Wednesday, August 28, 2013

FREE COMMUNICATIONS SESSIONS 01–16

Free Communication Session 01 | B332 | 28.08.2013 | 09:00–11:00

Theme: Dental Treatment and Restorative Dentistry: Caries

FC001

A Comparision of Different Radiographic Modalities for Detection of Occlusal Caries Lesions in vitro

Elif Tarım Ertaş[1], Ebru Küçükyılmaz[2], Hüseyin Ertaş[3], Selçuk Savaş[2], Meral Yırcalı Atıcı[1]
[1]*Department of Oral Diagnosis and Radiology, Izmir Katip Celebi University, Izmir, Turkey,* [2]*Department of Pediatric Dentistry, Izmir Katip Celebi University, Izmir, Turkey,* [3]*Department of Endodontics, Izmir Katip Celebi University, Izmir, Turkey*

Objectives: The aim of this in-vitro study was to compare the diagnostic accuracy of different radiographic imaging modalities in detecting occlusal caries lesions.
Materials and methods: Under standardised conditions, 125 extracted human permanent molar teeth with sound or occlusal caries lesions were radiographed using a conventional film system (F-speed), storage phosphor plate system (PSP), charge-coupled device (CCD) and cone beam computer tomography system (CBCT). Two observers scored the resulted images for the presence or absence of caries. Then, the teeth were histologically prepared and definite diagnosis was determined by stereomicroscobic assesment. The area under the receiver operating characteristic curve (Az), sensitivity, specificity, and accuracy of each imaging modality were calculated, as well as the intraexamier and interexaminer reproducibility.
Results: For both thresholds interexaminer and intraexaminer agreement was higher for CBCT. Similar Az values were achieved with all imaging methods at diagnostic D1 threshold (enamel lesions). Az values of CBCT system were found statistically higher than other imaging modalities at diagnostic D3 threshold ($p > 0.05$) and no significant difference was found between other imaging modalities. All radiographic methods showed similar sensitivities, specivities and accuracy in detecting enamel lesions. CBCT system showed higher sensitivities and accuracy in detecting dentine lesions.
Conclusions: Within the limitations of this study, CBCT showed better performance in detecting more advanced occlusal caries lesions in all radiographic systems.

FC002

An in vitro SEM Comparative Study of Dentine-Biodentine™ Interface

Jameel Mohammed Ameen Sulaiman[1], Maha Mosad Yahya[2], Wiaam Mohammed Al Ashou[2]
[1]*Dental Basic Sciences, University of Mosul – College of Dentistry,* [2]*Department of Conservative Dentistry, University of Mosul – College of Dentistry*

Aims: Investigate the adhesion interfaces between Biodentine™, MTA, GIC and Dentine. The sealing ability of these materials is assessed in vitro through SEM observation of the tooth-cement interface.
Materials and methods: Sixty three freshly extracted human molars were used and randomly divided into three groups according to filling material used for the restoration of the occlusal cavities. Groups (A) restored with Biodetine™, (B) with MTA and (C) GlC. Each group subdivided into three groups according time of storage (7, 14 28) days. After storage period, the teeth were sectioned mesio-distaly using a low speed diamond saw through the center of the restoration. The samples were prepared for (SEM: TESCAN – Germany) to find gap between restorations and dentine.
Results: SEM images for the interface gap clearly appear in significant different (32 μm) with Biodentine™, MTA and GIC, at (7) days, adaptation of these materials and dentine increased (3.35 μm) at (14) days. In (28) days the results are completely different such as for GlC no adaptation (85 μm), while the MTA (7 μm), and in Biodentine™ the results was the best i.e. approximately intimate contact (1 μm), see figure (1). All the difference was statistically done for significant comparative to all storage times.
Conclusions: All studies material exhibited some degree of marginal gaps. A positive correlation was found between the marginal adaptation and time of storage. Biodentine™ exhibited similar performances that are better than GIC and MTA under the conditions of our study.

FC003

Clinical Performance of Methods in Detecting Occlusal Caries Lesions in-vitro

Elif Tarım Ertaş[1], Ebru Kucukyılmaz[2], Huseyin Ertas[3], Meral Atıcı Yırcalı[1], Fahrettin Kalabalık[1]
[1]*Department of Oral and Maxillofacial Radiology, Faculty of Dentistry, Izmir Katip Celebi University, Izmir, Turkey,* [2]*Department of Pedodontics, Faculty of Dentistry, Izmir Katip Celebi University, Izmir, Turkey,* [3]*Department of Endodontics, Faculty of Dentistry, Izmir Katip Celebi University, İzmir, Turkey*

Objectives: The aim of this in-vitro study was to assess inter-and intra-examiner reproducibility and accuracy of a newly developed light-emitting diode (LED) (Midwest Caries ID, MID, DENTSPLY Professional, New York, USA)- and laser fluorescence-based device (DIAGNOdent pen 2190. Kavo, Biberach, Germany) in detecting occlusal caries in extracted human molar teeth, compared with the performance of visual inspection (VI) using the International Caries Detection and Assesment System (ICDAS).
Materials and methods: One hundred and forty permanent molar teeth were assessed twice by two examiners with VI using the ICDAS criteria and clinically using a LED- and a laser fluorescence

based devices. After measuring the reference point of each tooth, the teeth were histologically prepared and classified according to lesion extension as the gold standard. Intra and inter-examiner reliability of the examinations was assessed using Cohen's Kappa statistics. Sensitivity, specificity, and accuracy of the diagnostic methods were calculated. The area under the receiver operating characteristic curve (Az) was measured to compare their diagnostic performance of methods for occlusal caries diagnosis at D1 (enamel) and D3 (dentine) thresholds.

Results: Using the D1 and D3 threshold, all methods presented similar Az values ($p > 0.05$). ICDAS showed lower specificity comparing to other methods, which means ICDAS showed more false positive scores. MID showed higher interexaminer agreement at both D1 and D3 threshold. For both enamel and dentin thresholds all test methods showed similar intraeximer agreement for both observers.

Conclusions: All test methods seemed to be useful auxiliary tools with good performance in detecting occlusal caries lesions.

FC004

Internal Consistency and Diagnostic Success of New Caries Detection Device

Ali Murat Aktan[1], Mehmet Ertuğrul Çiftçi[1], Özlem İşman[2]
[1]*Department of Dento-Maksillofasiyal Radiology, University of Gaziantep, Gaziantep, Turkey,* [2]*Department of Dento-Maksillofasiyal Radiology, University of Sifa, İzmir, Turkey*

Objective: This in-vitro study on occlusal surface aimed to assess internal consistency and diagnostic success of the new LED-based caries detection device and to compare it with DIAGNOdent Pen (LF-based) which is the most widely-accepted caries detection device in the literature.

Material and methods: Sixteen occlusal non-cavitated molar surfaces were investigated twice by 20 undergraduate students with the LF- and LED-based caries detection devices. The teeth were sectioned at the surfaces suspected of containing occlusal caries and histologically evaluated using stereomicroscopy as a gold standard. Inter-observer agreement was calculated using Fleiss' Kappa statistic. The sensitivity, specificity, and accuracy in diagnosing occlusal caries using the two devices were also evaluated.

Result: Fleiss' Kappa showed moderate agreement for both LF- and LED-based caries detection devices (0.52 and 0.54). The mean specificity of the LED-based device was found as 0.75 and its sensitivity was found as 0.69. The mean specificity of the LF-based device was 0.35 and its sensitivity was 0.93.

Conclusion: Within the limitation of the current study, this study revealed that there were no differences among students for the measurements of two caries detection devices. Thus, LED-based device may be useful additionally visual inspection and dental radiographs as well as LF-based device. Furthermore, although internal consistency of the measurements of the two devices is acceptable according to results of the present study, diagnostic success of the LF-based device was found lower than the LED-based device for occlusal caries diagnosis.

FC005

The Technique of Composite Filling with Impression

Seyhan Akar Ergin
Dentalest Tedavi-Protez-Implant Uygulama Kliniği, Istanbul, Turkey

Aim: The technique of composite filling with impression is to give us valuable advantages in tooth filling processes. I have used this treatment technique successfully at my clinic for 5 years. Mostly indications are occlusal cavities, enamel yet not collapsed.

My aim is filling the composite at once by using the impression from the surface texture without fissure modeling.

Methods: Main material is orthodontic silicone wax. Before preparing the cavity, the impression of tooth will be achieved by pressing a piece of wax to the tooth surface. The wax is semi transparent material and it will permit the curing light to be absorbed by the composite. Also the pressure will be occured during the polymerization of the composite will be useful to discard the C force.

After the cavity is prepared, acid will be applied over enamel boundary. This issue will help to remove overflow composite easier. As a filling material a flow and soft composite will be satisfactory. But in deep cavities or when hard composites are needed, the desired material will be applied but 1 mm of occlusal gap must be reserved. Flow composite could be used in this gap for finishing. After removing wax, the composite must be continued to be lightened to impact the hardening process. Overflow material could be easily removed. Over occlusal contacts will not occur.

Results: Finally, the technique of composite filling with impression gives the dentist and the patient fast, reliable and aesthetic results, because of the impression is achieved from the original tooth.

FC006

Visualisation of Human Dental Pulp Vasculature by Detection of CD34

Ana Sotir Sotirovska Ivkovska[1], Efka Nikola Zabokova Bilbilova[1], Zlatko Mihail Georgiev[1], Ljube Angelko Ivkovski[2]
[1]*Department of Pediatric and Preventive Dentistry, Faculty of Dentistry, Skopje, Macedonia,* [2]*Department of Histopathology and Clinical Cytology, Faculty of Medicine, Instituute for Radiotherapy and Oncology, Skopje, Macedonia*

Aim: This study was undertaken to show the vasculogenesis, process by which endothelial precursor cells form new blood vessels in the embryo. Endothelial stem cells might persist into adult life, contributing to the formation of new blood vessels. To characterize vascularization of human dental pulp, we examined the expression of the human hematopoietic progenitor cell antigen CD34.

Methods: In this study we have examined 30 human teeth under three different clinical conditions: healthy teeth, shallow and deep cavities. Teeth were extracted and immediately cut longitudinally; pulp tissue was extirpated and fixed in formalin for 24 h at 4°C. The specimens were embedded in paraffin, according to standardized laboratory procedure. Sections were cut at 5 μm thicknesses

and stained by the streptavidin – biotin complex immunoperoxidase method. To characterize the vascularization of human dental pulp, we examined the expression of the human hematopoietic progenitor cell antigen CD34.
Results: The findings indicate that vasculogenesis of dental pulp is a process that is present in healthy teeth with single CD34 positive cell. In carious teeth these cells subsequently coalesce to form solid vascular cords inside the connective tissue, which later aggregate with the progression of the carious lesion. Pericites were embedded within the newly formed microvessels basement membrane.
Conclusions: Present study demonstrated that presence of CD34 endothelial cells reveals the continuous adjustment of vessels in response to functional needs and dental tissue homeostasis. Endothelial cells play a key role in immune and inflammatory reactions by regulating lymphocyte and leukocyte movement into dental pulp.

FC007

A Novel Computer Controlled Tri-Dimensional Cutting and Cavity Preparation Machine (CCTCCM) for Dental Laboratory Research

Saied Mostafa Moazzami[1], Steve Kurti[2], Mahmoud Torabinejad[3], Yiming Li[4], Micheal Meharry[5], Udochukwu Oyoyo[6], Majid Sarmad[7]
[1]Department of Operative and Esthetic Dentistry, Dental Research Center, Mashhad Dental School, Mashhad University of Medical Sciences (MUMS), Mashhad, Iran, [2]Center for Dental Research Biomaterials and Photonics Research Laboratory, Loma Linda University School of Dentistry, Loma Linda, CA, USA, [3]Department of Endodontics, Loma Linda University School of Dentistry, Loma Linda, CA, USA, [4]Center for Dental Research Loma Linda University School of Dentistry, Loma Linda, CA, USA, [5]Department of Restorative Dentistry, Center for Dental Research, Loma Linda University School of Dentistry, Loma Linda, CA, USA, [6]Department of BiostatisticsCenter for Dental Research, Loma Linda University School of Dentistry, Loma Linda, CA, USA, [7]Department of Statistics, Faculty of Mathematical Sciences, Fedowsi University of Mashhad (FUM), Mashhad, Iran

Introduction: The aim of this study was to design, manufacture a simple Computer Controlled Three-dimensional Cutting flat surfaces and Cavity preparation Machine (CCTCCM) and to compare the accuracy of cavities prepared by a CCTCCM to those prepared by an Expert Practitioner (EP).
Materials and methods: The hardware consists of several parts to provide high-speed headpiece the ability to move in three axes. The motion control system is programmed to create repeatable movements.

There were two groups of 12 samples. Cylindrical 2 × 2 mm cavity preparations (CP) on flat dentinal surface were prepared using CCTCCM (Group A) and by an EP (Group B). Measurements were done with ImageJ software to evaluate cavity diameter and depth accuracy.
Results: Welch two sample t-test in R-software was done for circularity, circle accuracy, depth uniformity error and depth accuracy in cavity preparation between CCTCCM and ECP groups. p-values smaller than 0.05 showed highly significant differences. An improvement of 3.6, 9.1, 4.7 and 6.3 times were accrued respectively if a machine is used for cavity preparation.
Discussion: Standardized cavity preparation, repeatability, remount ability of the jig and the tooth sample at the exact previous place and non-traumatic CP make CCTCCM a reliable device for in-vitro research to standardize CP.
Conclusion: The precision of CP in term of diameter and depth with CCTCCM was 8.4 and 5.0 times more than ECP respectively.

Theme: Preventive Dentistry: Caries

FC008

CPP-ACPF Application Methods – Effects on Salivary Parameters and Fluoride Level

Junnie Liaw, Ya Yin Chew, Lily Azura Shoaib, Halimah Awang
Department of Paediatric Dentistry and Orthodontics, Faculty of Dentistry, University of Malaya, Kuala Lumpur, Malaysia

Purpose: Casein phosphate products have in recent years been shown to have caries preventive effects. However, there has been no specific manufacturer's instruction, or agreement, on how these should be "applied." The aim of this study was to compare the effect of two methods of application, namely using cotton buds and special tray, for topical application of a casein phosphopeptide-amorphous calcium phosphate preparation (CPP-ACPF, a product containing 900 ppm fluoride) on whole saliva.
Method: Ten healthy 18–20 year-old volunteers were strictly trained to use CPP-ACPF (Tooth Mousse Plus®) using cotton buds and special trays in a standardized manner. Non-fluoride toothpaste was used for tooth brushing 2 weeks prior to and during the test duration. CPP-ACPF applications were twice daily for 7 days for each method, with a 1-week washout period in between. Stimulated whole saliva of subjects were evaluated for consistency, flow-rate, pH and buffering capacity at baseline and at the end of the study period. In addition, fluoride retention and concentration were measured and compared.
Results: There were no differences in salivary parameters (consistency, flow-rate, pH, buffering capacity) following applications of CPP-ACPF using the two methods of applications. However, there was a statistically significant difference in salivary fluoride concentrations ($p < 0.05$) between pre- and post-treatment in the special tray group. Higher salivary fluoride concentration, with longer retention, was also achieved with special tray application.
Conclusion: Following short-term CPP-ACPF applications, the use of special trays resulted in higher salivary fluoride level compared to its applications using cotton buds.

Theme: Preventive Dentistry: Epidemiology

FC009

Identification and Antibiotic Susceptibility of Oral Streptococci from Dental Plaque in Children

Aida Namani Rexhepi[1], Raimonda Niko[2], Vjosa Hamiti Krasniqi[3], Agim Begzati[1], Teuta Kutllovci[1], Blerta Latifi Xhemajli[1], Zana Bajrami Agani[3], Mergime Prekazi Loxha[3]

[1]*Department of Pediatric and Preventive Dentistry, Prishtina University, Kosovo,* [2]*Department of Pediatric, Tirana University, Albania,* [3]*Department of Oral Surgery, Prishtina University, Kosovo*

Introduction: Oral streptococci are major inhabitants of dental plaque, particularly viridians group of streptococci, which can cause serious infections. However, their presence may be associated with infective endocarditis, especially in children with congenital heart disease.
Aim: The aim of this study is to identify the presence of different types of oral streptococci from dental plaque, using Vitek 2 methods (bioMerieux) in children and at the same time their susceptibilities in some antibiotics using disc diffusion techniques.
Material and methods: Samples of supragingival dental plaques for microbiological studies were collected from 60 healthy children, ages 5–15 years from Kosovo. The samples were obtained from the bucal surfaces of the first (deciduous or permanent) molars of the lower jaw and incisors of the upper jaw using the sterile swab sticks. Gram positive cocci were identify by VITEK 2-GP card. The Samples were cultivated on Columbia nutrient agar and thioglycollat (Institute of Microbiology CCK). After the identification of gram-positive cocci, the disc diffusion method is used for their susceptibilities in antibiotics: amoxicilin, cefalexin eritromocin and clyndamycin.
Results: In microbiological tests have dominated viridans group of streptococci (*S. mitis*, *S. oralis*, *S. salivarius*, *S. vestibularis*, *S. sanguis*, *S. mutans*). From overall oral cocci group, our results shows that amoxicillin sensitive were 89%, cefalexin 63.3%, eritromicin 66.6% and clindamicin 70%.
Conclusion: It is important to be known the presence of oral streptococci and their sensitivity in antibiotic because of the serious infections they can cause during the dental treatment, especially in children with special medical needs.

Theme: Preventive Dentistry: Epidemiology

FC010
Dental Caries Experience and Periodontal Status Among Schoolchildren in Georgia
Mariam Margvelashvili[1], Manana Kalandadze[1], Eli Machtei[2], Vladimer Margvelashvili[1], Harold Sgan Cohen[3]
[1]*Department of Dentistry and Maxilla-Facial Surgery, Faculty of Medicine, Tbilisi State University, Tbilisi, Georgia,* [2]*Periodontology, Rambam and Faculty of Medicine, School of Graduate Dentistry, Technion (I.I.T.), Haifa, Israel,* [3]*Hebrew University-Hadassah Faculty of Dental Medicine, Jerusalem, Israel*

Aim: To evaluate current caries experience and periodontal status of schoolchildren in Georgia.
Materials and methods: A pathfinder study was planned and executed according to the WHO recommendations. School children were examined in three large cities populated mainly by ethnic Georgians and in two villages represented by ethnic minorities (Armenian and Azeri). In order to assess caries experience DMFT as well as dmft values were recorded by calibrated examiners in three different age groups: first grade, seventh grade and tenth grade (the age of 5–6, 12 and 15 years respectively). For the tenth grade group, periodontal status was also evaluated by recording outcomes of plaque, calculus and bleeding on probing.
Results: Overall 1053 children were examined. The total caries experience values for the first (n = 404), seventh (n = 334) and tenth grade (n = 314) children were DMF = 0.04 and dmf = 4.40, DMF = 1.81 and DMF = 3.19 respectively. The plaque was evidenced in 230 (73.25%) children; in 125 (39.81%) children plaque was evidenced on all the examined teeth. Calculus was evidenced in 117 (37.26%) children. Probing pocket depth of 5 mm and above was detected in 85 participants (27.07%). Seventeen (5.41%) children presented with more than three sites with PD > 5 mm. Bleeding on probing was recorded in 83 (26.43%) children.
Conclusions: Caries experience as well as periodontal diseases seem to be prevalent in Georgia. Further research is warranted in order to shed light on the influencing factors. Education and prevention programs should be introduced in order to improve oral health status among the children in Georgia.

Free Communication Session 02 | B342 | 28.08.2013 | 09:00–11:00

Theme: Dental Treatment and Restorative Dentistry: Endodontics

FC011
A Survey on Endodontic Practice of Dental Practitioners in Turkey
Selen Küçükkaya[1], Melahat Görduysus[1], Mehmet Ömer Görduysus[1], Duygu Anıl[2]
[1]*Department of Endodontics, Faculty of Dentistry, Hacettepe University, Ankara, Turkey,* [2]*Department of Educational Measurement and Evaluation, Faculty of Education, Hacettepe University, Ankara, Turkey*

Aim: To assess the current endodontic practice in Turkey and to find out the opinions of practitioners on their level of practice and training needs.
Methods: A questionnaire dealing with current endodontic practice was conducted. A total of 650 practitioners from Turkey were randomly chosen and the questionnaires were sent to their e-mail adresses. All responses were gathered and thereafter analyzed using the statistical software SPSS.
Results: A total of 204 dentists returned the questionnaires, giving a response rate of 31.3%. More than 70% of the respondents stated that they never used rubber-dam during endodontic treatment, 60.3% indicated that they routinely took preoperative radiographs. The most commonly chosen technique for working length estimation was taking radiographs (78%). Seventy-six percent of the respondents used rotary NiTi instruments. Nearly 64% of them used rotary NiTi instruments more than five times per week and 30.5% used them until distortion occurred. Respondents commonly applied a combination of techniques (57.2%) or crown down (28.3%). Nearly 50% of the respondents used rotary NiTi instruments for retreatment and almost 90% considered postgraduate endodontic training was necessary.
Conclusions: This study demonstrates that the majority of respondents adopted the rotary NiTi instruments and techniques into

endodontic practice. On the other hand, some other procedures such as rubber-dam usage for isolation or electronic apex locator application in working length determination are not well incorporated. The need of endodontic training after graduation is seemed to be a common opinion among practitioners.

FC012

An in vitro Comparison of Antibacterial Effects of Four Different Root Canal Irrigation Method in Root Canals Infected with *Enterococcus faecalis*

Tuba Ayhan[1], Figen Kaptan[1], Sadık Kalaycı[2], Fikrettin Şahin[2]
[1]*Department of Endodontics, Yeditepe University, Istanbul, Turkey,* [2]*Department of Genetics and Bioengineering, Yeditepe University, Istanbul, Turkey*

Aim: The purpose of the study was to compare the antibacterial effect of four different currently generated rootcanal irrigation methods in root canals enfected with *E. faecalis*.
Methods: In the study, 105 extracted single rooted teeth were used. Twenty samples were distrubuted to each four experimental and a positive control group. Five teeth were used in SEM imaging. Groups were generated respectively in this way: Group 1: Hawe irrigation probe side-vented needle, Grup 2: EndoActivator, Grup 3: EndoVac, Grup 4: SAF ve Grup 5: (+) control group.

After shaping with hand instruments root canals were infected with E. faecalis and first samples (S1) was taken, then the mechanic preparation was done with rotary instruments and irrigation systems. Then second samples (S2) were taken. Intra and inter group analyses were performed.

Statistical analyses was performed by SPSS (Statistical package for social sciences) for windows 15.0 program. While study data were being evaluated the convenience of the parameters to normal distribution was evaluated with Kolmogorov–Smirnov test and parameters weren't in compliance with normal distribution. The significance was evaluated at the level of $p < 0.05$.
Results: The decrease percentage of the number of bacteria in positive control group was significantly lower than experimental groups ($p < 0.005$). There was no significant difference between the experimental groups in terms of decrease percentage after irrigation ($p > 0.05$).
Conclusions: According to the result of the study there was no staistically difference observed between irrigation systems used in terms of antibacterial effect.

FC013

Assessment of New Root Canal Filling Material Based on Polymer-Modified White Portland Cement with $CaCl_2$:PH and Solubility Study

Saud Jasim Dizayee, Raid Fahim Salman
Khanzad Training Center for Dental and Oral Health, Erbil, Iraq

Aim: This study aimed to assess a new root canal filling material which may known as Polymer-modified White Portland Cement and investigate its properties in comparison with Portland cement with $CaCl_2$.

Materials and methods: The experimental materials were prepared from 20% bismuth oxide and 80% white Portland cement. Later on $CaCl_2$ was added to them. Polymer was added to the developing material to enhance the workability of this material to be used as injectable root canal filling, so the mixture of 17.5% polymer, 12.5% $CaCl_2$ and 20% water was the most favorable one that comply the requirements.

pH study was conducted to measure the pH value of the experimental material and Portland cement with $CaCl_2$, ten specimens were used for each material.

The percentage of solubility of the experimental material and Portland cement with $CaCl_2$ was determined by modified method of American Dental Association specification no. 30 (ANSI/ADA 1991). Ten specimens were used for each tested material.
Results: It was shown that the experimental material had a higher pH which was (8.22 ± 1.3) than that of the Portland cement with $CaCl_2$ which was (8.0 ± 1.1).

There was non significant difference between experimental and Portland cement with $CaCl_2$. Regarding the solubility of the experimental material the value was less than the control.
Conclusions: It was concluded that this new material (Polymer-modified White Portland Cement) had comparable or better property with Portland cement with $CaCl_2$.

FC014

Bond Strength of Resin Sealer to Root Canal Dentin

Cihan Yıldırım[1], Fatih Aksoy[1], Emre Çulha[1], Aslıhan Üşümez[2]
[1]*Department of Endodontics, Gaziantep University,* [2]*Department of Prosthodontics, Bezmialem Vakif University*

Aim: The aim of this study was to evaluate the effect of photodynamic therapy (PDT) on the on bond strength of resin sealer to root canal using a push-out test method.
Methods: Sixty single rooted teeth which have round shaped canals were used in this study. The teeth were divided into four groups according to the irrigation protocol during root canal treatment ($n = 15$). Group 1: irrigated with saline (control), Group 2: irrigated with sodium hypochlorite (NaOCl-5.25%), Group 3: irrigated with sodium hypochlorite and EDTA (17%), Group 4: irradiated with a photodynamic system (HELBO Photodynamic Systems). The roots were filled with single cone guttapercha and a resin sealer (Adseal; Meta Biomed Co). All the specimens were then cut perpendicular to their long axis, to obtain 1 mm thick slices from the middle portions. Using push-out test, bond strength between resin sealer and root canal dentin was measured after 24 h using universal testing machine. Statistical analysis was performed with analysis of variance followed by Tukey HSD tests.
Results: The analysis of variance indicated that push-out test values do not statistically vary according to the irrigating solution used ($p > 0.05$). There was no effect of PDT on bond strength of resin sealer to root canal dentin.
Conclusion: The irrigation protocols used during root canal treatment did not affect the push-out bond strength between resin sealer and root canal dentin.

FC015

Clinical Implications of Calcifying Nanoparticles in Dental Diseases: A Critical Review

Mohammed S. Alenazy, Hezekiah A. Mosadomi
Department of Restorative, Riyadh Collages of Dentistry and Pharmacy, Riyadh, Saudi Arabia

Background: Unknown cell culture contaminants were described by Kajander and Ciftcioglu in 1998. These contaminants were called Nanobacteria (NB) initially and later on calcifying nanoparticles (CNPs). Their exact nature is unclear and controversial. Calcifying nano-particles have unique and unusual characteristics, which preclude placing them into any established evolutionary branch of life.
Aim: The aim of this systematic review was to assess the published data concerning CNPs since 1998.
Materials and methods: MEDLINE (PubMed) and SPIE digital library electronic searches were conducted. Nanobacteria, and calcifying nanoparticales were used as key wards.
Results: The search yielded 135 full-length papers. Further screening of the titles and abstracts that followed the review criteria resulted in 40 papers.
Conclusions: The review showed that whether or not nanobacteria are living particles that replicate or are inert, nanocalcification is still controversial. Some Investigators have clarified a role of CNPs in pulpal and salivary gland calcification as well as the possibility of using CNPs in treatment of cracked and/or eroded teeth.

FC016

Comparative Evaluation of Cleaning Efficacy of Root Canal Using Two Rotary Ni-Ti File System vs. Hand K-File- A SEM Study

Anil Chandra, Ashutosh Kumar, Tikku Ap
Department of Conservative Dentistry & Endodontics, K.G's Medical University, Lucknow, India

Aim: A study was conducted to compare the efficacy of three different file system (ProTaper, RaCe and K-flex files) in smear layer removal at coronal, middle and apical third of root canal.
Methods: Thirty healthy mandibular single rooted premolars were selected and divided into three groups (n = 10). Each group was instrumented by ProTaper, RaCe and K-flex files respectively and then grooved and split into two halves. Each sample was analyzed by scanning electron microscope at coronal, middle and apical third. Smear score of all the three groups were compared. The statistical analysis was done using wilcoxon score and found coronal and middle third of root canal were cleaner than apical third in all the three groups.
Results: RaCe group smear scores were minimum and for K-flex files it were maximum, but the result were not statistically significant ($p < 0.05$). The results of the present study indicated that neither of the three file system achieved complete cleanliness of root canal, particularly in the apical part.

FC017

Different Treatment of an External/Internal Root Resorptions Associated with Periodontal- Endodontic Lesion: A 30 Month Follow-Up

Yasemin Şentürk Yaman, Kamran Gulsahi
Department of Endodontics, Başkent University, Ankara, Turkey

Background: To describe the treatment of lower molar tooth associated with external/internal resorption and periodontal-endodontic lesion.
Technique: Sixty-one-year-old male patient was referred to the endodontic therapy of left mandibular second molar tooth. Radiographic examination demonstrated external-internal resorption in mesial root; also bone loss in furcation area and mesial root. Clinical examination showed the vital tooth with a deep periodontal pocket in mesial root. The access cavity was opened. While the working length was calculated, a perforation was determined between the internal and external resorption. Distal root canal was obturated with AH Plus and gutta-percha. Mesial root canals were prepared up to region of perforation and irrigated with 1% NaOCl, then a $Ca(OH)_2$ paste was applied to canals. One week later, $Ca(OH)_2$ was removed with copious 1% NaOCl irrigation, and thereafter, the root canals were irrigated with sterile saline and were filled by iRootSP sealer without gutta-percha cone up to the level of perforation in mid-root. The access cavity was restored with glass ionomer cement. At 15- and 30-month follow-up examination, no clinical or radiographic symptoms were identified. Unfilled apical portion was asymptomatic and perforation was healed.
Conclusion: CBCT is useful for detected of perforation in the external/internal root resorption cases. The studies demonstrated that when iRoot SP was exposed to moist environment, hydroxyapatite formed and being a true self-adhesive, this sealer has to possess high fracture resistance, tensile strength, and biocompatibility. Due to the features of iRoot SP can be considered as a favorable material for treatment of such cases.

FC018

Effect of Endodontic Irrigants When Used Alone or in Combinations on Mineral Content of Human Dentin

Mehmet Burak Güneşer, Ayçe Unverdi Eldeniz
Department of Endodontics, Selcuk University, Konya, Turkey

Aim: The aim of this study was to evaluate the ultramorphological and chemical effects of different endodontic irrigation solutions alone and their combinations on dentin.
Materials and methods: Standardized dentin discs were prepared from extracted non-carious human third molar teeth. The discs were randomly divided to 12 groups (n = 4) according to dentin treatment procedure: GroupI- 2.5% sodium hypochlorite (NaOCl), GroupII- 2% chlorhexidine (CHX), GroupIII- 2.5%NaOCl + Saline + CHX, GroupIV- 2.5%NaOCl + 17%EDTA + 2.5%NaOCl, GroupV- 17%EDTA + 2.5%NaOCl + 17%EDTA, GroupVI- Phosphate buffered saline solution (PBS), GroupVII- 17% EDTA + CHX + 17%EDTA, GroupVIII- QMix, GroupIX-

Octenidine hydrochloride (OCT), GroupX- OCT + EDTA + OCT, GroupXI- Saline and Group XII- no treated dentin as a control group. After exposure of dentin discs to 5 ml of test irrigation solutions for 15 min, the specimens were subjected to scanning electron microscopic (SEM) and energy dispersive X-ray (EDX) spectrometric analysis to determine calcium, phosphorus, carbon, sodium, magnesium, silicon and oxygen content in% weight of each specimen surface.
Results: The EDX results showed that calcium content was significantly decreased in GroupV, VII and IX. Phosphorus content was significantly decreased only in GroupV. Significantly higher carbon content was detected in all test groups except in Group I, VIII and XI. Group I was the only group that had the least effect on sodium content. No differences were observed in magnesium and silicon content of any of the groups while oxygen content was significantly decreased in GroupV.
Conclusions: QMix and saline solutions caused the minimal effect on mineral content of dentin whereas 17% EDTA + 2.5% NaOCl + 17%EDTA combination had the worst effect on dentin.

FC019
Interfacial Adaptation and Thickness of Bioceramic-Based Root Canal Sealers
Zeti Adura Che Ab Aziz, Noor Hayaty Abu Kassim, Afaf Yahya Al Haddad
Department of Conservative Dentistry, Faculty of Dentistry, University of Malaya, Kuala Lumpur, Malaysia

Introduction: Aim of this study is to evaluate the sealing ability of bioceramic-based sealer compared to AH plus sealer in term of interfacial adaptation to the root dentin and sealer thickness.
Methods: Sixty extracted single root premolars were standardized and instrumented. Teeth were divided into four groups (15 roots each) according to type of sealer as following; Group 1: Apatite Sankin type III, Group 2: MTA-Fillapex, Group 3: Endosequence BC, and Group 4: AH plus. Sealers were labeled with 0.1% Rhodamine B fluorescent dye. The roots were sectioned transversally at the level of 1 mm (apical), 3 mm (middle), and 6 mm (coronal) from the terminus of filling. Each cross section was evaluated under confocal laser scan microscope and the percentage of gap containing region to the circumferential of whole root canal was calculated. Specimens also examined under stereomicroscope and percentage of sealer to the whole canal was measured.
Result: For interfacial adaptation, the apical level had significantly more interfacial gaps compared to middle and coronal level ($p < 0.001$). Apatite, MTAF and Endosequence BC sealer resulted in more gap compared to AH plus ($p < 0.05$), however no significant different between the three sealers ($p > 0.05$). The sealer thickness was significantly higher at apical and middle thirds compared to coronal in all groups ($p < 0.001$) and Endosequence BC has significantly the highest thickness compared to MTAF ($p < 0.001$) and AH plus ($p = 0.005$).
Conclusion: With the limitation of this study, bioceramic-based sealers have higher sealer thickness and more interfacial gap to root dentin compared to epoxy resin based sealer AH plus.

FC020
Investigation of the Root and Canal Configuration of Maxillary Permanent First and Second Molars Using Cone-Beam Computed Tomography
Hatice Parlak[1], Ahmet Ercan Şekerci[2], Sezer Demirbuğa[1], Muhammed Çayabatmaz[1], Asiye Nur Dinçer[3], Yahya Orçun Zorba[1]
[1]*Department of Restorative Dentistry, Erciyes University, Kayseri, Turkey,* [2]*Department of Oral Radiology, Erciyes University, Kayseri, Turkey,* [3]*Department of Endodontics, Erciyes University, Kayseri, Turkey*

Objective: To investigate the root and canal morphology of maxillary first and second molars in a Turkish population by using cone beam computed tomography (CBCT).
Materials and methods: Maxillary first (n = 894) and second (n = 944) molar teeth from 605 Turkish patients were analyzed to make the following observations: (i) the number of roots and their morphology; (ii) the number of canals per root; (iii) the incidence of a second root canal in the mesiobuccal root (MB2), and the correlations between the incidence of an MB2 canal and age, gender, and tooth position and (iv) the frequency of C-shaped canals. The root canal configuration was categorized and compared according to Vertucci's criteria.
Results: The most common root morphology was that of three separate roots in both first (93.6%) and second molars (69.1%). Type I canal configuration was the most frequent in all roots: 56.6–100%. The mesiobuccal root (MB) had significantly more variations in canal configuration when compared with other roots in both the first and second molars ($p < 0.05$). C-shaped canals were found as 0.52% in second molars. The incidence of an MB2 canal (39.3% for females and 43.3% for males both in first and second molars) showed a statistical difference in gender ($p < 0.05$).
Conclusion: The MB roots of maxillary molars tended to have more variations in the canal system than the distobuccal or palatal roots and the incidence of MB2 was higher in the first molars than in the second molars.

Free Communication Session 03 | B343 | 28.08.2013 | 09:00–11:00

Theme: Dental Treatment and Restorative Dentistry: Materials

FC021
A Clinical Photogrammetric Technique for Dental Analysis and Visualization
Ahmet Kürşad Çulhaoğlu[1], Serkan Kemeç[2], Hakan Terzioğlu[1], Şebnem Düzgün[2]
[1]*Prosthetic Treatment, Ankara University Faculty of Dentistry,* [2]*Metallurgical and Materials Engineering, Middle East Technical*

Aim: Accurate information about teeth shape, position and their appearance in the face is essentially important for various dentistry fields such as orthodontia and prosthodontia. New techniques for teeth shape and teeth occlusion registration and analysis is proposed based on applying 3D teeth arc model instead of plaster mould.

Direct intra-oral measurement seems very advantageous for dental applications and research. Firstly, direct intraoral measurement would overcome the tedium of the impression and casting procedure for patients as well as dental workers. Secondly the use of direct intra-oral measurements could improve the efficiency of measurements, degrees the time and cost of the measurement. The main purpose of this study is to evaluate the effectiveness of low-cost 3D modelling method. In the study, 3D models of different tooth were obtained with "narrow baseline photogrammetry" techniques. Moreover, these models were evaluated with the potential ability to form a base approach to digital archiving and gathering information about teeth shape, position and their appearance in the face.

Materials and methods: Method involves two basic phases. These are: (i) intra-oral image collection, and (ii) processing of the collected images. Factors, affecting the success of photogrammetric technique used in this study, could be listed as; camera resolution, camera calibration method, angles between photos, photo orientation quality, and targets.

Results: In the lights of the first applications, it could easily be said that, method was given promising results for the 3D digital archiving and acquisition of information about teeth.

FC022

Comparative Study on Enamel Microstructure of Bovine and Human Incisors

Baiping Fu, Chaoyang Wang

Department of Prosthodontics, Hospital of Stomatology affiliated to Zhejiang University School of Medicine, Zhejiang University School of Stomatology, Hangzhou, China

Objective: To comparatively investigate enamel microstructure of bovine and human incisors.

Materials and methods: Sixteen human incisors (four each maxillary/mandibular central/lateral incisor) extracted for periodontal reasons and eight bovine mandibular incisors were longitudinally cut into three fragments (mesial/middle/distal thirds) at the labiolingual direction before they were horizontally cut into three small fragments (occlusal/middle/cervical thirds). Each fragment of bovine incisors was further trisected in longitudinal or labiolingual directions. Human and bovine fragments were further tangentially cut through the middle of whole enamel thickness. All the sectioned surfaces were observed by SEM.

Results: Bovine and human incisor's enamel was mainly composed of Hunter-Schreger Bands (HBS) and parallel prisms (PP). HBS mainly located in most labial inner enamel and cingulum of lingual inner enamel while PP located in all the outer enamel, cervical region and incisal ridge. A transition zone was found between parazone and diazone within an HBS of bovine incisors, but not in human incisors. Interprisms appeared as thicker plate-like structures and decussated with prisms in bovine incisors, but were thin and round prisms in human incisors. Thicker PP in cingulum and thinner interprisms in whole enamel were main two characteristics of human maxillary central incisors.

Conclusion: Bovine incisor's enamel was characterized as thicker plate-like interprisms, a transition zone between parazone and diazone within an HBS, and prism/interprism decussating plane, but not in human incisors. Differences of enamel microstructure between bovine and human incisors should be taken into consideration when bovine teeth were substituted as human teeth for dental research.

FC023

Adhesion of *C. albicans* and *E. faecalis* to Various Dental Filling Materials

Ayçe Ünverdi Eldeniz, Makbule Bilge Akbulut, Mehmet Burak Güneşer

Department of Endodontics, Selcuk University, Konya, Turkey

To evaluate adhesion of Candida albicans and Enterococcus faecalis microorganisms to amalgam (Cavex Avalloy (Harlem, Holland), composite; Tetric N-Ceram (Ivoclar, Vivadent), flowable composites; SDR (Dentsply, DeTrey, Germany) and Premise (Kerr, Orange, CA), glass ionomer; Kavitan Plus (Spofa Dental, Jicin, Czech), ZnOE cement; Alganol (Kemdent, Wiltshire, UK), Zinc Phosphate cement; Adhesor (Spofa Dental, Jicin, Czech) and compomer; Dyract AP (Dentsply DeTrey, Konstanz, Germany) surfaces.

Methodology: Standardized ten discs were prepared from each material and sterilized under Ultraviolet light for 24 h. The discs were then randomly assigned to two groups ($n = 5$) according to test microorganism used and were either incubated with *C. albicans* (ATCC90028) or with *E. faecalis* (A197A) aerobically for 48 h. After incubation fungal and bacterial adherence was determined by using a colorimetric XTT assay. Data were statistically analyzed by using ANOVA and Tukey HSD tests ($p = 0.05$).

Results: *E. faecalis* adhered statistically significantly to amalgam and Alganol surfaces ($p < 0.05$). *C. albicans* also adhered statistically significantly to amalgam and Alganol surfaces ($p < 0.05$). *C. albicans* adhered more to zinc phosphate cement Adhesor's, and flowable composites'; SDR and Premise surfaces than *E. faecalis* ($p < 0.05$). *E. faecalis* and *C. albicans* adhered equally to glass ionomer cement Kavitan Plus.

Conclusion: Within the limitation of this in vitro study it can be concluded that these materials should be polished in order to prevent or reduce bacterial and fungal adherence to their surfaces.

FC024

The Effect of Parylene Coating on Some Properties of PMMA

Fariba Motevasselian[1], Steven Soo[1], Aviva Petrie[2], Haralampos Petridis[1]

[1]Department of Restorative Dentistry, Prosthodontics Unit, UCL Eastman Dental Institute, London, UK, [2]Biostatistics Unit, UCL Eastman Dental Institute, London, UK

Aim: The aim of the present study was to investigate the effect of surface coating of PMMA with Parylene-C, a novel biomedical coating, on water sorption, solubility and staining.

Materials and methods: Specimens were fabricated using heat-polymerizing polymethyl-methacrylate (PMMA) and divided into

two groups, uncoated PMMA and coated with Parylene-C. Twelve specimens of each group were subjected to water sorption and solubility tests in distilled water according to ISO 20795-1:2008 for denture base polymers. A further 24 specimens of each group were exposed to a staining test by being divided into two subgroups for soaking in distilled water or coffee solution for 1 week. CIE L*a*b* values of all samples were obtained using a digital camera imaging and appropriate image analysis software, and compared before and after exposure to the staining test. Total colour differences (ΔE) and lightness values (L) were calculated. Non-parametric Mann-Whitney tests were used for statistical analysis with the level of significance set at $p < 0.01$.

Results: Coated PMMA samples showed significantly less water sorption while no difference was noted in solubility. The coating did not have a significant effect on ΔE values after the staining tests, but the L* values in coated samples were significantly higher compared to the uncoated ones. Significant L* value reduction occurred for uncoated PMMA, while the coated samples were not affected.

Conclusion: Parylene-C coating of PMMA caused significant reduced water sorption but no effect was observed in the solubility and staining.

FC025

Antibacterial Effects of Conventional Glass Ionomer Cement Following Incorporation of Benzalkonium Chloride and Cetylpyridinium Chloride

Aleksandar Dimkov[1], Elizabeta Gjorgievska[1], John William Nicholson[2], Nikola Panovski[3], Ana Kaftandzieva[3]

[1]Department of Paediatric and Preventive Dentistry, Faculty of Dental Medicine, University "Ss Cyril and Methodius", Skopje, Macedonia, [2]Mary's University College, Twickenham, London, UK, [3]Institute of Microbiology and Parasitology, Medical Faculty – Skopje, Macedonia

Background: The antibacterial activity of conventional glass ionomer cement against three different microorganism strains alone and following incorporation of 1%, 2% and 3% Benzalkonium Chloride and Cetylpyridinium Chloride was evaluated.

Methods: The agar diffusion method was used to determine the inhibitory effect of the conventional glass ionomer cement ChemFlex on *Streptococcus mutans*, *Lactobacillus casei* and *Actinomyces viscosus*. Bacterial strains were inoculated into BHIB, and incubated in an anaerobic atmosphere (37°C). From the bacteria grown in the liquid medium, the density of the inoculum was set to be equivalent to McFarland 2 standard. In Shaedler agar, 350 µl of the bacterial suspension were equally spread. Specimens (4 mm × 6 mm) were prepared from the cement with and without addition of 1%, 2% and 3% Benzalkonium Chloride and Cetylpyridinium Chloride. The inhibition zones were determined after 48 h, after 7 days and after 21 days of incubation.

Results: The glass-ionomer cements with no antimicrobial compounds incorporated either form very small inhibition zones or form no zones at all. The combination ChemFlex + Benzalkonium Chloride has the best effect on the three analysed bacteria. The Benzalkonium Chloride antibacterial compound has a stronger antibacterial effect than Cetylpyridinium Chloride.

Conclusions: Glass ionomer cements can potentially be used as a medium for slow release of active antimicrobial components, and thay have the potential to improve clinical outcomes of the cements.

FC026

Biocompatibility of Two Different Restorative Materials Used in Pediatric Dentistry

Mira Jankulovska[1], Meri Pavlevska[1], Blagoja Lazovski[1], Liljana Spasevska[2], Olga Kokoceva[1], Vesna Ambarkova[1], Marija Jankulovska[1], Elena Pavlevska[2]

[1]Department of Pediatric and Preventive Dentistry, Faculty of Dentistry, Skopje, Macedonia, [2]Department of Patology, Faculty of Medicine, Skopje, Macedonia

Aim: Common biocompatibility problems with some of the current dental materials include chemical leakage from the material, pulpal irritation and less commonly allergy.

The aim of our investigation was to make a comparative analysis of the biocompatibility of two different restorative materials used in children.

Materials: Eighteen male albino rats (Wistar) weighing 200–250 mg were used in this study. Tested material was freshly prepared as advised by the manufacturer and placed in a polyethylene tube (5 mm long/3 mm internal diameter). For material implantation, the dorsal skins of the animals were shaved under ketamine (25 mg/kg) anesthesia and disinfected with 5% iodine solution. Three incisions were made on the back of each animal, on the dorsal surface of the front limbs and on the dorsal pelvic area. Each animal received one tube filled by glassjonomer cement and compomer. For control purposes, empty polyethylene tubes closed from both sides by heat were implanted on the dorsal surface of the left back limb. The histological evaluations were performed 1, 3 weeks and 45 days post implantation.

At each period, the rats were sacrificed by anesthetic overdose; the tubes and surrounding tissues were removed by tissue dissection technique and fixed in 10% buffered formalin at pH 7.0. Comparative histologycal analysis were made.

Results: One week post implantation at the control and experimental group, microscopic examination revealed the strongest inflammatory reaction despite another three examal periods.

Conclusions: All materials in current use are considered acceptable, in terms of their biocompatibility with local tissues, when properly handled and placed.

FC027

Biodentine'tm – A Biomaterial for Endodontic Applications – Clinical Cases

Sonja Mihail Apostolska[1], Elizabeta Gjorgievska[2], Vasilka Rendzova[1], Marina Eftimovska[1], Kiro Ivanovski[3], Mira Jankulovska[2], Marija Stevanovic[2], Saso Elencevski[4]

[1]Department of Conservative Dentistry, Faculty of Dental Medicine, University "Ss. Cyril and Methodius", Skopje, Macedonia, [2]Department of Paediatric and Preventive Dentistry, Faculty of Dental Medicine, University "Ss. Cyril and Methodius",

Skopje, Macedonia, [3]Department of Periodontology and Oral Pathology, Faculty of Dental Medicine, University "Ss. Cyril and Methodius", Skopje, Macedonia, [4]Department of Fixed and Mobile Prosthetics, Faculty of Dental Medicine, University "Ss. Cyril and Methodius", Skopje, Macedonia

Purpose: The purpose of the present study is to demonstrate the endodontic treatment and re-treatment with the, so far, the most promising materials in these indications, the calcium-silicate cements.
Method: Biodentinetm, a new dental biomaterial based on calcium-silicate technology, with excellent handling characteristics and biocompatibility, has been used in patients with complications during the endodontic therapy (perforations of the root canal or pulp chamber floor), traumatic injuries and as a dentin substitute for restorations in complex situations.
Results: The clinical cases demonstrated the excellent healing potential after the treatment with Biodentinetm.
Conclusions: The bio-silicate technology is highly promising, mostly due to its chemical properties and easy clinical manipulation. The short working time and the high mechanical strength makes Biodentinetm a material with easy handling, highly biocompatible and with wide range of indications (such as endodontic procedures and as a dentin substitute in restorations).

FC028

Bisphenol A Elution from Dental Resins: The Effect of Temperature

Didem Atabek[1], Itır Aydıntuğ[1], Alev Alaçam[1], Aysel Berkkan[2]
[1]Department of Pedodontics, Gazi University, Ankara, Turkey, [2]Faculty of Chemistry, Gazi University, Ankara, Turkey

Aim: Bisphenol A (BPA) elution from baby bottles into content has been of great public interest and debate in recent year. Uncontrolled BPA elution due to temperature increase may create a risk factor for human health. However, dental resins that are used in pediatric dentistry also have BPA derivatives. The aim of this study is to evaluate BPA elution from dental resins and to determine the effect of temperature increase on this elution.
Methods: Four dental resins containing BPA derivatives (Filtek Z250, Filtek Supreme XT, Fissurit FX, and Admira) and a control group (BPA free G-aenial) were used in this study. Each specimen was stored in 2 ml of 75% ethanol-water solution at 37°C. Water at a temperature of 59 ± 1°C (preferred temperature of hot drinks) was added to the study samples at certain time intervals (1, 6, 24 h, 2, 3, 4, 5, and 6 days). The methanol samples were analyzed using high-performance liquid chromatography (HPLC). Data was analyzed using multivariate and repeated measures analysis of variance ($p < 0.05$).
Results: The study samples generally eluted more BPA than the control samples ($p < 0.05$). The greatest amount of BPA for an individual time period was measured after 6 h for the groups A-B-C-D; the same was found after 24 h for group E. Although the temperature increase due to hot drink consumption caused increased elution of BPA from dental resins, the amounts were within safety margins.

FC029

Seven Year Clinical Evaluation of Filtek™ Silorane vs. Tetric Ceram

Sigfus Thor Eliason, Svend Richter
Faculty of Odontology, Health Sciences, University of Iceland, Reykjavik, Iceland

Aim: The purpose of this clinical investigation was to evaluate the performance of FiltekTM Silorane (3M ESPE), a low shrink composite, used in conjunction with a dedicated experimental adhesive system, that was never commercialized, and compare to Tetric Ceram bonded with AdheSE (Vivadent).
Methods: The materials were placed in teeth in individuals that needed at least two box shape class II restorations of similar size. The restorations were placed by one operator in private practice. A total of 53 restoration pairs were placed in 31 patients. The restorations were evaluated by two trained examiners using USPHS criteria. The study was accepted by the National Bioethics Committee and the Privacy Commission of Iceland.
Results: At 7 years 50 restoration pairs were available for reevaluation. Color match and gingival status was unchanged and neither secondary caries nor sensitivity reported. All but three contacts scored normal. Only slight chipping and surface roughness was reported for both materials. When marginal integrity was evaluated about 2/3 scored Alfa for both materials and only 38% Tetric and 34% Silorane restorations scored Alfa for interfacial staining. For anatomic form (wear), 38% Tetric and 72% Silorane scored Beta and one Silorane restoration (2%) Charlie. There was no significant difference between the materials tested for any of the criteria evaluated except anatomic form ($p < 0.001$).
Conclusions: At 7 years, Filtek Silorane showed significantly more wear than Tetric Ceram. High incidence of marginal discoloration and marginal breakdown observed for both materials suggests that improved or different adhesive systems are needed.

FC030

Detecting Surface Roughness of Posterior Composites After Different Polishing Techniques with Atomic Force Microscopy

Kanşad Pala[1], Yahya Orçun Zorba[1], Halil İbrahim Kılınç[2]
[1]Department of Restorative Dentistry, Faculty of Dentistry, Erciyes University, Turkey, [2]Department of Prosthetic Dentistry, Faculty of Dentistry, Erciyes University, Turkey

Aim: The having smooth surface and adequate polimerization of composite restorations greatly effects the succes and clinical lifetime of restorations. After curing of the resin composites different systems could be used for finishing and polishing procedures. This in vitro study evaluates the effect of two different polishing systems (one step and multistep) on four posterior resin composites with atomic force microscopy.
Methodology: For each composite, 30 standard circular specimens were prepared: ten specimens were polished for each different method, while ten specimens were used as controls. Surface roughness was determined with atomic force microscopy by using roughness parameters (Ra).

Results: The results obtained indicated that, the smoothest surfaces were obtained in control groups. AFM showed that the multi-step polishing method had smoother surface than one-step ($p = 0.00$). However no statistical differences were observed between different composite resins. ($p = 0.103$)
Conclusion: Based on the results obtained, it was concluded that, the composite resin which was polished with multi step system could have a smoother surface, if compared to the other system tested.

Free Communication Session 04 | B360 | 28.08.2013 | 09:00–11:00

Theme: Dental Treatment and Restorative Dentistry: Pedodontics

FC031
Calcium Hydroxide Iodofom Paste in Vital Pulpotomy – Randomized Controlled Study
Samah Mohamed Awad, Mervat Abdel Moneim Rashed, Dalia Mohamed Moheb
Pediatric Dentistry and Public Health Department, Faculty of Oral and Dental Medicine, Cairo University, Cairo, Egypt

Background: Despite modern advances in dental caries prevention, many teeth are still lost prematurely. Pulpotomy has been conducted with various medicaments over the years. Formocresol pulpotomy has enjoyed long term clinical use and success, but concerns over toxicity and mutagenicity have promoted research into alternative dressing materials. Several researches have studied incorporation of other substances to calcium hydroxide aiming to improve some of its properties. Among these medicaments is Metapex, a silicone oil-based calcium hydroxide paste containing 38% iodoform. Though Metapex is commonly used in treatment of necrotic primary teeth, few studies reported its use in treatment of vital primary teeth.

Aim of this randomized controlled study is to compare clinical and radiographic success rates of Metapex to formocresol in pulpotomy of vital pr imary molars.
Methods: Three hundred asymptomatic, carious, vital primary molars in patients aged 2–7 years old were randomly assigned to receive either formocresol or Metapex after vital pulpotomy. Treated molars were restored by stainless steel crowns. Clinical and radiographic assessments were performed at 3, 6 and 12 months postoperatively.
Results: There was no significant difference in clinical and radiographical success rates of formocresol and Metapex. Radiographic assessments revealed that all treated molars did not show any signs of intracanal resorption throughout the follow up period.
Conclusion: Calcium hydroxide iodoform paste showed comparable results to formocresol in treatment of asymptomatic carious primary teeth indicated for vital pulpotomy.

FC032
Can Hydrophilic Fissure Sealants be Acceptable Alternative to Hydrophobic Sealants?
Ali Bagherian
Pediatric Dentistry Department, Dental School, Rafsanjan University of Medical Sciences, Rafsanjan, Iran

Purpose: The aim of this laboratory study was to compare microbial leakage of a new hydrophilic sealant with a conventional hydrophobic resin-based sealant.
Materials and methods: One hundred caries-free extracted human maxillary premolars were randomly divided into five groups. Teeth in groups I, II and III were sealed with hydrophilic sealant on dry, wet and artificial saliva-contaminated occlusal surfaces, respectively. Teeth in groups IV and V were sealed with a hydrophobic sealant on dry and wet occlusal surfaces, respectively. A newly designed microbial penetration method with Streptococcus Mutans as an indicator was used for leakage assessment. Data was analyzed using SPSS 15.0 software and the significance level was set at $\alpha = 0.05$.
Results: The log-rank test indicated a statistically significant difference in leakage rates among the five groups. Mantel-Cox log-rank test showed that group III had the most leakage rate and groups II and IV had the least leakage rates. There was no statistically significant difference between leakage rates of groups II and IV.
Conclusions: With respect to the limitations of an in vitro study, it may be conclude that from the microleakage aspect, hydrophilic sealant may be used as an acceptable alternative to hydrophobic sealant.

FC033
Clinical Evaluation of a Self-Adhering Flowable Composite as a Class 1 Restorative in Primary Molars: 12 Months Results
İffet Yazıcıoğlu, Buse Ayşe Serin, Muharrem Cem Doğan
Department of Pediatric Dentistry of Cukurova University, Adana, Turkiye

Aim: The purpose of this study was to evaluate a self-adhering flowable composite and compare its 12 month clinical performances with a commercially avaliable self-etch adhesive/composite system in Class I restorations of primary molars.
Design: Thirty-one patients (13 male, 18 female) were recruited into the study. A total of 62 Class I cavities were restored with either a self-adhering flowable composite or a commercially self-etch adhesive/composite system according to manufacturers' instructions. The restorations were clinically evaluate 1 month after restoration, and after 3, 6 and 12 months post-operatively using modified USPHS criteria by two previously calibrated operators. Statistical analysis were performed using SPSS 16.0 statistical package.
Results: All patients attended the 1, 3, 6 and 12-month recall. Lack of retention was not observed in any of the restorations. With respect to color match, marginal adaptation, secondary caries and surface texture, no significant differences were found between two restorative materials tested after 12 months ($p > 0.05$).

Conclusions: Clinical assessment of self-adhering flowable composite exhibited good clinical results with predominating alpha scores after 12 months. However; further evaluations are necessary for the long-term clinical performance of this material.

FC034

Color Stability of Anterior Restorations After Different Polishing Techniques

Esma Yıldız[1], Emine Sirin Karaarslan[2], Mine Simsek[1], Abdul Semih Özsevik[2], Aslihan Usumez[3]
[1]*Department of Pediatric Dentistry, University of Gaziantep, Gaziantep, Turkey,* [2]*Department of Restorative Dentistry, University of Gaziantep, Gaziantep, Turkey,* [3]*Department of Prosthodontics, Bezmialem Vakif University, Istanbul, Turkey*

Aim: The purpose of this study was to investigate the effects of different finishing-polishing techniques on the color stability of various anterior restoration materials after storing in staining solution.
Materials and methods: A composite resin (Admira, VOCO), a compomer (Dyract, Dentsply/De Trey) and a resin-modified glass ionomer (Fuji II LC, GC) were used to prepare 120 specimens (10 mm in diameter, 2 mm in depth). Specimens were randomly divided into four subgroups according to finishing-polishing systems; a series of polishing discs (Sof-Lex; 3M/ESPE), a liquid finishing-polishing material (Biscover; Bisco Inc), polishing wheels and pastes (Enhance Dentsply/DeTrey) and a control group (with no polishing) (n = 10/group). After storing in distilled water at 37°C for 24 h, the specimens were stored in coffee solution during 48 h at 37°C. Colorimetric values of the specimens before and after storing in coffee solution were measured using the spectrophotometer (Easyshade, Vita Zähnfabrik). The CIE L*a*b color system was used for the determination of the color differences. Data were analyzed using ANOVA and Tukey's test.
Results: The color differences were affected by the material type ($p < 0.05$) and finishing-polishing systems ($p < 0.05$). The composite resin showed the best color stability; however the color differences of the specimens of all groups were visually appreciable also for the nonskilled operator ($\Delta E^*ab > 2.5$).
Conclusion: The results of this study suggest that all restorative materials demonstrated measurable color changes after storing in staining solution regardless of the finishing- polishing systems.

FC035

Comparison of Anesthetic Efficacy of Intraligamentary and Supraperiosteal Anesthesia by Using Computer Controlled Delivery System

Ülkü Şermet Elbay[1], Mesut Elbay[1], Emine Kaya[1], Ülkem Cilasun[2]
[1]*Deparment of Pediatric Dentsitry, Kocaeli University Dentistry Faculty, Kocaeli, Turkey,* [2]*Deparment of Oral and Maxillofacial Surgery, Kocaeli University Dentistry Faculty, Kocaeli, Turkey*

Purpose: The purpose of this study was to compare anesthetic efficacy and patient comfort of intraligamentary anesthesia vs. supraperiosteal anesthesia by using computer controlled anesthesia delivery system in different operative procedure of deciduous teeth.
Materials and methods: The study was a randomized clinical trial which comprised 90 children (58 girls, 42 boys), who required same operative procedure (pulpotomy, extraction or restorative procedure) on their left and right first mandibular primary molars. The study consisted of two visits for each child. In first visit, left or right deciduous tooth was treated after intraligamentary anesthesia and in second visit, contralateral deciduous tooth were treated after supraperiosteal anesthesia by using computer controlled anesthesia delivery system. Totally 180 injections (90 periosteal and 90 intraligamentary) were administered. In each visit, the severity of pain during injection and operative procedure was evaluated by using Wond-Baker Faces Pain Rating Scale. A post injection questionnaire was asked the subjects to rate the comfort and any side effects. The results were recorded and data were analyzed statistically.
Results: There were no statistically significant differences for anesthetic efficacy during any operative procedures in the Wond-Baker Faces Pain Rating Scale Scores between intraligamentary and supraperiosteal anesthesia ($p > 0.05$). However, postoperative complications in supraperiosteal anesthesia were significantly more than intraligamentary technique.
Conclusions: Fortunately, most pediatric patients do not encounter problems related to prolonged soft tissue anesthesia. Intraligamentary anestesia with computer controlled anesthesia delivery system may be an alternative for overcoming postoperative complications.

FC036

Comparison of Chemomechanical Caries Removal (Papacárie) vs. Conventional Method in Children

Merve Erkmen Almaz[1], Işıl Sönmez[2], Aylin Akbay Oba[1]
[1]*Department of Pediatric Dentistry, Kırıkkale University, Kırıkkale, Turkey,* [2]*Department of Pediatric Dentistry, Adnan Menderes University, Aydın, Turkey*

Aim: The purpose of this study was to investigate the clinical efficacy of chemomechanical caries removal (Papacárie), compared with conventional method.
Materials and methods: The study consisted of 50 primary molars selected from 25 healthy children (mean age 7.6 ± 1.1). Ethical committee approval was obtained and the informed consent form was signed by the parent or the guardian. Each patient had at least two primary molars with approximately equal-size caries lesions. Both treatments were carried out in the same session. Before and after treatment, fluorescence values were obtained using DIAGNOdent Pen and time for caries removal was recorded. Each patient was asked whether he/she felt any pain, requested for local anesthesia and which treatment he/she preferred and behavior of the patient during caries removal was assessed. Data were analyzed using McNemar, Wilcoxon signed rank and Mann–Whitney U-test.
Results: Comparison of the difference in fluorescence values showed that readings were lower after conventional method ($p < 0.05$). The time taken for chemomechanical caries removal was approxi-

mately two times longer (t-test). There was no difference between two methods in terms of pain and patient behavior ($p > 0.05$).
Conclusion: Chemomechanical caries removal and conventional method exhibited similar efficacy in caries removal and present findings indicated that there is no clinical advantage for chemomechanical caries removal with Papacárie over conventional method.

FC037

Cystic Pathology Features and Contemporary Treatment to Children in Hospital Conditions

Aldo Vangjeli[1]
[1]*Prof. GafurShtino Department of Surgery, QSUTirane,* [2]*Prof. Ramazan Isuf Department of Surgery, QSUTirane*

Missing anmnesis or anmnesis based on parents, presence of mixed dentals anatomical-pathological particularities, do not knowing abot anaesthetical preparations create as e result a number of questions which we will try to explain below.
Aim: Evidention of clinical cases of cystic pathologies in children the importance of their diagnostication on time, as well as the waiys of treatment having in mind their anatomo-pathological particularities.
Material and methods: To realise this work I am based on my theorical-practical and personal experience in surgical treatment of my patients will cystical lesions for a period of about 15 years and also. In this work we will present three cystic cases of mandibular region which were not treated in a protocol way.
Conclusions: Dealing with little patiens include a series of particularities which are not only of professional character but also sociable ones. It is and remains our duty the salvations of those with as many traumas as possible. It is very important the evalutation of each case starting with those which seem as not problematic. Diagnostication protocol if it is done correctly does not leave spaces to make mistakes at least not unrepairable. The modernization of the ambulatory service and its expansion is a good news for everyone.

FC038

Effect of Different Surface Treatments on Shear Bond Strength of Fissure Sealants

Gül Tosun[1], Halenur Onat[1], Zeynep Yeğin[1], Kamil Kahraman[1], Tugrul Sarı[2], Murat Selim Botsalı[1]
[1]*Department of Pediatric Dentistry, Faculty of Dentistry, Selçuk University, Konya, Turkey,* [2]*Department of Prosthodontics Bezmi Alem Vakıf University, İstanbul, Turkey*

Aim: The aim of this in vitro study was to evaluate the shear bond strength of a fissure sealant to enamel treated with ER:YAG laser (MSP and QSP mode) and acid etching with/without drying agent.
Material and methods: Thirty permanent human molars were used in this study. The roots sectioned 2 mm coronal to the cemento-enamel junction. The crowns were mesiodistally sectioned providing 60 halves that were embedded in acrylic resin. The enamel was flattened and a 2 mm diameter bonding area was demarcated. Ultraseal XT Plus sealant (FS) was applied in all groups. Specimens were randomly assigned to six groups ($n = 10$); G1: 37% phosphoric acid + Prima Dry + FS, G2: 37% phosphoric acid + FS, G3: Er:YAG (MSP mode) + Prima Dry + FS; G4: Er:YAG (MSP mode) + FS; G5: Er:YAG (QSP mode) + Prima Dry + FS; G6: Er:YAG (QSP mode) + FS. After 24 h storage in distilled water, shear bond strength of samples were tested in a universal testing machine. Statistical analysis using Kruskal-Wallis and Mann-Whitney U test was used to compare the respective groups.
Results: The SBS results (MPa) were the following: G1: 11.33, G2: 9.76, G3: 8.65, G4: 7.72, G5: 4.49, G6: 2.73. There were significant differences amongs the groups ($p < 0.05$).
Conclusions: The acid etching surface application showed better performance than laser surface treatment in both MSP and QSP mode. Drying agent may be used for enamel surface prior to sealant application.

FC039

Temperature Changes in the Pulpal Chamber of Primary Tooth

Gül Tosun[1], Halenur Onat[1], Zeynep Yeğin[1], Tuğrul Sarı[2], Aslıhan Üşümez[2]
[1]*Department of Pediatric Dentistry, Faculty of Dentistry, Selcuk University, Konya Turkey,* [2]*Department of Prosthodontics, Bezmi Alem Vakıf University, İstanbul, Turkey*

Aim: The purpose of this study was to investigate the pulpal temperature increase induced during the polymerization of colored polyacid-modified composite resins (PMCR) in pulpal chamber of primary tooth.
Methods: A non-retentive class II cavity was prepared in an extracted primary molar tooth, leaving a dentin layer in 1 mm thickness between pulp chamber and proximal cavity wall. Different colored (gold, blue, green, berry) PMCR (Voco, Germany) was placed to the cavity in two stages. In first stage; PMCR was placed to the proximal surface and polymerized. In second stage; PMCR was placed to the occlusal surface and polymerized with LED curing unit. Temperature rise during polymerization of colored PMCRs were measured with a J-type thermocouple wire that was connected to a data logger. Data were analyzed with two way ANOVA and Mann Whitney *U* tests.
Results: Among the colored PMCR groups tested, the gold colored PMCR group induced the highest temperature increase in both proximal and occlusal surfaces. The first stage of application induced significantly higher temperature increases in pulp chamber than the second stage of application in all groups ($p < 0.05$).
Conclusion: The colored PMCRs induced higher temperature increases on the proximal surface than the occlusal surfaces. During polymerization of all colored PMCRs tested, the temperature increases recorded for all groups were above the critical value of 5.6°C that can cause irreversible harmful changes in pulp tissue.

Free Communication Session 05 | B332 | 28.08.2013 | 11:30–12:30

Dental Treatment and Restorative Dentistry: Prosthetics

FC040

Microleakage and Fracture Resistance of Teeth with Novel Post

Hanaa Ibraheem Sallam[1], Mohamed Abdelaziz Khalil[2]
[1]*Department of Fixed Prosthodontics, Cairo University, Cairo, Egypt,* [2]*Department of Fixed Prosthodontics, Pharos University, Alexandria, Egypt*

Aim: Evaluation of coronal microleakage and fracture resistance of endodontically treated teeth restored with novel post (Wuerzburg Post) as a function of margin design.
Materials and methods: Twenty mandibular premolars were collected, decoronated, endodontically treated and received Wuerzburg Posts (Hager and Meisinger GmbH, Germany) which cemented using Rely X unicem cement (3M ESPE). Then, samples divided into two groups according to cervical margin design; group 1(n = 10) butt margin, group 2 (n = 10) beveled margin. All samples received metal ceramic crowns and subjected to cyclic loading and thermocycling. In each group, five samples (embedded in epoxy resin blocks) used for fracture resistance test in universal testing machine (Lloyd Instruments Ltd., UK) in which compressive load applied vertically parallel to the long axis of teeth at crosshead speed of 0.5 mm/min until fracture occurred. The other five samples used for microleakage test using methylene blue dye, then samples were sectioned mesiodistally and buccolingually with diamond disc. Linear dye penetration at margins was measured using steriomicriscope. Data were statistically analyzed using Student's t-test ($p \leq 0.05$).
Results: Teeth with beveled margin showed statistically significantly lower mean microleakage values (432.5 ± 83.8 μ) than those with butt margin (1100 ± 210.5 μ). On the other hand, teeth with beveled margin showed statistically significantly lower mean fracture resistance (1078.3 ± 100.4 N) than those with butt margin (1289.9 ± 134 N).
Conclusions: When using Wuerzburg Post to restore endodontically treated teeth, beveling of cervical margin improved coronal microleakage and led to acceptable fracture resistance of posterior teeth.

FC041

A 4-Year Retrospective Study of All-Ceramic Onlays

Kübra Yıldız, Can Akmansoy, Zeliha Şanıvar, Seda Keban, Coşkun Yıldız, Burçin Akoğlu, Yasemin Kulak Özkan
Department of Prosthodontics, Marmara University, Istanbul, Turkey

Objectives: The purpose of this study was to evaluate the survival rate, failure and clinical quality of all ceramic onlays retrospectively in 4 years.
Methods: All restorations placed during the period Septmeber 2007–December 2011 at Marmara University Dentistry Faculty Department of Prosthodontics were included. Patients with parafunctional habits were excluded from the study. In 37 patients, 59 onlays were examined. Number of restorations failures and reasons for failure were recorded. The remaining ceramics were evaluated by CDA criteria (color match, anatomical form, marginal discoloration, marginal integrity and surface texture) by two clinicans after 2–6 years. The patienst also evaluated their restorations in five categories (color, surface, fonation, hygiene and bite efficiency) on a scale of 1–10.
Results: A survival rate of 83% was recorded. Six (10.16%) of the 59 restorations had to be replaced. The main reasons for failure were four decementation (6.8%), four endodontic treatment need (6.8%) and one extensive restoration need (0.06%), three ceramic fracture (5.08%), one tooth fracture (0.06%). On the other hand patient satisfaction score was founded mostly over 8 and none of the patients rated under 3.
Conclusion: In this study, location of teeth in dental arch and marginal integrities of teeth influenced restoration failures.

FC042

A Comparison of Validity Between KKU Surveyor and Ney Surveyor

Suwadee Aerarunchot, Manuswee Tanapoomchai, Kasamon Satchapong, Pechpailin Sukna, Namchai Sooksuntisakoonchai
Faculty of Dentistry, Khon Kaen University, Thailand

Aim: The purpose of this experimental research was to compare the validity between the KKU surveyor [Khon Kaen University surveyor model] and the Ney surveyor.
Materials and methods: Each of 12 survey line-customized model was surveyed by two different surveyors. The investigator who performed a survey was a dentist who had more than 3 years of experience in a field of prosthodontics. After all samples were completely surveyed, the differences of survey lines created by both surveyors on each samples were measured by a stereomicroscope at four crossing points between a horizontal survey line and a vertical connection line of a customized model.
Results: The Westlake's Testing Equivalent Mean demonstrated that the mean distance between the survey line of the KKU surveyor and that of the Ney surveyor was significantly different of <0.2 mm ($p = 0.043$; $d = 0.2$, Mean = 0.155 mm., SD = 0.068, 95% CI = 0.123–0.187).
Conclusions: Based on these results, it is indicated that the validity of the KKU surveyor is equivalent to the Ney surveyor.

FC043

Clinical Performance of Tooth-Supported and Implant-Supported Zirconia-Based Fixed Dental Prostheses

Elif Coşkun, Zeliha Şanıvar, Erkut Kahramanoğlu, Coşkun Yıldız, Burçin Vanlıoğlu, Buket Evren, Yasemin Kulak Özkan
Department of Prosthodontics, Marmara University, Istanbul, Turkey

Purpose: Zirconia-based prostheses are commonly used in prosthetic dentistry for aesthetic crowns and fixed restorations, although follow- up data are limited, especially for implant-

supported crowns. The aim of this retrospective study was to evalute the clinical performance of tooth supported and implant supported zirconia-based FDPs with the assessment of patient satisfaction.
Material and method: Ninety patients with zirconia- ceramic FDPs, restorated between 2004 and 2010 were called randomly. Seventy patients were reached and 56 patients accepted the invitation for clinical evaluation to the Department of Prosthodontics, University of Marmara Faculty of Dentistry. Tooth supported FDPs were examined with a survey including (i) Modified CDA criterias. (ii) plaque index, (iii) gingival index, (iv) complications, (v) sensitivity, (vi) secondary caries. Implant supported FDPs were examined with a survey including (i) Modified CDA criterias. (ii) plaque index, (iii) gingival index, (iv) complications.
Results: Thirtyfour female, 22 male patients were examined clinically. Number of patients with tooth supported FDPs were 23, implant supported FDPs were 20. Fifteen patients have both tooth supported and implant suppoted FDPs. Major complication of tooth-supported FDPs is tooth sensitivity (18.4%). Minor chipping is the most common complication both of the tooth- supported FDPs (10.5%) and implant-supported FDPs (10.7%).
Conclusion: Based on the intraoral examination, zirconia- ceramic restorations are succesful treatment alternative with minor complications. Most of the patients who participated in recall study, were satisfied with their prostheses in terms of colour, surface and function.

FC044

Color Interaction of Screw Hole Filling Materials in Implant Restorations

Umut Çakan, Haluk Barış Kara
Department of Prosthodontics, Istanbul Medipol University, Istanbul, Turkey

Purpose: The purpose of this study was to investigate the esthetic outcome of composite access hole filling materials and masking ability of opaque layer for screw-retained implant supported restorations.
Materials and methods: Two Ni-Cr cylindrical metal molds with a hole in the center were combined with either resilient composite (RC) (Clip, Voco) or restorative nanocomposite [enamel (A2E), dentin (A3B), dentin (A2B) (Filtek™ Ultimate Universal, 3M ESPE)] disc-shaped (8 × 1 mm) specimens. The metal mold and composite disc combinations were generated as follows; Group (Gr) 1 = 0.5 mm opaque (O) + A2E + A3B + RC, Gr2 = O + A2B + A2B + RC, Gr3 = A2B + A2B + RC, Gr4 = A2E + A3B + RC, Gr5 = RC + RC + RC. A Ni-Cr disc fused Shade A2 ceramic (VMKMaster®, Vident), was used for control group color measurements. The specimens were analyzed with a spectrophotometer (Easy Shade; VITA Zahnfabrik H), and data were obtained in the CIE Lab color system. The recorded data were analyzed with Kruskal–Wallis analysis of variance and Mann–Whitney U test was applied for post hoc comparisons ($p < 0.05$).
Results: The layering of composite in different shades and application of opaque layer to the inner surface of the experimental mold significantly affected the color ($p < 0.01$). The lowest ΔE values were obtained in opaque combined with dual layer composite (Gr1) where the highest ΔE values were obtained in the resilient composite (Gr5). No significant difference was observed between groups Gr3 and Gr4 ($p > 0.01$). The application of opaquer to the metal surface combined with dual layer composite, may significantly contribute to the color matching between metal fused ceramic and access hole filling for screw-retained implant restorations.

Free Communication Session 06 | B342 | 28.08.2013 | 11:30–12:30

Theme: Dental Treatment and Restorative Dentistry: Materials

FC046

Microleakage of Class V Composite Restorations Prepared by Er,Cr:YSGG Laser

Eman Adeel, Maan M. Nayif
Conservative Department, College of Dentistry, Mosul University

Objective: To evaluate restorations microleakage in cavities prepared by Er, Cr: YSGG laser and bonded with three types of adhesive systems.
Materials and methods: Class V cavities were prepared in 24 third molars on buccal by bur and lingual by Er, Cr: YSGG laser. Samples were bonded with (Total etch, Adper Single Bond 2, USA; One step self-etch, OptiBond All In One, kerr, USA; and Two step, Clearfil SE, kuraray, Japan). Cavities were restored in bulk with composite. Restorations were polished, stored, thermocycled in water bath and immersed in methylene blue solution for 24 h. Dye leakage was assessed by stereomicroscope at ×10. Data were analyzed with Kruskal –Wallis and Mann–Whitney at 5% significant level. Additional samples were prepared examined under SEM.
Results: Significant differences were found between bur and laser groups in one step adhesive. Also one step adhesive demonstrate higher leakage than two steps in bur cavities. No significant differences were found between restorations in laser group ($p > 0.05$). In bur prepared cavity SEM observation shows flat topography with smear layer. Laser cut dentin shows a corrugated or wavy profile, opened dentinal tubules and absence of a smear layer.
Conclusions: Microleakage of resin composite restorations was influenced by adhesive type. Bur prepared cavities bonded with one step self-etch were more prone to leakage than total etch and two step. Also one step demonstrated more leakage in bur cavities than those prepared by Er, Cr: YSGG laser.

FC047

Cytotoxicity of a Self-Adhesive Resin Luting Cement with L-929 Fibroblast Cell Line

Ufuk Hasanreisoğlu[1], Sadullah Üçtaşlı[1], Irem Ece Kıyan[1], Fikret Şahin[2], Mehmet Kıyan[2]
[1]*Department of Prosthodontics, Faculty of Dentistry, Ankara University, Turkey,* [2]*Department of Microbiology, Faculty of Medicine, Ankara University, Turkey*

Objective: The aim of this study was to compare the cytotoxicity of a self-adhesive resin luting cement on L-929 fibroblast cells

after polymerized by dual or chemical curing regimes at three different preincubation periods.
Materials and method: Thirty disc-shaped specimens of self-adhesive resin luting cement (RelyX Unicem) were prepared. Test specimens were polymerized by either dual or chemically curing regimes with 20 s (LED light curing unit) and 10 min, respectively. In order to obtain composite extracts, the samples were immersed in cell culture medium (DMEM) for 1-, 2-, 7- day. L 929 fibroblasts were pipetted into 96-well microplates with a cell of approximately 3 × 100,000 cells/ml added into the well cluster cell culture plates (100 µl) and then the plates were incubated at 37°C, 5% CO_2 in air for 24 h. After the incubation period, the culture medium was removed from the wells and equal volumes (100 µl) of the samples of the each material extract were added into each well. Cell survival was determined by using MTT assay. Data were statistically analyzed by one-way ANOVA ($p < 0.05$).
Results: Chemically cured test groups showed significant reductions in cell viability as to the dual polymerized groups for all the time intervals ($p < 0.05$). Considering the preincubation periods, the highest and lowest cytotoxicity values were obtained from 2- and 7-day specimens in both chemically and dual polymerized groups respectively ($p < 0.05$).
Conclusion: The results show the importance of light irradiation for dual cure effect on the cytotoxicity of the self-adhesive luting cement evaluated.

FC048
Effect of Different Adhesive Systems and Chlorhexidine on Matrix Mettaloproteinase
Arzu Kıran[1], Müjde Sevimay[2]
[1]*Özel Oldcitydent Ağız ve Diş Sağlığı Hastanesi, Eskişehir, Turkey,* [2]*Department of Prosthodontics, Selcuk University, Konya, Turkey*

Aim: This study evaluated the effects of adhesive systems and treatment of dentin surfaces with chlorhexidine digluconate (CHX) followed by adhesive systems to the matrix metalloproteinases (MMPs) in the dentin matrix. In addition to this, the bond strength of adhesive systems to dentin in vitro conditions was also investigated.
Materials and methods: This study consisted of two parts: gelatin zymography and the microtensile bond strength test. For gelatin zymography, seven groups each contains 1 g dentin powder were obtained to assay dentin MMPs activity. These groups were, mineralized dentin group, incubation of mineralized dentin powder with three different adhesive systems (Adper Scotchbond Multi Purpose, Clearfil SE Bond and Adper Prompt L-Pop) and incubation of mineralized dentin powder with CHX followed by three different adhesive systems application. For microtensile bond strength test, six groups ($n = 5$) were obtained in which three different adhesive system and these three different adhesive system treated with CHX were applied to the superfacial dentin. Fractured surfaces were later analyzed with stereo and scanning electron microscopes to determine the type of failure. Data were analyzed with one-way ANOVA, t-test and Scheffe multiple comparisons tests.
Results: Zymograms showed that incubation of mineralized dentin powder with Adper Scotchbond Multi Purpose increases MMP 2 activity, while CHX pre-treatment inhibited MMP 2 activity. CHX increased the bond strength of adhesive systems, but there was no significant statistically difference among these groups. The study demonstrates the efficacy of CHX inhibition of MMPs and increase in bond strength of adhesive systems.

Theme: Dental Treatment and Restorative Dentistry: Prosthetics

FC049
Mechanical Properties of Autocuring Temporary Crown and Bridge Materials
Ovul Kumbuloglu, Gozde Yerlioglu, Bahar Elter
Department of Prosthodontics, Ege University, İzmir, Turkey

Aim: Temporary prostheses are applied prior to permanent prosthetic restorations, in order to protect prepared teeth, get an idea about the resulting prosthesis and avoid migration of teeth towards the spacing. The aim of this study was to compare mechanical properties of four different bis-acrylic composite based materials and methacrylate resin temporary crown and bridge (C&B) material as a control group.
Materials and methods: Five different temporary C&B materials (Luxatemp AM Plus/ DMG, Structur Premium/VOCO, Kingscross/ KETTENBACH, Tempofit Premium/ DETAX, Temdent Classic/ SCHUTZ) were used to fabricate bar shaped specimens (2 mm × 2 mm × 25 mm, ISO 4049:2000) ($n = 50$). Flexural strenght and flexural modulus of these specimens were subjected to a three point bending test after thermal cycling (5000×, 5–55°C). Mean values and standart deviation of all measurements were calculated and data was subjected to parametric statistics in SPSS ($p < 0.05$).
Results: Difference among both flexural strength and flexural modulus values of temporary C&B material groups investigated were statically significant. The highest flexural strength and modulus values were observed in Luxatemp AM Plus, where the lowest flexural strength and flexural modulus values were recorded with Tempofit Premium (90.97 ± 17.9 MPa [flexural strength], 2788.63 ± 167.36 MPa [flexural modulus], 34.03 ± 14.9 MPa [flexural strength], 609.30 ± 248.30 MPa [flexural modulus] respectively).
Conclusions: Among the groups investigated, the highest values for both flexural strength and flexural modulus were observed in temporary C&B material Luxatemp AM Plus.

Free Communication Session 07 | B343 | 28.08.2013 | 11:30–12:30

Theme: Dental Treatment and Restorative Dentistry: Esthetics

FC050
Bleaching Efficacy and Color Stability of Over-The-Counter Products
R. Banu Ermiş[1], Esra Uzer Çelik[2], Gül Yıldız[1], Başak Yazkan[1]
[1]*Department of Restorative Dentistry, Suleyman Demirel University, Isparta, Turkey,* [2]*Department of Restorative Dentistry, Izmir Katip Celebi University, İzmir, Turkey*

Objective: Although demand for over-the-counter tooth bleaching products has increased in recent years, little is known regarding their efficacy and color stability. Therefore, the purpose of this study was to compare bleaching efficacy and color stability of two over-the-counter products with that of an at-home bleaching agent, considering severity of tooth discoloration.
Materials and methods: Ninety enamel-dentin samples were stained by Orange II dye and assigned into lightly ($65 \leq L^* \leq 75$) and darkly ($L^* < 65$) stained groups. Teeth were divided into three subgroups ($n = 15$); 10% hydrogen peroxide pre-loaded tray (Treswhite Supreme), 22% carbamide peroxide pen (Hollywood Smiles), 10% carbamide peroxide at-home bleaching agent (Opalescence Oh!). All products were applied according to manufacturers' instructions. Teeth were then re-stained using red wine for 9 days. A dental spectrophotometer was used, baseline/post-bleaching ($\Delta E1$) and post-bleaching/re-staining ($\Delta E2$) color differences were determined. The data were analyzed using nested ANOVA and post-hoc tests ($\alpha = 0.05$).
Results: No differences were observed between $\Delta E1$ values for Treswhite and Opalescence in lightly stained teeth ($p < 0.05$), while Opalescence had the highest value in darkly stained teeth ($p < 0.05$). Hollywood Smiles had the lowest mean $\Delta E1$ and $\Delta E2$ values ($p < 0.05$) in both lightly and darkly stained teeth, while no differences were observed between $\Delta E2$ values for Treswhite and Opalescence.
Conclusion: Tray-based over-the-counter product produced better bleaching efficacy, but worse color stability compared to whitening pen. Its bleaching efficacy was also similar to at-home bleaching agent in lightly stained teeth. Teeth in darkly stained group revealed higher $\Delta E1$ values than their lightly stained counterparts with each product.

FC051

Chromatic Analysis of a Nano-Hybrid Composite Exposed to Different Whitening Mouth Rinses

Osman Tolga Harorlı, Çağatay Barutcigil
Department of Restorative Dentistry, Akdeniz University, Dentistry Faculty, Antalya, Turkey

Objective: The aim of this study was to evaluate the effect of whitening mouth rinses on the color parameters of a nano-hybrid composite.
Materials and methods: Seventy composite resin disks (8.0×1.0 mm) were fabricated from a nano-hybrid composite resin. (3M ESPE Z550) At the beginning, samples were stored in distilled water 24 h. The initial color parameters of composite samples were measured with a clinical spectrophotometer according to the CIELAB color scale and then composite samples were randomly divided into seven groups ($n = 10$). A total of six whitening mouth rinses; three hydrogen peroxide including (Listerine Whitening Vibrant, Scope White, Crest 3D White) and three non hydrogen peroxide including (Oral-B 3D White, Signal White Now, Colgate Optic white) were tested. Distilled water was used as a control. After 1 and 24 h exposure periods color measurements were repeated and color changes were analyzed, ΔE^* values over 3.3 were considered as clinically unacceptable. Statistical differences were analyzed using ANOVA and Tukey's post hoc tests.
Results: Non of the groups had an unacceptable color change. One hour exposure to solutions caused color changes between 0.97 (Listerine Whitening Vibrant), and 2.32 (Oral-B 3D White) where ΔE^* for control group was 0.67. Also after 24 h, ΔE^* values were in range of 0.65 (Listerine Whitening Vibrant) and 2.73 (Oral-B 3D White) (Control $\Delta E^* = 0.61$).
Conclusions: We can conclude that tested whitening mouth rinses are not capable to cause perceptible color changes on selected novel composite resin in vitro.

FC052

Correction of Crowding Teeth in Adults, Simple Approaches. Case Report

Doris Mingomataj[1], Edlira Baruti[2]
[1]*Department of Stomatology, Albania University, Tirana, Albania,* [2]*Department of Stomatology, American University of Tirana, Tirana, Albania*

Introduction: Many patients have slightly crowded or overlapping anterior teeth. There is no doubt that the best way to treat the anterior crowding in the upper and in the lower arches requires the bonding of brackets to the teeth. However, often the adult patients are unable to accept this comprehensive orthodontic procedure. Choosing the correct approach is the most important aspect of the treatment.

The aim of this cases report presentation is to explain different clinical applications, from minor tooth movement by using a 0.014 NiTi at lingual/palatine arches, restorations using bonding, laminate or crowning, to reconturing/striping, extraction or a combination of these procedures, in order to achive correction of the crowded teeth.
Case presentations: We established the most apropriate approach for the potential treatment options thorough evaluation of the patient needs and expectations. This treatment enabled a good tooth alignment in a short period of time and a very good aesthetic in such simple ways. Our results will be presented through different case reports.

FC053

Different Light Sources and Pulpal Temperature Rise During Office Bleaching

Tuğrul Sarı[1], Gözde Çelik[1], Zafer Kazak[2], Aslıhan Üşümez[1]
[1]*Department of Prosthodontics, Bezmialem Vakıf University, Istanbul, Turkey,* [2]*Medicadent Dental Clinic, Istanbul, Turkey*

Aim: The aim of this study is to evaluate the temperature rise induced by various light sources during office bleaching treatment, under simulated pulpal blood microcirculation conditions.
Methods: Thirty freshly extracted human maxiller central insicors were distributed into three groups. The root portions of the teeth were removed, apical access to the pulp chambers were enlarged and teeth were fixed on an apparatus for the simulation of pulpal blood microcirculation. A thermocouple wire was inserted

into the pulp chamber through an artificial access at the palatinal surfaces. An office bleaching agent with dark-red colour and 30% water content was applied to labial surface of the teeth and three different light sources; Er:YAG laser, 810-nm diode laser and high-intensity LED as the control group were used as curing units. Temperature rise in the pulp chambers during light application was recorded using a data logger and statistically evaluated.

Results: The highest temperature rise values were recorded for diode laser group (2.54°C) followed by Er:YAG laser (1.9°C) and LED (1.06°C) groups. Temperature rise results among the groups were significantly different from each other ($p < 0.05$; ANOVA, Tukey-HSD).

Conclusion: In spite of the significant differences among the groups, the mean temperature rise values recorded for all groups were below the cricital value of 5.6°C that can cause irreversible harmful changes in the pulp tissue. Consequently it could be concluded that; with regard to temperature rise, all the light sources evaluated in this study could be used safely for office bleaching treatment within the described parameters.

FC054

Effect of Bioactive Silica and Bleaching on Caries Like Lesions

Hend Mohamed Ahmed, Heba Mohamed Taher, Heba Mohamed Hamza

Department of Operative Dentistry, Cairo University, Cairo, Egypt

Aim: This study was carried out to detect the progression of enamel carieslike lesions following bleaching in terms of change in mineral content using chemical analysis and surface roughness measurements. And to test the remineralizing ability of bioactive silica (BS), sodium fluoride (FG) and a combination of casein phosphopeptide-amorphous calcium phosphate and fluoride (GC) on bleached enamel carieslike lesion.

Material and methods: A total of 90 freshly extracted sound human permanent anterior teeth were used in this study. Caries like lesions were induced in the specimens by Ph cycling protocol, teeth were divided into two main groups for bleaching with (Illumine'[IL] or Opalescence PF [OP]), then further subdivided into three subgroups for remineralization, Calcium and phosphorous weight percentages and surface roughness were measured using Environmental scanning electron microscope (ESEM) and Energy Dispersive Analytical X-ray (EDAX) of the ESEM.

Results: Surface roughness (Ra) results revealed that OP showed statistically significant highest mean Ra value compared with IL and control groups, Ranking between different groups of post bleaching remineralization OP + FG group and OP + GC showed statistically significant low mean surface roughness. Calcium weight percentages of OP group were significantly highest, where IL + FG treated group showed statistically significant lowest mean calcium weight percent.

Conclusions: In office dental bleaching with 30% hydrogen peroxide product doesn't influence the progression of caries like enamel lesions. Topical application of BS, FG and GC was effective at reducing enamel surface roughness after bleaching.

Free Communication Session 08 | B360 | 28.08.2013 | 11:30–12:30

Theme: Implantology: Implantology

FC055

Mini-Dental Implants: An Alternative Approach to Replace Mandibular Incisors

Rahma Gazbar[1], Dalenda Hadyaoui[1], Mohamed Barkaoui[1], Mohamed Ben Khalifa[2], Touhemi Ben Alaya[3], Mounir Cherif[1]

[1]Department of Prosthetic Dentistry, Dental University, Monastir, Tunisia, [2]Department of Oral Surgery, Dental Universiry, Monastir, Tunisia, [3]Department of Oral Radiology, Dental University, Monastir, Tunisia

Aim: Teeth restoration in the esthetic zone remains a challenge for clinicians. Our aim is to show how mini-dental implants can replace four mandibular incisors with a thin and narrowed residual ridge accomplishing the desired outcome both functionally and esthetically while preserving adjacent teeth.

Case presentation: A 55-year-old woman presented to the prosthodontics department requesting replacement of four missing mandibular incisors. Evaluation of the edentulous area revealed that both the interdental space and the alveolar ridge width were narrowed. The challenge was to provide the patient with a dental implant treatment although the implant site was characterized by a limited mesio-distal space (21 mm) as well as a thin edentulous ridge. The use of mini-dental implants was our treatment of choice. Four mini-dental implants, with a diameter of 2 mm were placed without reflecting a mucoperiosteal flap and were immediately loaded.

Conclusion: The use of mini-dental implants for fixed partial prostheses enables the clinician to overcome difficulties related to the ridge width and narrow interdental space. They can be considered as a viable alternative in clinical situations in which the space does not allow the use of standard sized implants. However, immediate loading and restorations should avoid any mechanical overload or premature contact during laterality and protrusive movements.

Theme: Implantology: Oral Medicine

FC056

Minimal Fungicidal Concentration of Aloe Vera to *Candida albicans* in HIV People

Elizabeth Fitriana Sari[1], Gus Permana Subita[2]

[1]Department of Oral Medicine, Universitas Padjadjaran, Bandung, Indonesia, [2]Department of Oral Medicine, Universitas Indonesia, Jakarta, Indonesia

Oral candidiasis is the third major opportunistic infection in people with HIV/AIDS. Severe oral candidiasis occur due to immune compromise condition in people with HIV/AIDS. This condition can lead to candidemia and possibility to cause death. Some antifungal drugs have been used to eliminate oral candidiasis, and

some have to an end to resistancy. Investigation of Aloe vera leaf as antifungal has been risen in some countries to find the Minimal Inhibitory Concentrations (MICs) toward *Candida albicans*, but rarely to find the Minimal Fungicidal Concentrations (MFCs). Whereas MFCs is important to be measure for clinical treatment.
Aim: To find MFCs of Aloe vera leaf extract to *Candida albicans* isolated from oral patients with HIV/AIDS and *Candida albicans* ATCC 10231 strain.
Material and method: Aloe vera leaf was soak into ethanol for 1–2 days, and extracted with rotary evaporator extractor. One hundred percent Aloe vera leaf extract was tested to find MFCs with tube dilution technique. Result

Aloe vera leaf extract has various MFC, one sample showed at 12.5%, three samples at 100%, and four samples still show the growth activity of *C. albicans* in 100%. For *Candida albicans* ATCC 10231 strain, extract Aloe Vera leaf has MFC at 75%.
Conclusion: Aloe vera leaf extract has a promising antifungal effect even for a severe oral candidiasis. The various concentration of MFCs showed different reaction towards severity of disease.

FC057
Salivary Markers for Oral Lichen Planus Disease Activity and Dysplasia
Fatheya Mohamed Zahran[1], Olfat Gamil Shaker[2], Dalia Moheideen Ghalwash[3], Nayroz Abdel Fattah Tarrad[3], Maha Abdel Kawy Fahmy[4], Mai Abdel Fattah Mostafa[3]
[1]Department of Basic & Clinical Sciences, King Abdulaziz University, Jeddah, Saudi Arabia, [2]Department of Biochemistry, Cairo University, Cairo, Egypt, [3]Departmentof Oral Medicine & Periodontology, MSA University, 6th October City, Egypt, [4]Department of Oral Medicine & Periodontology, MIU University, Cairo, Egypt

Aim: To verify the usefulness of salivary markers for monitoring oral lichen planus (OLP) lesions severity and premalignant potential.
Materials and methods: Fifty two individuals were included, group I: 30 patients with symptomatic OLP, no histopathologic signs of dysplasia (19 females, 11 males, age 40–65 years), group II: 12 OLP cases with dysplasia (10 females, two males, age 45–65 years) and group III: ten control subjects with no oral disease. Biopsy specimen were taken from group I before and after steroid therapy (after ethical committee approval and patients' consents) and from surgical sites in control subjects. Whole unstimulated saliva was collected from all included subjects simultaneous to biopsy. TNF-alpha and INF-gamma levels were determined in tissue and salivary samples of groups I and III, using ELISA kits (R&D system, Mineapolis, USA). Salivary total soluble (s)CD44 was investigated in all groups, using an ELISA assay (Bender MedSystems, Vienna, Austria)
Results: Control group registered lowest values for studied markers, in tissues and saliva with highly significant difference from OLP patients. TNF-alpha and INF-gamma levels in OLP patients decreased significantly after steroid therapy, simultaneously in tissues and saliva, but were still higher than controls. Levels of salivary sCD44 were significantly higher in group II than groups I and III; with strong correlation between dysplastic changes in OLP lesions and salivary sCD44 levels above 20.4 ng/ml.
Conclusion: Salivary markers could be considered valuable, reliable, available, non invasive and cost effective diagnostic tools that can monitor severity, dysplastic changes and therapeutic progress in OLP.

Theme: Implantology: Oral Surgery

FC058
Minor Oral Surgery in Patients on Aspirin Therapy-To Stop the Medication or Not
Suhael Ahmed, Nafeesa Tabassum, Moath Al Qarni, Abdulaziz Al Alloush, Almohanned Al Swaiket, Meshal Al Shammari
Department of Oral and Maxillofacial Surgery, Riyadh College of Dentistry and Pharmacy, Riyadh, Kingdom of Saudi Arabia

Purpose: The aim of this study is to outweigh the risk over the benefits of Aspirin withdrawal in minor oral surgical procedures.
Materials and methods: One hundred and twenty-four patients in the age group of 40–55 who visited Riyadh college of Dentistry over a period of 1 year were included in the study. First group of 62 patients were on Aspirin therapy with a daily dose of 81 mg for at least a year and second group of 62 patients were healthy individuals not on Aspirin therapy. Aspirin was not discontinued for any patient. Minor surgical procedures including extractions, implant placement and alveoloplasty were performed on the patients and Bleeding assessed before and after the surgical procedure. The bleeding time was measured once before the surgical procedure. After the procedure, bleeding time was measured at an interval of 30 min, until bleeding stopped completely. All the patients were continuously monitored for next 6 h.
Results: Preoperative values were within normal limits for all patients. Intraoperative bleeding was within normal limit in most cases except two cases in group 1 and three cases in group 2 where bleeding lasted for more than 2 h, although bleeding was easily controlled in these patients by local measures.
Conclusion: We conclude that most minor oral surgery procedures can be carried out safely without stopping long-term aspirin regimen.

FC059
Oral Surgery in Inherited Bleeding Disorder Population: Effectiveness of Local Hemostasis
Aicha Zaghbani[1], Yossra Ben Youssef[2], Wafa Hasni[1], Abderrahim Khlif[2], Abdellatif Boughzela[1]
[1]Department of Oral Surgery, University Hospital Farhat Fached Sousse, Tunisia, [2]Department of Medical Hematology, University Hospital Farhat Hached, Tunisia

Aim: This prospective study evaluated the effectiveness of surgical packs, suturing and antifibrinolytic treatment in preventing bleeding after oral surgery in patients with hemophilia, von Willebrand's disease (VWD), or platelet disorders.

Methods: Oral surgery was made in patients with inherited bleeding disorder, under standardized local hemostasis involving surgical pack, suturing and passive mouthwash with 5% tranexamic acid solution. Substitutive treatment was used in patients with severe deficits. Tooth extractions were made under local anesthesia, No nerve trunk infiltration was made.
Results: Twenty-two patients underwent 63 dental procedures including 39 permanent teeth and eight deciduous ones and 16 scaling. One patient had secondary bleeding requiring surgical hemostasis and postoperative transfusion.
Conclusion: Local hemostatic measures including surgical pack, suturing and inexpensive tranexamic acid mouthwash was effective in minimizing the concentration and the volume of clotting factor concentrates while carrying safely oral surgery.

Free Communication Session 09 | B332 | 28.08.2013 | 14:00–15:00

Theme: Implantology: Immunology

FC060
Biomechanical Behavior of Dental Prosthesis
Bel Abbes Bachir Bouiadjra[1], Ali Merdji[1], Boualem Serier[1], Osama Mukdadi[2], Iyad M. Muslih[3], Rajshree Mootanah[4]
[1]Department of Mechanical Engineering, Laboratory of Mechanical Physical of Materials (LMPM), University of Sidi Bel Abbes, Algeria, [2]Department of Mechanical and Aerospace Engineering, and Center for Cardiovascular & Respiratory Sciences, West Virginia University, USA, [3]Department of Mechanical and Industrial Engineering, Applied Science University, Amman, Jordan, [4]Medical Engineering Research Group, Faculty of Science & Technology, Anglia Ruskin University, Chelmsford, Essex, UK

Aim: Dental prosthesis has been used and studied for the replacement of missing teeth for many years. The biomechanical behaviour of osseointegrated dental prostheses systems plays an important role in its functional longevity inside the bone. Simulation of these systems requires an accurate modelling of the prosthesis components, the jaw bone, the implant–bone interface, and the response of the system to different types of applied forces. The purpose of this study was to develop a new three-dimensional model of an osseointegrated molar dental prosthesis and to carry out finite element analysis to evaluate stress distributions in the bone and the dental prosthesis compounds under an occlusal load was applied to the top of the occlusale face of the prosthesis crown.
Materials and methods: The jaw bone model containing cortical bone and cancellous bone was constructed by using computer tomography scan pictures and computer aided design tools. The dental prosthesis compounds were constructed, simulating the commercially available cylindrical implant of 4.8 mm diameter and 10 mm length. Both finite element models were created in Abaqus finite element software. All materials used in the models were considered to be isotropic, homogeneous and linearly elastic. The elastic properties, loads and constraints used in the model were taken from published data.
Results: Results of our finite element analyses indicated that the maximum stresses were located around the implant neck, in the marginal bone.
Conclusions: Thus, this area should be preserved clinically in order to maintain the bone–implant interface structurally and functionally.

Theme: Implantology: Implantology

FC061
3-D-FEA for Different Implant Designs Under Thermal and Dynamic Loading
Derya Özdemir Doğan[1], Nilufer Tulin Polat[2], Serkan Polat[3], Esma Başak Gül[2], Emre Şeker[4]
[1]Department of Prosthodontics, Faculty of Dentistry, Cumhuriyet University, Sivas, Turkey, [2]Department of Prosthodontics, Faculty of Dentistry, Inonu University, Malatya, Turkey, [3]Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, Inonu University, Malatya, Turkey, [4]Department of Prosthodontics, Faculty of Dentistry, Eskisehir Osmangazi University, Eskisehir, Turkey

Objective: The aim of the study was to evaluate the effect of the dynamic forces on the implants with two different superstructure materials in "all on four" concept and alternative designs using 3-D finite element stress analysis.
Methods: Different treatment alternatives with different implant designs were performed in an edentulous mandible. In Design 1 and 2 implants were placed according to "all-on-four" concept; Design 3 and 4 two long (13 mm length, 4 mm diameter), two short (7 mm length, 4 mm diameter) implants; Design 5 and 6 four long, two short implants; Design 7 and 8 two long, four short implants were placed vertically. Superstructures were planned as acrylic and porcelain dentures. Totally 300 N load was applied. FEA is used to evaluate stress distribution. Dynamic loading was performed as assuming a person eating three meals a day and 60 chewing motion per minute for 15 min. It was also assumed that the teeth were in uniform temperature (36°C) at the beginning, and 60°C for hot, 15°C for cold drinks (beverages).
Results: Stresses on the implants leads to early failure in the acrylic than the porcelain for all designs. "All-on-four" concept is a long-lasting design for implant endurance when compared with the short implant treatment alternatives. Usage of long implants instead of short ones, and increasing the number of implants; ensures the braking of the implants with greater cycles.
Conclusions: Usage of long implants rather than short ones, increasing the number of implants and porcelain superstructures elongates the implant's lifespan.

FC062
A Technique to Fabricate Passively Fitting Cast Frameworks for Fixed Detachable Implant-Supported Prostheses
Burak Tuncer Özçelik[1], Burak Yılmaz[2]
[1]Department of Prosthodontics, Faculty of Dentistry, Başkent University, Ankara, Turkey, [2]Division of Restorative and

Prosthetic Dentistry, College of Dentistry, The Ohio State University, Columbus, OH, USA

Aim: Passive fit of the frameworks has utmost importance for the long term success of implant restorations. Non-passive superstructures may lead to biologic and mechanical complications such as non-axial loads generated on implants, cervical bone loss, mobility and prosthetic component failures. A complete passive fit of screw-retained restorations is argueably impossible according to some clinicians, whereas, some think it can be achieved with precise application of the routine application of the fabrication procedures.
Case: This report describes an intra-oral luting technique to achieve passive fit of the metal framework of a fixed detachable implant-supported prosthesis. Clinical and laboratory procedures are presented step by step.

FC063

Accuracy Assessment of Computer Assisted Implant Planning and Placement

Deeksha Rajkumar
Apollo White Dental, Chennai, India

Aim: To compare 2D CT alone with 2D + 3D reconstruction for pre-operative planning of implant placement.
Methods: Spiral CTs of 29 patients were used for both reformatted 2D and 3D computer assisted planning. The number, size and site of implants and the occurrence of anatomical complications during the planning and the implant placement were statistically compared using percentage agreement and the Kendall's correlation coefficients. In 16 patients the surgery was based on 2D imaging while in 13 patients it was based on 2D + 3D imaging.
Results: Agreement between planning and placement of the implants was highly significant for the implant site selected. For 2D based planning and placement, agreement reached 62%. For 2D + 3D based planning and placement, agreement attained 76%. For planning and placement of implant size based on 2D images, agreement was 35% while in 2D + 3D it was 46%. Agreement was not significant for anatomical complications, 73% for 2D and 76% for 2D + 3D planning.
Conclusions: The 3D planning system is undoubtedly a more reliable tool for pre operative assesment of implant dimensions and placement. It has a better prognostic value than 2D based planning for implant length and axial placement in relation to the prosthetic tooth position. However, there are no significant differences in the 2D and 2D + 3D planning for anatomical complications. The 3D planning system definitely facilitates a significant increase in intra-operative safety, quality and also improves the predictability of treatment goal, especially during the insertion of implants in complex cases.

FC064

Clinical and Radiographic Evaluation of IDcam™ Dental Implants

Seçil Karakoca Nemli[1], Merve Bankoglu Gungor[1], Cemal Aydın[1], Handan Yılmaz[1], İrem Türkcan[1], Yeliz Kasko Arıcı[2]
[1]*Department of Prosthodontics, Gazi University, Ankara, Turkey,* [2]*Department of Biometry and Genetics, Ordu University, Ordu, Turkey*

Objective: When a new implant is brought to market, prospective trials should be carried out to determine predictability of system. The aim of this study was to evaluate implant survival, crestal bone level changes and clinical parameters of IDcam™ dental implants over a mean follow-up period of 3 years.
Materials and methods: Seventy-two patients, 32 females and 40 males, received 256 implants. Implant-supported metal-ceramic fixed restorations were inserted. Following completion of restorations, each patient was reexamined at 6-month intervals. Standardized radiographs of implants were made and radiographic crestal bone level changes were calculated as well as soft tissue parameters included pocket probing depth (PPD), bleeding on probing (BoP), plaque index (PI), and gingival index (GI). Examinations were recorded from 18 to 42 months. Implant survival was estimated using Kaplan–Meier method. The associations between implant survival and recorded variables were estimated by using Cox proportional regression analysis.
Results: The Kaplan–Meier survival analysis demonstrated a cumulative survival rate of 97.7%. Three implants in three patients were failed to osseointegrate at stage 2 surgery, and three implants in three patients were lost after loading. The mean marginal bone loss was 0.35 ± 0.14, 0.47 ± 0.15, and 0.58 ± 0.16 mm as determined 6, 12, and 24 months after prosthetic loading, respectively. Cox proportional regression analysis revealed that the variables of age, gender, type of the restoration, and implant region had no significant influence on implant failure ($p > 0.05$). Coefficients of correlation between implant survival and crestal bone loss, PPD, BoP, PI, GI were found nonsignificant ($p > 0.05$).

Free Communication Session 10 | B342 | 28.08.2013 | 14:00–15:00

Theme: Implantology: Oral Surgery

FC065

Eruption with Axis's Adjustment of a Cyst-Associated Mandibular Premolar

Hajer Hentati[1], Ines Dallel[2], Leila Njim[3], Nour Ben Messaoud[1], Jamil Selmi[1]
[1]*Department of Oral Medicine Oral Surgery, Monastir University, Monastir, Tunisia,* [2]*Department of Orthodontics, Monastir University, Monastir, Tunisia,* [3]*Department of Histopathology, Monastir University, Monastir, Tunisia*

Aim: Marsupialization is the most minimal intervention used for the treatment of odontogenic jaw cyst and may induce eruption of impacted teeth associated with dentigerous cystic lesion. Therefore marsupialization has been widely recommended, particularly for a

large cystic lesion, to avoid loss of teeth, bony defects in the jaw and neurovascular injury as a result of enucleation.

The purpose of this report is to describe the successful outcome of conservative surgical management of a large dentigerous cyst associated with an impacted mandibular second premolar in a young patient.

Clinical presentation: An 11-year-old girl was referred to the oral medicine oral surgery department of the university dental clinic of Monastir complaining from a painless buccal swelling in the right posterior mandible. The panoramic radiograph shows a well-defined radiolucent unilocular lesion located in the periapical area of the right second temporary mandibular molar which is endodontically treated. The computed tomography scan shows that the right second mandibular premolar is deeply impacted in a horizontal position the way that the root apex perforates the lingual cortex.

Treatment: The second right temporary mandibular molar was extracted then an incisional biopsy was performed associated with cystic decompression and suture of the pathologic tissue with the healthy mucosa. An arch was provided for space maintenance. The diagnosis of dentigerous cyst was approved by histological examination

Follow-up: During 15 months follow –up period, the cystic cavity has progressively shrunk and the impacted premolar has spontaneously erupted.

FC066

Genetic Implication in Supernumerary Teeth-Surgical Approach

Zana Bajrami Agani[1], Aida Rexhepi[2], Jehona Ahmedi[1], Osman Sejfija[3], Arberije Prenaj[4], Vjosa Hamiti Krasniqi[1], Ferijal Perjuci[1], Resmije Ademi[1], Ali Gashi[1], Mergime Loxha[3]
[1]Department of Oral Surgery, [2]Department of Pedodontics, [3]Department of Maxillofacial Surgery, [4]Department of Orthodontics

Introduction: Hiperdontia is the anomaly in the number of teeth-increased the number of teeth (supernumerary teeth), which presents a challenge to the oral surgeon, pedodontion, and orthodontion, in order to establish the adequate occlusion, rehabilitation and to achieve function and aesthetic.

Case: Three children of the same family aged, 10, 11, 13 years, came at the CUSCK in Clinic of Pedodontics because of the persistation of milk teeth in upper jaw in frontal region. After clinical examination, panoramix- RTG-in in all of three patients we found to be present the impacted permanent teeth, supernumerary tooths in frontal region of both jaws, and the evident persistation of milk teeth. After dental treatment of decayed tooth's in the Clinic of Pedodontics and extraction of persistent milk teeth, surgical treatment is continued in the Oral Surgery of CUSCK where the supernumerary teeth are removed and at the same procedure the permanent tooths of the frontal area are denudated. Patients are constantly called to examinations after surgical intervention and what we initially noticed are the first signs of eruptions of lateral incisives at all the patients, while the central incisives remained un-erupted. The patients then underwent second intervention in order to perform the orthodontic withdrawal of the central incisives. Follow up is presented with RTG and photos taken during the treatments.

Conclusion: For proper treatment of this anomaly is necessary to establish close cooperation in between Pedodontist, Oral surgeon and Orthodontist. Based on our results this multidisciplinary approach gives visible results.

FC067

Heart Rate Control in Oral Surgery Hypertensive Patients: Music Strategy

Maria Cristina Zindel Deboni[1], Ana Carolina Junqueira[1], Fernando Neves Nogueira[2], Maria Da Graça Naclério Homem[1]
[1]Oral Surgery Department, School of Dentistry University of São Paulo, São Paulo, Brazil, [2]Oral Biology and Biomaterials Department, School of Dentistry University of Sao Paulo, Sao Paulo, Brazil

Objective: To verify the effect of music on main vital signals, on immediate postoperative pain level and analgesic consumption in hypertensive patients undergoing minor oral surgery.

Methods: A prospective random control trial was held from February 2011 to November 2012 in the Oral Surgery Clinic of University of São Paulo. Fifty-seven patients attended inclusion criteria and were distributed in Group C when blood pressure was ≤ or ≥120:80 mmHg but without diagnose or medication for hypertension and in Group H when mean blood pressure was ≥120:80 mmHg with diagnose and under medication for hypertension. Patients were then randomly allocated into subgroups: "Cm" (n = 30) when individuals underwent music intervention during 20' pre-anesthesia, during dental extraction and 20' after surgery ending and "Sm" (n = 27) where patients underwent the same procedures without music intervention. Blood pressure, heart rate and oxygen saturation were measured at the immediate preoperative, pre-anesthesia, perioperative and postoperative periods. VAS scales and analgesic consumption diary accessed postoperative pain.

Results: There was significant decrease at heart rate especially in Group H after 20 min postoperative ($p = 0.002$). An expressive difference at "Cm" subgroup ($p < 0.001$) comparatively to "Sm" subgroup ($p = 0.016$) regardinh heart rate. There were no differences between blood pressure variations among subgroups. Limited sample did not allow concluding that music positively interferes with immediate postoperative pain control.

Conclusion: Listening to music is an alternative method to control the physiological response to minor oral surgery stress specially in hypertensive patients

FC068

Is Lingual Injection Necessary in Mandibular Anterior Tooth Extraction?

Bilal Ege, Rawand Mustafa, Mehmet Demirkol, Mutan Hamdi Aras, Sinan Ay
Department of Oral and Maxillofacial Surgery, Gaziantep University, Gaziantep, Turkey

Background: Infiltration anesthesia is the most commonly used technique as a local anesthetic injection of mandibular anterior

region during the restorative and surgical procedures. Despite of some dentists who use both buccal and lingual infiltrations in mandibular anterior and premolar tooth extractions, the others prefer only buccal infiltration. The aim of our study was to investigate if lingual injection is necessary in extraction of mandibular incisor and premolar teeth.

Materials and methods: Forty-four healthy patients who admitted to our clinic for dental extractions with various reasons were included in the study. Patients were divided into two groups. In the experimental group buccal infiltration only used 1.5 ml of 2% lidocain hydrochloride with 1/80,000 epinephrine administered to the buccal side. In the control group 1.5 ml lidocain hydrochloride (2%, 1/80,000) was injected to the buccal side and then 0.3 ml injected to the lingual side. Each patient asked to record the pain and discomfort degree that felt immediately after the injection according to Face Pain Scale (FPS) and Visual Analogue Scale (VAS). After 5 min, the teeth were extracted and same scales recorded by the patients.

Results: According to VAS and FPS scores, there was no statistically significant difference ($p > 0.05$) between mandibular anterior tooth removal with or without lingual injection.

Conclusion: Extraction of mandibular incisor and premolar teeth without lingual injection is possible by depositing buccal infiltration of 1.5 ml of 2% lidocaine HCl.

FC069

Large Odontogenic Cystic Lesions with Ectopic Impacted Teeth: Case Reports

Alen Palancıoğlu, İrem Kırlı, Mehmet Yaltırık
Department of Oral and Maxillofacial Surgery, Istanbul University Faculty of Dentistry, Istanbul, Turkey

Aim: Cystic and cystlike lesions of the maxilla and mandible are primarily ellipsoid, radiolucent, and clearly demarcated and may be odontogenic or nonodontogenic. Odontogenic cysts and tumors develop during or after the formation of teeth. Most odontogenic lesions are benign, but some may exhibit aggressive and destructive behavior locally. In this case report will be presented some cases like dentigerous cysts, keratocysts and an unicystic ameloblastoma with ectopic impacted teeth and their wide variety treatment options from minimal invasive to more aggresive.

Cases: We describe six cases, who refferred to our Oral and Maxillofacial Surgery clinic of Istanbul Universtiy Faculty of Dentistry between years 2009 and 2010 with some complaints like facial asymmetry and absence of teeth. The patient age ranged from 18 to 34 years, with sex distribution of one female and five males. According to radiological examinations large cystic lesions and ectopic impacted teeth were diagnosed.

Four dentigerous cysts, one keratocyst and one unicystic ameloblastoma were diagnosed after histological examination. Five of these lesions were located in mandibular ramus region, one were located in maxillary tuber area. Three years follow up after surgery was made and postoperative healing were satisfactory.

Conclusions: It is important by selecting the treatment protocol. It is often difficult to distinguish cystic-appearing lesions from one another with radiography. Careful consideration of the patient history and the location of the lesion within the mandible, its borders, its internal architecture, and its effects on adjacent structures generally makes it possible to narrow the differential diagnosis.

Free Communication Session 11 | B343 | 28.08.2013 | 14:00–15:00

Theme: Preventive Dentistry: Periodontology

FC070

The Effects of Humic Acid on the Local and Systemic IL-1β and IL-10 Levels in Ligature-Induced Periodontitis in Rats

Metin Çalışır[1], Aysun Akpinar[2], Omer Poyraz[3], Fahrettin Goze[4]
[1]*Department of Periodontology, Adiyaman University, Adiyaman, Turkey,* [2]*Department of Periodontology, Cumhuriyet University, Sivas, Turkey,* [3]*Department of Microbiology, Cumhuriyet University, Sivas, Turkey,* [4]*Department of Pathology, Cumhuriyet University, Sivas, Turkey*

Aim: The aim of the present study was to evaluate the effects of the humic acid on alveolar bone loss in ligature-induced periodontitis in rats.

Materials and methods: The study protocol were approved by the Animal Ethics Committee of Cumhuriyet University School of Medicine.

(1) Non-ligated (NL) group (n = 6).
(2) Ligature-only (LO) group (n = 8).
(3) Ligature + 20 mg/kgHA (HA-20) group (n = 8).
(4) Ligature + 80 mg/kgHA (HA-80) group (n = 8).
(5) Ligature + 150 mg/kgHA (HA-150) group (n = 8).

All groups, except the NL group, were applied ligature. In the study groups, humic acid was applied systemically. On the 15th day, all the animals were sacrificed and the blood samples were taken for serum ELISA analyses. After the mandibles were dissected, the vestibular gingival tissues were taken from each animal to use for the gingival cytokine analyses. The mandibles were defleshed and stained with 1% aqueous methylene blue. The alveolar bone height was measured under a stereomicroscope by recording the distance from the CEJ to the alveolar bone crest. For the histopathological evaluation, osteoclast number, osteoblastic activity and inflammatory cell infiltration were determined. Statistical analysis were performed using the Kruskal–Wallis test.

Results: While HA-80 and HA-150 groups lowered the IL-1β levels, they dwelled the IL-10 levels. The mean alveolar bone loss was reduced by humic acid. Furthermore, the number of osteoblasts was increased and the mean osteoclast number and inflammatory cell infiltrate were decreased.

Conclusion: It is probable that humic acid may prevent the destruction of alveolar bone loss and gingival inflammation.

FC071

Relation to Chronic Periodontis in Macedonians

Aneta Atanasovska Stojanovska[1], Mirjana Popovska[1], Ilijana Muratovska[1], Arijan Daci[1], Mirko Spiroski[2]
[1]*Department of Oral Pathology and Periodontology, Fakulty of Stomatology, University ss "Kiril and Methodius", Skopje,*

Macedonia, [2]Institute of Immunology and Human Genetics, Faculty of Medicine, University ss "Kiril and Methodius", Skopje, Macedonia

Background: Genetic polymorphisms in the interleukin 6 (IL6) gene have been reported to influence the host response to microbial challenge in periodontitis by altering levels of cytokine expression.

The aim of this study was to evaluate two nucleotide polymorphisms at positions -174 (C-G) and nt565 (A-G) of IL-6 gene and their association with generalized chronic moderate and severe periodontitis.

Material and methods: The study population consisted of 299 healthy unrelated individuals and 111 patients with periodontal disease divided into two groups according to the lost of attachment (moderate periodontitis with clinical attachment loss (CAL) ≤4 mm and severe periodontitis with CAL > 4 mm). They have filled in and signed informative permission for genetic research and storage of isolated DNA in the Macedonian Human DNA Bank (hDNAMKD). Cytokine genotyping was performed by PCR-SSP (Heidelberg kit). The population genetics analysis package (PyPop) was used for analysis of the cytokine data for this report. Comparisons of different alleles, genotypes, haplotypes, and haplotype zygosity for two groups were tested by Pearson's p-value.

Results: Within the moderate clinical phase of periodontal disease significant associations ($p < 0.05$) were detected between subjects with periodontitis and cytokine genotypes IL6 −174/C:C; IL6 −nt565/A:A and cytokine haplotype zygotes IL-6/CA:CA.

Within the severe clinical phase of periodontal disease significant associations ($p < 0.05$) were detected between subjects with periodontitis and cytokine genotypes IL6 −174/C:C; IL6 −nt565/A:A, cytokine haplotype IL-6/CA and cytokine haplotype zygotes IL-6/CA:CA.

Conclusion: Cytokine polymorphism on the IL-6 gene appears to be associated with susceptibility to chronic periodontitis in Macedonians.

FC072

Baseline Radiographic Defect Angle as a Prognostic Indicator of Regenerative Periodontal Surgery

Martu Silvia, Martu Ioana, Martu Alexandra, Luchian Ionut
"Gr.T. Popa" Medicine and Pharmacy University, Iasi, Romania

Aim: The aim of this study was investigate whether an association exists between baseline radiographic defect angle and treatment in periodontal regenerative surgery.

Materials and methods: The study was realized on 30 patients who had pair test sites and control sites, with pockets ≥6 mm and infra-osseous defects with depth ≥3 mm measured by probing and X-ray evaluation radiographic defect angle was ≤22° than when it was ≥36°.

Results: The average values of the clinical attachment level (CAL) in the test sites were 1.8 mm at 6 months and 2.1 mm after 12 months, for the group with EMDOGAIN®, 1.1 mm at 6 months and 1.2 mm at 12 months for the control group. The radiographic gain was ascertained after 12 months.

Conclusions: This study showed that there was a significant association between baseline radiographic defect angle and CAL gain of ≥4 mm after regenerative surgery with EMD is used in narrow (≤22°) intrabony defects suggests that the baseline radiographic defect angle might be used as a prognostic indicators of treatment outcome.

FC073

Clinical Evaluation of Periodontal Parameters in Marginal Dental Restorations

Seyed Ali Banihashemrad[1], Mohamd Javad Moghaddas[2]
[1]*Periodontic Department, Mashhad Dental School, Mashhad, Iran,* [2]*Restorative Dentistry Department, Mashhad Dental School, Mashhad, Iran*

Introduction: The relationship between periodontal health and the restoration of teeth is intimate and inseparable. For restorations to survive long term, the periodontium must remain healthy so that the teeth are maintained. For the periodontium to remain healthy, restoration must be critically managed in several areas so that they are in harmony with their surrounding periodontal tissues. The aim of this study was to evaluate the periodontal parameters in patients with correct marginal restorations that referred to periodontics department of Mashhad Dental School.

Materials and methods: Fifty patients with one or more marginal restorations as well as their controls were studied in a cross-sectional method. Gingival, plaque, probing depth and gingival bleeding indices were measured in both groups. Willcaxon test was used comparing the results in both groups.

Results: Fifty percent of cases had plaque index of 0 as the rate was 60% in control samples. Considering gingival index, the percentage of patients with gingival index was 58 and 74 in case and control groups respectively. Bleeding index of 0 was reported to be 38% and 72% in case and control groups respectively. Probing depth in case group was more than control. Statistical analysis showed significant difference between the two groups considering four measured variables ($p < 0.05$).

Conclusion: The finding of this study showed, even the correct marginal restoration may have effect on periodontal status and as a general rule, Periodontal health is the "Sine Qua Non" a prerequisite, of successful comprehensive dentistry.

FC074

Does Periodontal Therapy Reduce Gastric *Helicobacter pylori* Recurrence? A Meta-Analysis

Amal Bouziane[1], Samir Ahid[2], Redouane Abouqal[3], Oumkeltoum Ennibi[4]
[1]*Department of Periodontology, Faculty of Dental Medicine, Biostatistical, Clinical and Epidemiological Research Laboratory, Faculty of Medicine and Pharmacy, Mohammed the 5th Souissi University, Rabat, Morocco,* [2]*Biostatistical, Clinical and Epidemiological Research Laboratory, Pharmacology and Toxicology Laboratory, Faculty of Medicine and Pharmacy, Mohammed the 5th Souissi University, Rabat, Morocco,*

[3]*Biostatistical, Clinical and Epidemiological Research Laboratory, Faculty of Medicine and Pharmacy, Mohammed the 5th University, Rabat, Morocco,* [4]*Department of Periodontology, Faculty of Dental Medicine, Mohammed the 5th Souissi University, Rabat, Morocco*

Aim: The aim of this meta-analysis is to evaluate the effect of periodontal therapy plus eradication therapy vs. eradication therapy alone in terms of prevention of gastric *Helicobacter pylori* (*H. pylori*) infection recurrence for patients with gastric diseases associated with *H. pylori*.
Materials and methods: We systematically searched electronic databases, and included controlled trials comparing periodontal treatment and eradication therapy of *H. pylori* with eradication therapy alone for prevention of recurrence of gastric *H. pylori*. We used the absence of recurrence of gastric *H. pylori* after the first 3 months as an outcome measure to determine relative risk of persistence of gastric *H. pylori*. We estimated the degree of heterogeneity among trial results using Q statistic and the I_2 statistic.
Results: Three controlled clinical trials, including 298 patients and comparing eradication therapy alone with periodontal therapy or oral hygiene procedures as adjunct to eradication therapy, fulfilled the criteria for consideration in the review. When the effect sizes of these three trials were combined by a random-effects model, a significant relative risk reduction of 63% was seen ($p = 0.0004$). 68.45% (128 of 187) of patients given periodontal therapy and 22.52% of controls (25 of 111) were eradicated from *H. pylori* after 3 months.
Conclusions: The adjunction of periodontal treatment to eradication therapy appears to reduce gastric *H. pylori* recurrence compared with eradication therapy alone. The results of this meta-analysis suggest including periodontal treatment in the management of *H. pylori* infection.

Free Communication Session 12 | B360 | 28.08.2013 | 14:00–15:00

Theme: Dental Treatment and Restorative Dentistry: Prosthetics

FC075
Systemic Correlates of TMJ Neuro-Inflammation
Garabed Gary Demerjian[1], Anthony Benjamin Sims[2], Andre Barkhordarian[3], Francesco Chiappelli[3]
[1]*Private Practice, Glendora, CA, USA,* [2]*Private Practice, Columbia, MD, USA,* [3]*Section of Oral Biology, Division of Oral Biology & Medicine, UCLA School of Dentistry, Los Angeles, CA, USA*

Purpose: This research sought to identify systemic co-morbid conditions associated with temporomandibular joint disorders (TMJD). We present clinical observations that link TMJD to a variety of neurological disorders. We hypothesized that mechanical realignment between the maxilla and the mandible with oral orthotics can be successful in rapidly suppressing certain debilitating neurological and neuropsychiatric symptoms, including the movement disorders characteristic of Tourette's Syndrome, cervical dystonia, blepharospasm, and Parkinson's Disease.
Method: We examined patients with TMJD, as well as patients with a variety of neurologic conditions for possible TMJD. Diagnostic criteria included were jaw joint clicking or popping, jaw pain, headaches, migraines, neck and shoulder pain or tightness, limited jaw opening, and accidents or trauma to the head and neck. We confirmed the clinical diagnosis by means of MRI's, CT scans, Tomography.
Result: In 35% of patients with neurologic pathologies, calibrated oral orthotics were successful in reducing TMJ-associated symptoms, in re-aligning the position of the mandible, and in reducing the dystonic behaviors.
Conclusion: Our research suggests that up to one third of the patients with systemic disorders associated with TMJD may suffer from peripheral neuro-inflammation of the mandibular nerve. Our findings implicate particularly the auriculotemporal branch of the trigeminal V3, which runs proximal to the TMJ. We also established that a substantial proportion of patients with neurological pathologies, the neurologic symptoms appear to be definitely linked to TMJD.

In the remaining patients, the clinically observable neurological pathologies are clearly not systemic correlates of TMJ neuro-inflammatory processes.

FC076
The Effect of Ceramic Thickness and Number of Firings on the Color of Densely and Partially Sintered Zirconia Ceramic Systems
Volkan Şahin[1], Bülent Cumhur Uludağ[2], Alper Comut[3], Fehmi Gönüldaş[2]
[1]*Department of Prosthodontics, University of Kirikkale, Kirikkale, Turkey,* [2]*Department of Prosthodontics, University of Ankara, Ankara, Turkey,* [3]*Department of Prosthodontics, New York University, New York, NY, USA*

Purpose: Milling of zirconia blocks can be performed in the partially or fully sintered stage. Their high crystalline content makes zirconia ceramics relatively more opaque to visible light. The purpose of this study was to evaluate the effects of number of firings and veneering ceramic thickness on the color of partially sintered (Cercon) and fully sintered (DC Zirkon) zirconia cores.
Materials and methods: Thirty disc-shaped specimens, 4 mm in diameter with a 1-mm core thickness, and 0.5-, 1-, or1.5-mm dentin ceramic thicknesses, were made from each of two ceramic systems ($n = 10$). Repeated firings (3, 5, 7, or 9) were performed, and the color of the specimens was compared with the color after the initial firing.
Results: L*a*b* values of the ceramic systems were affected by the number of firings ($p < 0.01$), ceramic composition (Cercon or DC Zirkon) ($p < 0.01$), and ceramic thickness ($p < 0.01$) except the a* value ($p = 0.07$). As the ceramic thickness increased, significant reductions in L* values ($p < 0.01$) were recorded for DC Zirkon specimens resulting in darker specimens, increased ceramic thicknesses has led to increased L* values for the Cercon specimens subjected to 3 and 5 number of firings which became lighter. An increase in the number of firings has led to increased L* values for both ceramic systems resulting in lighter specimens ($p < 0.01$).

Cercon specimens were darker, more reddish and yellowish compared to the DC Zirkon specimens for every thickness and number of firings levels except the specimens with ceramic thicknesses of 0.5 and 1 mm less yellowish than the DC Zirkon specimens ($p < 0.01$).

FC077

Comparative Analyse of Variables of Metal Ceramic Dental Bridges

Sherif Ismen Shaqiri

Clinic for Prosthetic Dentistry, Kaltrina Sherif Shaqiri Student, School of Dentistry Faculty of Medical Sciences State University of Tetova-Macedonia

Aim: Our aim in this study is to:

(1) Analyze the odontometric values of pontic elements of occluso-cervical, mezio-distal and vestibulo-oral dimensions:

(2) Compare the getting values with homologous values of natural teeth.

(3) Determine the difference in per cent of values from our study with values of control group.

Material and methods: During 2010 and 2011 year, clinically were analysed and measured 455 pontic elements of lateral dental bridges by 151 treated patients from both sex, and in age from 26 to 70 years old.

Measurement was made with an instrument for precise measuring (shubler), with precision of 0.1 mm.

Like control group were used results from measurement of natural teeth according authors: Lavelle, Lenhossek, Sicher-Tandler and De Yonge-Cohen, realised with same measured precision of variables from 0.1 mm.

The statistically significance of results from our study is showed with T-test ($t = 6.75$), and coefficient of probability ($p < 0.01$).

Results: The getting results showed that:

Pontic elements in our study are in average for:

23.49% highest than control group

16.13% shorter than control group and

8.82% narrower than control group teeth.

Conclusions: Like conclusion we can say that:

(1) The highest of pontic elements of dental bridge increase the resistance and the hardness of bridge with geometric progress.

(2) The shorter pontic elements in mesio-distal dimension will influence on defence of dental bridge from deformity and breaking.

(3) The narrower pontic elements will increase the hardness of dental bridge in linear manner.

FC078

The Impact of Complete Dentures on Oral Health Related Quality of Life

Linda Dula, Kujtim Shala, Zana Lila Krasniqi, Arlinda Dragusha, Teuta Bicaj, Teuta Pustina Krasniqi, Enis Ahmedi

Department of Prosthetic Dentistry, Faculty of Medicine, University Dentistry Clinical Center of Kosova

Oral health related quality of life (OHRQoL) is considered to be an important part of patient's general health. Therefore, the main goal of contemporary dentistry is not only to improve oral health but also to improve overall quality of patients life.

Objectives: The aim of this study was to assess the OHRQoL before and after prosthodontic complete denture therapy and denture satisfaction of patients.

Material and methods: The study included 97 patients with complete denture (CD) There were 51 females and 46 males between the ages 40–80 years. These patients were selected from the waiting list for CD in University Dentistry Clinical Center, Prishtina, Kosova. The data was collected from survey questionnaires OHIP-49 more sophisticated, accepted and translated into more than 20 languages in world. All patients with CD filled in Albanian version of the questionnaire (OHIP-49) twice: the first time before the therapy had begun and the second time 6 months after the new CDs had been delivered.

Result: OHRQoL before and after 6 months was statistically significantly by the insertion of new CDs in all prosthodontic patients ($p < 0.0001$) with Mann–Whitney test. Patients are more satisfied with upper jaw CDs than in lower jaw.

Conclusions: Elimination of oral pain and problems associated with chewing and speech and improving patient's aesthetics increase the quality of life Clinicians should also recognize the important role they play in improving a patient's quality of life aside from just manufacturing a complete denture for.

FC079

Treatment Management in Cases with Bruxism

Biljana Kapusevska[1], Nikola Dereban[2]

[1]*Department of Prosthodontics, Faculty of Dentistry, P.H.O. Dental Clinical Centar, University St. Cyril and Methodicus, Skopje, Macedonia,* [2]*Department of Dentofacial Orthopedics, Faculty of Dentistry, P.H.O. Dental Clinical Centar, University St. Cyril and Methodicus, Skopje, Macedonia*

Aim: The primary objective of this paper is exhibiting a case presentation involving treatment management of patients with bruxism in which depending on the severity of the symptoms we fabricate various types of splints, suggest myofunctional exercises, yoga, use of vitamins, minerals and occasionally sedatives.

Materials and methods: We treated 40 patients, divided into four groups of 10. The first group manifested permanent afflictions, jaw pain, myalgia and persistent headaches. The second was comprised of patients with evidently present attrition on the dentition. The third group patients complained about TMJ pain and clicking sounds during jaw opening and closure. The severity of the bruxism in the third group caused clinically manifested stadium of periodontitis. The treatment protocol aimed to influence the impelled effectors. For the first group, we fabricated stabilization splints. For the second we used soft splints. The third was treated with restrictive splints and the fourth with partial splints for selective decompression. Simultaneously we examined the psychological component of the disorder by the use of a placebo.

Results: We documented the progress of the treatment after 6, 12 and 18 months from the beginning of treatment. The placebo

showed us that the psychological element was insignificant and the symptoms had organic origin. After the 18th month, the rehabilitation was evident even in the fourth group. In the second and third group, the symptoms were eliminated after 12 months and in the first only after 6 months.
Conclusions: The conclusion guided us toward the comprehension that our bruxism treatment management is effective and without resurgence.

Free Communication Session 13 | B332 | 28.08.2013 | 15:30–16:30

Theme: Preventive Dentistry: Public Health

FC080
"Smile Healthy to Your Diabetes": Health Coaching Based Intervention for Diabetes and Oral Health Management
Ayse Basak Cinar[1], Lone Schou[2], Inci Oktay[3]
[1]Department of Community Dentistry, Institute of Dentistry, University of Copenhagen, Copenhagen, Denmark, [2]The Head- Institute of Dentistry, University of Copenhagen, Copenhagen, Denmark, [3]Department of Community Dentistry, Yeditepe Dental Faculty, Istanbul, Turkey

Aim: The present study is the first to our knowledge that aims to evaluate the impact of Health Coaching (HC) on diabetes management and oral health among patients with diabetes type II (DM2).
Methods: The study is part of a prospective intervention among randomly selected DM2 patients (n = 186), Istanbul, Turkey. The data analyzed were Community Periodontal Need Index (CPI) and HbA1c (glycated haemoglobin). Data was collected initially and at the end of intervention. Participants were allocated randomly to Health Coaching (HC:intervention) (n = 77) and education (ED: control) (n = 102) groups.
Results: At baseline, there was no statistical difference between HC and ED groups [HbA1c:7.5% vs. 7.8% (59 vs. 62 mmol/mol); CPI: 2.3 vs. 2.4), ($p > 0.05$). At post-intervention the HC group had significantly lower HbA1c (6.7%; 51 mmol/mol) and CPI (0.6±) than the ED group [7.7% (61 mmol/mol), CPI:1.9), ($p < 0.01$). HC significantly reduced HbA1c ($F = 6.58$) and CPI ($F = 8.14$), ($p < 0.05$). The impact of ED on CPI was significant ($F = 14.45$, $p = 0.001$) but not on HbA1c ($F = 0.05$, $p = 0.94$). The improvement at CPI from baseline to post intervention had significant impact on reduced HbA1c at HC ($F = 2.94$) and ED groups ($F = 5.93$), ($p < 0.05$).
Conclusion: The present findings may imply that HC has a significantly higher impact on better management of diabetes and oral health compared to ED. The impact of ED was insufficient to make significant reduction at HbA1c. Thus may underline the need for integration of HC to the daily practice of health care providers and diabetes educators to improve quality of life for patients with DM2.

FC081
Adolescents' Opinion on School-Based Oral Health Education
Nurul Syakirin Abdul Shukor[1], Marhazlinda Jamaluddin[2], Roslan Saub[1]
[1]Department of Community Dentistry, Faculty of Dentistry, University of Malaya, Kuala Lumpur, Malaysia, [2]Dental Research and Training Unit, Faculty of Dentistry, University of Malaya, Kuala Lumpur, Malaysia

Introduction: Health education is one of the important components of school-based oral health promotion programme. Adolescent perspectives on the school-based oral health education (OHE) may support public health professionals in order to develop more effective interventions of OHE.
Objectives: This qualitative study used focus groups to gather adolescents' opinions on school-based oral health education approach in terms of acceptance and its perceived benefits.
Methods: Thirty-two adolescents aged 17 years old from two secondary schools in Selangor, Malaysia participated in a total of four focus group discussions. Each session was audio and video-recorded. The data were transcribed and coded into themes using QSR NVivo 9 according to the principles of Grounded Theory approach.
Results: Participants described that their acceptance of school-based oral health education depended on exquisiteness, satisfaction, quality and value of the programme. Content, delivery, speakers and language were the factors that contributed to the exquisiteness of school-based OHE. The venue, duration, attitude of dental support staff and support from teachers were the factors that affected their satisfaction. Quality of school-based OHE was reflected in the conduct, audio-visual aids and surrounding. Their perceived values of oral health initiated the acceptance of the programme. Awareness, knowledge and self-confidence were the perceived benefits gained from the school-based OHE.
Conclusions: This qualitative study gives the insight of acceptance of school-based OHE among adolescents. Though school-based oral health educations were perceived to be beneficial to the adolescents, understanding their acceptance may provide essential information for enhancing school-based OHE programmes.

FC082
Gender and Weight Concerns Among an Adolescent Population
Omolara Uti, Oyinkansola Sofola
Department of Preventive Dentistry, College of Medicine, University of Lagos, Lagos, Nigeria

Aim: The relationship between smoking and weight is complex, and the mechanisms by which smoking influences weight are not fully understood. Several studies have reported that smoking affects weight by increasing metabolic rate and decreasing caloric absorption, which is thought to help suppress appetite. This study examined the beliefs that Nigerian adolescents hold regarding smoking and weight gain.
Methods: This study used data from a cross-sectional survey among a group of adolescents to assess the influence of gender, age and smoking status on smoking-related weight concerns.

Results: Two hundred and three senior secondary school students whose ages were 14–19 years participated in the study. Prevalence of current cigarette smoking was 2% and all smokers were males.

There was no statistically significant differences in terms of age ($p = 0.139$), gender ($p = 0.053$) and weight gain concerns. However there was a significant difference in terms of smoking status with significantly higher proportion of smokers believing that smoking helps to gain weight while non smokers believe it helps to lose weight ($p = 0.000$).

Conclusion: Results highlight potentially important differences in the relationship between weight concerns and smoking status and the influence these concerns may have on smoking uptake. The relationship between smoking and weight concerns among the population studied is different from previously reported studies.

FC083

Greek Dentists' Work-Related Stress During the Economic Crisis

Aristomenis I. Syngelakis[1], Haroula Koletsi Kounari[1], Argy Polychronopoulou[1], Demosthenes B. Panagiotakos[2], Pavlos Msaouel[3], Nikolaos C. Keramaris[4], Christos Lionis[5]
[1]Department of Preventive and Community Dentistry, Dental School, National and Kapodistrian University of Athens, Athens, Greece, [2]Department of Nutrition and Dietetics, Harokopio University, Athens, Greece, [3]Department of Internal Medicine, Jacobi Medical Center, Albert Einstein College of Medicine, USA, [4]Greek Junior Doctors and Health Scientists Society, Athens, Greece, [5]Clinic of Social and Family Medicine, Medical School, University of Crete, Heraklion, Greece

Aim: Greek National Health System dentists suffer from work stress because of wage cuts and job insecurity due to the economic crisis and consequent health policies. The aim of this study was to investigate chronic work stress of dentists working in public sector's primary healthcare by using the Effort-Reward Imbalance (ERI) questionnaire, which was used for the first time among Greek dentists.

Materials and methods: All 192 dentists working in Greek public health centers were invited to participate; 135 (70.3%) agreed. Of them, 68 (50.4%) were male (age 55.3 ± 6.6 years) and 67 (49.6%) were female (age 54.3 ± 4.5 years). The translated, adapted and validated into Greek version of the ERI, a 23-item instrument using a simplified, uniform 4-point Likert response scale, was delivered between July and October 2012, with permission of the Ministry of Health.

Results: Factor analysis revealed three main profiles characterizing dentists' responses: (i) one pattern, combining intense time stress, physical fatigue, anxiety and feelings of decreased esteem and respect by others, (ii) one comprising by time stress, physical fatigue, work insecurity and instability and (iii) one exhibiting intense daily work stress. ER ratio >1 was found in 60.18% of dentists, while 13.56% had overcomitmment score in the upper tertile.

Conclusions: A relative imbalance between efforts dedicated and rewards perceived was found in primary care Greek dentists at the specific timing. Therefore, appropriate interventions should be implemented to monitor and address work-related stress, which is expected to increase in the era of crisis.

Theme: Preventive Dentistry: Epidemiology

FC084

Gingival Crevicular Fluid Levels of Monocyte Chemoattractant Protein-1 in Patients with Aggressive Periodontitis

Şadiye Coşkuner[1], Nilgün Özlem Alptekin[1], Niyazi Dündar[2]
[1]Department of Periodontology, Faculty of Dentistry, Selcuk University, Konya, Turkey, [2]Research Center, Faculty of Dentistry, Selcuk University, Konya, Turkey

Aim: Monocyte chemoattractant protein-1 (MCP-1) is a member of the C-C chemokine family, and a potent chemotactic factor for monocytes. MCP-1 is synthesized in inflamed gingiva by vascular endothelial cells and mononuclear phagocytes. This study was carried out to examine the gingival crevicular fluid (GCF) levels of MCP-1 in aggressive periodontitis (AgP) and periodontally healthy subjects.

Materials and methods: GCF samples were collected from 141 patients including 50 localized (L) AgP, 30 generalized (G) AgP and 61 periodontally healthy control (C) patients Analysis for GCF MCP-1 was measured by an enzyme-linked immunosorbent assay. The mean whole mouth scores of plaque index (PI), gingival index (GI), probing depth (PD) and clinical attachment level (CAL) were recorded.

Results: Compared to healthy controls, all clinical parameters, concentrations (pg/ml) and total amounts (pg/site) of MCP-1 levels were statistically significantly higher in subjects with LAgP and GAgP ($p < 0.001$). There were a significant correlations between total amounts of MCP-1 and clinical parameters in subjects with AgP ($p < 0.001$).

Conclusions: These results indicate that total amounts of MCP-1 levels in GCF may have a potential indicator of periodontal tissue destruction in subjects with LAgP and GAgP.

Free Communication Session 14 | B342 | 28.08.2013 | 15:30–16:30

Theme: Dental Treatment and Restorative Dentistry: Prosthetics

FC085

A New Apparatus: Changing the Bonding Force of Impression Tray to the Edentulous Jaw

Yusuf Ziya Akpınar[1], İsmail Hakkı Uzun[2], Betül Yılmaz[1], Numan Tatar[1]
[1]Department of Prosthodontics, Abant izzet Baysal University, Bolu, Turkey, [2]Department of Prosthodontics, Inonu University, Malatya, Turkey

Aim: This in vivo study evaluated the bonding strength of impression material to the edentulous maxillary jaw using different impression materials with and without an impression valve system (IVS).

Materials and methods: Two impression materials – ZnOEugenol (ZnOE) and irreversible hydrocolloid (IH) – were used as experimental material to determine the bonding force of an individual impression tray (IIT) with and without IVS to edentulous the maxillary jaw using digital dynamometer.

Results: There were statistically significant differences between the ZnOE and IH groups ($p < 0.05$). The effect of IVS on bonding strength was found to be statistically significant ($p < 0.05$).
Conclusions: In clinical application, takingset impression material away from the mouth can cause negative effects such as distortion of impression material, surface changes, tearing, and detaching impression from impression tray. The main advantage of this new technique is that dentistscan take the impression tray away from the mouth with minimal force. Consequently, the dimensional stability and structural integrity of the impression will be protected.

FC086

A New Technique for Controling the Patient Using RFID Card
Mustafa Zortuk, Hasan Akbaba, Haydar Albayrak, Hasan Hüseyin Kocaağaoğlu, Aytaç Demircan
Department of Prosthodontics, Faculty of Dentistry, Erciyes University, Kayseri, Turkey

Introduction: Marking or labelling the dentures is not a new concept in either prosthetic or forensic dentistry, and its routine practice has been urged by forensic dentists internationally for many years. Denture identification is especially important for patients in geriatric institutions. For the patient who may have difficulty learning to control new dentures it is possible to lose the dentures. Over the years, various methods of denture marking have been reported in the literature. These include surface marking and inclusion techniques using metal or nonmetal materials, microlabels, and chips. Automatic identification using barcodes incorporated into dentures has been developed. However, the scanning of barcodes may be difficult due to the opacity of the acrylic resin, and for this reason the use of clear acrylic resin is recommended with this system. Furthermore, the curvature of the denture may cause distortion of the barcode, making it unreadable. Also, barcode technology may present practical obstacles for denture prostheses. In medicine, radiofrequency identification (RFID) is used to reduce the errors of patient identification, particularly during blood transfusion and drug administration in hospitals It seems reasonable to adopt this technology for denture identification. It is possible to help blind patients using a similar technology. Patients can be warned or informed with the system that placed in the living area.
Results: In this study we inserted a RFID chip in to removable prosthesis using a simple method. It helps the patients family following and controlling the patient when the he is alone.

FC087

Study of the Radius of the Monson's Sphere in Iranian Adults
Maryam Azimi Zavare[1], Farnoosh Taghavi Damghani[1], Mehran Torabi[2], Mahdie Chavoshzade[3]
[1]*Department of Prostodontics, Dental School of Shahed University, Tehran, Iran,* [2]*Mechanic's Engineer, Tehran, Iran,* [3]*General Dentist, Tehran, Iran*

Aims: One of the required information in rehabilitating the occlusal plane in dentistry is the radius of Monson's sphere, which like other anatomical indices varies in different races. The purpose of this study is to determine the radius of this sphere in the students of dental school as a sample of Iranian race.
Materials and Methods: Forty-five Iranian subjects (19 males and 26 females) aged 18–25 years old were selected for this study. The x, y, z coordinates of cusp tips of all mandibular teeth except for the third molars obtained with a three-dimensional digitizer, were used to derive a spherical model of the occlusal surfaces' curvature. From the best interpolating sphere, the radi of the Monson's sphere, the left and right curves of Spee(quasi-sagital plan), the canine and molar curves of Wilson (frontal plane) and also the depth of curve of Spee were computed. Statistical analysis of the data was performed by student's t-test.
Results: Although all of the computed variables were greater in men, the occlusal curvature of mandibular arch was not influenced by gender. The mean radius of the Monson's sphere was 111.5 mm (121 mm in men and 104 mm in women which was closer than men to the classical value of 4inch, confirming Monson's observations). The radi of the left and right curves of Spee, and the curve of Wilson in canine area were about 119 mm in men and 102 mm in women. The depth of the curve of Spee was 2/04 mm in men and 1/17 mm in women without any gender differences.
Conclusions: The average radius of the Monson sphere in this study was greater than the classic value of 4 inch.

FC088

Residual Ridge Morphology in African American vs. Caucasian Women, and Clincial Management
Asha Samant
Restorative Dentistry New Jersey Dental School-UMDNJ, Newark, NJ, USA

Osteoporosis is a risk factor for residual ridge resorption in postmenopausal women. African American women have high bone mass and less severe osteoporosis than caucasian women. But its implication on residual ridge morphology IN AA is not clearly defined much in research.
Objective: Morphology of both type women was evaluated.
Method: BMI, ridge shape presence or absence of undercuts in both arches was studied. Panoram Inde Benson) and Mandibular Cortical Index (Klementti et al) was used for calculation
Results and conclusions: Clinical and morphometric assessment reveal greater RR volume and increased occurrence of heavier, bulbous ridges in African American women. These findings are consistent with high bone mass reported in African American Women.
Clinical management: The presentation will present management of clinical cases, how to render treatment prosthesis in such patients.

FC089

An Investigation into the Effect of Different Preparation Designs and Try-in Pastes, on the Overall Color of Ceramic Laminate Veneer Restorations
Burçin Vanlıoğlu, Buket Evren, Erhan Tuğcu, Yasemin Kulak Özkan

Department of Prosthodontics, Marmara University, Istanbul, Turkey

Purpose: The aim of this study was to assess how different preparation designs and shades of try-in pastes, influence the overall color of porcelain laminate veneer restorations.
Methods: Laminate veneer preparations were performed in 20 intact human maxillary central incisors. Teeth were divided in four groups: (P1)0.3 mm depth of preparation, preparation entirely in enamel; (P2) 0.5 mm depth of preparation, preparation in enamel and dentin complex; (P3) 1 mm depth of preparation, preparation entirely in dentin; (P4) without preparation, only surface roughening. Porcelain discs (IPSemaxPress, IvoclarVivadent AG, Schann, Liechtenstein) of Shade Vita 1M1 were fabricated in three different thicknesses. The color measurement was performed with an intra-oral spectrophotometer (Vita Easyshade) before and after preparation and with try-in pastes (Variolink Veneer Try-in, IvoclarVivadent) in two different colors. Analysis of variance was carried out on the color difference values.
Results: There were statistically significant differences between different preparation designs. There were statistically significant differences between the measurements performed before and after preparation. The difference between try-in pastes was not statistically significant between P1 and P2. Different colored try-in pastes produced color changes which are clinically useful in changing the color of laminate veneer restorations and therefore aid color matching to adjacent dentition.

Free Communication Session 15 | B343 | 28.08.2013 | 15:30–16:30

Theme: Preventive Dentistry: Orthodontics

FC090

Nasoalveolarmolding for Infants with Complete Unilateral Cleft Lip and Palate

Mosleh Saad Alharbi
Dental Department, National Guard Health Affair, Jeddah, Saudi Arabia

Background and aim: In the 19th century McNeil (prosthodontist) used an oral prosthesis to approximate the cleft alveolar segments and thus initiating the concept of modern presurgical infant orthopedics. More recently (1994) Barry Grayson developed a new technique that not only it approximates the alveolar segments but it also reshapes the nose in order to perform primary nose surgery, this technique is called Nasoalveolar molding (NAM).

The aim of presenting this is to demonstrate the sequence of alveolar and nasal changes following the use of nasoalveolar molding.
Materials and methods: Patients with nonsyndromic complete unilateral cleft lip and palate. Nasoalveolar molding was performed for each patient and treatment time took 8–12 weeks. A serial of standard basilar view 1:1 photographs were taken for each patient (same digital camera). Each patient was photographed at the initial visit and after the nasoalveolar molding.

Digital caliper was used to measure the cleft size on the study model at the initial visit and after nasoalveolar molding.
Results: Patients expressed good improvement. The cleft size was reduced significantly, improved both the columella deviation and length as well as the nostril width and height in the cleft side.
Conclusion: NAM is an effective procedure in reducing the alveolar cleft size and it also improves the nasal architecture. This will facilitate the work of the plastic surgeon during the lip adhesion and primary nose surgery and consequently with better aesthetic outcome.

FC091

A Comparative Evaluation of Active Vertical Protraction Appliance (AVPA) and Reverse Headgear: A Randomized Comparative Clinical Trial

Berk Özoğul[1], Sevil Akkaya[2]
[1]*Private Orthodontic Practice, Ankara, Turkey,* [2]*Department of Orthodontics, Gazi University, Ankara, Turkey*

Aim: The aim of this randomized comparative clinical trial is to evaluate the skeletal and dentoalveolar effects of Active Vertical Protraction Appliance (AVPA) in comparison with Reverse Headgear (RH). AVPA is recently developed to prevent the undesired side effects of conventional protraction therapy and for providing simultaneous openbite and Class III treatment in patients with increased or optimum vertical dimensions.
Materials and methods: The inclusion criteria for the AVPA (30 patients, average age: 10.19 years) group were the presence of maxillary deficiency caused skeletal Class III, increased or normal vertical dimensions and being at the pubertal growth spurt or at earlier growth periods. RH group consisted randomizely selected 30 patients (average age: 10.81 years) from archive records. Inter- and intragroup differences were analyzed with independent and paired samples t-tests.
Results: As a result of AVPA treatment major Class III correction was achieved in all patients. Palatal plane inclination remained stable in AVPA group whereas it decreased significantly in RH group. Gonial, ramal and mandibular plane angles decreased significantly in AVPA group, however, significant increase was observed in RH group. Upper maxillary incisor extrusion and protrusion were recorded in both groups and as for the lower incisors, protrusion was recorded in AVPA group whereas retrusion was recorded in RH group.
Conclusions: With the use of AVPA treatment, vertical control was successfully achieved during protraction while preventing the maxillary and mandibular side effects of the conventional protraction treatment. The use of skeletal anchorage with AVPA can be considered in further studies for the prevention of dentoalveolar side effects.

FC092

A Comparison of Two Different Digital Model Analysis Programs

Ruhi Nalçacı[1], Burcu Aydın[1], Ali Altuğ Bıçakçı[2], Hikmet Orhan[3]
[1]*Department of Orthodontics, Suleyman Demirel University, Isparta, Turkey,* [2]*Department of Orthodontics, Gaziosmanpasa University, Tokat, Turkey,* [3]*Department of Biostatistics and Medical Informations, Suleyman Demirel University, Isparta, Turkey*

Aim: With regard to innovations in computer technology and systems, three-dimensional dental models have been a good alternative for conventional casts. In the literature there are some researches that surveys the accuracy and reproducibility of the measurements comparing digital and conventional dental casts, however there is not any study that compares different three-dimensional model analysis softwares. The purpose of the current study was to evaluate and compare reliability of measurements performed by two different three-dimensional digital orthodontic model analysis programs.
Material and methods: From the archive of our faculty 20 dental casts were selected and scanned in STL format with an Orthodontic 3D Scanner (3 shape R700, Copenhagen, Denmark). For orthodontic analyses we used Orthomodel (v.1.01, Orthomodel Inc., Istanbul, Turkey) and O3DM (v.3.4, O3DM Thunoegade, Aarhus C, Denmark) software programs. With both programs one examiner performed Bolton and space need analyses, tooth widths, arch lengths, intermolar and intercanine measurements. For intra-observer reproducibility, 1 week after assessment, ten randomize-selected dental casts were re-measured by the same observer. Paired-samples test was used to determine the differences between the groups and Cronbach's alpha analysis was applied for intra-observer reproducibility.
Results: Orthomodel and O3DM programs showed no significant differences in the measurements that are crucial for treatment planning ($p > 0.05$). Also Cronbach's alpha value was very close to the ideal value of 1 ($\alpha = 0.905$), which shows good intra-observer reliability for all measurements.
Conclusions: The results of our study suggest that both of the programs are clinically acceptable for orthodontic measurements with respectable reliability.

FC093

Antibacterial Effects of Six Orthodontic Bonding Materials

Zeliha Muge Baka[1], Ayce Unverdi Eldeniz[2], Mehmet Burak Guneser[2], Faruk Ayhan Basciftci[1]
[1]*Department of Orthodontics, Selcuk University, Konya, Turkey,* [2]*Department of Endodontics, Selcuk University, Konya, Turkey*

Objective: Long-lasting antibacterial effects of orthodontic bonding materials may be beneficial in the prevention of white spot lesions. The aim of this study was to evaluate antibacterial effects of six orthodontic bonding materials which are commonly used in orthodontics.
Materials and methods: The antibacterial effects of six orthodontic adhesives were evaluated against Streptococcus mutans and *Streptococcus salivarius* by direct contact test (DCT). With DCT, quintet specimens of Transbond XT, Bloe Gloo, Gren Gloo, Opal, Light Bond and Clearfil AP-X were placed at the bottom of the wells at a height of 2 mm in 96-microtiter plate. Two sets of test materials were prepared: 1- and 7-days samples. Ten microliters of bacterial suspension was added to each well for direct contact with each material for 1 h at 37°C. Bacterial growth was then measured using a microplate spectrophotometer hourly for 24 h ($OD_{620} = 0.6$). Five uncoated wells using identical inoculum size served as positive controls. Another five uncoated wells with media served as negative controls. The data obtained at the end of 24 h was statistically analyzed with one-way ANOVA and post hoc comparisons were done using Tamhane's T2 test.
Results: Although stastistically it was not significant, Bloe Gloe generally showed greater antibacterial activity than the other materials. Transbond XT usually showed the least antibacterial activity. There was a statistically significant difference between Transbond XT and Light Bond in 1 day sample against *S. mutans*. No statistical significant differences were found among the other groups ($p > 0.05$).
Conclusions: Bloe gloo possessed the most potent antibacterial activity.

FC094

Surgical Assisted Rapid Maxillary Expansion-Case Report

Mergime Prekazi Loxha[1], Albena Reshitaj[2], Florije Asllani[3], Osman Sejfija[1], Fellanza Gjinolli[1], Sami Salihu[1], Zana Agani[4], Aida Rexhepi[5], Vjosa Hamiti[4]
[1]*Department of Maxillofacial Surgery, Clinical University Center of Kosova, Prishtina,* [2]*Department of Orthodontics, Clinical Dentistry University Center of Kosova, Prishtina,* [3]*Department of Prosthetic Dentistry, Clinical Dentistry University Center of Kosova, Prishtina,* [4]*Department of Oral Surgery, Clinical Dentistry University Center of Kosova, Prishtina,* [5]*Department of Pediatric Dentistry, Clinical Dentistry University Center of Kosova, Prishtina*

Background: Transverse maxillary hypoplasia is frequently seen in adolescents and adults patients. The treatment we did was Surgical Assisted Rapid Maxillary Expansion (SARME) a combination of orthodontics and surgical procedures using modified acrylic bonded rapid maxillary expander appliance.
Subject and method: Female 32 year old with bimaxillar retrognathy, dominant narrow arch, missing teeth in both of jaws came to our Department never treated before with orthodontic appliances. Clinical anthropometric, morphometric and roentgenologic methods were used. Pre-surgical orthodontic treatment was carried out by modeling of the transverse relationship and levelling of the dental arches. We did surgical assisted rapid maxillary expansion, Fort I osteotomy combined with saggital osteotomy of maxilla. The RME appliance was cemented using glass ionomer cement and fixed in palatum with mini screw. The appliance was activated one-quarter turn twice a day during the expansion period. When the required expansion was achieved, the screw of RME appliance was locked and appliance was used as a retainer for 3 months. Orthodontic treatment continued again after the retention period. After that was started with prosthesis treatment in the Department of Prosthetic Dentistry. Six months after SARME we have done Le Fort I osteotomy and genioplasty.
Results: After 3 weeks of surgery the distance between central maxillary incisors were: 11 mm. Satisfactory aesthetic and functional results were achieved by combined orthodontic-surgery and prosthesis treatment.
Conclusion: In our practice modified acrylic bonded rapid maxillary expansion appliance in SARME was effective and inexpensive for patients with maxillary transversal deficiency.

Free Communication Session 16 | B360 | 28.08.2013 | 15:30–16:30

Theme: Dental Treatment and Restorative Dentistry: Endodontics

FC095

Endodontic Articles Published in Pubmed-Indexed Journals from Turkey

Emel Uzunoglu, Melahat Gorduysus
Department of Endodontics, Faculty of Dentistry, Hacettepe University, Ankara, Tukey

Aim: The aim of this survey was to illustrate statistical information about endodontic research published in PubMed index journals from the different universities of Turkey.
Materials and methods: A PubMed search was performed to retrieve the endodontic publications of authors affiliated to different universities of Turkey. Abstracts were reviewed and unrelated articles were omitted. Citation of each article was obtained from Web of Science. Data were extracted and transferred to Microsoft excel to determine the related scintometric indicators.
Results: A total of 1044 papers were found according to the defined criteria which shows considerable increase from one paper in 1953 to 103 in 2012. 79.31% of the articles printed in journals that presented in Science Citation Index expanded dental journal's list. Most of the articles printed in Journal of Endodontics (17.59%), followed by Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology, and Endodontology (11.47%). Most of the endodontic articles originated from the Ege University (15, 82%). Majority of endodontic articles (31%) were written by four Turkish authors. Thirteen percent of the articles were written by authors from different Turkish universities and only 9% of the papers were written with foreign researchers from different countries. The most cited Turkish article was written in 1995 and cited 100 times until December 2012.
Conclusion: Endodontic publication from different universities in Turkey has considerably increased, showing that research is becoming more important.

FC096

Effect of Radiotherapy on the Sealing Ability of Obturating Materials

Aseem Prakash Tikku, Monika Khangwal
King George's Medical University, Lucknow, India

Aim: It is a known fact that radiotherapy, an important treatment modality for cancer patients, effects dental hard tissues at the same time. However, the effect of radiotherapy on the sealing ability of root canal obturating materials is not yet established. This in-vitro SEM study was carried out with the aim to assess the influence of radiotherapy on the sealing ability of three different obturating materials.
Method: Freshly extracted human maxillary anterior teeth were selected and decoronated before being randomly divided into two main groups, depending on the presence or absence of irradiation. Both the groups were divided into three subgroups on the basis of different root canal obturating materials used (REAL-SEAL, BEEFILL2IN1 and GUTTA PERCHA without sealer). For the groups that received irradiation, a dose of 60 gray was delivered in fractions of 1.8 Gray per day, 5 days a week for 7 weeks. The specimens were then analyzed by SEM for marginal gap width and the images obtained were recorded and evaluated using Orion 6.604 software. All analyses were performed on Statistica software using Tukey's post hoc test.
Results: In all the specimens receiving radiotherapy, mean marginal gap width was slightly higher when compared to those without irradiation, but was not statistically significant, except in case of the obturating material Resilon
Conclusion: Radiotherapy significantly effects the sealing ability resilon.

FC097

Effect of Zoledronate Therapy on Bone Loss in Experimental Periapical Lesions in Rats

Manuel Marques Ferreira, Ana Margarida Abrantes, Hugo Diogo Ferreira, Siri Vicente Paulo, Lina Carvalho, Eunice Virgínia Carrilho, Maria Filomena Botelho
Faculty of Medicine, University of Coimbra, Coimbra, Portugal

Aim: Osteonecrosis of the jaw is associated with bisphosphonates use in patients treated with intravenous doses for the prevention of bony metastases. The aim of the research was to evaluate the impact of zoledronate (ZOL) therapy on bone loss resulting from experimental periapical lesions in rats, using gamma camera to quantify the radioactivity of 99mTc-HMDP.
Methodology: After three doses of Zol injected subcutaneous weekly (0.07 mg/kg), in wistar rats, periapical lesions were induced in the first lower left molar. After 2, and 4 weeks the animals were euthanized. Before euthanized the animals were injected with 30–40 MBq of 99mTc-hydroxylmethylene diphosphonate (99mTc-HMDP) and performed a scintigraphic acquisition 3 h later. After euthanized, the mandible was removed and radiopharmaceutical uptake was calculated. The absorption of the radiopharmaceutical was evaluated and analyzed using the Mann–Whitney test ($p = 0.05$).
Results: The results showed no statistically significant difference found in the absorption of the 99mTc-HMDP, between the groups.
Conclusions: This study demonstrated that there was no difference between the two groups in terms of the bone periapical destruction in rats taking Zol. Besides that it is possible to conclude that 99mTc-HMDP is a reliable method to assess the apical periodontitis.

FC098

Effectiveness of Irrigation Activation Protocols on Smear Layer and Debris Removal

İsmail Davut Çapar[1], Hale Arı Aydınbelge[2]
[1]*Department of Endodontics, Faculty of Dentistry, Katip çelebi University, İzmir, Turkey,* [2]*Department of Endodontics, Faculty of Dentistry, Selçuk University, Konya, Turkey*

Aim: The purpose of this in-vitro study was to compare cleaning efficacy of different irrigation activation protocols (Syringe irriga-

tion with needles, NaviTip FX, Manual dynamic irrigation, Canal-Brush, EndoActivator, EndoVac, Passive Ultrasonic irrigation and Self-Adjusting File system) on smear layer and debris.
Methodology: Ninety-six lateral incisor teeth were sectioned at or below the cementoenamel junction and were randomly divided into eight experimental groups (n = 12). Root canals were prepared using ProTaper rotary files, with the exception of the Self-Adjusting File (SAF) group. Canals were irrigated with 2 ml of 5% sodium hypochlorite (NaOCl) at each instrument change, and received a final flush with 10 ml of 17% EDTA and 10 ml of 5% NaOCl for 1 min. The surface of root dentin was observed using a scanning electron microscope. Statistical analyses of the data were performed using Kruskal–Wallis and Bonferroni adjusted Mann–Whitney *U*-tests ($p < 0.05$).
Results: This in-vitro study showed that; the use of EndoActivator, EndoVac, Ultrasonic and SAF systems increased efficacy of smear layer and debris removal, and furthermore manual dynamic activation increased efficacy of debris removal.
Conclusions: Neither technique completely removed smear layer from the root canal walls. However irrigation activation protocols (especially sonic, ultrasonic, apical negative pressure and continuous irrigation during instrumentation) increased the cleaning efficacy of root canal debridement in comparison with syringe irrigation.

FC099
Microirricodontics
Anuj Bhardwaj, Amit Bhardwaj, Amit Kumar Garg
Modern Dental College & Research Centre, Indore, India

Aim: Endodontists have always taken pride in saying that they can do much of their work blindfolded simply because there is "nothing to see." The truth is always sour, that there is a great deal to see with the right tools. In the past decade, there has been an innumerous development of new technologies, instruments, and materials. These developments have improved the precision with which endodontic treatment are performed. These advances have enabled clinicians to complete procedures that were once considered impossible or that could be performed only by talented or lucky clinicians.

But the credit goes to the introduction and adoption of the Cone beam computed tomography (CBCT), Dental operating microscope (DOM) and irrigation devices, which has revolutionized how endodontics is practiced worldwide.

Until recently, endodontic therapy was performed using tactile sensitivity, and the only way to see inside the root canal system was to take a radiograph.

Before the CBCT and DOM, the presence of a problem (ledge, perforation, blockage, retreatment, broken instrument) was only "felt," and the clinical management of the problem was never predictable and depended on happenstance. Most endodontic procedures occurred in a visual void, which placed a premium on the doctor's tactile dexterity, mental imaging, and perseverance.
Conclusions: This presentation provides basic information on how a CBCT, DOM along with irrigation devices are used in clinical endodontic practice to make endodontics more of seeing rather than just feeling.

POSTERS SESSION 01 (P001–P209)

Theme: Dental Treatment & Restorative Dentistry: Caries

P001
Restoration of Non-Caries Cervical Lesion in the First Maxillary Premolar
Xiao Xu
Department of Oral VIP, Shanghai Second Medical University, Shanghai, China

Purpose: To investigate the factors such as cavity depth, shape restoration material and occlusal adjustment which had influences on the restoration of non-carious cervical lesion (NCCL) in the first maxillary premolar.
Methods: 3-D finite element models of adult first maxillary premolars which had cavities of different depths and shapes in buccal cervical region were built. The models were restored and divided into three groups: glass ion cement (GIC). amalgam and composite resin. We evaluated stress profiles and distribution in normal occlusions and malocclusion were evaluated from vertical and lateral loading.
Results: In normal occlusion, there was mainly tensile stress and umform distribution on buccal cervial margin. compressive stress appeared when approaching to tooth root. in malocclusion. there was mainly greater concentrated tensile stress on buccal cervical margin with vertical loading. The results showed that interface stress values of GIC and composite resin model were smaller than amalgam, the latter was 3–9 times greater than the former two.
Conclusion: For smaller cavity depth. cavity shape is not the primary factor affecting treatments of NCCL. But the rectangular cavity isn't suitable for larger defects. There is positive correlation between stress values of restoration and cavity depth. Supported by Research Fund of Science and Technology.

P002
Lactotransferrin Gene Polymorphism in Children with Dental Caries
Michaela Volckova[1], Petra Borilova Linhartova[2], Tereza Trefna[3], Jan Vlazny[3], Kristina Musilova[1], Martina Kukletova[1], Lubomir Kukla[4], Lydie Izakovicova Holla[1]
[1]*Clinic of Stomatology, Institutions Shared with St. Anne's Faculty Hospital, Faculty of Medicine, Masaryk University, Brno, Czech Republic,* [2]*Department of Pathophysiology, Faculty of Medicine, Masaryk University, Brno, Czech Republic,* [3]*Faculty of Medicine, Masaryk University, Brno, Czech Republic,* [4]*Department of Social Medicine and Health Care Administration, Faculty of Medicine, Masaryk University, Brno, Czech Republic*

Aim: The aim of this study was to determine the association between lactotransferrin (LTF) gene polymorphism and dental caries.
Materials and methods: Unrelated 13-years-old to 15-years-old children (n = 637) were enrolled into the study. They were divided

into two groups: caries free (DMFT = 0) and caries affected (DMFT ≥ 1). The LTF rs1126478 (140A/G exon 2, Lys/Arg) genotypes were determined by polymerase-chain reaction (PCR) with restriction analysis by EarI enzyme.
Results: There were no statistically significant differences between caries experience and allele or genotype distributions of the LTF rs1126478 variant in the total cohort. When the caries affected group (N = 482) was stratified according severity: low (DMFT = 1), moderate (2 ≤ DMFT ≥ 3), and high (DMFT ≥ 4) caries experience, allele and genotype frequencies were not significantly different.
Conclusions: Lactotransferrin 140A/G (exon 2, Lys/Arg) variant was not associated with dental caries susceptibility or severity in the Czech children.

P003
Subgingival Class V Composite Restorations using Miniflap Technique
Youn Hee Cho, Moon Hwan Lee, Kyung Mi Son, Jung Hong Ha, Young Kyung Kim, Sung Kyo Kim, Myoung Uk Jin
Department of Conservative Dentistry, School of Dentistry, Kyungpook National University, Daegu, Korea

Introduction: When cervical lesions occur supragingivally, access to the area for preparation and restoration is often easily obtained. But if the lesion has progressed to or below the free gingival margin, isolation for complete caries removal, tooth preparation, restoration placement, and finishing can be difficult. The use of miniflaps can often provide sufficient access to subgingival lesions. Following cases present subgingival class V resin restorations using miniflap technique.
Case presentation: Case 1
(1) Sex/age: M/45
(2) Chief Complaint: caries on no. 43
(3) Past Dental History: N/S
(4) Present Illness: per (−), pal (−), mob (0), cold (+), EPT (35/64)
(5) Impression: cervical C2 dental caries
(6) Treatment plan: Composite resin restoration through miniflap
Case 2
(1) Sex/age: F/66
(2) Chief Complaint: caries on no. 11
(3) Past Dental History: N/S
(4) Present Illness: per (−), pal (−), mob (0), cold (+), EPT (7/64)
(5) Impression: cervical C2 dental caries
(6) Treatment plan: Composite resin restoration through miniflap
Conclusion: It is essential that the class V caries lesion be exposed, including all demineralized tooth structure in these cases. As shown by these cases, the rubber dam retainer is modified and positioned on the tooth with subsequent placement of the dental dam material over the retainer and tooth. This technique saves time and provides good retraction of the gingival tissue and isolation of the cavity preparation from contamination.

Theme: Dental Treatment & Restorative Dentistry: Endodontics

P004
Evaluation of the Prevalence and Risk Factors of Mucous Retention Cyst
Maryam Ehsani, Farida Abesi, Alireza Mirshekar, Hosein Heidari
Endodontics Department, Faculty of Dentistry of Babol, Babol, Iran

Introduction: Mucous retention cyst (MRC) is a kind of the mucus pseudocyst. MRC of the maxillary sinus are often found incidentally during the evaluation of radiographs. It is detected in panoramic radiography as well defined, not corticated, smooth, dome-shaped radiopaque mass in maxillary sinus. It rarely causes any sign or symptom. The purpose of this study was to determine the prevalence and some associated risk factors of (MRC) in panoramic view in patients referring to the oral and maxillofacial radiology department of Babol dental school during 2011.
Materials and methods: In this cross sectional study, panoramic radiographs of 700 patients referring to oral and maxillofacial radiology department of Babol dental school were examined for detection MRC maxillary sinus for 1 year and MRC prevalence and some associated risk factors such as sex, site of occurrence, seasonal allergy, month and smoking habit were evaluated. The data were statistically analyzed by SPSS software and we used chi-square and *t*-tests. For all of tests the p-value of <0.05 was considered for statistical significance.
Results: Among 700 radiographs sixty-seven MRC was founded and the prevalence of this lesion was % 9.57. Prevalence of MRC was significantly higher among men ($p < 0.05$) and there were no significantly correlation between smoking, family history, seasonal allergy and month with MRC ($p > 0.05$).
Conclusion: The results of this study were similar to previous studies but despite the low incidence of this lesion, practitioners should pay special attention to these lesions in maxillary sinus.

P005
Origin of Fractures and Wear of Ni-Ti Endodontic Files
Metref Zoheir[1], Serradj Sid Ahmed[2], Souabi Ali[2], Guendouz Djamel[2]
[1]Medical University, Oran, Algeria, [2]Endodontics Department, Oran, Algeria

Aim: Endodontics concerns prevention, diagnosis and treatment of pulp diseases and associated periradicular complications.
Material and methods: The principles and the modalities of canal preparation and obturation are presently clearly systematized and accepted by a large number of practitians. Shape Memory Alloys (SMA) and in particular Nitinol, open new perspectives. Nikel-titanium instruments have become an indispensable complement to traditional instrumentation in cleaning and shaping steps of canal system.
Conclusion: They allow a respect of canal anatomy, dentin and pulp debris removal toward coronal access, regular preparation and better adaptation of the main cone. However, these innovative technologies must not overshadow certain major disadvantages

and their consequences such as difficulty in fabrication and ease of breakage of SMA.

P006

An Evaluation of the Apical Seal in Oval-Shaped Root Canals

Dilek Helvacioglu Yigit[1], Hasan Orucoglu[2], Tevfik Yavuz[3], Cavit Isik Yavuz[4], Ayca Simsek[5], Yusuf Nuri Kaba[1], Samet Ozden[1]
[1]*Department of Endodontics, Kocaeli University, Kocaeli, Turkey,* [2]*Department of Endodontics, Abant Izzet Baysal University, Bolu, Turkey,* [3]*Department of Prostodontics, Selcuk University, Konya, Turkey,* [4]*Department of Public Health, Kocaeli University, Kocaeli, Turkey,* [5]*Department of Endodontics, Istanbul University, Istanbul, Turkey*

Aim: The purpose of the present study was to evaluate the apical seal obtained with lateral compaction of gutta-percha in oval-shaped root canals prepared with either self-adjusting files or Protaper rotary files.
Material and methods: Twelve pairs of extracted mandibular premolars with oval-shaped root canals were randomly divided into two groups. The first group was biomechanically prepared with Protaper files, while the self-adjusting file system was used in the second group. The roots were obturated using cold lateral compaction of gutta-percha. Apical microleakage was measured with the computerized fluid filtration method. The results were analyzed statistically using the Mann–Whitney *U*-test.
Results: All of the roots in both groups showed leakage. Group 1 demonstrated significantly less microleakage ($p < 0.05$). Instrumentation of oval-shaped canals using a self-adjusting file system with cold lateral compaction of gutta-percha demonstrated significantly greater apical microleakage when compared to Protaper.

P007

A Rapid Molecular Method for Detection and Identification of a New Candidate Endodontic Pathogen

Saengusa Khemaleelakul[1], Prakaimuk Saraithong[2]
[1]*Department of Restorative Dentistry, Chiang Mai University, Chiang Mai, Thailand,* [2]*Dental Research Center, Faculty of Dentistry, Chiang Mai University, Thailand*

Aim: Cultivation of endodontic anaerobic pathogens has several significant limitations, including time-consuming process, inability to detect fastidious and as-yet-uncultivated bacteria, and misidentification of species with aberrant phenotypic behaviors. The purpose of this study was to develop a rapid and reliable method for detection and identification of *Prevotella baroniae*, a new candidate endodontic anaerobic pathogen.
Materials and methods: A pair of specific primers was designed from the sequences of 16S rRNA genes of *P. baroniae*. The primers were tested with genomic DNAs of various oral bacteria by polymerase chain reactions (PCR) under an optimized condition. The amplified products were analyzed by agarose gel electrophoresis followed by SYBR® Safe DNA gel staining.
Results: It was found that, the primers were very specific for *P. baroniae*. The sensitivity of the PCR was 0.75 pg/μl. The specific fragment of approximately 848-bp could only be amplified from a standard strain and clinical strains of *P. baroniae*, but not from other bacteria. Digestion of the amplified products with a restriction enzyme; EcoRV, generated a specific pattern when separated by gel electrophoresis.
Conclusion: Our results show that the assay is very effective for rapid detection and reliable identification of *P. baroniae*.

P008

Antimicrobial Action of a Chinese Medicine Extract on *E. faecalis* Biofilm

Afzan Adilah Binti Ayoub[1], Gary Shun Pan Cheung[2]
[1]*Centre of Studies for Restorative Dentistry, Faculty of Dentistry, Universiti Teknologi MARA, Shah Alam, Selangor, Malaysia,* [2]*Comprehensive Dental Care, Faculty of Dentistry, University of Hong Kong, Hong Kong*

Aim: To investigate the effectiveness of various irrigants and an aqueous extract of Fructus mume in combating *E. faecalis* biofilm.
Methods: A mono-species biofilm of *E. faecalis* was cultivated for 3 days on Thermanox™ plates. Each biofilm specimen was subjected to 10 s of immersion in different irrigants: Fructus mume solution, citric acid, sodium hypochlorite or sterile saline. The amount of viable bacteria remaining on the substrate was quantified by LIVE/DEAD® BacLight™ staining and confocal light scanning microscopy (CLSM). Then, the same biofilm was retrieved and processed for scanning electron microscopy (SEM).
Results: Images were obtained from 12 sites throughout the biofilm, which were grouped into four regions of concern: Bottom where it would be immersed in the solution for most of the duration of the experiment; Centre where it was struck by the stream of irrigant; Middle and Upper where the effect was due to splashing or vapour of the irrigant. Results of the amount of viable bacteria residual indicated that Fructus mume showed no significant activity, with an effect similar to physiological saline or citric acid, and significantly inferior to sodium hypochlorite.
Conclusion: Sodium hypochlorite (0.5%) solution was superior to citric acid, Fructus mume and physiological saline as an antimicrobial agent against *E. faecalis* biofilm.

P009

Periapical Status in an Algerian and French Population

Oudghiri Fouad[1], Lasfargues Jean Jacques[2], Serradj Sid Ahmed[3]
[1]*Fouad Oudghiri,* [2]*Jean Jacques Lasfargues,* [3]*Sid Ahmed Serradj*

Aim: The prevalence of apical periodontitis and the quality of root fillings and restorations were determined in an Algerian and French population.
Material and methods: Full-mouth periapical radiographs of 507 French and 216 Algerian adult patients were examined. The occurrence and technical quality of root fillings were assessed for each root according to the position and the density of the obturation. The périapical status was evaluated using the Periapical Index Scoring System.

Results: The frequency of apical periodontitis in ours Algerien and French sample is respectly 7.33% and 5.23%. It is above the averages of the other studies (5.2%) indicating values between 0.6% and 9.8%.

The prevalence of the apical periodontitis in our Algerian sample is more alarming, where 84.26% of the patients develop an apical periodontitis. This result is the highest off all the previous studies (59.7–68.3%). This risk is important, which places the apical periodontitis in the forefront in the epidemiologic scale of infectious disease and constitutes a real problem to public health.

The radiographic quality of endodontic treatments for our Algerian sample is incorrect for 88% and 64.2% for our French sample. The risk of seeing an apical periodontitis develop is significantly higher with inadequate treatment than for teeth with an adequate filling.

Conclusion: Our epidemiologic results revealed a strong correlation between the bad quality of endodontic procedures and the prevalence of apical periodontitis. The improvement of the quality of endodontic treatment using efficient technical is a great necessity to the public health.

P010

Biological Evaluation of Ca(OH)2 *Psidium cattleianum* Plant Extracts Associated with and Calcium Hydroxide

Eloi Dezan Junior, Diego Valentim, Loiane Massunari, Joao Eduardo Gomes Filho, Aguinaldo Candido Da Silva Facundo, Camilla Pires Bruno, Gustavo Arcos Lopes, Luciano Tavares Angelo Cintra

UNESP – Univ EST Paulista School of Dentstry

Objectives: Leaf extracts of araça (*Psidium cattleianum*) exhibit biocompatibility and inhibitory activity against oral microorganisms. Association of this hydroalcoholic extract to Ca(OH)2 imbibed *E. faecalis* in 24 h wile Ca(OH)2 associated with propyleneglycol extract and distilled water needed 7–14 days. Evaluation of biological immediate and late response of calcium hydroxide pastes associated to ethanolic and watery solutions prepared with vegetable extract of araça compared with CH and distilled water.

Material and methods: For the edemogenic analysis (immediate reaction), we used 18 male mice. Under general anesthesia, the animals received intravenous injection of 1% Evans blue. Thirty minutes later, it was injected 0.1 ml of one of the pastes, on the dorsal under skin region of the animal. The animals were euthanatized after 3 and 6 h and the obtained material were put in formamide for 72 h for spectrophotometer. For the morphological analysis, 30 mice received polyethylene implant with the pastes extracts or saline on dorsal region. Analysis were after 7, 28, 60 and 90 days for the thickness evaluation of the fiber capsule and counting of the damaged cells, that quantified the damaged infiltrate.

Results: The associations of calcium hydroxide with hydroalcoholic extract of *Psidium cattleianum* and in propyleneglycol extract presented similar results to calcium hydroxide and distilled water.

Conclusion: Association of calcium hydroxide to *Psidium cattleianum* extracts are biocompatible.

P011

In Vitro Comparative Study Between a Manuel System Hand Files, and Rotary Intrumentation (R-ENDO) for Endodontic Retreatment

Guendouz Djamel, Serradj Sid Ahmed

Department of Conservative Dentistery and Endodontics, Oran City, Algeria

Aim: When root canal treatment fails, treatment options include conventionnel retreatment, periraducular surgery, or extraction.

Retraitment should be considered the first choice because it is the most conservative method to resolve the problem.

Actually, root canal preparation with rotary NiTi instruments has becaume popular, these instruments were proposed as alternatives to manuel instrumentation for the removalof filling materials from root canals.

The aim of this study is to compare, in vitro, between two system of endodontic retreatment: one manuel using manuel files (handstrom files) with a step-back procedure, and the second using a rotary intrumentation with R-Endo.

Materials and methods: In this present study, 20 teeth were randomly divided for retreatment inti two groups of 10 teeth each one:

Groupe1 with manuel files and step-back procedure in sizes 20.25.30.35.40 oh handestrom files.

Groupe2 with R-endo system retreatment using a NiTi instrumentation were used with an inget type contra-angle handpiece at low 300 rpm.

Results: Group 1 for the 10 teeth endodontically taken only eight of these have been restated to be a time in the laboratory for about 1 h each tooth, whereas for group 2 the practice of re-treatment was easier. Radilogiques of criteria that distinguished endodontic retreatment manual shown leftover pasta or cones of gutta percha in the root canal up to 85% for group 1, whereas in group 2 only 5% showed visible in the X-ray control.

Conclusion: Endodontic retreatment with the R-endo system is faster clinically simpler, more effective than manual.

P012

Evaluation of the Effect of Nanosilver Suspension on Antimicrobial Activity of MTA and CEM

Maryam Javidi[1], Pedram Javidi[2], Babak Javidi[3]

[1]*Department of Endodontics, Dental School, Mashhad, Iran,*
[2]*Department of Orthodontics, Dental School, Ahwaz, Iran,*
[3]*Department of Maxillofacial Surgery, Dental School, Ahwaz, Iran*

Aim: The ideal root-end filling material seals the contents of the root canal system within the canal should be not only have good physical properyties nonresorbable, biocompatible and but also have good antimicrobial activity against microorganisms.

The aim of this study was to evaluate the antimicrobial activity of MTA and CEM mixed with nano silver suspension.

Materials and methods: Cements used in this study included ProRootMTA and CEM and the microorganisms were *Entrococcus faecalis*, *Streptococcus muntas*, *Candida albicans*, *Actinomyces*,

Escherichia coli and mixture of these microorganisms. Nano silver suspension was used.

Contact dilution and colony count method was used to evaluate the antibacterial activity of these cements. Cements mixed with liquid or two concentrations of nano silver suspension were placed into the sterile microtubes. Then the standard suspension (0/5 McFarland) of each microorganism was added to each microtube. Colonies were counted after After 0, 24, 48, 72 and 96 h intervals incubation at 35°.

Results: The result showed that MTA and CEM had antibacterial activitises on all microorganisms strains except for *Enterococcus faecalis* and mixture group. MTA had better antibacterial activity than CEM but this difference was not significant. The combination nano siver suspension with two cements resulted into higher antimicrobial activities.

Conclusion: Mixture of MTA and CEM with different concentration of nano silver suspension significantly increased the antibacterial activity.

P013

Unintentional Extrusion of MTA in Treatment of Immature Tooth

Çiğdem Çetin Canbazoğlu, Bahar Özçelik
Department of Endodontics, Hacettepe University, Ankara, Turkey

Introduction: Obturation of nonvital permanent teeth with immature apices can be performed using an apical barrier material. Mineral trioxide aggregate (MTA) is a well-known root-end closure material for non-surgical management of wide open apices. However, it is difficult to avoid extrusion of MTA into periradicular tissues. This case report presents the healing after unintentionally extrusion of MTA into periradicular lesions.

Methods: Thirteen year-old male patient was referred for root canal treatment. The patient had no trauma history that he remembered. Clinical examination revealed that maxillary left lateral incisor was asymptomatic and had normal mobility and no sinus tract was present. Radiographic examination demonstrated an open apex and radyolucency at the periradicular area of the maxillary left lateral incisor. The tooth was not responsitive to the sensitivity tests. It was decided to perform root canal treatment by an apical barrier technique. MTA has chosen as barrier material. After instrumentation and irrigation procedures, the apical third of the canal was obturated with MTA. The remaining canal space was filled with warm vertical gutta percha using Obtura ll. During the placement of MTA, material was inadvertently extruded beyond the apex. The patient was recalled 3, 6 and 12 months after the treatment.

Results: The clinical and radiological follow-up revealed that the tooth was asymptomatic and repair of the lesion was achieved without endodontic surgery.

P014

Effect of Gutta-percha with Calciobiotic sealer vs. Resilon with Epiphany Sealer on Healing of Periapical Tissues

Amira Samir Salem[1], Sybel Mokhtar Moussa[1], Nehal Adel Leheta[1], Nesreen Fathy Hanafy[2]
[1]Department of Conservative Dentistry, Faculty of Dentistry, Alexandria University, Alexandria, Egypt, [2]Department of Medical Microbiology, Faculty of Medicine, Alexandria University, Alexandria, Egypt

The present study was designed to compare clinically and radiographically the effect of two root canal filling materials "Gutta-percha with Calciobiotic sealer vs. Resilon with Epiphany sealer" on healing of periapical tissues.

Materials and methods: Thirty single rooted teeth from 21 patients were selected, with their ages ranged from 20 to 40 years. The selected teeth had necrotic pulp with varying degree of periapical inflammation. The teeth were divided into two groups of 15 teeth each. Teeth of group I were filled with Gutta-percha points and Calciobiotic sealer, while teeth of group II were filled with Resilon points and Epiphany dual curing resin sealer and Epiphany self etching primer. Obturation was performed after obtaining negative bacteriological culture from the canals. Clinical and radiographical evaluation was conducted immediately after treatment and after 3, 6, 9 and 12 month postoperatively. Evaluation was carried out using the periapical index scoring system (PAI). Readings were collected and subjected to statistical analysis.

Results: Although no statistical significant difference was reported between the two materials, Statistical analysis of the results showed that teeth treated with Resilon had a higher healing rate (83.3%) compared to those treated with Gutta-percha (60%) after 12 months, while Gutta-percha had a higher improvement rate (40%) compared to Resilon (16.7%).

Conclusion: Resilon acted clinically as gutta-percha and could be used successfully as a root canal filling material.

P015

Contribution of Passive Ultrasonic Irrigation and Nd: YAP Laser in Reducing the Bacterial Flora Root Canal

Najah Nawel Farah
Faculty of Dental Surgery, Constantine, Algeria

Objective: The purpose of the study is to demonstrate the ability of the PUI and the laser used to eradicate final irrigation canal endodontic flora compared to conventional irrigation

Materials and methods: A total of 126 teeth gangrene, monoradicular, freshly extracted were sectioned at DEJ.

One for each tooth bacteriological sampling was performed before treatment and then the teeth were endodontically treated with hand instruments steel.

Results: Forty-seven percent eradication of endodontic flora with conventional irrigation, 93% with 100% and PUI with LASER.

The teeth were then randomly divided into three groups of 42 teeth each:

(1) The first group served as control received at the end of treatment a conventional irrigation with sodium hypochlorite 2.5%

(2) The 2nd group received treatment at the end of passive ultrasonic irrigation for one minute

(3) The 3rd group was treated at the end of preparation with the Nd: YAP laser
(4) At the end of treatment a second bacteriological sampling was done immediately for each tooth.
(5) Bacteriological analysis was performed according to the standards of Microbiology

P016

Contribution of the Continuous Rotation and the EDTA in the Infection Control Ductal

Ghodbane Nadia, Najah Nawel Farah
Faculty of Dental Medicine, Constantine, Algeria

Objective: The objective of the study to compare the efficacy and rotary instruments associated with the use of EDTA during the preparation to eradicate flora endodontic hand instruments compared to steel
Materials and methods: The study was conducted in vitro, gangrene teeth, freshly extracted single rooted.

All teeth were thoroughly cleaned and sectioned at the crown.

On each tooth, a bacteriological sampling was performed before and after root canal treatment using sterile paper points and analyzed according to standard microbiological

The study was performed on a total of 84 teeth randomly divided into four groups as follows:

(1) The first group was prepared manually with steel instruments and received sodium hypochlorite 2.5% as irrigating
(2) The 2nd group was prepared manually with steel instruments and received sodium hypochlorite 2.5% associated with 17% EDTA as irrigant
(3) The 3rd group was prepared with rotary instruments Hero Shaper and received sodium hypochlorite 2.5% as irrigating
(4) The 4th group was prepared with rotary instruments Hero Shaper and received sodium hypochlorite 2.5% associated with 17% EDTA as irrigant
Results: Twenty-three percent eradication of germs to the teeth of the first group, 56% in the 2nd group, 47% for the 3rd group and 68% for the 4th group.

P017

Antimicrobial Efficacy of Gaseous Ozone in Infected Root Canals. In Vivo Study

Nexhmije Ajeti[1], Sonia Apostolska[2], Blerim Kamberi[1], Tringa Kelmendi[1], Violeta Vula[1], Edmond Dragusha[1]
[1]*Department of Dental Pathology and Endodontics, University of Prishtina, Kosova,* [2]*Department of Dental Pathology and Endodontics, Unversity of Skopje, Macedonia*

Aim: To determine antimicrobial efficacy of gaseous ozone in infected root canals combination with 2.5% NaOCl, 2% CHX and 0.9% NaCl.
Materials and methods: This in vivo study includes 30 male/female. The samples groups were divided into two test group. Treatment protocol was as follows: Group 1(test) was irrigated with 2.5% NaOCl + gaseous O3 (Prozone, WH Austria) 18" and 24", Group 2(test) was irrigated with 2.5% CHX + gaseous O3 18" and 24" and group 3(control) was irrigated with 2% NaCl + gaseous O3, 18" and 24". All of the treat teeth bacterial samples were taken as the per following protocol: sample 1 (D1) at the baseline (no irrigation), sample 2 (D2) after first 18" exposure to gaseous O3, sample 3 (D3) after second 24" exposure to gaseous O3, and sample 4 (D4) 3 days after treatment. Cultivable bacteria recovered from root canals were counted. Data were analyzed by One Way ANOVA and Kruskal–Wallis test.
Results: There was significant ($p < 0.05$) reduction of aerobic bacteria in second group (2% CHX) at D4.
Conclusion: None of these combinations yielded bacteria free canals. Group 2 (2% CHX) at D4 showed better efficacy toward aerobic/anaerobic bacteria.

P018

Determination of Effects of Propolis in Root Canal Disinfection as an Intracanal Medicament: A Clinical Study

Ülkü Özan[1], Kürşat Er[2], Fatih Özan[3], Elif Aybala Oktay[4], Hasan Oruçoğlu[1], Hüseyin Tort[4]
[1]*Department of Endodontics, Faculty of Dentistry, Abant Izzet Baysal University, Bolu, Turkey,* [2]*Department of Endodontics, Faculty of Dentistry, Akdeniz University, Bolu, Turkey,* [3]*Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, Abant Izzet Baysal University, Bolu, Turkey,* [4]*Department of Dental Sciences, Gülhane Military Medical Academy, Ankara, Turkey*

Aim: The purpose of this study was to determine the effects of propolis in root canal disinfection as an intracanal medicament.
Materials and methods: Nineteen patients presenting as emergencies to our clinic were included in the study. Inclusion was limited to patients with a diagnosis of pulp necrosis and obvious periapical radiolucency. All teeth underwent conventional root canal treatment, which involved the instrumentation to the apices of each canal at the first visit. After 1 week, powder propolis was instructed to root canals with glycerin, and procedure was finished by temporary filling material. Propolis was removed after 3 weeks and root canal treatment was finished with gutta-percha and permanent filling material. Healing was controlled by radiographically and clinically for each month.
Results: After 1 year follow-up only two patients failed and apical resection was choosed as a treatment modality. Seventeen patients have no either clinically or radiographically symptom after 1 year follow-up period.
Conclusion: According to these results propolis would be used as an intracanal medicament, but this study must be confirmed by more studies and under different clinical conditions.

P019

Comparison of the Antimicrobial Effects of Various Root Canal Medicaments on Microorganism (An In Vitro Study)

Ezel Bayar Yılmaz[1], Selmin Kaan Aşçı[2]
[1]*Department of Endodontist, Istanbul, Turkey,* [2]*Department of Endodontics, Istanbul University, Istanbul, Turkey*

Aim: The antimicrobial effects of the various root canal medicaments on *C. albicans* and *E. faecalis* were examined following 3- and 7-day periods.
Materials and methods: Two hundred-seventy single rooted, single canal human incisors and premolars were used for the study. Mechanically shaped root canals were embedded into the acrylic blocks and sterilized in an autoclave. The samples were divided into two groups. Half of the samples were inoculated with *C. albicans* (ATCC10231-Group A) and the other half with *E. faecalis* (ATCC29212-GroupB) for 48 h duration. The infected teeth in each group were further divided into subgroups (n:15) and medicated with (i) saline/calcium hydroxide mixture, (ii) 1.5% chlorhexidine gel (iii) 2% liquid chlorhexidine/calcium hydroxide mixture. Saline treatment was used as the positive control group (n:15). Fifteen teeth were kept in the incubator served as the negative control group. At the end of the 3rd and 7th days, samples collected from the root canals with paper points were suspended and transferred into petri dishes. After 24-h incubation, the colony counts were performed and evaluated statistically (ANOVA test).
Results: According to the findings, 2% chlorhexidine gel showed the most efficient antimicrobial activity against *C. albicans* in 3- and 7- day periods. This is followed by 2% liquid chlorhexidine/calcium hydroxide mixture and then saline/calcium hydroxide mixture. Two percent liquid chlorhexidine/calcium hydroxide mixture showed the most efficient antimicrobial activity against *E. faecalis*, which was followed by calcium hydroxide and chlorhexidine gel.

P020

Evaluation of NiTi Rotary System and Hand Files on Young Permanent Teeth by Using Micro-Computed Tomography

Hilal Sillelioğlu, Ayşegül Ölmez
Department of Paediatric Dentistry, Gazi University, Ankara, Turkey

Aim: Several studies show that the success and reliability had proven of the NiTi rotary systems used in the root canal treatment. However, there isn't enough information to use in young permanent teeth. The purpose of this study is to evaluate the shaping properties of NiTi Rotary systems and hand files on young permanent teeth per root canal volume changes, unprepared surface area, and deviations occurred at the centerline of the canal by using micro-computed tomography (μCT).
Material and methods: In the study, 30 second molar teeth that were extracted from patients 15–18 years old were used. (i) Group-NiTi hand files: was prepared with the conventional step-back technique (2.25% NaOCl). (ii) Group-NiTi rotary system: was prepared with crown-down technique (lubricant gel, 2.25% NaOCl). Before and after root canal preparation, the root canal volume changes, the percentage differences between these volumes, the ratio of unprepared surface areas to the total surface areas, and amount of canals deviation from the center line were evaluated with the recorded μCT data and analyzed statistically.
Results: As a result, the canal volume differences and percentage increase in volume, before and after preparation was statistically significant ($p < 0.05$) among all canals in both groups. When an evaluation was made between Ni-Ti hand files group, and Ni-Ti rotary system group, and also within groups, the root canal volume changes, the percentage differences between these volumes, unprepared surface area ratio to the total surface, and deviation of root canal from the center line had statistically no significant differences ($p > 0.05$).

P021

In Vitro Evaluation of the Effects of Different Power Parameters of KTP Laser on Smear Layer and Temperature Change

Dilara Arslan[1], Alper Kuştarcı[2]
[1]*Department of Endodontics, Bezmialem Vakıf University, Istanbul, Turkey,* [2]*Deparment of Endodontics, Akdeniz Universtity, Antalya, Turkey*

Objective: The purpose of this study is in vitro evaluation of the effects of KTP laser applied to root canals at different power parametres on the smear layer and the temperature changes.
Material and methods: Two hundred four single-rooted mandibular premolars teeth, 85 for evaluate temperature changes and 119 for smear layer, were employed. All of the root canals were prepared at 1 mm short of the apical foramen by a conventional technique using K-files by the step-back technique. The temperature rise was evaluated using an infrared thermographic camera during different power parameters (1W, 1.5W, 2W, 3W, 4W Ton: 10 ms, Toff: 50 ms, repeated mode) KTP laser irradiation. Roots bisected longitudinally and SEM evaluations were made with ×1000 magnifications. Data were analyzed statistically using Kruskal–Wallis and Tukey's tests.
Results: In all areas, the difference between the group where 17% EDTA was used and all other groups were significant while in apical 1/3 area the difference between the group where 2.5% NaOCl group was used and 4 W KTP laser groups was significant and in the middle 1/3 area the difference between, with 1.5 W KTP laser group and KTP laser group 1.5 W KTP laser group and the group where 2.5% NaOCl group was used was found significant ($p < 0.05$). Increase in temperature values in all groups were found to be below 10° cantigrade in 20 s.

P022

Effect of Diode Laser on Antibacterial Activity of Natural Irrigation in Contaminated Root Canals (In Vitro)

Behzad Salari[1], Mohammad Ali Saghiri[2]
[1]*Dental School, International Branch of Tehran University of Medical Sciences, Tehran, Iran,* [2]*Department of Dental Material, Dental School, Azad University, Tehran, Iran*

Aim: The purpose of current investigation was to evaluate the combination effect of diode laser on antibacterial activity of Vinegar/Morinda Citrifolia juice and 2% Chlorhexidine (as a control group) in *Enterococcus faecalis* inoculated root canal dentines.
Materials and methods: Forty single human teeth were selected and after ethical and experimental consideration. All specimens were instrumented up to the apical size (40), in addition smear layer was remove and transferred to sterile Brain Heart Infusion (BHI) broth and then autoclaved. All specimens were contaminated with *E. faecalis* and incubated for 7 days. In each group

half specimens (n = 5) after incubation period samples underwent laser irradiation by diode laser emitting at a wavelength of 810 nm and power of 2W subsequently. The samplings from root canal dentine walls were taken place at the 7 days and colony counting was done.
Results: Statistical analysis of data using Kruskal–Wallis and Mann–Whitney tests showed a significant difference between all groups ($p < 0.0001$).
Conclusions: It was concluded that 2% Chlorhexidine followed by a final flush of diode laser at a wavelength of 810 nm can be regarded as an effective solution on eliminate of *E. faecalis* of root canal dentin.

P023

Effects of Ultrasonic Root-End Cavity Preparation with Different Retro-Tips and at Different Power-Settings on Micro-Leakage

Betul Gunes[1], Hale Ari Aydinbelge[2]
[1]*Department of Endodontics, Faculty of Dentistry, Osmangazi University, Eskişehir, Turkey,* [2]*Department of Endodontics, Faculty of Dentistry, Selcuk University, Konya, Turkey*

Aim: The aim of this in-vitro study was to evaluate the effects of different ultrasonic surgical-tips and power-settings on micro leakage of root-end filling material.
Methodology: A hundred extracted human single-rooted teeth were selected for this study. The coronal parts of the teeth were removed at the semento-enamel junction and the root canals were instrumented with a crown-down technique using ProTaper rotary files up to file F3 at the working length. The root canals were filled with ProTaper F3 gutta-percha and AH Plus root canal sealer using a single-cone technique. The apical 3 mm of each root was resected and the roots were divided into six experimental groups 15 root each. Ten roots were used as negative and positive control groups. Root-end cavities were prepared with diamond coated, zirconium nitride coated and stainless steel ultrasonic surgical tips at half power and high power settings. Root-end cavities were filled Super-EBA regular set. Leakage of specimens was evaluated with glucose penetration method after 1, 2, 3, 4 weeks. The results were statistically analyzed with Kruskal–Wallis and Hollander–Wolfe tests.
Results: There were no statistically significant differences in the glucose penetration between the groups at first and second weeks ($p > 0.01$). Diamond-coated surgical tip showed the least leakage at high-power setting at third and forth weeks ($p < 0.01$).
Conclusion: Under the conditions of this study, the leakage of the root end fillings was the least when diamond-coated retro-tip used at high-power setting.

P024

The Effect of Application Thickness on Microleakage of Bioaggregate used in One-Step Apexification Models

Tuğba Bezgin[1], Betül Memiş Özgül[1], Cem Şahin[2], Şaziye Sarı[1]
[1]*Department of Pediatric Dentistry, Ankara University, Ankara, Turkey,* [2]*Department of Prosthodontics, Hacettepe University, Ankara, Turkey*

Aim: The aim of this study was to evaluate the microleakage of different thicknesses of Bioaggregate [(BioAggregate, Verio Dental Co. Ltd., Vancouver, Canada) (BA)] and 4-mm-thick mineral trioxide aggregate [White ProRoot MTA, Dentsply, Maillefer, Switzerland (WMTA)] in an apexification model using liquid transport model.
Materials and methods: Thirty-two mandibular premolar teeth extracted for orthodontic reasons were sectioned at the cemento-enamel junction and 3–4 mm from the tooth apex to obtain 12-mm-long root segments. To mimic the clinical situation, apical and coronal thirds were prepared with No. 2–6 Gates Glidden burs. Teeth were divided into three groups according to material and thickness, as follows: Group 1: 2 mm BA; Group 2: 4 mm BA; Group 3: 12 mm (total length) BA; Group 4: 4 mm WMTA (control). Teeth were stored at 37°C for 4 days to allow the material to set, the empty parts of the roots in Groups 1, 2 and 4 were filled with gutta-percha and root canal sealer, and leakage was measured using liquid transport method. Data was analyzed with SPSS statistical software (Version 11.5; SPSS Inc, Chicago, IL) using the Kruskal–Wallis H test. A p-value of <0.05 was considered statistically significant.
Results: No statistical differences in microleakage were observed between Groups 1, 2 and 4 ($p > 0.05$). Group 3 showed significantly less leakage than the other groups tested ($p < 0.01$).
Conclusion: Using BA to completely fill the root canal gives ideal results in one-step apexification; however, considering the cost of the material, 2–4 mm may be used instead with success.

P025

In Vitro Fracture Resistance of Roots Obturated with Different Sealers

Hüseyin Sinan Topçuoğlu[1], Ertuğrul Karataş[2], Kübra Yeter[2], Hakan Arslan[3]
[1]*Department of Endodontics, Erciyes University, Kayseri, Turkey,* [2]*Department of Endodontics, Ataturk University, Erzurum, Turkey,* [3]*Department of Endodontics, Katip Celebi University, Izmir, Turkey*

Introduction: The aim of this study was to evaluate the fracture resistance of teeth filled with three different endodontic sealers
Methods: Seventy-five single-rooted extracted mandibular premolars were decoronated to obtain 13 mm length. Teeth were randomly divided into five groups (n = 15). In group 1, teeth were left unprepared and unfilled (negative control). The rest of the roots were prepared with the ProTaper System up to a master apical file size of F3. Group 2 was left unobturated (positive control), group 3: bioceramic-based sealer (Endosequence BC sealer) + gutta percha, group 4: MTA-based sealer (Tech Biosealer Endo) + gutta percha, group 5: epoxy resin-based sealer (AH Plus Jet) + gutta percha. The specimens were stored for 2 weeks in 100% humidity to allow complete setting of the sealer. The roots were subjected to fracture testing under universal testing machine. The force required to fracture was recorded as Newtons (N). Data were analyzed statistically by one-way ANOVA followed by Tukey's multiple comparison test.
Results: Mean fracture load was recorded as follows: group 1 (470.68 N), group 2 (320.19 N), group 3 (457.61 N), group 4

(358.85 N) and group 5 (452.97 N). The fracture values of the group 3 and 5 were significantly higher than group 4 ($p < 0.05$). There were no significant differences between group 3 and 5 ($p > 0.05$).
Conclusions: Endosequence BC and AH Plus Jet increased the fracture resistance of instrumented root canals, whereas Tech Biosealer Endo did not exhibit any reinforcing effect on the fracture resistance.

P026

Longitudinal Assessment of Biocompatibility and Healing Response of MTA Fillapex

Alaa Abdelsalam Elbaz[1], Geraldine Mohamed Ahmed[1], Abeer Kamal Shalaan[2]
[1]*Department of Endodontics, Cairo University, Cairo, Egypt,*
[2]*Department of Oral Pathology, Cairo University, Cairo, Egypt*

Aim: A longitudinal assessment of biocompatibility and wound healing tissue responses of MTA Fillapex and AH-Plus using rat subcutaneous implants
Materials and methods: Fifteen adult female Wistarn albinos were divided into three groups according to three experimental periods (3, 7, and 30 days), five animals for each period. Group 1: MTA Fillapex, Group 2: AH-Plus, Group 3: control. Sealers loaded in sterile polyethylene tubes were surgically implanted subcutaneously in each animal, two with the tested sealers and an empty control tube. Tissue specimens were collected and histologicaly stained with H&E and Masson Trichrome. Immunohistochemistry was applied to assess the healing response using: Transforming Growth Factor Beta-1, Proliferating Cell Nuclear Antigen, Matrix Metalloproteinase 9 and Fibronectin. Kruskal–Wallis test was used to compare the three experimental groups as well as to compare between the three time periods. The significance level was set at $p \leq 0.05$.
Results: There was no statistically significant difference in necrosis and inflammation mean scores within the three groups through all periods. After 3 days; MTA Fillapex showed the highest mean granulation tissue, TGF-β1 and PCNA positive cell count area perecntages. After 1 week MTA Fillapex showed the highest mean granulation tissue, TGF-β1, PCNA positive cell count and MMP-9 area%. After 1 month MTA Fillapex showed the highest mean granulation tissue, PCNA positive cell count, MMP-9 and fibronectin area%.
Conclusion: Both sealers showed similar biocompatibility outcome while MTA Fillapex revealed an enhanced healing response compared to AH Plus.

P027

Apical Microleakage of Root Canal Sealers: A Comparative Study

Violeta Vula, Veton Hoxha, Edmond Dragusha, Astrit Kuçi, Nexhmije Ajeti
Department of Dental Pathology & Endodontics, University Dentistry Clinical Center of Kosovo, Prishtina, Kosovo

Aim: Root canal sealers should ensure an impervious seal of the apical portion of the root canal systems. The purpose of this in vitro study was to compare apical microleakage of three root canal sealers.
Materials and methods: For this study, 60 single rooted human teeth were used. They were divided into three experimental groups and 12 teeth were also divided into three control groups. All of the teeth were instrumented using the step-back technique and sealed with cold lateral compaction of gutta-percha with Pro Root MTA ™, GI Fuji I or Endo Rez. Apical microleakage was measured using dye penetration method of 2% methylene blue. The samples were incubated (at 37°C for 7 days and 100% humidity). Following longitudinal sectioning, linear dye penetration at the apical third of the roots was recorded with a stereomicroscope at 20× and 30× magnification. The results were analyzed using descriptive statistics and *T*-test.
Results: Maximum rate of dye penetration was the following: MTA 1.07 mm, GIC 0.23 mm and EndoRez 1.01 mm. Comparation of the results demonstrates that GIC had the lowest dye penetration rate.
Conclusions: There was a significant difference in dye penetration rate between MTA fillet teeth and GIC and EndoRez, respectively.

P028

Endodontic Treatment of a Traumatized and Iatrogenically Damaged-Tooth

Esma Sarıçam, Güven Kayaoğlu
Department of Endodontics, Faculty of Dentistry, Gazi University, Ankara, Turkey

Case: A 35-year-old male patient without systemic disease presented to our clinic for endodontic treatment. In 2009, he had a traffic accident which caused trauma to the maxilla, and an emergency intervention was performed by a doctor of medicine. Then, Le Fort-I surgery was performed by an oral and maxillofacial surgeon. In our clinic examination, maxillary right canine tooth was found to be tender to percussion. The tooth was not sensitive to palpation and there was no caries. Radiographically, a periradicular radiolucency was noticed. Further, there was a notch-like radiolucent area at the mesial aspect of the root, which was caused iatrogenically during the emergency intervention while drilling a mini-screw, as reported by the patient. At the periodontal examination, the tissues around the tooth was healthy. After written informed consent was obtained, root canal treatment was initiated. The tooth was devital. After shaping and dressing with calsium hydroxite, the root canal was obturated 10 days later.
Conclusion: At 3 and 6-month postendodontic follow-ups, the patient was asymptomatic and there was a reduction in the size of the periapical lesion. The radiographical size of the iatrogenical defect remained the same.

Theme: Dental Treatment & Restorative Dentistry: Esthetics

P029

The Effect of Irrigation Solutions on the Bond Strength of Cemented Fiber Posts

Fahad Alkhudhairy[1], Peter Yaman[2], Joseph Dennison[2], Neville McDonald[2], Alberto Herrero[2]
[1]*College of Dentistry, King Saud University, Riyadh, Saudi Arabia,* [2]*School of Dentistry, University of Michigan, Ann Arbor, MI, USA*

Objectives: To evaluate the effect of endodontic irrigants on the bond strength and resin tag formation of fiber posts cemented with resin cement.
Methods: Fifty-two human anterior teeth were stored in 1% sodium azide. The crowns were sectioned 2 mm incisal from the CEJ. Endodontics was performed using 6.15% NaOCl during instrumentation and a final flush with 17% EDTA. Root canals were obturated with gutta percha and sealer. Teeth were assigned into four groups for post space rinsing (n = 13): Group 1- 6.15% NaOCL; Group 2- 17% EDTA; Group 3- 6.15% NaOCl + 17% EDTA; Group 4- 6.15% NaOCl + 0.12% Chlorhexidine. Parallel-sided fiber posts were cemented with self-adhesive resin cement and samples were embedded in a PVC mounting jig for sectioning. Cervical and apical sections, were subjected to a push-out test using an Instron and failure mode was analyzed.
Results: Group 2 had the highest bond strength, (18.63 ± 2.85 MPa cervical; 13.49 ± 3.67 MPa apical) and was significantly higher than other groups. Cervical specimens in Group 3 had the next highest bond strength (11.22 ± 4.55 MPa). Group 1 had the lowest bond strengths, 5.93 ± 2.33 cervical and 5.18 ± 1.53 apical. Adhesive failure was the main failure mode in all groups. Groups 2 and 3 showed better resin tag formation, while Groups 1 and 4 showed less resin tag formation
Conclusions: Irrigation with 6.15% NaOCl reduced the bond strength of cemented fiber posts. Post spaces irrigated by 17% EDTA produced higher bond strength and more distinct resin tag formation.

P030

Distribution Evaluation of Anterior Teeth Color in Client Patients of Gilan Dental School

Reza Tayefeh Davalloo, Farideh Darabi, Maryam Tavangar, Mohamad Safarpour
Restorative Department, Gillan Dental School, Rasht, Iran

Aim: As maxillary anterior teeth have important role in esthetics, knowing the common shades can help dentists to achieve best treatment so this article evaluates the most prevalent upper anterior teeth in different ages and gender.
Material and method: Upper central incisor of 600 clients of clinic of rasht dental school (in north ofiran) primarily were cleaned with low speed hand piece and slurry of pumice then their color shade were selected by Vita standard shade guide under standard daylight lamp.288 of samples were female and 312 male.shade selection were made in four age groups: 20–29, 30–39, 40–49 and 50–59 years old.
Results: In females the most prevalent shades were: in 20–29 year: A2 with 54.05%, 30–39 year: A3 with 36.5%, 40–49 year: A3 with 44.4% and 50–59 year: A3 with 33.3%.

The most prevalent shades in males: 20–29 year: A2 with 33.3%, 30–39 year: A3 with 40.8%, 40–49 year: A3 with 46.1% and 50–59 year: A3 with 31.2%.

In overall the most prevalent shade without relation to age and gender was A2 with 32.5% and the least was C1 with 0.3%.

P031

Orthodontic and Prosthetic Rehabilitation of a Patient with Cleft Lip and Palate

Fidan Alakuş Sabuncuoğlu[1], Mahmut Yılmaz[2], Serpil Akyol Uzun[2]
[1]*Marasal Cakmak Military Hospital Dental Center,* [2]*Free Practice*

Aim: In this case report, orthodontic and prosthetic treatments of a cleft lip and palate case is presented.
Methods: A 18-year-old man with a cleft lip and palate presented with a concave facial profile due to maxillary hypoplasia. The patient exhibited sagittal and transverse maxillary deficiency. On treatment, narrow upper arch was corrected with orthodontic expansion appliance and tooth alignment problem was corrected with fixed orthodontic treatment. Metal brackets with 0.018 × 0.022" slots were bonded to maxillary and mandibular teeth. Orthodontic leveling and finishing stages were performed in 22 months period. Following the orthodontic treatment, the missing teeth was restored and the occlusion problem was solved with fixed prosthetic appliance.
Conclusion: Correction of the malocclusion improved the patient's speech and pronounciation. As an added benefit, the patient reported a better self-esteem and a greater degree of pleasure related to his appearance. This case report demonstrated the need for multidisciplinary treatment in patients with CLP.

P032

In Vitro Determination of Permanence of Tooth Bleaching

Oya Ulu[1], Can Dörter[2]
[1]*Department of Restoratif Dentistry, Istanbul Aydin University, Istanbul, Turkey,* [2]*Department of Restoratif Dentistry, Istanbul University, Istanbul, Turkey*

Aim: This study aims to compare the whitening efficacy of bleaching techniques and bleaching agents with distinct concentrations by spectrophotometric analysis methods with painting the tooth, bleaching with related techniques, then recoloring with the same matters.
Methods: The samples used in the study are consisting of tooth exposed to a special preparation to cause interior coloring. Eight experimental and three control groups are formed with seven samples in each group. Five color measurements (The initial color,

kept in the coloring matters, after the bleaching after the kept in artificial saliva and after the recoloring of the same coloring materials) of the samples has been made with the spectrophotometer.

For the evaluation of the results obtained from the study, nonparametric Kruskal–Wallis one-way variance analysis was used.

For the evaluation of the results obtained from the study, nonparametric Kruskal–Wallis one-way variance analysis was used.

Results: As the result of the study, a similar whitening level was observed by changing the application time and number of whitening agents in different-concentrations, and while evaluating the recoloring level of bleaching, even there exists some minor distinctions in bleaching agents; no difference has been seen from statistical perspective, and in the meantime no effect has been derived as the bleaching application increase the possibility of recoloring of the tooth ($p > 0.05$).

Conclusion: According to our study, the bleaching application does not lead to an increase in the tendency of restaining of the tooth.

P033

The Golden Proportion Among Malay Students in IIUM/Malaysia

Kais Raad Abdul Majeed[1], Ammar A. Mustafa[2], Maan Ibrahim Al Marzok[3], Ibrahim Khalil Ibrahim[4]

[1]Department of Conservative Dentistry, International Islamic University Malaysia, Kuantan, Malaysia, [2]Department of Prosthetic Dentistry, International Islamic University Malaysia, Kuantan, Malaysia, [3]Department of Restorative Dentistry, MAHSA University College, Kuala Lumpur, Malaysia, [4]Department of Prosthetic Dentistry, Ajman University of Science and Technology, Ajman, United Arab Emirates

Objectives: The maxillary anterior teeth are significant in achieving beautiful dental aesthetics. This study aimed to find the application of golden proportion on Malaysian populations.

Materials and methods: The sample size consisted of 100 students from any faculty, 50 men and 50 women, ranging in age from 20 to 25 years old. The subjects have all of their natural anterior teeth, no history of orthodontic treatment or tooth size alteration and are of Malay origin. Impression was taken and measurements done by using cast. The golden percentage calculated by dividing the width of each central incisor, lateral incisor and canine by the total width of all six maxillary anterior teeth, multiplied by 100 in order to obtain the golden percentage for each tooth.

Results: The golden proportion found to be accurate between the width of the right central and lateral incisors in 33.2% of men and 33.1% of women subjects. 13.9% of male and 13.6% of female subjects have the widths of their right lateral incisors in golden proportion to the widths of their right canines. Moreover, the data shows 37.2% of the male and 37.1% of the female subjects have the widths of their left central incisors in golden proportion to the widths of the eft lateral incisors

Conclusion: Golden proportion is applicable to Malay population. The width of the central incisor represents 24%, lateral incisor 16% and canine 10% of the width of the six maxillary anterior teeth as viewed from the front.

P034

Reattachment of Dehydrated Tooth Fragments: Two Case Reports

Funda Öztürk Bozkurt[1], Becen Demir[2], Erhan Erkan[3]

[1]Department of Restorative Dentistry, School of Dentistry, İstanbul Medipol University, İstanbul, Turkey, [2]Department of Periodontology, School of Dentistry, İstanbul Medipol University, İstanbul, Turkey, [3]Department of Endodontics, School of Dentistry, İstanbul Medipol University, İstanbul, Turkey

Introduction: Anterior crown fractures are the most common type of injury in dental trauma. Restoration of the tooth by reattaching the original fragment is the best way of treatment in aesthetic, conservative and economic point of view. The concept of reattachment began in 1964 by Chosack and Eidelman. In the following years various techniques have been described and due to the developments in adhesive technology reattachment treatment became very simple and successful. The ideal treatment is to reattach the fragments as quickly as possible following intraoral and radiographic examination, but sometimes delayed treatment appointments are necessary because of uninformed patients/parents or multidisciplinary cases included endodontically and periodontically. Delayed reattachment may lead to anaesthetic results because of the dehydration of fragments.

Case: The purpose of this study was to present 1 year follow ups of reattachment of dehydrated fragments by using self-etch adhesives and flowable composites in two different cases.

Conclusion: The colour of the dehydrated fragments were natural in the control appointments and 1 year follow ups show harmonious integration of colour, form and texture after the reattachment of the original piece of tooth.

P035

Minimal Invasive Approach in Restorative Dentistry

Muhittin Toman, Suna Toksavul, Ece Tamaç, İrem Karagözoğlu

Department of Prosthetic Dentistry, Ege University, Izmir, Turkey

Introduction: There are many treatment alternatives to correct the esthetically compromised maxillary anterior teeth. Today, satisfactory results can be obtained in restorative dentistry at baseline (luting appointment of indirect restorations) thanks to the improvements in dental technology. In addition to clinical success at baseline, long-term clinical outcome of indirect restorations is of great importance. At this point, which restoration type will be performed and tooth preparation depth for each indirect restoration should be strictly considered. It was accepted that the lesser the tooth tissue removing for indirect restorations, the lower the risk of complication in long-term clinical use of them. Because of their esthetic appeal, biocompatibility and adherence to the physiology of minimal-invasive dentistry Porcelain laminate veneers (PLV) have now become a restoration of choice. PLVs provide an alternative to complete coverage as they avoid aggressive dental preparation.

Case: This study describes the minimal invasive approach in restorative dentistry and treatment steps of three esthetically compromised cases.

Theme: Dental Treatment & Restorative Dentistry: Materials

P036

Comparison of Cytotoxicity of White and Grey Mineral Trioxide Aggregate (MTA) with Calcium Enriched Mixture (CEM)

Farida Abesi, Maryam Ehsani, Ebrahim Zabihi, Fatemeh Vejdani
Oral & Maxillofacial Radiology Department, Faculty of Dentistry of Babol, Babol, Iran

Objectives: The aim of this study was to compare the cytotoxicity of a newly invented root filling material, CEM, with Angelus white and grey MTA on L929 and Saos-2 cell lines
Materials and methods: Sterile set discs of each material were prepared and extracted by immersing in 1 ml complete media for 24, 48 and 72 h. Three different dilutions of each cement extract in complete media were added to 24 h cultured L929 and Saos-2 cell lines in 24 well plates. After 24 h exposure to the extracts, cell cytotoxicity was measured using MTT assay. Data were analyzed by one way ANOVA and Tukey's post hoc tests.
Results: MTT assay results revealed that none of 24, 48 and 72 h extracts/dilutions of white and grey MTA was cytotoxic. The 48 and 72 h CEM extracts were cytotoxic at 0.5 and 1 dilutions. All of tested materials were cytotoxic on Saos-2 cell line at dilution 1 after 24, 48 and 72 h extraction. Also 72 h extracts of all tested materials were cytotoxic on Saos-2 cell line.
Conclusion: It seems white and grey MTA to have similar cytotoxicity's on both cell lines. On the other hand, while CEM showed cytotoxicity similar to white and grey MTA on Saos-2 cell line, it seems to be more cytotoxic on L929 cell line at least by some extraction periods/dilutions.

P037

The Influence of Different Ceramic Bases on the Veneering Colour

Mehmet Ali Kılıçarslan[1], Ayhan Gürbüz[1], Sema Penbe Aka[2], Ahmet Serkan Oruç[1]
[1]*Department of Prosthodontics, Ankara University, Ankara, Turkey,* [2]*Free Researcher, Ankara, Turkey*

Objectives: Metal free contemporary dental materials produce a solution for aesthetic and strength problems together. Despite of these advantages, these materials may cause some limitations due to the colour reflection of their core structures. The aim of this in vitro study was to compare the influence of base colour of two strengthened core ceramic materials on the veneering.
Materials and methods: Square-shaped ceramic framework specimens (5 × 5 × 1.5 mm) were prepared from two commercially available zirconium oxide Y-TZP ceramic, Cercon (Degussa Dental, Germany) and the lithium disilicate glass ceramic, IPS Empress 2 (Ivoclar, Vivadent, Leichtenstein). Shade A1veneering ceramic Cercon Ceram and Ivoclar d. Sign were applied over zirconium oxide and lithium disilicate glass ceramic specimens respectively. Colour of all the specimens were tested and measured with the aid of a chromameter (SHOFU Shade Eye NCC, U.S.A) and evaluated according to CIELAB formula.
Results: The grades for Vita A1 standard colour according to Biomaterial properties database of Michigan Universities are of L* = 79.57, a* = −1.61, b* = 13.05, and ΔE*ab = 80.65. Due to these standard data, the colour match of Zirconium oxide ceramics (L* = 80.03, a* = −1.19, b* = 12.63, and ΔE*ab = 81.03) are more close to the standards however was diverse lithium disilicate ceramics (L* = 75.56, a* = −2.04, b* = 10.34, and ΔE*ab = 76.29). Therefore the unacceptable difference between these two ceramic systems is mainly due to the colour difference of lithium disilicate ceramics.

P038

Effect of Temperatures on Polymerization Stress and Microleakage of Class V Composite Restorations

Pavinee Padipatvuthikul Didron
Department of General Dentistry, Faculty of Dentistry, Srinakharinwirot University, Thailand

Objectives: This study aimed to investigate contraction-stress of composites at 23, 37 and 60°C, and to measure microleakage in Class V restorations restored with preheated composites.
Methods: Maximum contraction-stress of the composites (n = 5) at 23, 37, and 60°C were evaluated using a low-compliance device. The contraction forces were recorded during 15 min. Calculations were done to adjust for the system's compliance and to obtain shrinkage values of composites. Class V cavities were prepared on the buccal surface of 72 extracted premolar teeth. The teeth were restored with three composites at three temperatures, finished, and stored in distilled water for 24 h before thermocycled between 5 and 55°C for 1000 cycles. The teeth were sealed and placed in 0.5% toluidine-blue dye for 24 h then embedded in self-curing resin and sectioned mesio-distally with a slow-speed diamond saw, providing three sections/restoration. Microleakage was rated by two evaluators using a 0–4 scale at the occlusal and cervical margins under light microscope (40×). The data were analyzed with Kruskal–Wallis ANOVA and Mann–Whitney *U*-test ($\alpha = 0.05$).
Results: Results indicated that preheating composites to 37 and 60°C significantly increased polymerization stress of composites ($p < 0.05$). A greater amount of leakage at the cervical margins was found when compared to the occlusal margins ($p < 0.05$), and preheating composites to 60°C resulted in significantly less microleakage at the cervical margin.
Conclusion: Preheating composites significantly increased their polymerization contraction stress. However, preheating composite to 60°C may help reduce microleakage at cervical margin of class V restorations.

P039

Stress Evaluation of Complete Denture by Electrical Resistance Strain Gage

Cristina Maria Bortun[1], Anghel Cernescu[2], Cornelius Amariei[3]
[1]*Victor Babes University of Medicine and Pharmacy Timisoara,* [2]*Politehnica University Timisoara,* [3]*Ovidius University Constanta*

Aim: The purpose of this paper was to evaluate the stress and strain state of maxillary complete dentures loaded in compression until the final fracture.
Material and method: For this study, electrical resistance strain gage were used for evaluation the strain and stress distribution on five maxillary complete dentures made by acrylic resin Triplex. Based on practical observations, the strain gages were applied on the mid-lines of the dentures at the base of incisors and on the sides of the dentures, under molars. The dentures were loaded until failure and on registered the strains in the located strain gages through micro-measurements by Vishay devices.
Results: The Young's modulus of Triplex was determined by tensile tests at about 3048 MPa. Based on these tests one determined the critical stress and strain in the interest areas, as follows: in median area of dentures, under the incisors, the maximum strain was $\varepsilon_{max} = 5984$ μm/m and the tensile stress was $\sigma_{max} = 18.239$ MPa; on the sides within dentures, under the molars were determined the maximum strain $\varepsilon_{max} = 3646$ μm/m and the tensile stress $\sigma_{max} = 11.11$ MPa.

In all the tests carried out the fracture occurred in the median area of the denture and the crack was initiated between the incisor teeth.
Conclusions: The stress and strain field associated with the crack initiation mode showed a strong influence of geometry on the fracture strength of denture.

The analysis provides a qualitative analysis of the stress field in the denture examined and conducted to a critical stress state of complete dentures.

P040
Measurement Accuracy of a Three-Point Bending Device with Adjustable Specimen-Supporting Parts
Thepparat Khemaleelakul[1], Narin Sirikulrat[2]
[1]*Department of Restorative Dentistry, Chiang Mai University, Chiang Mai, Thailand,* [2]*Department of Physics, Chiang Mai University, Chiang Mai, Thailand*

Aim: One common problem found in the flexural testing of dental ceramic bars is edge fracture due to non-parallel surfaces which can lead to the inaccuracy of the measurement. Using modified specimen-supporting parts that can be adjusted to fully attach to the non-parallel surfaces may decrease this inaccuracy. The aim of this study was to determine the measurement accuracy of three-point bending devices using adjustable or fixed specimen-supporting parts.
Material and methods: One hundred and twenty specimen bars were fabricated from VITA VMK 95 body porcelain according to the BS EN ISO 6872 standard. The specimens were ground and polished to produce six groups of 20 with opposing surfaces parallel within 0.00, 0.01, 0.02, 0.03, 0.04 and 0.05 mm. Ten specimens from each group were tested by the apparatus with adjustable specimen-supporting parts, while the others were tested with fixed parts. The flexural strength of the specimens was statistically analyzed by one-way ANOVA and the data reliability was calculated by Weibull analysis.
Results: The mean flexural strengths of the specimens tested with the adjustable was significantly higher than those tested with the fixed parts in all groups ($p < 0.05$). The Weibull modulus of the data generated from the adjustable apparatus was also significantly higher than these from the fixed ($p < 0.05$).
Conclusion: The results of this study indicate that using the three-point bending device with adjustable specimen-supporting parts significantly improves the force distribution at the tensile surface of the specimens and therefore the reliability of the flexural strength data.

P041
Decision Making Between Traumatized Teeth Treatment Options?
Nihal Özcan, Zeynep Uzgur
Department of Prosthodontics, Kirikkale University, Kirikkale, Turkey

Introduction: Traumatized teeth affected people pschiologically and phsically so the problem must be solved in the most effective solution by satisfying the patient in cited two ways. After tarumas traumatized teeth taken into consideration and desicion making becomes a complex outcome, as it depends predominantly on decisions taken by dentists and patients especially after traumas. There is two way to follow; one is extracting the teeth, the other is treating existing teeth part. Final desicion is mostly depending on the position of the crack observed on the tooth after trauma. If crack effects the pulp, teeth must have root canal treatment first and then must be treated with composite restorations or post- core crown restorations.
Case and conclusion: In this case report we will present two traumatized tooth cases; one scenario ends with extraction and the other ends with post-core crown restoration after endodontic treatment.

P042
The Effect of Glass-Ionomer Containing Various Levels of Titanium-Dioxide Nanoparticles Against *Streptococcus mutans*
Atefeh Saffari, Parinaz Emam Verdi, Fatemeh Esmi
Dental Material Research Center, Babol University of Medical Science, Babol, Iran

Purpose: One of the most important topics of recent studies is the use of nanoparticles on the antibacterial properties of dental resins, In this study we added titanium-dioxide nanoparticles to a light-cured glass-ionomer to examine its antibacterial properties against *Streptococcus mutans*.
Materials and methods: In this in-vitro study the population were divided into five groups of glass ionomer Fuji II LC (GC Corp. Japan) containing, respectively, zero (control), half, one, three and five percent by weight of titanium-dioxide nanoparticles. Fifteen discs (three of each group) of this experimental glass-ionomer were cured inside the same plastic mold for the Disk Diffusion Test. The antibacterial effect against *Streptococcus mutans* was studied in Chocolate Agar. For Direct Contact Test 15 microtubes containing resin groups (three disks per group) were prepared and the antibacterial effect was examined.

Results: The mean diameter of bacterial inhibition zone around disks containing 0/5% titanium-dioxide nanoparticles was the same as around other disks containing nanoparticles and it was slightly higher than the control group. The direct contact test after 3.6, and 24 h showed fewer number of bacteria on the surface of nanoparticles. There was no difference between the four groups containing nanoparticles However, reduced bacterial growth was observed compared with the control group.
Conclusion: Samples containing nanoparticles in both tests had antibacterial property.

P043

The Effect of Silica Nano-Particles on Mechanical Properties of Glass Ionomer

Fateme Esmi[1], Mohammad Bagher Rezvani[1], Mohammad Ataei[2], Mohsen Hosseinali[3]
[1]Department of Dental Research, Shahed University, Tehran, Iran, [2]Department of Polymer, Polymer Research Institute, Tehran, Iran, [3]Department of Biomaterial, Elm-Va-Sanaat University, Tehran, Iran

Aim: In spite of good mechanical properties of glass ionomer, there is some problems result in limited application in stress bearing area. It seem addition of Silica nano- particles to Light Curing GIC (RMGIC), in addition to increasing its mechanical properties, do not have any adverse effect on useful properties.
Materials and methods: Amounts of 0, 0.2, 0.5, 1 and 2 weight percent of silica nano- particles with 10–20 nm in diameters added to RMGIC powder. For flexural strength test, totally 25 samples were prepared in five groups. In order to ISO 4049 Standard, rectangular samples were prepared in 2 × 2 × 25 mm. After storage in incubator (immediate, 1 day and 1 month intervals) samples were tested in flexural strength by using of three point bending test (by0.02 N primary force and 0.5 mm/min chisel speed). In order to ISO 9917 Standard for compressive strength test, 25 cylinderal samples were prepared in 4 × 6 mm, divided in five groups and were tested. Data result from this study, were evaluated by Colmograph–Smirnoff, two-way ANOVA and Tukey tests.
Result: Addition of various amount of nano-particles up to 0.5 weight percent result in significant increase in mechanical properties of RMGIC ($p < 0.05$). In higher amount of nano-particles, mechanical properties improved rather than control group but it was lower than optimal level (0.5 weight percent). Time and storage condition result in significant increase in mechanical properties of Fuji II LC RMGIC ($p < 0.05$).
Conclusion: Use of silica nano-particles up to 0.5% in RMGIC powder result in significant improvement in mechanical properties.

P044

Nanomechanical Evaluation of Fluoridated PMMA Surface Properties after Fluoride Ion Release

Isra Albakri[1], Ayman Ellakwa[1], Michael Swain[1], Wojciech Chrzanowski[2]
[1]Department of Biomaterials, University of Sydney, Sydney, Australia, [2]Faculty of Pharmacy, University of Sydney, Sydney, Australia

Aim: To investigate the changes of surface topography of new fluoridated polymethylmethacrylate PMMA denture base material post fluoride ion release in two storage media, considering surface roughness on atomic scale and surface hardness on Nano scale.
Materials and methods: Discs of PMMA uploaded with various percentages of fluoridated glass fillers were prepared (0, 1, 2.5, 5, and 10% by weight) and aged for 3 months in deionised water ($n = 5$) and in lactic acid ($n = 5$) with the storage medium discharged and refreshed after each of 15 testing intervals detecting fluoride ion release. Evaluation of surface roughness pre and post storage was performed using atomic force microscope (AFM) in a tapping mode with the Ra measured on the scan of 25 × 25 μm images. Evaluation of the nanohardness of the specimens was carried out using Ultra Micro Indentation System, utilizing a three-sided Berkovich indenter tip. One-way analysis of variance was used to assess the influence of storage media and fluoride ion release on both surface properties.
Results: The tested groups showed no significant difference ($p > 0.05$) in surface roughness and hardness pre and post fluoride ion release over 3 months comparing with the control group in either media. All testing groups presented slight decrease in surface hardness and roughness post fluoride release in both media, excluding the control and 1% resin bases which became rougher in lactic acid.
Conclusion: Fluoride ion release had no negative influence on surface topography and hardness of the denture base material despite its expected rule in enhancing anticariogenic effect.

P045

Effect of Plasma Deposition of Monomers on Enamel Adhesion

Byeong Hoon Cho, Geum Jun Han, Jae Hoon Kim, Mi Ae Lee
Department of Conservative Dentistry, Seoul National Universtiry School of Dentistry, Seoul, Korea

Purpose: A pencil-type floating electrode dielectric barrier discharge (FE-DBD) jet was applied to improve the adhesion of composite resin to enamel. This study investigated the effect of plasma treatment on enamel adhesion and evaluated the durability of the adhesion.
Materials and methods: Microshear bond strengths (MSBS) of composite resin to enamel after helium (He) plasma deposition with no monomer, benzene and 1,3-butadiene were compared with that of the conventional enamel bonding. The adhesive of Scotchbond Multi-Purpose (3M ESPE) was applied on etched enamel after the assigned treatment in each group. The same number of specimens were additionally prepared and the MSBS were evaluated after 5000 times of thermocycling. The MSBS data were statistically analyzed using two-way ANOVA and post hoc Duncan test at a 5% level of significance. Weibull analysis was also used to compare the effect of plasma treatment.
Results: According to two-way ANOVA, plasma deposition of benzene and 1,3-butadiene exhibited significantly higher MSBS than conventional enamel bonding procedure ($p < 0.05$). The differences in MSBS were not observed after thermocycling. However, according to Weibull analysis, the highest Weibull moduli of

both monomer-deposited groups were maintained even after thermocycling, although the characteristic strengths of both groups decreased to that of the control group.
Conclusions: The plasma deposition with 1,3-butadiene or benzene enhanced the adhesion of composite resin to the enamel. Although the MSBS decreased after thermocycling, their effect on adhesion durability needs to be investigated in the point of fracture mechanics.

P046
Effect of Beverages Temperature on Physical Properties of a Composite Resin
Duygu Tuncer[1], Emel Karaman[2], Esra Fırat[3]
[1]*Department of Restorative Dentistry, School of Dentistry, Baskent University, Ankara, Turkey,* [2]*Department of Restorative Dentistry, School of Dentistry, Ondokuz Mayıs University, Samsun, Turkey,* [3]*Department of Restorative Dentistry, School of Dentistry, Hacettepe University, Ankara, Turkey*

Objective: To investigate the effect of beverages' temperature on the surface roughness, hardness, and color stability of a composite resin.
Materials and methods: Fifty specimens of the Filtek Z-250 composite (3M ESPE, Dental Products, Seefeld, Germany) were prepared and initial roughness, microhardness, and color were measured. Then the specimens were randomly divided into five groups of 10 specimens each: coffee at 70°C; coffee at 37°C; cola at 10°C; cola at 37°C; artificial saliva (control). After the samples were submitted to 15 min × 3 cycles per day of exposure to the solutions for 30 days, final measurements were recorded. The data among groups and the changes over time were evaluated by using analysis of variance for repeated measures for the parameters of microhardness, roughness, and color (L, a, b). Multiple comparisons were evaluated by Bonferroni test. Welch-ANOVA test was used to evaluate the differences in ΔE measurements among the groups. Multiple comparisons were evaluated using the Games–Howell test.
Results: After immersion in beverages, the artificial saliva group showed hardness values higher than those of the other groups ($p < 0.001$), and the microhardness values were significantly different from the initial values in all groups except for the control group. Both cola groups showed roughness values higher than baseline values ($p < 0.05$), while the other groups showed values similar to baseline measurements. When ΔE measurements were examined, the 70°C-coffee group showed the highest color change among all the groups ($p < 0.05$).
Conclusion: High temperature solutions can cause alterations in certain properties of composites, such as increased color change, although they did not affect the hardness or roughness of the composite resin material tested.

P047
Quantification of Water-Based Cements Acid Erosion by 3D Microscopy
Mont Kumpugdee Vollrath[1], Oppel Claudia[1], Risse Andreas[2], Hoffmann Yvonne[3]
[1]*Faculty II Pharmaceutical Technology, University of Applied Sciences (BeuthHS),* [2]*Faculty VII Electrical Engineering, University of Applied Sciences (BeuthHS),* [3]*Hoffmann Dental Manufaktur GmbH*

Aim: The purpose of this study was to evaluate the acid erosion of commercially available water-based cements according to the method specified in ISO standard 9917-1 and to compare dial gauge measurements with results from 3D microscopy investigations.
Materials and methods: Water-based phosphate and copper ion cements used as filling materials were prepared according to the manufacturer's instructions and subsequently tested by the ISO standard 9917-1 method. After 24 h of setting at a temperature of 37°C and a relative humidity of at least 90% the specimens were immersed in an eroding solution with a pH of 2.74. Quantification of the resulting depth loss of cement material after 24 h was both examined with a dial gauge and a 3D microscopy setup.
Results: Both recording methods appeared to correlate as no significant differences in terms of material depth loss were observed. As previously reported the force applied by the dial gauge onto the specimen must be carefully controlled as it may influence the depth loss. The 3D microscopy instrument operates in a non-contact mode and circumvents this problem. In addition information about surface defects and voids on the µm scale which can influence as well the results from dial gauge measurements become visible.
Conclusions: Recording of depth loss with 3D microscopy was found to be comparable to the measurements with the dial gauge. The test method using a 3D microscope points out further advantages compared to the mechanical method and seems to be suitable as a reliable alternative.

P048
Effect of an Anti-Oxidant on Cytotoxicity of Dentin Bonding Agents
Çiğdem Atalayın[1], Hüseyin Tezel[1], Zeynep Ergücü[1], Banu Önal[1], Sibel Konyalıoğlu[2], Güliz Armağan[2], Ayşegül Keser[3], Taner Dağcı[3]
[1]*Department of Restorative Dentistry, Faculty of Dentistry, Ege University, Izmir, Turkey,* [2]*Department of Biochemistry, Faculty of Pharmacy, Ege University, Bornova, Izmir, Turkey,* [3]*Department of Physiology, School of Medicine, Ege University, Izmir, Turkey*

Objective: The aim of this study was to evaluate the cytotoxicity of different dentin bonding agents on mouse fibroblast (L-929) cells and to determine the effect of an anti-oxidant agent on cell viability.
Materials and methods: Four different dentin bonding agents (Group A: G-aenial Bond-GC, Group B: Optibond All in One-Kerr, Group C: Gluma Self Etch-Heraeus and Group D: Clearfil S3 Bond-Kuraray) with three different concentrations (1:1, 1:10 and 1:20) were added to the culture medium using extract method. The cells were cultured with or without an anti-oxidant (Resveratrol) addition. The dose-depended response of cells against

Resveratrol (R) was investigated. Cell survival was measured by MTT after 1 and 24 h. The data were analyzed statistically with one-way ANOVA and two-way ANOVA respectively.
Results: The most effective dose of Resveratrol that significantly increased the cell viability was found to be 0.5 μM ($p < 0.05$). All tested bonding agents had a dose-dependent (1:1 > 1:10 > 1:20) cytotoxic effect. The strongest cytotoxic effect was determined in Group C ($p < 0.01$). Considering the 1:10 concentration; Group D at 1 h ($p < 0.01$) and Group B and Group D at 24 h had the weakest cytotoxic effect ($p < 0.05$). After Resveratrol addition, the highest cell viability was determined in Group B + R and Group D + R at 1 h. Group A + R and Group B + R had the highest cell viability at 24 h ($p < 0.01$).
Conclusion: Regarding the results of this preliminary study, the cytotoxicity of bonding agents may be decreased by addition of 0.5 μM Resveratrol.

P049
An Investigation of Biological Properties of Acrylic Resin Copolymers
Yeliz Hayran[1], Yasemin Keskin[2]
[1]*Department of Prosthodontics, Gaziosmanpasa University, Tokat, Turkey,* [2]*Department of Prosthodontics, Ankara University, Ankara, Turkey*

Purpose: Aim of this study was to assess the cytotoxicity of variety copolymer acrylic resins that evaluated physical properties previously.
Materials and methods: Specimens of copolymer test groups were prepared by adding volumetric percent of 10–20–30–40 of ethyl, butyl and isobutyl methacrylate monomers in conventional heat cured acrylic resin monomer. Test specimens divided into 13 groups that including the control group. Five specimens of each resin were fabricated 10 mm in diameter by 1 mm thick. Eluates were prepared by placing five discs into a sterile glass vial with Dulbecco's Modified Eagle's medium and incubating at 37°C for 24 and 48 h. The cytotoxic effect from the eluates was evaluated on L929 cells using the MTT assay. The results were assessed stastistically
Results: Statistical significance was determined by one-way ANOVA. The result of ANOVA indicated that there was a statistically significant difference between acrylic resins in terms of cytotoxicity for 24 and 48 h ($p < 0.01$). Also there was statistically significant interaction between times and groups.
Conclusion: There was a statistically significant difference between acrylic resins in terms of cytotoxicity for 24 and 48 h. However, the values of cytotoxicity of all groups for 24 and 48 h were within acceptable limits clinically. For all copolymer groups, values of cell viability for 48 h decreased by increasing the volume of the monomer in the copolymer. When cell viability compared for 24 and 48 h, values of cell viability increased at 48 h in general.

P050
Comparison of Microleakage of Four Self-Adhesive Resin Cements
Lezize Sebnem Turkun, Gamze Yildirim
Department of Restorative Dentistry, Ege University, Izmir, Turkey

Aim: The aim of this study was to compare the microleakage of four self adhesive resin cements used for fiber post cementation with fluid filtration method.
Materials and methods: In the study, 50 upper human canine teeth extracted for periodontal reasons were used. The root lengths of the teeth were standardized. Root canals were enlarged with rotary instruments (Protaper, Dentsply Maillefer, Ballaquies, Switzerland) and filling was achieved using lateral compaction technique. The specimens were randomly assigned to five groups (n = 10). The fiber post (Exacto Glass Fiber posts, Angelus Industria de Produtos Odontologicos S/A, Londrina-PR-Brasil) cementations are completed with the materials below:

(1) Group 1: Variolink II Professional Pack (Ivoclar Vivadent, Liechtenstein) (Control)
(2) Group 2: G-Cem Automix (GC, Tokyo, Japan)
(3) Group 3: Panavia SA Cement (Kuraray, Okayama, Japan)
(4) Group 4: Smart Cem 2 (Dentsply DeTrey GmbH, Konstanz, Germany)
(5) Group 5: Rely X U200 (3M ESPE, Neuss, Germany)

The measurement of microleakage was performed at 2nd, 4th, 6th and 8th minutes.

The data was analyzed by univariate analysis of variance and Tukey tests ($p < 0.05$).
Results: The best results were obtained in group 3 and 5, while the most leakage was seen in group 2 and 4. There was statistically significant difference between Rely X U200 and Panavia SA Cement groups compared to the control group.
Conclusion: From the point of microleakage, some self adhesive resin cements used for fiber post cementation were found to be more reliable than the control group material.

P051
Polymerization of Dual-Cure Resin Cements under Zirconia with Two Different Light Curing Units
Elif Pak Tunç, Pınar Gültekin, Değer Öngül, Volkan Turp, Özgür Bultan, Burçin Karataşlı
Department of Prosthodontics, Faculty of Dentistry, Istanbul University

Purpose: Adequate polymerization is a crucial factor in obtaining optimal physical properties and a satisfying clinical performance of composite resin materials, however it depends on several factors including the ceramic system, luting agent, curing light characteristics, and curing regimen. The aim of this study was to evaluate the curing efficiency of resin cement used under zirconia structures with two different light curing units.
Material and methods: Four disc samples with four different thicknesses representing the zirconia substructures were prepared 4.0 mm in diameter using CAD/CAM system and layered with feldspathic porcelain. The resin cement was light cured using two

different light curing units (LED: Light Emitting Diode and QTH: Quartz-Tungsten Halogen). The values of depth of cure (mm) and the Vickers Hardness values (VHN) were evaluated for each specimen. Statistical analysis was performed using One-way ANOVA, Tukey's HSD, and Student's *t*-tests ($p < 0.05$).
Results: The use of LED unit produced a greater depth of cure compared to QTH under ceramic discs with 0.5 and 1.0 mm thickness. At 1.0 and 2.0 mm depth, the LED unit produced significantly greater VHN values compared to the QTH unit. At 3.0 mm depth, the difference between the VHN values of LED and QTH groups were not statistically significant.
Conclusions: Light curing may not result in desired resin cement polymerization under thick zirconia structures. Using LED light sources should be preferred rather than QTH for curing dual-cure resin cements especially under thicker zirconia restorations

P052
Temperature Rise During Polymerization of Light-Cured Pulp-Capping Materials with Different Modes
Ebru Küçükyılmaz[1], Murat Selim Botsalı[2], Tuğrul Sarı[3], Selçuk Savaş[1]
[1]*Department of Pediatric Dentistry, Izmir Katip Celebi University, Izmir, Turkey,* [2]*Department of Pediatric Dentistry, Selcuk University, Konya, Turkey,* [3]*Department of Prosthodontics, Bezmialem Vakıf University, Istanbul, Turkey*

Aim: Pulp damage may occur because of the temperature rise during polymerization of light-cured dental materials. The purpose of this study was to evaluate three different curing modes of a light emitting diode (LED) on the temperature rise in the pulp chamber during polymerization of a light-cured resin-modified calcium silicate filled pulp-capping material.
Material and methods: A straight-cut was made to the occlusal surface of an extracted molar ensuring 1 mm dentin thickness over the pulp. Pulpal circulation was simulated by water cycling through the pulp chamber with a defined flow pressure to simulate the clinical case. Temperature rise was measured during the light curing of capping material (Theracal, Bisco Inc., USA). Three modes of light curing unit (Planmeca Lumion, Mectron, Italy) were used to polymerizate the material; fast (FP), slow rise (SRP) and soft (SP). Thermal changes were measured with J-type thermocouple and recorded by a data-logger. The data were statistically analyzed by one-way ANOVA.
Results: ANOVA test showed that pulp chamber temperature changes were influenced by the mode of light source. All groups showed significant differences between each other ($p < 0.05$). The intrapulpal temperature changes induced by different modes were: (7.19 ± 0.44°C) for FP, (6.62 ± 0.34°C) for SRP, (6.10 ± 0.37°C) for SP.
Conclusions: Following conclusions were drawn; The intrapulpal temperature changes induced by various light modes were: FP, SRP and SP in descending order. All curing modes of light curing unit showed significant differences between each other. Light curing of the Theracal with different polymerization modes of the same light unit resulted in more than 5.5°C increase in the pulp chamber.

P053
Determination of Wettability of Dentine by Er:YAG Laser Irradiation
Onur Oral, Pekka Vallittu, Lippo Lassila
Department of Biomaterials Science and Turku Clinical Biomaterials Centre, Institute of Dentistry, University of Turku, Turku, Finland

Objectives: The aim of this study was to observe wettability characteristics of dentin surfaces after Er:YAG laser and acid etching applications.
Methods: Sixty human posterior teeth were segmented by means of a precision cut-off machine and dentin surfaces were polished till 4000-grit silicon carbide paper. The specimens were analysed in three main groups according to application methods: Unirradiated control dentin (UD), Low energy laser (LEL) (80 mJ, 15 Hz), High energy laser (HEL) (250 mJ, 15 Hz) (Kavo K-E-Y). Each main group was examined in five groups according to acid etching (ESPE Scotchbond Etchant) duration after irradiation (0–15–30–45–60 s). A droplet of water/adhesive (ESPE Scotchbond Universal Adhesive) was applied on the surface and contact angle was measured (KSV CAM100). Determination of water wettability was recorded by four measurements for each specimen (n = 16/group). For the investigation of the adhesive resin contact angle, two measurements were recorded (n = 8/group) and second measurement was carried out after 0.5 mm grinding of the surface. Statistical analysis was performed using ANOVA followed by post-hoc comparisons (Tukey B, $p < 0.05$).
Results: The highest results were observed in 60 s etchant groups for both tests and main groups (74.480–77.530 for water, 47.590–52.240 for adhesive). The lowest results were recorded in HEL groups (48.970 ± 5.690 on non-etched surface for water test and 38.360 ± 3.110 on 30 s etched surface for adhesive test).
Conclusions: Er:YAG laser is affecting dentin surface characteristics, and etchant application for short duration followed by laser may lead to a better bonding by enhanced surface wettability.

P054
Microshear Bond Strength of a Self Adhering Flowable Resin Composite to Dentin
Cem Peşkersoy, Tijen Pamir, Zeynep Ergücü, Banu Önal, Duygu Recen
Department of Restorative Dentistry, Ege University, Izmir, Turkey

Objective: The purpose of this study was to evaluate the microshear bond strength (μSBS) to dentin of a self-adhering flowable resin composite and to compare it with those of different resin composites in combination with a self-etching adhesive system.
Materials and methods: Forty eight caries-free human molars were transversally sectioned in order to achieve a flat dentine surface. They were divided into four study groups (n = 12) according to the materials; Group-I: Vertise Flow (self-adhering flowable); Group-II: Single Bond (self-etching adhesive) + G-ænial (flowable composite), Group-III: Single Bond + Charisma Opal (flowable composite), Group-IV: Single Bond + Filtek Ultimate (Universal hybrid composite). In groups II-III-IV; after the application of

adhesive system, composite cylinders were placed to dentin using Tygon tubes with an inner diameter of 0.90 mm. However self-adhering flowable composite was used without adhesive application. The μSBS of samples were determined using a Universal testing machine. Data obtained were analyzed with one-way ANOVA followed by Tukey test ($\alpha = 0.05$).

Results: G-ænial and Vertise Flow presented higher μSBS than the others ($p < 0.05$). However the μSBS of Single Bond + G-ænial was not significantly different from that of Vertise Flow ($p > 0.05$). Additionally the μSBS of Single Bond + Filtek Ultimate was the lowest ($p < 0.05$).

Conclusions: Within the limitation of this study, it was concluded that self-adhering flowable composite in dentin depicted a comparable performance to those of other flowable composite resins used with a self-etching adhesive system. The performance of a self-etching adhesive system may be affected by the quality of the flowable composites.

P055

An In-Vitro Comparison of the Bond Strength of FRC Posts to Radicular Dentin Using Different Adhesive Cements

Maryam Tavangar, Reza Tayefeh Davalloo, Farideh Darabi, Niloofar Moein, Shohreh Nekooie

Guilan Dental School, Restorative Department, Rasht, Iran

In this research we decided to evaluate the bond strength of FRC posts to endodontically treated teeth with different adhesive cements.

Material and methods: Fourty-four caries-free, single-rooted human premolars, were selected for this study. The crown of each teeth was removed 2 mm below the CEJ and the roots were endodontically treated then prepared for post cementation. Then they divided into four groups, according to the adhesive cement type: group 1: Breeze (self-adhesive), group 2: ED Primer II/Panavia F2 (self-etch), group 3: Prime & Bond NT/all-Cem (etch & rinse), group 4: GC Fuji plus cement.

Each specimen was cut in to 2 mm thick section from middle third of root and push-out bond strength test was performed in each section at a cross-head speed of 0.5 mm/min. Data was analyzed with one-way ANOVA and a post hoc test.

Results and conclusion: The interfacial bond strength was different among the four groups.

GC Fuji plus obtain the highest bond strength values, this result indicate that the chemical interactions between the adhesive cement and hydroxyapatite may be important for root dentin bonding. Breeze (self-adhesive resin cement) without any pretreatment procedure can not obtain the acceptable bond strength.

P056

Effect of Nd:YAG Laser on Human Dentin Fluid Flow

Wael M. Al Omari[1], Joseph E. Palamara[2], Isra A. Albakri[3]

[1]*Department of Prosthodontics, Jordan University of Science and Technology, Irbid, Jordan,* [2]*Department of Restorative Dentistry, Melbourne University, Australia,* [3]*Department of Biomaterials, Sydney University, Australia*

Aim: The aim of the current investigation was to assess the rate and magnitude of dentine fluid flow of dentinal surfaces irradiated with Nd:YAG laser.

Materials and methods: Thirty third molars were sectioned, mounted and irradiated with Nd:YAG laser at 2 W power settings. The samples were irradiated automatically at individual runs until all dentine surfaces were completely irradiated. Samples were divided into three groups, group 1: the flow was for measured over 5 min after irradiation, group 2: dentin flow was measured over 10 min after irradiation and group 3: teeth were treated with 1% sodium hypochlorite prior to irradiation and then dentin flow was measured over 10 min after irradiation. Fluid flow was measured using fluid flow apparatus (Flodec). The rate, magnitude and direction of dentine fluid flow were recorded at baseline and after irradiation.

Results: Non-parametric Wilcoxon Signed Ranks repeated-measure *t*-test and Kruskal–Wallis ANOVA test revealed statistically significant increase in fluid flow for all the groups after irradiation. However, no significant differences were found between the groups. The samples demonstrated a baseline outward flow followed by inward flow due to irradiation then followed by increased outward flow.

Conclusions: Nd:YAG laser at 2 W power settings has significantly increased dentinal fluid flow rate. The removal of smear layer with sodium hypochlorite prior to irradiation did not have any significant effect on the dentin fluid flow rate.

P057

Effect of Hydrocholoric Acid on Surface Properties of Restorative Materials

Cigdem Sozen Cabukusta[1], Yasemin Benderli Gökce[1], Murat Baydogan[2], Onur Meydanoglu[2]

[1]*Department of Operative and Restorative Dentistry, Istanbul University, İstanbul, Turkey,* [2]*Department of Metallurgical and Materials Engineering, Istanbul Technical University, İstanbul, Turkey*

Purpose: The purpose of this study was to evaluate the effect of hydrochloric acid on wear rates and surface hardness of six different tooth-coloured restorative materials

Material and method: Conventional glass ionomer (Fuji IX GP), resin-modified glass ionomer (Fuji II LC Improved), compomer (Compoglass F), hybrid composite (Aelite LS Posterior), microhybrid composite (Gradia Direct) and nanohybrid composite (IPS Empress Direct) were tested in a pin-on-disk design wear machine at 20 N load. Each specimen was subjected to 10,000 cycles under two different solutions (artificial saliva, pH 7; hydrochloric acid, pH 2.6). Amout of material loss were evaluated by profilometer. For the hardness test restorative materials immersed in distiled water, artificial saliva and hydrochloric acid. Measurement of surface microhardness were carried out using a hardness tester under 500 g load for 20 s. The statistical analyses were performed by Oneway ANOVA test, Tukey HDS test, Student *t*-test and paired sample *t*-test.

Results: Hybrid composite, demostrated the highest hardness values and the lowest wear loss ($p < 0.01$). Compomer and composites at artificial saliva showed significantly higher wear loss than hydrochloric acid solution ($p < 0.01$). Conventional glass ionomer, resin modified glass ionomer, hybrid composite and nanohybrid composite at hydrochloric acid solution, exhibited significantly lower hardness than at distilled water and artificial saliva ($p < 0.01$).
Conclusion: The results of this study suggested that making restorations by using glass ionomer cement and resin-modified glass ionomer cement should be avoided from patient with reflu problems. In such cases, composite resins would be more suitable and reliable.

P058

Evaluation of Dynamic Viscoelasticity of Tissue Conditioners with Surface Coating Agents

Derya Birler Yağlı[1], Canan Bural[1], İsmail Aydın[2], Selen Ezgi Açıkyıldız[2], Gülsen Bayraktar[1]
[1]*Department of Prosthodontics, Faculty of Dentistry, Istanbul University, Istanbul, Turkey,* [2]*Department of Chemical Engineering, Faculty of Engineering, Istanbul University, Istanbul, Turkey*

Aim: The application of a surface coating agent on the tissue conditioner has been reported to increase the intra-oral use of the tissue-conditioners. This in vitro study evaluated the dynamic viscoelastic properties of the tissue-conditioning materials with surface-coating agents.
Materials and methods: Specimens of tissue-conditioning materials (20 mm diameter × 10 mm thickness) (Coe-Comfort-C, F.I.T.T.-F and Visco-gel-V) was mixed in accordance with the manufacturers' recommendations (C, F, V) and with altered powder/liquid ratios (C',F'V') ($n = 144$). Surface coating materials (Monopoly-M, Palaseal-P) was applied onto the surface of the specimens. The shear storage modulus (G'), shear loss modulus (G″) and loss tangent (tanδ) were measured using a magnetic rheometer after a gelation time of 2 h, 1, 3, 7, 14, 21 and 28 days of immersion. Data were analyzed by using Kolmogorov–Smirnov, Kruskal–Wallis and Mann–Whitney *U*-tests ($p \leq 0.05$).
Results: For all the time periods tested, G' and G'' values of FM, F'M, VM and V'M groups were lower than F, F', V and V'. Higher G' and G'' and lower tanδ values of C' and V' than those of C and V groups were detected; while lower G' and G'' and higher tanδ values of F' than those of F groups were detected. Palaseal surface coating material did not affect the viscoelasticity of the all samples tested while Monopoly surface coating affected the dynamic viscoelasticity of tissue-conditioners mixed with altered powder/liquid ratios.
Conclusion: The application of surface coating agents on the tissue-conditioners might be advantageous to increase the viscoelastic properties and cushioning effect of these materials.

Theme: Dental Treatment & Restorative Dentistry: Periodontics

P059

Clinical and Histological Evaluation of Primary Second Molar with Caries

Vellore Kannan Gopinath[1], Khurshid Anwar[2]
[1]*College of Dentistry, University of Sharjah, Sharjah, UAE,* [2]*College of Medicine, University of Sharjah, Sharjah, UAE*

Aim: Managing dental caries in young children is demanding due to the elusions present on the right diagnostic criteria for treatment. The present study evaluated the histological status of pulp tissues extracted from primary second molar with caries involvement. Histological findings are correlated with clinical and radiographic assessment.
Materials and methods: Simple experimental study was conducted with ethical approval on upper or lower second primary molars with occlusal (22 teeth) or proximal (22 teeth) dental caries. Selected children were below 6 years of age. Percentage of caries involvement, residual dentin thickness (RDT), radiographic assessment of interradicular and periapical areas, clinical caries depth and signs and symptoms are the parameters considered for comparing with histological findings. The specimens were grouped based on nature of inflammatory process as acute or chronic. The data were analyzed by student *t*-test to compare histological types of inflammation with clinical parameters.
Results: Four cases revealed severe acute inflammation in coronal and relatively mild acute inflammation in radicular pulp. In rest of the specimen coronal and radicular pulp had similar acute or chronic inflammatory changes. Histological evidence of pulpitis correlated with dental caries depth of ≥80%, RDT of ≤1 mm, radiographic rarefactions in the interradicular regions and symptoms of pain.
Conclusions: Primary second molars with more than two third caries involvement with symptoms of pain histologically showed inflammation of both coronal and radicular pulp tissues in all cases.

P060

Assessments of Dental Fear in Children by Using the Frankl Behaviour Rating Scale and Sound Eye Motor Scale

Özlem Martı Akgün, Ceren Yıldırım, Günseli Güven Polat, Ceyhan Altun, Feridun Başak
Department of Pediatric Dentistry, Gulhane Medical Academy, Ankara, Turkey

Aim: To compare dental fear (DF) in children who practiced the tell-show-do technique with those did not by using the Frankl Behaviour Rating Scale (FS) and Sound Eye Motor Scale (SEM) at the patients' first meeting with the dentist.
Materials and methods: The 532 subjects admitted and examined at the department of pediatric dentistry were assessed. Children with physical and mental health problems (mental retardation, psychotic disorders, severe sensory motor impairment), toothache (pulpitis, pericoronitis), and a history of dental treatment were excluded from the study. Thus, a total of 85 children (47 male, 38

female) matched the inclusion criteria and participated in this randomized controlled clinical study. The study protocol was approved by the Research Ethics Committee, and informed consent was obtained from the parents of all children. All dental treatments and the tell-show-do technique were applied by one calibrated examiner, and the FS and SEM were applied by an independent calibrated examiner. All subjects received restorative therapy after local anesthesia in the first therapeutic session. For the statistical analysis and calculations SPSS for Win (SPSS, Ver. 15.0, Chicago, IL., USA) was used. In statistical decisions, $p < 0.05$ values were accepted as an indicator of significant difference.

Results: The children who did not perform the tell-show-do technique showed higher levels of DF than those who did; however, there were no differences in DF results between the two scales.

Conclusion: The tell-show-do technique, which is a behavioral management technique, should be preferred over pharmacological techniques in children with DF during dental treatment.

P061

The Effect of Magnetic Resonance Imaging on Microleakage of Amalgam Restorations

Özlem Martı Akgün[1], Günseli Güven Polat[1], Ahmet Turan Ilıca[2], Feridun Başak[1]

[1]Department of Pediatric Dentistry, Gulhane Medical Academy, Ankara, Turkey, [2]Department of Radiology, İzmir Mevki Military Hospital, İzmir, Turkey

Aim: To compare the effect of magnetic resonance imaging (MRI) on microleakage of class II amalgam restorations.

Materials and methods: A total of 40 human extracted, caries-free third molars were used in this study. Class II cavities were prepared using diamond burs under water cooling and were randomly divided into four groups ($n = 10$). The first and second groups comprised molars with cavities that were restored with dentin adhesive and amalgam, whereas the third and fourth groups comprised molars with only amalgam-restored cavities. The amalgams were placed incrementally with the condensing towards the cavity walls. The finishing and polishing procedures were completed. MRI was applied to the teeth in the first and third groups for approximately 20 min. The specimens were thermocycled at temperatures between 5 and 55°C with a 30-s dwell time for 1000 cycles. The samples were then immersed in 0.5% Methylene blue dye for 24 h and sectioned longitudinally. Dye penetration at the occlusal and gingival margins was quantified using a stereomicroscope at 15× magnification. For the statistical analysis and calculations SPSS for Win (SPSS, Ver. 15.0, Chicago, IL., USA) was used. In statistical decisions, $p < 0.05$ values were accepted as an indicator of significant difference.

Results: The groups that were not subjected to MRI showed less microleakage than those that were; however, there were no differences between the bonded amalgam and amalgam groups.

Conclusion: The results of this study suggest that MRI can increase microleakage of amalgam restorations.

P062

Conservative Treatment of Dentigerous Cyst Associated with Primary Teeth

Yelda Kasımoğlu[1], Elif Bahar Tuna-İnce[1], Burak Çankaya[2], Nihan Aksakallı[3], Koray Gençay[1]

[1]Department of Pedodontics, Faculty of Dentistry, Istanbul University, Istanbul, Turkey, [2]Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, Istanbul University, Istanbul, Turkey, [3]Department of Tumour Pathology, Institute of Oncology, Istanbul University, Istanbul, Turkey

Background: Dentigerous cysts are the most common bony lesions of the jaws in children. They are associated with the crowns of permanent teeth, most frequently impacted mandibular third molars, maxillary canines, maxillary third molars and, rarely, supernumerary teeth. Radiographically, the cyst appears as ovoid well-demarcated unilocular radiolucency with a sclerotic border.

Case: The purpose of the present case was to report 7 year-old boy with a dentigerous cyst associated with unerupted mandibular second premolar tooth and its dental management. The patient referred to our department with a chief complaint of painless swelling on right side of the mandible. On the extraoral examination facial asymmetry was noted on the right side. The radiographic and 3D-CT examination showed thin sclerotic border surrounding the large, well-defined unilocular radiolucent lesion with 22.5 mm in diameter. Primary first and second molar teeth were necrotic and showed large loss of bone in the bifurcation area. Case management: Marsupialization of the cyst was chosen as the treatment of choice. The treatment consisted of extraction of necrotic first and second primary molars and created a window through the extracted socket to decompress the lesion under local anesthesia. An epithelial tissue sample from the cyst was collected. Histopathological diagnosis was inflamed odontogenic cyst. After 18 months, bone formation was observed in the same region and mandibular right second premolar was seen erupting in its proper place.

Conclusion: Careful evaluation of the history, the clinical and radiographical findings help clinicians to diagnose the condition correctly, identify the etiological factors, and administer the appropriate conservative treatment instead of serious surgery.

P063

The Effect of Mumps on Primary Teeth: A Case Report

Aybarshan Yılmaz, Günseli Güven Polat, Ceyhan Altun

Department of Pediatric Dentistry, Center of Dental Sciences, Gulhane Medical Academy, Ankara, Turkey

Aim: The aim of this study was to expose the enamel defects and their treatment of the second primary molar of a 6-year-old patient who suffered from mumps when he was 4 months.

Case report: In the oral examination of a 6-year old patient referred to our clinic with toothache, it was detected cavities penetrated into the dentine on all his second primary molars along with softening in the enamel of the teeth without deformation. However, it was not located any decays on the other teeth. In his anamnesis, it was ascertained that the patient had mumps when he was 4 months. Before starting his treatment, a radiographic

examination of the teeth is carried out through OPG. The decayed portions of the teeth numbers 55, 65, and 85 are removed and a root canal treatment was performed on the tooth number 75. All the second primary molars were covered by stainless steel crown. The changes in the patient has been followed in 6-month time periods.

Conclusion: The enamel formation of the second primary molar generally initiates during the fifth month of intrauterin life and terminates at the tenth month after the birth. Because experiencing skin eruption and inflammatory diseases during this period effects directly ameloblast activities in a negative way, enamel hypoplasia occurs. Due to the fact that they have the best impermeability, keep their original form and size of primary teeth and become more retainable, these teeth are treated with stainless steel crown.

P064

Postoperative Complications Following Dental Treatment under General Anesthesia in Pediatric Patients

Seda Alp[1], Işıl Şaroğlu Sönmez[2], Aylin Akbay Oba[1], Merve Erkmen Almaz[1]

[1]*Department of Pediatric Dentistry, Faculty of Dentistry, University of Kirikkale, Kirikkale, Turkey,* [2]*Department of Pediatric Dentistry, Faculty of Dentistry, University of Adnan Menderes, Aydin, Turkey*

Aim: The aim of this study was to investigate postoperative complications following dental treatment under general anesthesia in pediatric patients over a year period.

Method: One hundred and thirty-three healthy pediatric patients (age range 2–9 years) were referred for dental treatment under general anesthesia. The study was approved by the ethical committee at the Faculty of Medicine, Kirikkale University in Turkey. Data were obtained by history taking, clinical examination, pre-formed questionnaire and standardized data records. During the general anesthesia procedure, a mean number of 8.1 (±3.3) teeth were filled, 1.3 (±1.4) teeth were treated endodontically and 2.6 (±2.4) teeth were extracted. Post-operative complications were assessed through telephone calls to the patient's mother/guardian by the investigator, after the first day (after 24 h) and after the third day (after 72 h). Results showed that 69.9% of the children had one or more complaints after 24 h in contrast to only 35.3% after 72 h. Cough and pain (27.1%), inability to eat (24.8%), psychological changes (24.1%), sore throat (21.1%), were more common complaints in the first day, followed by drowsiness (17.3%), bleeding (16.5%), fever (15.8%), sleepiness (15%), nausea (12%) and vomiting (9.8%). A significant reduction in complaints was reported after 72 h ($p < 0.05$).

Conclusion: Post-operative complaints were common 24 h after dental treatment under general anesthesia. However complaints were mild in severity and limited to the first day.

P065

Clinical Research on Restoration of Bone Defect in Cleft Alveolar with β-Tricalcium Phosphate

Renji Chen

Beijing Stomatolgical Hospital, Capital Medical University

Objective: To evaluate the feasibility of using β-tricalcium phosphate (β-TCP) to repair bone defects of patients with alveolar cleft. To search for ideal artificial material as a substitution of autogenous iliac cancellous bone to repair alveolar cleft.

Materials and methods: Twenty-four patients with alveolar cleft were chosen from oral and maxillofacial department of Beijing stomatological hospital. They were divided into two groups: group A (10 cases) and group B (14 cases). In group A, autogenous iliac cancellous bone was transplanted to repair alveolar cleft, and in group B, β-TCP was transplanted. Observe the coalesced condition of the both groups 1 week after the operation. Compare the formation of the new bone between the two groups through the images of cone beam computer tomography (CBCT) and three-dimensional reconstruction taking pre-operation and 4–6 months post-operation.

Results: All the 24 patients achieved well primary-healing without infection, dehiscence or rejection 1 week post-operation except one case in Group A. CBCT and three-dimensional reconstruction 4–6 months after operation showed new bone formations and the succession of alveolar being well or partly recovered. The clinical success rate is the same in both groups.

Conclusion: There is no significant difference in the formation of the new bone between β-TCP and autogenous iliac cancellous bone. As an ideal artificial material, β-TCP can be used to repair the bone defect of alveolar cleft in the patients with cleft lip and palate.

P066

Polymicrotrauma

Eda Haznedaroğlu, Fatma Varol, Ali Menteş

Department of Paediatric Dentistry, Marmara University, Istanbul

Introduction: Nail-biting is one of the most common but unresolved oral habits among children and important concern for paediatricians and paediatric dentists. Nail-biting may damage the structure of the mouth and can enable easier spread of infectious diseases. Beside all these damages chronically nail-biting, repetitive trauma might also cause the dental pulp to become inflamed.

Case: The presented case was 10-year-old boy in mixed dentition referred for emergency treatment with complaint of pain. There was no reported history of orofacial trauma. Through extra-oral examination was noted that lower lip and chip were swollen.

The mandibular left incisor did not present any carious lesion or fracture. However, the tooth was sensitive to percussion, showed abnormal colour, increased mobility and responded abnormally to thermal pulp tests. The periapical radiograph did show enlargement of the periodontal space. After being diagnosed as advanced irreversible pulpitis, root canal treatment was carried out; adequate healing was manifested clinically by resolution of symptoms and radiographically by bone filling in the radiolucent

area at the root apex over a period of 10 months. According to the medical history has a habit of nail-biting for 5.5 years.
Conclusion: This unusual case report gives important information about examination of oral habits in children and emergency cases. Many studies noted that nail-biting may play a significant role in the development of some anomalies of the oral-facial system or may cause damage of the cuticles and secondary bacterial infection. After treatment the patient quitted this bad habit.

P067
Conservative Approach for Missing Single Tooth in Adolesence: Case Study with 1 year Follow Up
Ece Turan, Nazan Ersin, Aslı Topaloglu Ak
Department of Pediatric Dentistry, Ege University, Izmir, Turkey

Purpose: The purpose of this study was to rehabilitate the single missing tooth due to the trauma of an adolescent with the minimal invasive approach using a direct FiberReinforced Composite Dental Bridge.
Materials and method: Due to the trauma history, one single tooth was missing in the maxillary anterior region in three patients who were 11–13 years old. In these years of adolescence, they are mostly worried about their appearance. Patients were temporarily treated by fiber reinforced adhesive bridges. No preparations were done on the lingual surfaces of the abutment teeth. Because of their development period, we used only one abutment tooth to allow for the growth of the maxillary. The patients were recalled for examinations every 6 months to evaluate the restorations and their consistence.
Results: After a 1 year clinical follow-up, all three fiber reinforced adhesive bridges were intact and no signs of fracture, debonding or discoloration was observed. Patients were happy with their appearance. Restoring a missing single central incisor is one of the most difficult esthetic procedures in dentistry especially during the developmental period. For the ongoing growth of young patients it is hard to replace the tooth with implants or using removable appliences. This alternative treatment approach may be successfully used for temporary treatment of incisor tooth loss.

P068
Oral Manifestations of Hypophosphatemic Rickets: A Case Report
Hanin Fellagh, Şirin Güner, Senem Selvi Kuvvetli, Nüket Sandallı
Department of Pediatric Dentistry, Faculty of Dentistry, Yeditepe University, İstanbul, Turkey

Background: Hypophosphatemic Rickets is an inherited disease characterized by renal phosphate loss, growth retardation and defects in bone mineralization. Patients present clinically skeletal deformities and oral manifestations including pulpal infections and dental abcessess due to defective dentin which occurs as a result of hypophosphatemia. We present oral manifestations and dental treatment of a hypophosphatemic rickets case as established by the combination of clinical, radiographic findings and laboratory values.
Case: A 7 year-old boy diagnosed with hypophosphatemic rickets was referred to Yeditepe University, Faculty of Dentistry, Department of Pediatric Dentistry with the chief complaint of toothache. Physical examination showed markedly curved legs and short stature. Intraoral examination revealed pulpal infections and abcess formation in the primary molars and premature loss of upper incisors. The radiographic findings were enlarged pulp chambers and root canals related to defective dentin. Following consultation with a pediatric endocrinologist, dental treatments including extractions and restoration of primary teeth were performed under general anesthesia due to the inadequate cooperation. The immediate prosthetic rehabilitation was carried out 4 weeks later and after 3 months dentures were renewed according to the changes in the mouth. Oral health care advices have been provided and the patient is under follow up at regular intervals for preventive measures.
Conclusion: Patients with hypophosphatemic rickets may frequently present dental abnormalities. Dentists and pediatricians should be aware of the features of this disorder and periodic oral examinations and preventive measures should be performed because early intervention could prevent more invasive dental procedures.

P069
Hallermann–Streiff Syndrome: A Case Report
Esra Karakaya, Nurhan Özalp
Department of Pediatric Dentistry, Ankara University, Ankara, Turkey

Aim: Hallermann-Streiff syndrome also known as occulo-mandibulo-dyscephaly is a rare congenital disorder characterized primarily by head and face abnormalities. Dental abnormalities are seen in 50–80% of the cases including neonatal and supernumerary teeth, agenesis of permanent teeth, enamel hypoplasia, open bite, malocclusion and hypodontia. The aim of this case report is to present general clinical features of this syndrome and the dental management of a patient with Hallermann-Streiff syndrome.
Case: A 2, 5-year-old girl was referred to the pediatric dental clinic with a chief complaint of delayed teeth eruption. Extraoral examination revealed a beak-shaped nose, sparse hair, eyelashes and eyelids, congenital cataracts, parietal and frontal bossing, microstomia, hypoplastic mandible and skin atrophy. Intraoral examination showed that primary teeth eruption was not concordant with her age. The upper right and lower both cuspids with lower right first premolar primary teeth were not erupted. Also her upper incisors had caries. So prophylactic and restorative treatments were planned.
Conclusion: Due to the findings of this syndrome; an interdisciplinary approach including early preventive care program, detailed oral hygiene motivation, dietary recommendations and counseling of the parents were initiated. Because of the multiple skeletal and dental problems of this patient; the premature loss of primary teeth with the congenital absence of several permanent teeth will result in functional as well as esthetical problems. Hence, the patient must be included in a strong prevention program as early as possible.

P070

Relationship Between Craniofacial Morphology and Sleep Bruxism in Adolescent

Gokce G. Gokdogan[1], Ozlem Tulunoglu[1], Tuba Tortop[2], Meryem T. Alkurt[3]

[1]Department of Pediatric Dentistry, Gazi University, Ankara, Turkey, [2]Department of Orthodontics, Gazi University, Ankara, Turkey, [3]Department of Oral Diagnosis and Radiology, Gazi University, Ankara, Turkey

Introduction: Sleep bruxism is a stereotyped movement disorder characterized by grinding or clenching of the teeth during sleep. A change in orofacial muscles function was first reflected electromyographically and in bruxism masseter and internal pterygoid muscles by their action directly influence the amount and direction of growth of gonial process. The aim of this study was to determine whether a relationship existed between the craniofacial morphologies and presence of bruxism in adolescent.

Material and methods: The sample group comprised thirty-four 13–16 years old children of both genders with complete permanent dentition. Bruxism was evaluated by a structured questionnaire on clinical sign/symptoms and a bite strip (BiteStrip®, S.L.P. ltd, Israel). It is a single use small disposable electronic electromyographic device designed as a front line screener for bruxism. According to the Bite-Strip scores among the participants were: Group 1 (n: 10): No bruxism. Group 2 (n: 7): 1: mild. Group 3 (n: 8): 2: moderate. Group 4 (n: 9): 3: severe. Craniofacial measurements were obtained from lateral cephalograms by same examiner. Kolmogorov-Smirnow's one-sample test for testing the distribution of the variables for normality and ANOVA and post hoc test was performed to analysis of differences between bruxism and cepholometric measurements.

Results: This study found no statistical significant differences in the craniofacial morphologies of bruxers and non-bruxers, except for difference in Sella-Basion. This measure was significantly increased in Bruxers.

Conclusion: The results of this study showed that except for Sella-Basion, craniofacial morphologies were not found to be related to bruxism in adolescents.

P071

Two Different Therapeutic Approaches to Ranulas

Simge Durmuşlar[1], Ahmet Ferhat Mısır[2], Levent Demiriz[1]

[1]Department of Peadiatric Dentistry, Bulent Ecevit University, Faculty of Dentistry, Zonguldak, Turkey, [2]Department of Oral and Maxillofacial Surgery, Bulent Ecevit University, Faculty of Dentistry, Zonguldak, Turkey

Introduction: The term ranula is used to describe mucoceles occuring on the floor of the mouth. Ranulas develop from extravasation of mucous after trauma to the sublingual gland or obstruction of the ducts. In the treatment of ranula, which may be seen in almost all ages beginning childhood, have been reported including aspiration of mucus, marsupialization, excision of the ranula alone or with sublingual gland and cryosurgery.

Case: In this case report we explained that two different therapeutic approaches to intraoral ranulas. An 8 years-old and a 12 years-old boys reported discomfort with swallowing. On physical examinations, diagnosed as ranula that there was a soft, nontender fluctuant mass on the floor of the mouths. The ranula seen in the first case, we learned that occured when he started using a removable space maintainer. The ranula of the first case was aspirated mucus and recovered spontaneously shortly after the space maintainer was disused. The ranula of the second case was observed during the presurgical period but spontaneous resolution was not detected and then the ranula excised with salivary gland duct under local anesthesia. Both of them, histopathological examination revealed that ranulas consisted of central cystic space containing mucin. No recurrence has been observed after 6 months of follow-up.

Conclusion: Excision of the ranula alone or with sublingual gland, commonly performed, is a successful method of treatment. If the cause of trauma eliminated, conservative treatment with spontaneous resolution may be another option for pediatric population.

P072

Identification of the Mandibular Landmarks in a Pediatric Population

Kenan Cantekin[1], Özkan Miloğlu[2], Ahmet Ercan Şekerci[3], Süleyman Kutalmış Büyük[4], Yasin Yaşa[2]

[1]Department of Pediatric Dentistry, Erciyes University, Kayseri, Turkey, [2]Deparment of Oral and Maxillo-Facial Radiology, Atatürk University, Erzurum, Turkey, [3]Deparment of Oral and Maxillo-Facial Radiology, Erciyes University, Kayseri, Turkey, [4]Department of Orthodontics, Erciyes University, Kayseri, Turkey

Aim: The aim of this study was to determine and compare reliabilities of common mandibular landmarks and to determine the incidence of incisive canal, anterior looping and lingual foramen in children from panoramic and CBCT images.

Material and methods: Panoramic and CBCT images from 100 children and adolescent patients were randomly selected. In order to grade the visibility of mandibular anatomical landmarks, a four-point rating scale was used.

Results: In panoramic images; the mandibular canal could be observed in 92.5% of the cases, with a good visibility in 12.0% of the cases. The mental foramen could be observed in 44.5% of the cases while good visibility was not seen. Anterior looping of the mental nerve was present in 16.5% of the cases while good visibility was not seen in any case. An incisive canal could be identified in 22.5% of the cases, with only 1.5% showing good visibility. The lingual foramen could be visualized in 61.0% of the cases, with good visibility in 6%. In CBCT images; the mandibular canal, the mental foramen and the lingual foramen could be observed in 100% of the cases, with a good visibility in 51.0%, 98.5% and 45.0% of the cases, respectively. Anterior looping of the mental nerve was present in 26% of the cases, with 2% having good visibility. An incisive canal could be identified in 49.5% of the cases, with only 7.5% showing good visibility.

Conclusions: This study confirms the applicability of CBCT images for visualization of critical structures in children.

P073

Microleakage of Self-Adhering Material in Primary Teeth after ART

Zeynep Aslı Güçlü[1], Nazmiye Dönmez[2,3], Tamer Tüzüner[4], Şerife Özalp[5]

[1]*Department of Pediatric Dentistry, Faculty of Dentistry, Trakya University,* [2]*Department of Operative Dentistry, Bezmialem Vakif University, Faculty of Dentistry,* [3]*Department of Restorative Dentistry İstanbul, Turkey,* [4]*Department of Pediatric Dentistry, KATU Faculty of Dentistry,* [5]*Department of Pediatric Dentistry, Faculty of Dentistry, Bezmialem Vakif University*

Aim: The aim of the present study was to compare the performance of materials suitable for ART with regard to microleakage in class II restorations of primary molars in an in vitro conditions.

Materials and methods: In this study it was carried out to compare the microleakage of a flowable composite (Vertice™ Flow, Bisco, USA), an injectable resin modified glass-ionomer (Equa, GC, Japan) and conventional glass-ionomer (Ionofil, Voco, Germany) on 33 carious primary molars. Teeth were divided into three groups (n = 11). The specimen preparation procedures were performed by the same operator. The teeth were subjected to thermally cycled (between 50 and 550°C, 1000 cycle) and stained with 0.5% basic-fuchsin solution. Then the teeth were sectioned in bucco- lingual direction to examine dye penetration under stereomicroscope.

Statistical analysis were performed with SPSS for Windows 15.0. Kruksal–Wallis and Mann–Whitney *U*-test with Bonferroni correctionwere used both for occlusal and gingival scores ($p < 0.017$).

Results: No significant differences were found among the groups regarding gingival scores ($p > 0.017$). Except for the other pairwise comparisons, significant differences were only found between conventional and injectable resin modified glass-ionomer ($p < 0.017$) in terms of occlusal scores. However, no significant difference was observed when self-adhering flowable composite was compared to conventional and injectable resin modified glass-ionomer cement ($p > 0.017$).

Conclusions: This study concludes that flowable composite materials can be used like conventional glass ionomer for ART of the primary teeth but it does not effect the long-lasting time with regard to leakage.

P074

Do Children Always Prefer Colorful Things?

Didem Öner Özdaş[1], Şerife Özalp[2]

[1]*Department of Pediatric Dentistry, Istanbul Aydin University, Istanbul, Turkey,* [2]*Department of Pediatric Dentistry, Bezmialem University, Istanbul, Turkey*

Aim: Doing known and/or preferred activities affects performance positively. Also person's choice which he/she preferred provides more positive interaction between who gives that opportunity to him/her. While determining of children's consumption habits, according to perception levels and age of children, color, content and design of the products are all taken into consideration. It is thought that children like colorful things. The aims of this study were to determine if children really curious about trying colorful things and choice priority of children in between the colored mouth rinsing liquids during a dental treatment session (DTS).

Material and methods: Totally 263 children (ages 3–15 year old; mean age: 8.62 ± 2.48; 122 female, 141 male) assessed in this study. Three transparent cups filled with water, green and pink rinsing solutions and aligned near dental unit. During DTS, child was told to rinse his/her mouth with one of the cups whichever he wants. The preferred color of cups, gender, age and number of sessions were recorded. All data were statistically analysed by SPSS 15.0 programme and chi-square tests.

Results: Children preferred water 62.7%, pink 21.7%, and green liquid 15.6%. Only eight children tried three of the cups in one DTS. Girls chose pink and boys chose green liquid but this difference was not statistically significant. Children attended DTS one time 74.5%; twice 22.4%; three times 3% in the study.

Conclusion: Neither ages and gender nor number of attending DTS affected children's preference. Water was the mostly chosen rinsing liquid. Children do not wonder about colorful things in a DTS.

P075

Revascularization of Immature Incisors after Dental Injuries: Two Cases Report

Kenan Cantekin, Güldağ Herdem

Department of Pediatric Dentistry, Faculty of Dentistry, Erciyes University, Kayseri, Türkiye

Introduction: Intrusive luxation in the permanent dentition is an uncommon injury but it is considered one of the most severe types of dental trauma because of the risk for damage to the periodontal ligament, pulp and alveolar bone. Effect of regenerative procedures based on the type of tooth injury, fracture type, presence of necrosis or infection, periodontal status, presence of periapical lesions, stage of tooth development, vitality status, patient age, and patient health status will be reviewed.

Case: In this case report; a 6-year-old male presented with trauma to the permanent maxillary central incisors. Upon clinical and radiographic examination, the left central incisor had open apex and intrusion degree was more than 7 mm. Right central incisor had open apex and subluxation injury. The teeth were treated via a revascularization protocol using sodium hypochlorite irrigation followed by spontenous repositioning then expected to make the source of bleeding clot formation. When occurred of bleeding clot formation a coronal seal of mineral trioxide aggregate and resin composite. Revascularization therapy was performed over multiple visits. Fourteen months after treatment right incisors root development appeared complete and dentinal wall thickening was noted, particularly in the roots apical third. However, revascularization of left incisor which had intrusion injuries, the prognosis has been quite poor and still being followed.

Conclusion: Although, follow-up observations confirmed the efficacy of the regenerative treatment as a viable alternative to conventional apexification in endodontically involved, subluxation injury, this treatment approach might show undesirable results for some of luxation injury such as intrusive cases.

P076

Iatrogenic Dentistry in Kosovo Population

Fatmir Sadri Dragidella[1], Metush Disha[1], Gloria Staka[2], Blerim Kamberi[3], Kastriot Meqa[1], Zana Sllamniku[1]
[1]*Department of Periodontology and Oral Disease, Faculty of Medicine, Dentistry School, University of Prishtina, Kosovo,* [2]*Department of Prosthetic Dentistry, Faculty of Medicine, Dentistry School, sUniversity of Prishtina, Kosovo,* [3]*Department of Cariesology and Endodontics, Faculty of Medicine, Dentistry School, University of Prishtina, Kosovo*

Aim: The aim of this study was to examine the prevalence of incorrect dental fillings and dental crowns and to determinate the influence of iatrogenic dentistry in marginal periodontium on Kosovo residents.
Matherial and methods: In this study were examined 2012 individuals from six Kosovo locations, with mean age of 31.61 years. 44.3% of them were females and 55.7% males. Presence of incorrect dental fillings and crowns was determined with dental examination and retro alveolar x-rays. Examined persons were divided in ten age groups. Periodontal damages were evaluated with CPITN index. Adequate methods of medical statistics were used for data processing.
Results: Prevalence of incorrect dental fillings (second and fifth Black's class) was recorded at 581 individuals (28.9%), whereas incorrect crowns at 117 examined persons (5.8%). Bad fillings were recorded more often at females, while bad crowns were frequently recorded at males. It is obviously that incorrect fillings or crowns, causes more damages of supporting teeth structures. There is positive visible link between incorrect fillings and crowns and periodontal damages at males ($p < 0.02$) and females ($p < 0.05$).
Conclusions: Iatrogenic dentistry has an accessory role in development of periodontal disease. It allows accumulation of microbial plaque and additional progression of periodontal disease. A high prevalence of iatrogenic dentistry was recorded in this study. Periodontal conditions in presence of incorrect dental fillings and crowns were significantly worse. In fact these results were founded just for some age groups, not for all of them.

P077

Combined Endodontic and Periodontal Treatment of Maxillary Frontal Teeth Crown – Clinical Cases

Metush Disha[1], Fatmir Dragidella[1], Kastriot Meqa[1], Zana Sllamniku Dalipi[1], Teresa Disha[2], Saranda Disha[1], Edon Behluli[1], Donika Disha[2], Burim Gutiqi[2], Melisa Disha[2], Donika Dragidella[1]
[1]*Periodontology and Oral Medicine, Dentistry School, University of Prishtina, Prishtina, Republic of Kosovo,* [2]*Private Dentistry Clinic "Dental- D", Peja, Republic of Kosovo*

Objective: Endo-periodontal lesion can be treated by endodontic and periodontal care and sometimes complemented by surgery. Extensive carious lesions, especially in the maxillary frontal teeth represent not only functional and aesthetic problems, but also psychosocial discomfort due to bad appearance.
Methods: Two patients of same age (16) were treated for extensive destruction of the maxillary frontal teeth 11, 21, with involvement of the periodontal tissues, while one case had periapical pathology, too. The cases were indicated for endodontic as well as periodontal treatment.
Results: The endodontic treatment of the both cases consisted of root canal treatment and composite restoration, while the periodontal treatment consisted of surgical flap surgery (in one of the cases also with apicotomy). Postoperative follow-up after 3 weeks, 1 year and 3 years showed the maintenance of the results of the treatment.
Conclusion: The reconstruction of the maxillary frontal teeth has restored functionality and esthetics, and satisfactory psychological impact to the patient.

P078

Multiple Extractions During Periodontal Surgery – Case Presentation

Kastriot Meqa, Fatmir Dragidella, Metush Disha, Zana Sllamniku Dalipi, Saranda Disha, Donika Dragidella
Periodontology and Oral Medicine, Dentistry School, University of Prishtina, Prishtina, Republic of Kosovo

Introduction: Treatment option of periodontal disease in terminal stage is usually extraction. Due to pathological remains of the periodontal tissues after the extraction, the extraction site will have better regeneration process if the affected region is treated with periodontal flap surgery. During this procedure, multiple extractions are followed with profound debridement of bone defects and mucosae.
Material and method: Patient AB male, age 37 was referred for periodontal treatment with complaints of mobility and migration of the teeth in both jaws. Clinical and radiographic assessment concluded that most of the frontal teeth of both jaws are indicated for extraction. Periodontal surgery with Widman-modified flap was conducted in the frontal maxillary and mandibulary teeth. Teeth 12, 11, 21, 22, 32, 31, 41, 42 were extracted and the extraction sites were carefully cleaned, removing the pathological soft tissues and sharp bone extrusions.
Result: Postoperative visits showed that the restitution of the region was sufficient and ready to receive prosthetic appliance.
Conclusion: Periodontal treatment plan consisting of multiple extractions may be considered as one of the options for periodontitis.

P079

The Clinical Comparison of Free Gingival Graft and Semilunar Coronally Position Flap

Gholamreza Farrokhi
Department of Periodontal Surgery, Samen Hospital, Mashhad, Iran

Aim: Keratinized gingival tissue around teeth is essential to withstand of gingival inflammation. Among currently used procedures for gingival recession, free gingival auto graft is more common.

The aim of this study was to clinically compare the outcome of free gingival graft vs. semi lunar coronally position flap in order to augment gingival recession.
Materials and methods: The present study was a controlled, clinical trial which 20 pairs of upper left and right canine teeth requiring gingival augmentation were exposed to surgery using (FGGP) and (SCPF). Statistical data analysis was done using SPSS software. Chi- square (χ^2) test was used for comparison of color matching between two groups. Nonparametric Mann–Whitney *U*-test was used for comparison of dimensional changes of graft between two groups.
Results: The result showed that the amount of dimensional changes in the (FGGP) was more than (SCPF) ($p < 0.05$). With regard to the color matching with adjacent tissue, the results of (SCPF) was superior to (FGGP) ($p < 0.05$).
Conclusion: Both procedures had the ability to increase the keratinized gingival width, however SCPF had lower dimensional changes. In addition, SCPF had better color matching and esthetic. Also this procedure is simpler and has less side effects such as hemorrhage, wound healing.

P080
Gingival Recession Treatment with Connective Tissue Grafts or Platelet Rich Fibrin
Elif Öncü[1], Elif Emine Alaaddinoğlu[2]
[1]*Department of Periodontology, Faculty of Dentistry, Konya Necmettin Erbakan University, Konya, Turkey,* [2]*Department of Periodontology, Faculty of Dentistry, Başkent University, Ankara, Turkey*

Aim: The main objective of this study was to evaluate the clinical effectiveness of platelet-rich fibrin membrane used in combination with a coronally advanced flap and to compare it with subepitelial connective tissue graft in Miller Class I bilateral gingival recession treatment.
Material and methods: Ten healthy patients with buccal Miller's Class I recession defects participated in this case series. Sixty recession defects were treated. Recession sites were assigned randomly into platelet-rich fibrin membrane used with a coronally advanced flap (PRF) and subepitelial connective tissue graft in combination with a coronally advanced flap groups (CTG). Root coverage and keratinized tissue gain were evaluated at 6th month. Post-surgical patient satisfaction and pain status were measured by comparing visual analogue scale (VAS) scores.
Results: All treatments were effective in providing a significant reduction of baseline recession. Mean recession reduction was not statistically different between groups. Complete root coverage percentages of PRF were similar or lesser compared to the subepithelial connective tissue grafts. Operation time was significantly shorter for PRF when compared to the CTG. Use of a PRF membrane in gingival recession treatment decreased subjective patient discomfort compared to CTG-treated gingival recessions.
Conclusion: The results indicated that platelet-rich fibrin membrane used in combination with coronally advanced flap can be considered as an alternative method for the treatment of Miller Class I recession defects.

P081
Treatment of Gingival Recession with Subepithelial Connective Tissue Graft and Double Papilla Flap Approach
Gözde Peker Tekdal, Ali Gürkan
Department of Periodontology, Ege University, İzmir, Turkey

Aim: This case report presents treatment of a patient who has gingival recession on the facial aspect of lower incisor by combination of subepithelial connective tissue graft and double papilla flap approach.
Materials and methods: A 37-year-old female patient having 7 mm Miller class III gingival recession on the facial aspect of lower left central incisor, referred to the clinic for treatment of root sensitivity and esthetic concern. After initial periodontal theraphy was completed, incisions were made all along the soft tissue margin of the defect. Then, superficial horizontal incisions were made at both sides of the wound edges and two vertical incisions were performed from the edges of the horizontal incisions to below the mucogingival junction. Flap was raised with a split-full-split approach in the coronal-apical direction and a subepithelial connective tissue graft was harvested from palate. Recipient sites were de-epitelized and subepithelial tissue graft was stabilized on the exposed root surface with sutures. After that double papilla flap was coronally positioned to cover the recession completely. The surgical site was evaluated at 2, 6, and 12 months.
Results: The surgical site healed uneventfully. At the end of the 12 month, recession depth decreased from 7 to 2 mm and keratinized tissue width increased from 0.5 to 2 mm.
Conclusion: The root coverage procedure, presented in this case, involving subepithelial connective tissue graft with double papilla flap approach is a safe and predictable procedure for Miller class III recession-type defects.

P082
Mutational Analyses of the Cathepsin C Gene (CTSC) in Two Iranian Families with Papillon Lefèvre Syndrome
Hamidreza Boostani, Hamidreza Arab,
Mohamadreza Abbaszadeghan
Department of Periodontics, Mashad University, Mashad, Iran

Purpose: Papillon-Lefèvre syndrome (PLS; OMIM 245000) is a rare autosomal recessive disorder. Clinically, PLS is characterized by hyperkeratosis involving the palms, soles, elbows and knees which is followed later on by periodontitis, destruction of alveolar bone and loss of primary and permanent teeth. Mutations of the lysosomal protease cathepsin C (CTSC) gene have been shown to be the genetic cause of Papillon-Lefèvre syndrome. This study analyses of the Cathepsin C Gene (CTSC) mutation in two Iranian families with Papillon Lefèvre syndrome.
Materials and methods: We analyzed the DNA of two members from consanguineous families for mutations by direct automated sequencing of genomic DNA that amplified for exonic regions and associated splice intron site junctions of the cathepsin C gene. We then performed RFLP to determine the presence of mutations in control groups.

Results: Two Iranian patients carrying Papillon-Lefèvre syndrome showing premature tooth loss and palmoplantar hyperkeratosis. Mutation screening and sequence analysis of the CTSC gene revealed a novel mutation (Del CTG, 207) in axon 1 in one patient, and one previousely reported mutations (C>T 28595) in the other patient. RFLP confirmed different patterns of restricted fragment between 50 healthy controls and patient.
Conclusions: The presence of this mutation in these patients provides evidence for founder CTSC mutations in PLS. This mutations lead to the loss of leusine aminoacide molecule that present in proteins. Our novel discovery indicates that the phenotypes observed in these two patients are due to the CTSC gene mutation.

P083

Therapy of Infrabony Defects Using Combination of Bone Materials, Enamel Matrix Proteins and Membranes

Tamara Ristic, Milica Nedic
Faculty of Stomatology, Pancevo, Serbia

Aim: Periodontal regeneration refers to the restoration of bone, cementum and ligament to their original levels before they were damaged by the periodontal disease process. It has been shown that clinical improvement of intrabony periodontal detects can be achieved with use of enamel matrix proteins (EMPs) or by grafting with bovine porous bone mineral (BPBM). This study compared the clinical effectiveness of EMPs used alone or in combination with BPBM in the treatment of periodontal intrabony defects in humans.
Material and methods: Twenty one paired intrabony detects were surgically treated using a split mouth design. Intrabony defects were treated either with enamel matrix proteins (EMP group) or with enamel matrix proteins combined with bovine porous bone mineral (EMP/BPBM group). Reentry surgeries were performed at 6 months.
Results: Preoperative probing depths, attachment levels, and transoperative bone measurements were similar for the EMP and EMP/BPBM groups. Post surgical measurements taken at 6 months revealed a significantly greater reduction in probing depth in the EMP/BPBM group when compared to the EMP group. The EMP/BPBM group also presented with significantly more attachment gain than the EMP group. Surgical reentry of the treated defects revealed a significantly greater amount of defect till in favour of the EMP/BPBM group as compared to the EMP group.
Conclusion: The results of this study indicate that BPBM has the ability to augment the effects of EMPs in reducing probia depth, improvming clinical attachment levels, and promoting defect fill when compared to presurgical levels.

P084

Role of Interleukin 33 in Gingival Fibroblasts

Arzu Beklen[1], Gülten Tsaous Memet[2]
[1]*Department of Periodontology, Faculty of Dentistry, Osmangazi University, Eskisehir, Turkey,* [2]*Tepebasi Oral and Dental Health Hospital, Ankara, Turkey*

Objective: Interleukin-33 (IL-33) is a new member of the IL-1 superfamily, binding to mIL-33R (ST2L) and IL-1 receptor accessory protein (IL-1RAP). This ternary complex signals via NF-kB and MAP kinases, activating the production of Th2 cytokines by mast cells, basophils, eosinophils and lymphocytes. In this study we sought, apart from the previously described cells, if IL-33 is released from gingival fibroblasts during periodontal inflammation.
Material and methods: Local ethical committee approved the study. TNF-α IgG was used to immunostain formalin fixed paraffin embedded human periodontal tissues. Ten healthy (age range 30–37 years) and ten periodontitis (age range 31–45 years) patient samples were used. The influence of TNF-α on IL-33 in gingival fibroblasts was analyzed with ELISA for in vitro analysis. Student's t-test was used to compare data between tissues or cultured fibroblasts.
Results: The number of TNF-α positive cells was higher in periodontitis group compared to healthy group ($p < 0.001$). TNF-α located in all cell types of connective tissue, as well as in gingival fibroblasts. Upon stimulation with TNF-α, gingival fibroblasts released IL-33 ($p < 0.001$).
Conclusion: IL-33 is released during necrosis as a danger signal or alarmin, and that is related to disease severity. Chronic periodontitis is characterized by Th2 cell dominance, which has been linked to anti-inflammatory responses and periodontal repair. Therefore, TNF-α-induced IL-33 might directly link inflammation to the IL-33-dependent stimulation of Th2 cytokine-producing cells.

P085

Comparison of Non-Viral Transfection on Human Periodontal Ligament Stem Cells

Yajing Wang, Shuhuan Shang, Chengzhang Li
School and Hospital of Stomatology, Wuhan University, Wuhan, Hubei Province, China

Purpose: Inducing human periodontal ligament stem cells (hPDLSC) differentiation by DNA transfecrtion is a promising way for periodontal tissue engineering. However, there are very few studies focus on introducing foreign DNA into hPDLSC by non-viral methods which were relatively safe. Hense, the major purpose of this study was to compare the transfection efficiency and toxicity of non-viral gene transfer methods on hPDLSC and search a best approach and optimal protocol for transfer genes into hPDLSC using non-viral vectors.
Materials and methods: hPDLSC were transfectd by (i) Lipofectamine 2000 Reagent, (ii) polyethylenimine (PEI), (iii) GBfectene-Elite transfection reagent, (iv) X-tremeGENE HP DNA Transfection Reagent, (v) MATra Magnet Assisted Transfection, and (vi) compared to lentiviral vectors harboring a eGFP gene. Transfection efficiency was measured by fluorescence microscope and flow cytometry. Meanswhile, cell morphology and growth status were observed in brightfield of microscope in order to estimate the cytotoxicity.
Results: Among these methods, the transfection efficiency of the former 4 methods was not very satisfactory (<10%), especially lipofectamine 2000. However, MATra Magnet Assisted Transfection was the most effective non-virval method (60%). Moreover,

cellular toxicity was lower than that of former 4 methods. Finally, transduction with lentiviral vectors (positive control) obtained the highest levels of transduction (95%).
Conclusions: In conclusion, the transfection efficiency of PDLSCs with Magnet Assisted Transfection was higher than the other non-viral transfection regents in this study although it was far less than viral vectors.

P086
Effect of Baseline Defect Angle and Depth on Periodontal Regeneration
Ömer Birkan Ağralı, Bahar Kuru, Leyla Kuru
Department of Periodontology, Faculty of Dentistry, Marmara University, Istanbul, Turkey

Aim: To examine any possible association between baseline radiographic defect angle/depth and clinical/radiographical outcomes when enamel matrix derivatives (EMD) either alone or with autogenous cortical bone graft (ACBG) were used in the treatment of intrabony defects.
Materials and methods: Twenty intrabony defects with a depth ≥4 mm in 10 patients with advanced chronic periodontitis were included. Following sulcular incision, flap reflection and degranulation, the depth of intrabony defect was measured. Then the root surfaces were conditioned with EDTA gel and the defects were randomly treated with EMD alone or EMD + ACBG combination. Clinical parameters were recorded for the deepest site of the defect and standardized periapical radiographs were taken at baseline and 6 months after surgery. Defect angles and the percentage of intrabony defect fill (DF) were calculated on radiographs using Image J software. Pearson method was used for statistical analysis. The study approved by the Institutional Review Board of Health Sciences of Marmara University (MAR-Yç-2009-0048)
Results: Both treatment groups demonstrated similar significant clinical and radiographical improvements at 6 months. Statistical analysis revealed significant negative correlation between the defect angle and attachment gain ($p < 0.05$), also DF ($p < 0.01$) in both groups. On the other hand, positive correlations were found between the defect depth and attachment gain/DF ($p < 0.05$) in both groups.
Conclusions: Our findings suggested a significant correlation between baseline radiographic defect angle/depth and periodontal regenerative healing at 6 month. Within the limits of this study, it can be concluded that the baseline radiographic defect angle and depth are prognostic indicators of treatment outcome.

P087
Radiological Results of Apical Cystic Granuloma Treated with Cupral
Aida Meto[1], Agron Meto[1], Michele Tepedino[2]
[1]Department of Dentistry, Aldent Medical University, Tirana, Albania, [2]Department of Biotechnological and Applied Clinical Sciences, Aquila University, Aquila, Italy

Purpose: Provision of a safe alternative for apical cystic granuloma treatment.
Methodology: We have treated 22 cases diagnosed with apical cystic granuloma with size exceeding 0.5 cm, nine cases in maxilla and 13 cases in the mandible, mainly in multiradicular teeth. 40% of the cases were females and 60% males, aged 25–70 years old. Endodontic cavities were opened with the traditional techniques. Starting from the entrance, we propagated in 2/3 depth of the channels. A Cupral amount was applied with the help of lentylo as deep as it was possible. Depot-suspension of Cupral was created and it was set in motion with the help of apparatus Comfort II. 4–5 sessions were carried out in the interval from 8 to 10 days. Afterwards the cases were filled with Atacamit paste. Results were observed for a period from 3-6-12 and 24 months after treatment, by clinical and radiological view.
Results: In the first session, the pain came as a result of proteolytic action of Cupral, noticed only in 30% of the cases. At the end of the fourth session, the patients showed no concerns in percussion and mobility, transiting mucosa color was normal. X-ray examinations after 3–6–12 and 24 months showed that destructive hearths were reduced to the maximum, and after 1 year they were ossified. The earliest radiological analysis of cases showed the effectiveness of the treatment with Cupral compared to the traditional methods.
Conclusion: Treatment of apical cystic granuloma with Cupral-depotphorese is a safer alternative, than the treatment with Ca(OH) 2 and other antiseptics.

P088
The Application of Enamel Matrix Proteins in Regenerative Periodontal Therapy
Smiljka Cicmil[1], Jelena Krunic[2], Nikola Stojanovic[2], Milica Nedic[3]
[1]Department of Periodontology, Faculty of Medicine, Univeristy of East Sarajevo, Foca, Bosnia and Herzegovina, [2]Department of Restorative Dentistry and Endodontics, Faculty of Medicine, University of East Sarajevo, Foca, Bosnia and Herzegovina, [3]Department of Periodontology, Faculty of Stomatology, University Business Academy, Pancevo, Serbia

Aim: The purpose of this study was to evaluate the effectiveness of enamel matrix proteins (EMPs) compared with open flap debridment (OFD) in the treatment of intrabony defects in humans.
Materials and methods: Twenty-four-paired intrabony defects were surgically treated using a split mouth design. Experimental site were treated with EMPs. Control sites were treated with an OFD. Re-entry surgeries were performed after 6 months. The primary outcomes evaluated in the study were changes in pocket depth, clinical attachment level and defect bone fill.
Results: No differences in pocket depths, attachment levels and intra-operative bone measurements were observed at baseline. Six months after surgery, the experimental sites exhibited highly significant reduction in pocket depth ($p < 0.001$) and gain attachment level ($p < 0.001$) compared to OFD. Surgical re-entry of the treated defects in experimental group revealed a significantly greater amount of defect fill compared to the controls ($p < 0.001$).
Conclusion: The results of this study indicates that treatment of periodontal intrabony defects with EMPs is clinically and statisti-

cally superior to treatment without EMPs (OFD) for each parameter measured.

Theme: Dental Treatment & Restorative Dentistry: Prosthetics

P089

The Influence of Resin Luting Agents on the Marginal Fidelity of Lithium Disilicate Onlays: An In Vitro Study

Kostantinos Sergis[1], Fahim Vohra[2], Graeme Lillywhite[3]
[1]*Department of Prosthdontics, National and Kapodistrian University of Athens Dental School, Athens, Greece,* [2]*Department of Prosthetic Dental Science, King Saud University, Riyadh, Saudi Arabia,* [3]*Department of Restorative Dentistry, University Of Edinburgh, Edinburgh, UK*

Purpose: The durability of resin-cement interfaces is reported to be the likely cause of failure of bonded porcelain restorations. The purpose of this study was to investigate the marginal fidelity of lithium disilicate glass ceramic onlays cemented to teeth using three different resin luting agents.
Materials and methods: Thirty extracted premolars were prepared to receive MOD onlays with circumferential margins in enamel, allocated to three experimental groups on the basis of type of luting agent: (i) Group A – pre-heated restorative composite (Filtek Supreme, Dentsply); (ii) Group B – RelyX Unicem (Self-Etch Adhesive Resin Cement, 3M ESPE); (iii) Group C – Calibra (Esthetic Resin Cement, Dentsply). After the fabrication of thirty ceramic onlays, pre-cementation fit was assessed and post-cementation marginal continuity was evaluated. The teeth were further immersed in 2% methylene blue solution for 24 h at room temperature prior to embedding and sectioning. The extent of dye penetration along the margins was measured at tooth- cement and ceramic- cement interfaces with a stereomicroscope at 63× magnification. The data were analyzed statistically using a non-parametric Kruskal–Wallis and Dunn's multiple comparisons tests.
Results: Calibra was found to exhibit least microleakage values ($p < 0.001$) at all sites. At the tooth-cement interface, pre-heated composite showed the lowest microleakage ($p < 0.05$) and RelyX Unicem showed the highest microleakage values ($p < 0.01$).
Conclusion: The results suggest that Calibra resin cement is less influenced by microleakage for cementation of ceramic onlays, hence the risk of post-operative sensitivity, caries, discoloration, staining and failure may be comparatively minimized.

P090

The Effect of Surface Treatments on Bond Strength of Dentin

Erhan Dilber[1], A. Nilgün Öztürk[2]
[1]*Department of Prosthodontics, Sifa University, Izmir, Turkey,*
[2]*Department of Prosthodontics, Selcuk University, Konya, Turkey*

Aim: The purpose of this study was to investigate the effect of different surface treatments (acid, air abrasion, laser, laser + acid and air abrasion + laser) on shear bond strength of dentin.
Materials and methods: In our study, maxillary central teeth were used including 105 teeth for shear bond strength, six teeth for AFM imaging. Dentin specimens embedded to clear acrylic resin were divided into seven groups: Control, acid etching (37% phosphoric acid), air abrasion (50 μm Al2O3), Er:YAG laser etching (120 mJ, 10 Hz), laser + acid etching, air abrasion + acid etching, air abrasion + laser. After the surface treatments, IPS Empress Esthetic porcelain discs were cemented by using Variolink Veneer light-cured resin cement. After specimens had subjected to thermal cycling (10,000 cycles, 5–55°C), shear bond strength test was applied and fracture types (adhesive, cohesive, mixed) were observed. Surface treated dentin specimens were observed with SEM and AFM. Shear bond strength values were analyzed by one-way analysis of variance and Tamhane's T2 tests.
Results: Porcelain-dentin bond strength values of laser group were statistically higher than control and air abrasion group; Porcelain-dentin bond strength values of acid group were statistically higher than control, air abrasion and air abrasion + laser group ($p < 0.05$). AFM and SEM images showed changes in dentin surface topography after surface treatments.
Conclusion: Laser etching produced no demineralization of peritubular dentin.

P091

Determining the Effects of Microwave Disinfection on Surface Microroughness of Different Acrylic Resins

Turhan Didinen, Yasemin Keskin
Department of Prosthodonics, Ankara University, Ankara, Turkey

Introduction: Several studies have demonstrated the adherence of *Candida* spp. to both denture base acrylic resins and lining materials. Therefore, the denture-fitting surface can act as a reservoir of *Candida* spp. and the use of removable dentures is a predisposing factor for denture related stomatitis. Proper routine cleaning of the denture is essential for the prevention and treatment of denture stomatitis. Studies have shown that microwave irradiation is an effective method to inactivate plaque microorganisms from removable dentures.

Ideally, a disinfection method should be effective without detrimental effects on the material used for the fabrication of dentures. Among these properties, roughness is important, as rough surfaces of acrylic resins are significantly more prone to mcrorganisms accumulaton and plaque formation than smooth surfaces.

Injection molding for denture base resins is a polymerization technique, which is developed to overcome the polymerization shrinkage and improve the mechanical properties. Many studies have evaluated this technique comparing with the conventional method but our knowledge about the effect of microwave disinfection on surface microroughness is limited.
Materials and methods: In this study, we have evaluated the changes in surface microroughness of a conventional and injection-molded denture base resins with or without microwave disinfection. Microwave disinfection is applied with 650 W power for 3 min to square shaped resin specimens immersed in water. Surface microroughness is measured with a profilometer.

Results and conclusion: We determined that microwave disinfection increases the surface roughness of both materials, but this increase is not statistically and clinically significant. Further investigation is needed.

P092

Dimensional Stability of Made Casts from Conventional and Extended-Pour Alginates

Mehmet Dinçel[1], Hasan Önder Gümüş[1], Süleyman Kutalmış Büyük[2], Haydar Albayrak[1], Hasan Hüseyin Kocaağaoğlu[1]
[1]*Department of Prosthodontics, Faculty of Dentistry, Erciyes University, Kayseri, Turkey,* [2]*Department of Orthodontics, Faculty of Dentistry, Erciyes University, Kayseri, Turkey*

Objectives: The aim of this study was to determine the accuracy of casts made from alginate impression materials with immediate and delayed pouring with the help of a 3D scanner.
Materials and methods: A master model was mounted on a modified articulator designed to standardize impression procedures. A total of 125 impressions were taken and grouped into 25 groups (n = 5) according to alginate brand [CA37 (Cavex), Tropicalgin (Zhermack), Colorchange (Cavex), Hydrogum 5 (Zhermack), and Hydrocolor 5 (Zhermack)] and storage time (0, 1, 24, 72 and 120 h). Impressions were stored at 23 ± 1°C and 100% relative humidity and poured with gypsum at the predetermined storage time. Casts were scanned with a 3D model scanner. The digital models were measured and the data obtained was statistically analyzed using two-way analysis of variance (ANOVA) and Tukey's tests ($p < 0.05$).
Results: With impressions poured following 0, 1 and 24 h of storage, no statistically significant differences were found between measurements made from the master model and those made from the impression casts ($p > 0.05$). However, with impressions poured following 72 and 120 h of storage, measurements made from the master model and those made from casts of Tropicalgin and Cavex CA37 alginates were found to differ significantly ($p < 0.05$), whereas no significant differences were found between measurements made from the master model and those made from Colorchange, Hydrogum 5 and Hydrocolor 5 impression casts.

P093

Fretting and Fretting-Corrosion of 316L Steel in Oral Cavity Environment

Jan Ryszard Dabrowski, Marcin Klekotka, Jaroslaw Sidun
Material and Biomedical Department, Bialystok University and Technology, Bialystok, Poland

Aim: Destruction processes of prosthetic and orthodontic appliances not only significantly diminish their stability in use but also patients' comfort. One of causes of these negative processes, although not so well known, appears to be the destruction of kinematic connection in these appliances due to fretting an fretting-corrosion processes [1]. The paper presents the results of research on fretting and fretting-corrosion of stainless steel type 316L - widely used in dentistry, especially in prosthetic and orthodontic appliances.
Materials and methods: The investigations were carried out using original devices and following specially devised methodology worked out by the author. The friction and corrosion tests were performed in the presence of phosphoric buffer (PBS) as well as natural and artificial saliva. For research purposes some original compositions of artificial saliva were manufactured. Destruction processes resulting from fretting and corrosion were analyzed using scanning electron microscopy (SEM) and a confocal microscope.
Results: The research results have shown a strong influence of fretting on the corrosion processes (fretting - corrosion). Material transfer processes in the contact zone were observed and evaluated. Significant influence of investigated lubricants on the processes was also examined. The optimum protection effect was confirmed for human saliva and its substitute with Mucine III content.

P094

Study of Longivity of Fixed Prothesis in Tunisia

Ommezine Gnewa Moncef[1], Dallel Ommezine Ines[2], Guesmi Imen Nawel[3], Zohra Nouira[4], Jilani Saafi[5], Mounir Cherif[6]
[1]*Department of Fixed Prothesis, Dental Clinic of Monastir, Tunisia,* [2]*Department of Othodontic, Dental Clinic of Monastir, Tunisia,* [3]*Department of Fixed Prothesis, Dental Clinic of Monastir, Tunisia,* [4]*Department of Fixed Prothesis, Dental Clinic of Monastir, Tunisia,* [5]*Department of Fixed Prothesis, Dental Clinic of Monastir, Tunisia,* [6]*Department of Fixed Prothesis, Dental Clinic of Monastir, Tunisia*

It's a retrospective and analytic study conducted on patients who are consulted at the emergency of the dental clinic of Monastir-Tunisia.
Aims of study:
Determination of longevity of fixed prosthesis.
Identification of the failure's factors.
Materials and methods:
Study concerned 60 patients (41.7%Men and 58.30% Women) aged between 26 and 72 years.
In a practical way, we proceeded by performing:
(1) a clinical examination of a total patients
(2) a radiological examination of the crowned teeth.
Results: A study allowed the repartition of the sample according to age, sex, motivation prosthesis longevity and consultation motive.
Discussion: The results of study were compared to those found in the literature.
Conclusion: This study allowed to identify the factors favorising the appearance of different types of failures.

P095

Anxiety in Prosthodontic Clinic

Amal El Sawy
Faculty of Dentistry, Minia University, Egypt

Aim: The psychological status of an individual is an effective stimulus for unexpected behavior. The aim of this study was evaluated

the anxiety level for patients in prosthodontic clinic, and the relationship between anxiety level and the difficult patient.

Material and methods: One hundred patients, 65 male and 35 female, in the age range 30–65 years were randomly selected for the study.

The State-Trait Anxiety Inventory (STAI) was used to measure the anxiety level of the selected sample.

The difficult patients were identified and classified according to Graves's classification.

Results: The results clarified that, anxiety was influenced by the patients' age, behavior and social problems. Patients aged <50 had higher anxiety levels than patients aged 50 years or over.

The social problems were a factor which increased the anxiety scores. The anxiety scores for difficult patients were higher than for normal patients, but this difference was statistically insignificant. The social problems were the main factors for creating the difficult patient (p-values < 0.05 were considered significant).

Conclusion: The adult patients (age group <50 years) had higher anxiety levels than the old patients. The anxiety scores for difficult patients were higher than for normal patients. The social problems were the main factors for creating the difficult patient.

P096

The Relationship Between Facial Variables and Maxillary Anterior Teeth

Gloria Staka[1], Venera Bimbashi[2]
[1]*Department of Prosthodontics, Faculty of Medicine, Dental School, University of Prishtina, Republic of Kosovo,* [2]*Dental Science, School of Dental Medicine, University of Zagreb, Croatia*

Introduction: The maxillary anterior teeth are important in achieving pleasing dental and facial aesthetics. Selection of the appropriate size of maxillary anterior teeth in complete dentures may be difficult, when pre-extraction records are not available.

Purpose: The aim of this study was to investigate where there is a relationship between the facial variables (face width, philtrum width, mouth width, interbuccal frenum distance) and mesiodistal width of the six maxillary anterior teeth.

Material and methods: One hundred and sixty dental students (80 males and 80 females, aged 18–25 years) of the University of Prishtina participated in the study. Face width (FW), mouth width (MW) and philtrum (PHW) were measured directly on the subjects, while the interbuccal frenum distance (IBFD) and the width of the maxillary anterior teeth (WMAT) were recorded on the dental cast. All measurements were made using a digital caliper (Boss, Germany) with accuracy of 0.01 mm. Descriptive statistics and regression analysis were calculated.

Results: The mean mesiodistal width of six maxillary anterior teeth was 46.13 ± 2.02 mm. There were significant correlation between MW (ß = 0.187, t = 2.234, Sig 0.027, Partial 0.177), IBFD (ß = 0.289, t = 3.837, Sig 0.000, Partial 0.295) and the width of the maxillary anterior teeth (WMAT).

Conclusions: Within the limitation of this study, the mouth width and interbuccal frenum distance can be used as preliminary methods for estimating the width of maxillary anterior teeth for edentulous patients.

P097

The Effect of Implant Shape and Screw Pitch on Bone Microdamage

Baowei Zhang, Chendi Xu
Department of Prosthodontics, School of Medicine, Ninth People's Hospital Affiliated to Shanghai Jiao Tong University

Objective: The aim of this study was to investigate the effect of implant shape and screw pitch on microdamage in bone during insertion of dental implants.

Materials and methods: Thirty custom-made implants (length, 10 mm; diameters, 4.1 mm; cylindrical, tapered and taper-cylindrical shapes; screw pitches, 1.25 and 0.8 mm; classified as 1.25C, 0.8C, 1.25T, 0.8T, 1.25TC, 0.8TC) were randomly placed in goat mandibles with a surgical device. Four cylindrical and four tapered or taper-cylindrical ostoetomy sites were made as control groups. Two implant sites were prepared in the ededtulous area on each side of the mandible. Immediately after the placement of implants, the bone block with the implant was collected. Histomorphometric analyses of the microcrack length (Cr.Le, μm/mm^2) and damaged bone area fraction (DB.Ar/B.Ar, %) were performed. Wilcoxon tests were done for statistical analysis.

Results: (i) On the osteotomy sites of both control groups, no evidence of any type of microdamage was discovered adjacent to the holes. (ii) Microcrack length: 1.25T>0.8T>1.25TC>0.8TC ($p < 0.05$). (iii) Microcrack surface density: 1.25C>0.8C>1.25T> 0.8T>1.25TC>0.8TC ($p < 0.05$). (iv) Damaged bone area fraction: 1.25C>0.8C>1.25T>0.8T>1.25TC>0.8TC ($p < 0.05$).

Conclusion: (i) The generation of microdamage is the result of the placement of implant. Osteotomy preparation does not generate microdamage. (ii) For the implants with the same screw pitch, implant shape has a significant effect on the generation of microdamage. Taper-cylindrical implants cause the least microdamage to the bone. (iii) For the implants with the same implant shape, screw pitch has a significant effect on the generation of microdamage. Increased screw pitch cause greater microdamage to the bone.

P098

Establishment of Digital Models of Tilted Incisors Restored with Fiber Post-Core and Crown

Chun Xu, Wenting Shan, Hao Yu, Xiaoyu Gu
Department of Prosthodontics, Ninth People's Hospital, Shanghai Jiao Tong University School of Medicine, Shanghai, China

Objective: This study aimed to establish the three-dimensional digital model of labially or palatally tilted upper central incisors restored with fiber post-core and all-ceramic crown, and to provide the basis for the finite element mechanical analysis subsequently.

Methods: A maxillary central incisor extracted from a 25 years old male for periodontic reason and a #1.4 mm fiber post (matchpost, RTD) were scanned by micro-CT. Then, the tooth was root canal treated and subsequently prepared according to the requirement of fiber post-core and all-ceramic crown restoration, and was

scanned by Micro-CT again. Then the sectional images obtained from Micro-CT were imported into Mimics software to generate the three-dimensional model of nature tooth, preparation and fiber post. Then the three-dimensional model was imported into Geomagic Studio software to obtain triangular patches of preparation, fiber post, resin core and all-ceramic crown after relaxation and refinement. Finally, models of labially or palatally tilted upper central incisors restored with fiber post-core and all-ceramic crown were designed by adjusting the angle between the long axis of resin core-crown and root (0°, ±10°, ±20°, ±30°) and were imported into SolidWorks software and materialized after surface precision, to obtain the final three-dimensional models.

Results: The three-dimensional digital model of labially or palatally tilted upper central incisors restored with fiber post-core and all-ceramic crown were obtained.

Conclusion: This study establishes the three-dimensional digital model of labially or palatally tilted upper central incisors restored with fiber post-core and all-ceramic crown, and provides the basis for the subsequent finite element mechanical analysis.

P099

TMD in a Population of Urban Bosnian Young Adults

Mihael Stanojevic, Irena Mladenovic, Ivana Simic, Zorica Stojanovic, Ognjenka Janjic Pavlovic, Nedeljka Ivkovic
Department of Prosthodonthics, Medical Faculty Foca, University of East Sarajevo, Republic of Srpska, Bosnia and Herzegovina

Aim: The aim of this study was to determine the presence of TMD in a population of urban Bosnian young adults.

Materials and methods: A cross-sectional survey was carried out among 1062 randomly selected subjects, 646 females, aged 20–40 years, drawn from the five cities in Eastern region of Republic of Srpska, Bosnia and Herzegovina in 2010/between January and December 2010. Subjects were screened for TMD based on Research Diagnostic Criteria for TMD (RDC/TMD). Descriptive statistics and Chi square analysis of results for statistical significance using a p-value of <0.05 was done on count data using SPSS version 17 statistical software.

Results: The prevalence of TMD in the studied sample was 54%, and was higher in females than in males (59.4% vs. 45.4%; $p < 0.001$). The most frequently observed TMD subtype was myofascial pain, diagnosed in 30.6%. Of the individuals. Chronic TMD pain was found in 30.4% of TMD subjects, in 29.2% of cases related to muscle dysfunctions.

Conclusions: TMD is prevalent among Bosnian young adults, especially among females. Longitudinal studies are required to establish possible causes of TMD in Bosnia and Herzegovina. The government needs to develop strategies in prevention, screening and management of TMD.

P100

Quality of Life and Denture Satisfaction in Complete Denture Wearers

Jelena Eric[1], Ljiljana Kulic[2], Ljiljana Tihacek Šojic[3], Georgios Tsakos[4]
[1]*Department of Prosthodontics, University of East Sarajevo, Foča, Bosnia and Herzegovina,* [2]*Department of Endodontics and Restorative Dentistry, University of East Sarajevo, Foča, Bosnia and Herzegovina,* [3]*Department of Prosthodontics, University of Belgrade, Belgrade, Serbia,* [4]*Department of Epidemiology and Public Health, University College London, London, UK*

Aim: This study aimed to assess the: (i) oral health-related quality of life (OHRQoL) and denture satisfaction in complete denture wearers and (ii) correlation between patients' and prosthodontists' assessment of dentures.

Materials and methods: A sample of 114 community-dwelling adults was selected; all were aged ≥65 years, were completely edentulous, wore complete dentures on both arches. Participants were randomly drawn from four senior day-centres for elderly people. Data were collected using an oral health interview, a clinical oral examination, a visuel analoge scale (VAS) and Oral Impacts on Daily Performances (OIDP) questionnaire. The oral health interview recorded data on socio-demographic information and their previous denture history including number of previous dentures and period of wearing the existing dentures. The existing complete dentures were evaluated by the same prosthodontist for retention, stability, occlusion, articulation and vertical dimension. Participants rated their level of satisfaction with their dentures using a VAS. OHRQoL was assessed through Bosnian version of OIDP, recently validated for this population. The data were statistically analyzed using descriptive statistics and Spearman's correlation.

Results: Overall, 42.1% reported at least one oral impact in the last 6 months. Difficulty eating (33.3%) and difficulty smiling (17.5%) were the most common impacts. The Spearman correlation coefficient revealed no significant correlation between the functional assessment of denture and patients' satisfaction for any of the factors evaluated.

Conclusion: The prevalence of oral impacts was high. There was no significant correlation between the clinical variables assessed by the prosthodontist and subjective variables evaluated by the patient.

P101

Diagnosis and Management Challenges of Temporomandibular Joint Dysfunction and Pain Syndromes

Jacques Dargaud, Marco Del Corso, Stephan Tobalem, Patrick Mertens
Departement Universitaire d'Anatomie, Faculte de Medecine Lyon Est, Universite Lyon 1, France

Objective: Diagnosis and management of temporomandibular joint (TMJ) is challenging. In some cases, patients don't need to be systematically referred to a TMJ-specialist and general dental practitioners can make diagnosis and offer valuable treatment plan to

patients. We report here three clinical cases illustrating this approach.

Methods: In all three cases, the main clinical symptom was chronical TMJ pain accompanied by clicking and popping. One patient had also a discomfort, locking of TMJ. Panoramic orthopantomography and dental occlusal analysis were systematically performed using a semi-adjustable arcon-articulator following a careful physical examination.

Results: In two patients, our results showed a poor occlusion. One with linguoversion of teeth #37–47, responsible for a limited mandibular propulsion and retrusion. The second, with multiple tooth positioning abnormalities, responsible for reduced jaw mobility. In these patients with objectively diagnosed occlusal problems, a treatment associating occlusal bite splint (OBS), physiotherapy, on demand NSAI drugs was given. Clinical signs were rapidly decreased 1 week after the beginning of the treatment and subsequently, restorative dental solutions such as implants or dental protheses were used to give a long-lasting physiologic occlusion. In our third patient, despite disabling pain, no clinical or radiological abnormality was detected. She had a satisfactory OBS treatment leading to pain relief.

Conclusion: Pathophysiology of TMJ pains are nor fully understood. Patients with objectively detected occlusal disorders should be distinguished from those with chronical pain but no detectable abnormalities. Treatment strategy should be adapted accordingly. General practitioners may start treatment with OBS, nonspecific pain management and refer difficult cases to specialists. The potential link between anxiety, depression and TMJ pain should be carefully evaluated since anxiety may induce TMJ pain or anxiety may be increased by unrelieved permanent pain.

P102

Effect of Core Build-up Materials on Polymerization of Elastomeric Impressions

Hussain D. Al Sayed[1], Saad S. Al Resayes[1], Faris Z. Jamjoom[2], Zeyad H. Al Sowygh[1]

[1]*Department of Prosthetic Dental Sciences, King Saud University, Riyadh, K.S.A,* [2]*National Guard Hospital, Riyadh, K.S.A*

Objectives: The purpose of this study was to detect whether multiple core build-up materials could have a negative effect on the polymerization of commonly used elastomeric impression materials, and to evaluate several decontamination methods to eliminate any inhibitory effect of core build-up materials.

Materials and methods: The polymerization of six brands of elastomeric impression materials (Virtual, Aquasil, Genie, Correct Plus, Express and Impregum) was evaluated in vitro after direct contact with various core build-up materials (composites resin, flowable composites and resin-modified glass ionomers). The setting of impression materials was visually scored as either inhibited or non-inhibited independently by three different general practitioners. Different methods to prevent inhibition were also tested. The materials were dispensed according to manufacturers' instructions on exposed dentin of premolar teeth mounted in dental stone. A Chi-square analysis was used to evaluate the results ($p < 0.05$).

Results: Setting inhibition was found with five brands of polyvinylsiloxane impression materials when in direct contacted with four types of core build-up materials, while none of the materials used caused inhibition to the polyether impression material. No decontamination method proved adequate in preventing impression material inhibition except grinding 1 mm from the multicore restoration surface. Examiners were in complete agreement (kappa +1).

Conclusions: Under these in vitro conditions, direct contact of polyvinyl siloxane impression materials to some brands of core build-up materials resulted in polymerization inhibition. For optimal result, flowable composites should not be used as a core build-up material with PVS impression materials; polyether is the material of choices.

P103

A 13 Year Follow-Up Study of In-Ceram FPDs

Anders Tillberg[1], Margareta Molin Thorén[2]

[1]*Institute for Clinical Dentistry, University of Tromsø, Norway/ The Public Dental Health Competence Centre of Northern Norway (TkNN), Tromsø, Norway,* [2]*Department of Odontology, Faculty of Medicine, Umeå University, Sweden*

Aim: The aim of this study was to review the long-term clinical performance of In-Ceram Fixed Partial Dentures (FPDs).

Materials and methods: The study comprised a total of 33 FPDs luted with zinc phosphate ($n = 17$) cement and glass ionomer cement ($n = 16$). The California Dental Association (CDA) quality rating system was used to clinically evaluate the FPDs. The Kaplan and Meier nonparametric statistical method was used to analyse the fracture rates obtained.

Results: The estimated survival rate at 13 years for all FPDs was 60.6%. For the CDA rating "Surface", the score "excellent" decreased from 91% at baseline to 21% ($p < 0.001$) at the 13 years clinical evaluation. There were no statistically significant differences between the two luting agents used in regard to the fracture rates obtained.

Conclusion: Almost 40% of the In-Ceram ceramic bridges had fractured after 13 years, which emphasize that the risk of fractures has to be taken into consideration when planning for ceramic FPDs that are likely to be subjected to great stress.

P104

Osteonecrosis in Subpontic Bone of Fixed Partial Denture

Ria Koesoemawati

Department of Prosthodontic University Mahasaraswati Denpasar

Aim: To achieve predictable success Fixed Partial Denture (FPD) prostheses an adequate abutment teeth and supporting structures including a compact alveolar bone beneath the pontic are required. Osteonecrosis is not a disease in the usual sense but is the result of wide variety of local and systemic disorders that eventually lead to ischemia and infarction of the marrow and bone. Osteonecrosis can occur in the jaw bone that can result in ulcers (sores) of gum

tissue, exposed jaw bone and pain. The problem is approximately 90% of subpontic bone demonstrated either ischemic osteonecrosis (68%) and more than 84% of the patients had abnormal radiographic changes. The aim of this study is to discuss osteonecrosis caused of FPD wear. The jaw bones are separated from a trauma-intense and microbiologically diverse oral environment by thin mucosa and periosteum. Trauma to the periosteum may also serve to initiate osteonecrosis in patients wearing dentures or dental prostheses.
Conclusion: In concussion, multifactors of local and systemic condition lead to osteonecrosis caused of FPD such as, extracted infection tooth, poor healing, traumatic prosthetics wear, bisphosphonates medications, herediter and aging process or combination of these factors.

P105

The Effect of the Gonial Angle on Masticatory Performance in Denture Wearers

Deniz Ayşe Deniz[1], Şule Kapkın[2], Yasemin Kulak Özkan[1]
[1]*Department of Prosthodontics, Faculty of Denistry, Marmara University, Istanbul, Turkey,* [2]*Department of Mechanical Engineering, Faculty of Engineering, Istanbul University, Istanbul, Turkey*

Aim: To analyze the gonial angles of the mandible and to determine the relationship of gonial angles, gender, age, duration of the edentulous period, alveolar ridge resorption and the masticatory performance in complete denture wearers.
Methods: Thirty edentulous patients were enrolled in this study. The gonial angles and degree of alveolar ridge resorption of the mandible were measured using panoramic radiographs. Patient's gender, age and duration of the edentulous period were recorded. The masseter and anterior temporalis muscle activities were recorded electromyographic (EMG) measurements, 3, 6, 9 and 12 months after insertion of the new dentures for the masticatory performance. EMG measurements were recorded during maximum voluntary contraction and while chewing pieces of chewing gum and peanut.
Results: There was no statistically significant difference between right (124.12°) and left (124.70°) gonial angles ($p > 0.05$). There was a statistically significant difference between gender in gonial angles ($p < 0{\cdot}05$). The gonial angles of female subjects were greater than male subjects both on the right and left side. No statistically significant difference was seen between the gonial angles and age, duration of the edentulous period and alveolar ridge resorption ($p > 0.05$). However a negative correlation was found between EMG activity and gonial angles, it was not statistically significant ($p > 0.05$).
Conclusions: Female subjects have larger gonial angles both the right and left sides than male subjects. The size of the gonial angle did not correlate with masticatory performance.

P106

Full Mouth Rehabilitation of a Patient with Severe Deep Bite: A Case Report

Gulfem Ergun, Ayse Seda Yucel
Department of Prosthodontics, Faculty of Dentistry, Gazi University, Ankara, Turkey

Aim: Increasing the vertical dimension is essential to resolve each of problems associated with deep bite. Restorative dentistry, orthodontia and oral surgery are the three disciplines that can perform to help gaining the vertical dimension necessary in these patients.
Case: This case report presents increasing vertical dimension with the full mouth restorative treatment procedure for a 40-year-old male patient who exhibited severe deep bite. After clinical evaluations, extraoral examination showed a reduction of the lower facial height and protuberant lips, wrinkles, drooping and over-closed commissures. Additionally, intraoral examination showed a severe anterior deep bite articulation and upper incisors were in contact with the labial tissue of lower incisors. A removable partial denture was made at increased occlusal vertical dimension to use in the first stage of rehabilitation. Diagnostic wax-up was performed at the increased vertical dimension. Then, provisional crowns were fabricated according to this increased vertical dimension. Interim restorations were used for 3 months as a guide for preparing the definitive restorations.
Conclusion: The adaptation of patient to the increased occlusal vertical dimension was evaluated. During this period the patient was asymptomatic. Following the evaluation period definitive restorations were completed and routine clinical assessments were made at the 1st week, 1st month, 3rd month and 6th month, then 1st and 2nd year with visual and radiographic examinations.

P107

An Alternative Method of Adding Eyelashes on Orbital Prostheses

Arzu Atay, Cumhur Korkmaz, Yumushan Gunay
GMMA, Hardarpasa Training Hospital Dental Service, Istanbul, Turkey

Aim: Development of an alternative technique about adding eyelash on orbital prostheses.
Material and method: Impression of defect and healthy side was made as traditional methods. Ocular prosthesis location was determined according to the anatomical planes. Wax modeling was completed on the dental stone model. Eyelashes were embedded in this wax phase. After this phase, eyelashes were coated with silicone elastomer impression material. After this phase, silicone prostheses finished by traditional methods.
Results: In contrast to the traditional method, it was determined that the appearance output as natural as natural eyelash. There was not displacement in eyelashes.
Conclusion: Eyelashes bonded with various adhesives in the traditional method. In this proposed method, there was not required adhesive. Thus was prevented dirty appearance, and rupture of eyelashes and orbital prostheses. With this method, orbital prosthesis could be meet the expectations of the high aesthetically image of the patients.

P108

Antimicrobial Efficacy of Denture Cleansers

Funda Bayındır[1], Dilek Vural Keleş[2], Mustafa Gündoğdu[1], Hakan Uslu[2]

[1]*Department of Prosthodontics, Faculty of Dentistry, Atatürk University, Erzurum, Turkey,* [2]*Department of Microbiology and Clinical Microbiology, Faculty of Medicine, Atatürk University, Erzurum, Turkey*

Purpose: The purpose of this study was to evaluate efficacy of two commercially denture cleansers on microorganism.
Material and methods: *Staphylococcus epidermidis*, *Streptococcus viridans*, *Streptococcus pneumonia*, *Escherichia coli*, *Enterobacter aeruginosa*, *Pseudomonas aeruginosa*, and *Candida albicans* patient saliva and additionally *Staphylococcus aureus* and *Enterococcus fecalis* isolated from isolates of the clinical microbiology laboratory. All microorganisms were transferred into 2 ml Brain-Heart-Infusion Broth containing tubes and were incubated at 36 ± 1°C for 3 h. After incubation, these samples were cultured routinely on different mediums at 36 ± 1°C for 24 h. 0.5 Mc Farland suspensions were prepared for each strain (108 CFU/ml) and two commercially available denture cleansers (Protefix Active Cleanser and Corega) were prepared manufacturers' instruction. 45 × 2 sets sterile tubes were prepared for five different dilutions (1/2, 1/4, 1/8, 1/16, and 1/32) including mixture of Mc Farland suspensions and denture cleansers. This mixture tubes were stored in incubator at 37°C for 24 h. At the end of 24 h, samples from each tube were inoculated widespread surface Muller Hinton Agar Plates and incubated for 24 h again. After incubation, the growth of bacteria was performed by counting the Colony-forming Units.
Results: 1/2 dilution of Protefix was especially determined to be effective on gram-positive bacteria. In all dilutions of Protefix, *Pseudomonas aeruginosa*, *Candida albicans*, *Enterobacter aeruginosa*, and *Enterococcus fecalis* were not eliminated completely. 1/2 dilution of Corega had an antibacterial activity, except *Pseudomonas aeruginosa*. 1/4 dilution of Corega had an antibacterial acitivitiy on *Staphylococcus epidermidis*, *Streptococcus pneumoniae*, *Escherichia coli*, and *Enterobacter aeruginosa*.

P109

Evaluation of Antimicrobial Activity on Denture Adhesives

Mustafa Gündoğdu[1], Dilek Vural Keleş[2], Funda Bayındır[1], Hakan Uslu[2]

[1]*Department of Prosthodontics, Faculty of Dentistry, Atatürk University, Erzurum, Turkey,* [2]*Department of Microbiology and Clinical Microbiology, Faculty of Medicine, Atatürk University, Erzurum, Turkey*

Purpose: The purpose of this study was to evaluate antimicrobial activity on four commercially denture adhesives.
Material and methods: *Staphylococcus epidermidis*, *Streptococcus viridans*, *Streptococcus pneumonia*, *Escherichia coli*, *Enterobacter aeruginosa*, *Pseudomonas aeruginosa*, and *Candida albicans* isolated from patient saliva and additionally *Staphylococcus aureus* and *Enterococcus fecalis* isolated from isolates of the clinical microbiology laboratory. All microorganisms were transferred into 2 ml Brain-Heart-Infusion Broth (BHIB) containing tubes and were incubated at 36 ± 1°C for 3 h. After incubation, these samples were cultured routinely on different mediums at 36 ± 1°C for 24 h. Four sterile petri dishes were prepared for two creams (Protefix cream and Corega super cream) and two powder (Protefix powder and Corega Ultra powder) forms of denture adhesives. On each petri dish, nine divisions were made to prevent mixing of bacteria that were inoculated. Suspensions were prepared from all microorganisms in 0.5 Mc Farland. From each bacteria suspension, 40 µl of bacteria were inoculated into small pits in each nine separate divisions and then all plaques were incubated at 37°C. Bacteria count per ml was calculated as CFU/ml by taking 10 µl sample on surface of covering medium petri dishes every 8 h.
Results: *Staphylococcus epidermidis* was not determined in Corega Ultra Powder specimen after 2nd measurement at the earliest, while *Escherichia coli* and *Pseudomonas aeruginosa* was not determined in Protefix Powder specimen after 5th measurement at the latest. As a result of, both of them were determined antimicrobial activity.

P110

Prosthetic Rehabilitation of a Patient with Cleidocranial Dysplasia

Işıl Turp[1], Mehmet Esad Güven[1], Fethiye Çağlar[2], Aslıhan Üşümez[1]

[1]*Department of Prosthodontics, Bezmialem Vakıf University, Istanbul, Turkey,* [2]*Department of Periodontology, Bezmialem Vakıf University, Istanbul, Turkey*

Introduction: Cleidocranial dysplasia (CCD) is an uncommon but well-known genetic skeletal disorder affecting bones and teeth. CCD is associated with complete absence or hypoplasia of the clavicles, delayed or deficient closure of the fontanellas and open sutures, retarded exfoliation of the deciduous teeth, retarded eruption of the permanent teeth and multiple impacted supernumerary teeth.
Case: This case report describes the prosthetic rehabilitation of a 31-year-old Caucasian woman with CCD who had been through an unsuccessful orthodontic treatment for 10 years and absolutely didn't want any more orthodontics. The patient was suffering from severe periodontitis. Hopeless teeth and dislocated supernumerary teeth were extracted and the patient was treated with a removable denture retained by double crowns with flanges to obtain lip support. Regular recalls are planned in order to check if the impacted teeth without any bone retention are erupting and if so to prepare appropriate space in the denture.
Conclusion: Fabricating a removable denture is a viable prosthetic treatment option for adult patients with CCD in order to obtain lip support and to be able to modify in case any of the impacted teeth erupts.

P111

Rehabilitation of a 8 Year Old Child with Papillon Lefèvre Syndrome Using Deflex Dentures – A Case Report

Arzu Atay[1], Barış Karabulut[2], Cemile Deniz Can Karabulut[3]

[1]*Department of Prosthodontics, GMMA Haydapasa Education Hospital, Istanbul, Turkey,* [2]*Department of Pedodontics, GMMA*

Haydapasa Education Hospital, Istanbul, Turkey, [3]Sancaktepe Oral and Dental Health Center, Istanbul, Turkey

Introduction: The Papillon-Lefevre syndrome (PLS) is a rare autosomal recessive inheritance affecting both the deciduous and permanent dentition. Defective Neutrophil Chemotaxis is found to be responsible for extensive periodontal tissue destruction. Severe periodontitis starts at the age of three or 4 years. The development and eruption of deciduous teeth proceeds normally, but their eruption is associated with gingival inflammation and subsequent rapid destruction of the periodontium. Primary dentition is usually exfoliated prematurely by the age 4 years. After exfoliation, the inflammation subsides and gingiva appears healthy. However, with eruption of the permanent dentition the process of gingivitis and periodontitis is usually repeated and there is subsequent premature exfoliation of the permanent teeth.
Case: A 8 yers old boy was brought to the Department of Pedodontics, GMMA Haydapasa Education Hospital Istanbul with the chief complaint of multiple tooth loss and inability to at properly. He exhibited hyperkeratosis of palms, soles, elbows, knuckless and kness. The case was diagnosed as Papillon Lefevre Syndrome. As the syndrome can reduce the self-confidence of the patient at a very early age oral rehabilitation must take the forefront. Metal clasps of conventional removable partial dentures, especially used in anterior section, cause aesthetic problems. Traditional acryilic resins have possibility of various physical and chemical incompetence and allergic reactions.
Conclusion: In this case report the combined periodontal therapy and prosthetic treatment was presented with a semi-flexible polyamide material (Deflex).

P112

Changing the Bonding Force of Impression Tray to Edentulous Maxillary Jaw with Impression Valve System

Yusuf Ziya Akpınar[1], Numan Tatar[1], Betül Yılmaz[1], Zülfikar Demirtağ[2]
[1]*Department of Prosthodontics, Abant izzet Baysal University, Bolu, Turkey,* [2]*Department of Prosthodontics, Kırıkkkale University, Kırıkkale, Turkey*

Purpose: The purpose of this study was to change the bonding force of impression tray to maxillary jaw with new apparatus that impression valve system.
Materials and methods: In this in-vitro study, polyether-coated maxillary jaw simulator (FM) that simulates edentulous maxillary jaw was used. Impression valve system (IVS) was placed into the individual impression tray. Irreversible hydrocolloid impression was taken from FM while IVS was open and closed. Bonding force of impression tray was measured by digital dinamometer. Significance test of the difference between the two groups was performed with Student's *t* test. It was observed that impression ray was more easily separated (108 ± 3.9 N) from FM when IVS was open and difficult to seperate (153.7 ± 14.2 N) when IVS was closed. Statistically significant difference between the two groups ($p < 0.001$) was observed.
Conclusion: Use of IVS makes impression tray easily taken from mouth when taking impression from edentulous maxillary jaw.

P113

Strain Analysis of Implant Overdentures with and without Palatal Bar

Şehnaz Kazokoğlu[1], Funda Akaltan[2]
[1]*Private Clinic, Istanbul, Turkey,* [2]*Department of Prosthodontics, Ankara University, Ankara, Turkey*

Aim: The aim of this study was to investigate the efficiency of major connectors of Marburg Double Crown (MDC), bar and ball retained maxillary implant overdentures using strain gauge analysis.
Materials and methods: An in-vitro maxillary model was prepared having four implants (Astra Tech AB, Mölndal, Sweden) with strain-gauges placed distally to each implant and also in the edentulous regions. For implants, three element 45° rosette strain gauges (Vishay Measurements Group, USA) and for edentulous ridges, single element strain gauges were used. Five each of MDC, ball and bar (Round Bar, Astratech Dental, Sweden) implant overdentures were prepared in a standard manner with anteroposterior palatal bar. The loading was made with a static vertical load of 280 N applied on the first molar region bilaterally before and after removing palatal bar. The maximum and minimum principal strain values calculated according to the datas read from the strain indicator and recorder. Datas were analysed statistically with ANOVA and paired *t*-tests with the significance level set at 0.05.
Results: The strain patterns produced by MDC, ball and bar attachments with and without major connectors (posterior palatal bar) on edentulous ridges and peri-implant region were not found to be statistically significant ($p > 0.05$). Additionally, no significant difference is observed between MDC, bar and ball attachment types considering the strain values.
Conclusion: MDC, bar and ball retained maxillary overdentures with four implants can be used safely without major connectors (posterior palatal bar) with regard to the strains generated on edentulous ridges and peri-implant region.

P114

Polymerization Efficiency of Two Dual-Cure Cements Through Dental Ceramics

Değer Öngül, Volkan Turp, Pınar Gültekin, Özgür Bultan, Burçin Karataşlı, Elif Pak Tunç
Department of Prosthodontics, Istanbul University, Faculty of Dentistry, Istanbul, Turkey

Aim: The aim of this study was to evaluate the effect of thickness of zirconia framework on curing efficiency of resin cements.
Materials and methods: Four discs with 4.0 mm in diameter were prepared from non-HIP transluscent zirconia blocks using a CAD/CAM system and sintered according to manufacturer's instructions. Feldspathic ceramic was layered onto discs using a stainless steel mold. Thus, four ceramic disc samples were fabricated: (1) single layer 0.5 mm zirconia- to be used as a control group, (2) bilayered 0.5 mm zirconia and 0.5 mm feldspathic sample, (3) bilayered 1.0 mm zirconia and 0.5 mm feldspathic sample and (4) bilayered 2.0 mm zirconia and 0.5 mm feldspathic ceramic layer.

Two different dual cure resin cements were polymerized under each ceramic sample using a LED curing unit, thus eight groups were formed (n = 12). Degree of conversion was evaluated using Vickers Hardness Test and depth of cure of samples were measured. Data were analyzed statistically using One-way ANOVA and Tukey's HSD test ($p < 0.05$).

Results: Microhardness and depth of cure values were different under same thickness of ceramic discs for two resin cements. As the thickness of the zirconia discs increased, the microhardness values and depth of cure decreased.

Conclusion: Photocuring time cannot be the same for all clinical conditions therefore the manufacturer's recommendations may not be successful in all situations. Clinicians should be aware that, especially for dual-cure resin cement under thicker zirconia restorations (>2.0 mm), an extended period of light curing or a light unit with a high irradiance should be used.

P115

The Evaluation of Periodontal Changes in Fixed Prosthesis

Alice Arina Ciocan Pendefunda, Valeria Pendefunda

Department of Prosthetic, Dental Faculty UMF Gr. T. Popa, Iasi, Romania

Aim: The aim of this study is to evaluated of the influence of fixed prothesis on the periodontal health status, emphasising the pathological changes induced by the restorative materials.

Materials and methods: The study group was made by 112 patients evaluated 282 fixed dental bridges by clinical and paraclinical exams. The clinical evaluation included the age of the dental bridge, the material was made of, the periodontal changes, the bleeding index. For the statistical processing of the data was used STATISTICA a special program for medical research.

Results and discussion: Periodontal changes were highlighted by periodontal bleeding index, with significant values for 46.43% of the cases, by periodontal pockets in 12.5% of the cases, by recession in 3.57% of the studied cases.

Conclusions: There is a significant correlation between the material in use for the dental bridges and the presence of the periodontal damage, specially for the matal – acrylic and cast metal crowns.

P116

Evaluation of Materials Facing Zirconia Primary Crowns in Telescopic Systems

Işıl Turp[1], Ergün Bozdağ[2], Emin Sünbüloğlu[2], Gülsen Bayraktar[3]

[1]*Department of Prosthodontics, Bezmialem Vakıf University, İstanbul, Turkey,* [2]*Faculty of Mechanical Engineering, Istanbul Technical University, İstanbul, Turkey,* [3]*Department of Prosthodontics, İstanbul University, İstanbul, Turkey*

Aim: The purpose of this in vitro study was to evaluate the usage of casted non-precious alloy secondary crown instead of electroformed gold in secondary crowns on zirconia primary crowns in terms of long-term retention force changes, wear and phase transformation.

Materials and methods: Eight groups, each containing six samples, consisting of zirconia primary crown-electroformed gold secondary crowns (ZA) or casted non-precious alloy secondary crowns (ZC) with conus angles of 0°, 2°, 4°, 6° were manufactured. Double crowns were subjected to 10,000 insertion-separation cycles in artificial saliva and retention force was measured. X-ray diffraction and scanning electron microscope analysis were performed on the surfaces of the samples.

Results: The highest retention forces were obtained from ZC-0° group (72.09 N–71.26 N) and the lowest were obtained from ZA-4° (12.73 N–19.44 N) and ZA-6° (5.36 N–19.73 N) groups in the beginning and after 10,000 cycles respectively and the retention force increased as the conus angle decreased. ZC material couple showed higher retention force values for all conus angles, also wear was observed in the zirconia primary crowns of only ZC-0° and ZC-2° groups and all secondary crowns. The monoclinic phase ratio on the surfaces of zirconia primary crowns decreased after the experiments.

Conclusion: Retention force values obtained from ZC material couple were higher than ZA material couple and higher than the suggested range. Although ZC material couple was more advantageous than ZA material couple in terms of cost and stability of retention force, their retention force was too high especially with low conus angles.

P117

Corrosion Behavior of Ni- Cr Alloys in %10 Carbamide Peroxide

Mahir Çataltepe[1], Musa Üstün Güldağ[1], Ali Abbas Aksüt[2]

[1]*Department of Prosthodontics, Süleyman Demirel University, Isparta, Turkey,* [2]*Department of Physical Chemistry, Ankara University, Ankara, Turkey*

Purpose: The aim of this study was to investigate the corrosion behaviour of two different commercially available Ni- Cr metal alloys exposed to %10 carbamide peroxide solution using electrochemical technique.

Material and methods: Two types of dental metal alloys [Bellabond Plus (Ni- Cr- Mo) and Wiron 99 (Ni- Cr- Mo)] were evaluated. Fabrication of test samples (n = 3 for each alloy) was carried out using lost-wax technique. All samples with their contact surfaces open were immersed in polyester material, which was then poured into a Teflon cylinder mould, and in this manner the rotary disc electrodes were constructed. The experiments were carried out in a galvanic cell that was open to air and the temperature was kept constant. Cyclic potentiodynamic polarization tests were used to evaluate the corrosion behaviour of metal alloys in% 10 carbamide peroxide of bleaching agents with pH 6, 5 at 37°C. Corrosion values of metal alloys were detected electrochemically. Each sample was polarized three times and the mean of all were calculated.

Results: Results showed that the dental metals investigated in this study corroded in%10 carbamide peroxide solution. Corrosion rate values of Bellabond Plus and Wiron 99 alloys were 1.87 μA/cm² and 3.21 μA/cm² respectively.

Conclusion: Wiron 99 alloy exhibited the higher corrosion tendency in carbamide peroxide solution. Bellabond Plus alloy demonstrated more desirable corrosion resistance properties comparing to Wiron 99 alloy.

P118

Accuracy of Bite Mark Analysis: An Affirmation to the Guilt

K. P. Nandita

Department of OralPathology & Microbiology, Manipal College of Dental Sciences, Manipal University, Mangalore, India

Purpose: The study aims to conduct the most accurate bite mark overlay fabrication technique.

Materials and methods: Thirty subjects both male and female with age above 20 years with complete set of natural upper and lower anterior teeth were selected for this study after Institutional Ethical Committee Approval. The upper and lower alginate impressions were taken from 30 subjects. Die stone model was obtained from each impression; overlays are produced from the biting surfaces of six upper and six lower anterior teeth using the following methods like: Hand tracing from study casts, Hand tracing from wax impression method, Radiopaque wax impression method and Xerographic based method.

Results: Xerographic method was the most accurate with highest reproducibility for bite mark analysis compared to hand tracing from wax method and hand tracing from study casts.

Conclusions: Comparison techniques used in bite mark analysis are many and varied, the choice of technique depending largely on personal preference. Until recently, no one technique has been shown to be better than the others and very little research has been carried out to compare different methods. This study evaluated the accuracy of direct comparisons between suspects' models and bite marks with indirect comparisons in the form of conventional traced overlays of suspects with the xenographic technique being the best.

P119

Endocrown Restorations in Anterior and Posterior Regions of the Dental Arch

Beste Becerikli, Ebru Çal

Department of Prosthodontics, Ege University, İzmir, Turkey

Introduction: Restoration of endodontically treated teeth is a common problem in restorative dentistry, related to the fractures occurring in such teeth. The access preparation for endodontic treatment causes the loss of the roof of the pulp chamber, which may account for the relatively high fracture incidence documented in pulpless teeth. Posts have often been described as not to reinforce endodontically treated teeth. Moreover, some authors noticed that posts may interfere with the mechanical resistance of teeth, increasing the risk of damage to residual tooth structure. With the development of adhesive techniques and ceramic materials, the advantage of adhesive restorations is that macroretentive design is no longer a prerequisite if there is enough tooth surface for bonding. All-ceramic endocrown restorations have been used as an alternative to post-core restorations in teeth with excessive tissue loss by utilizing the adhesive bonding techniques. The objective of this restorative approach is to provide adequate function and esthetics in the anterior and posterior regions of the dental arch.

Case: Patients presented in this report were chosen from the group who applied for treatment in our clinic having excessive tissue loss in their anterior teeth, due to trauma and posterior teeth because of profound caries. After the endodontic treatments, tooth preparations were accomplished. Additional silicone materials were used for impressions. Restorations were made by pressed glass ceramics (Ivoclar-Vivadent, Schaan, Liechtenstein) and cemented by a self curing (Super-Bond C&B- Sun Medical Co. Ltd, Shiga, Japan) adhesive resin material.

Conclusion: Patients were followed 1 year after the insertion of endocrown restorations.

P120

Effect of Carbamide Peroxide on Elemental Release from Heat-treated Alloy

Evşen Tamam[1], Kevser A. Aydın[2]

[1]Department of Prosthodontics, Faculty of Dentistry, Gazi University, Ankara, Turkiye, [2]Department of Prosthodontics, Faculty of Dentistry, Ankara University, Ankara, Turkiye

Objective: This study investigated the effect of various heat-treatments simulating porcelain firing on elemental release from a base metal alloy subjected to 10% carbamide peroxide (CP).

Methods: Cylinder shaped 30 specimens were cast from Ni-Cr alloy(Wiron 99) and divided into following three groups (n = 10) after finishing: (1) casting (as-cast state), (2) casting, simulating firing procedure according to a mean value (950°C for 5 min) (3) casting, simulating firing procedure according to general porcelain firing cycle without applying porcelain. Then all groups were divided into additional two sub-groups, each contains five samples. Test groups were exposed either phosphate-buffer solution(PBS) as control or CP for 15 days; then total mass and individual elements (Ni, Cr and Mo) released into solutions were measured by means of atomic absorption spectrometry. Differences in total mass released were determined using ANOVA and Dunnett T3 test.

Results: Presence of CP induced the total mass released compared to control group; this effect was recorded in both as-cast and heat-treated groups. For PBS and CP treatments, the order of total mass released was 3, 2, 1 and 1, 2, 3; respectively. All differences were found statistically significant. With in the limitations of this study, results showed that procedures for porcelain firing have different effects in presence of CP. For all groups (except for group3/PBS treatment), the order of individual elements released was Ni, Mo, Cr. The increase in amount of Cr released was higher than Mo released for group3/PBS treatment.

Theme: General Dentistry and Oral Health

P121

Efficacy of *Elaeagnus angustifolia* Topical Gel in the Treatment of Symptomatic Oral Lichen Planus

Yasaman Rezvani[1], Jamile Beigom Taheri[2], Fahime Anbari[2], Ziba Maleki[2], Shiva Boostani[3], Afshin Zarghi[4], Firoz Pouralibaba[5]

[1]Department of Pedodontics, Dental School, Shahid Beheshti University of Medical Science, Tehran, Iran, [2]Department of Oral Medicine, Faculty of Dentistry, Shahid Beheshti University of Medical Science, Tehran, Iran, [3]Oral Medicine, Private Practice, Tehran, Iran, [4]Department of Pharmaceutical Chemistry, Faculty of Pharmacy, Shahid Beheshti University of Medical Science,

Tehran, Iran, [5]Department of Oral Medicine, Faculty of Dentistry, Tabriz University of Medical Science, Tabriz, Iran

Background and aims: The purpose of this study was to determine efficacy of 19% Elaeagnus angustifolia (EA) topical gel in the treatment of symptomatic oral lichen planus.
Materials and methods: Patients with symptomatic oral lichen planus referring to the Department of Oral Medicine, Faculty of Dentistry at Shahid Beheshti University of Medical Science were asked to participate in the study. Twenty-eight patients who were histopathologically diagnosed with lichen planus were divided into two groups (15 in the case and 13 in the control groups). The subjects were randomly assigned to either topical gel of EA or placebo in a double – blind manner. They were then instructed to apply the medication on dried lesions three times daily. Pain and size of the lesions were evaluated after 2 weeks. Data were analyzed by SPSS 12.0 software, using *t*-test, paired *t*-test, Fisher's exact test and chi-square test.
Results: Twenty-eight patients (m/f: 7/21) with symptomatic oral lichen planus participated in the study. Fifteen patients (m/f: 4/11) received EA gel and 13 patients (m/f: 3/10) received placebo. There was a 75% decrease in pain (33.3% in the case and 7.7% in thr control group), and a decrease of 50% in size (33.3% in the case group) and 75% only in 7.6% of the case group.
Conclusion: The results suggest that 19% EA gel is efficient in the treatment of symptomatic oral lichen planus, with anti-inflammatory and analgesic effects, as well.

P122

Good Occlusion Impact on Chewing Muscles Electromyographic Activity

Mimoza Canga
Faculty of Public Health, University of Vlora, Albania

Aim: To study the relationship between teeth occlusion and muscle activity in patients with healthy teeth expressed by number of teeth contacts.
Material and method: The sample consists of 20 patients (10 M/ 10 F) from 25 to 40 years old. (2011–2012). The patients had full dental formula up to the second molar, belonged to Angle I classification. The electromyography data were conducted with an eight channel electromyography on a computer allowing recording and graphic presentation. Electrodes were located on masseter muscle and anterior temporal muscle on both sides over Bausch joints. We verified the teeth contacts from 17 to 27. Each patient clenched their teeth for a few seconds registering the electromyography potential.
Results: 25% of teeth contacts of first group and 28% of second group were found on first molar, 25% of first group and 20% of second group are found on premolars. 24% of contacts of first group and 10% of second group were recorded on canines and incisive. We calculated the POC for each patient for masseter and temporal muscles, mean values 86.49% (temporal), 85.59% (masseter) with a mean of 86.04%.
Conclusions: The results verify the systematic impact of occlusive contacts on the elevator muscle activity during clenching. The study gives a good relation between the morphology expressed as a number of the teeth contact and their function expressed by EMG waves.

P123

Awareness and Perception of Dental Students on E-learning Use

Ayo Seun Arowosegbe, Omolara G. Uti, Oyinkansola O. Sofola
Department of Preventive Dentistry, Faculty of Dental Sciences, College of Medicine, University of Lagos, Lagos, Nigeria

Aim: To assess the awareness and perception of dental students on the use of e-learning as an instructional tool in dental education.
Materials and methods: A descriptive cross-sectional study was undertaken using one hundred and five 5th and 6th year clinical dental students. Ethical approval was granted by the relevant body. Data collection was by self-administered questionnaires consisting of five sections. Information obtained include; socio-demographic characteristics, awareness on e-learning, perception on benefits and challenges of e-learning, perception on e-learning compared with conventional classroom learning.
Results: Majority (94.3%) of respondents have heard of e-learning, 61.5% have prior use of at least one e-learning tool with CD/DVD-ROM and audio/visual conferencing been the most commonly used e-learning tools (32.4% each) and virtual reality/simulation been the least used (1.0%). Increase access to lecture materials and ease of lecture delivery to a large number of students were identified as two major benefits of e-learning (68.6% and 55.2% respectively) while poor electricity supply and poor internet access were the major challenges confronting e-learning (65.7% each). Majority of respondents (93.3%) strongly agreed or agreed that e-learning should be combined with conventional classroom learning.
Conclusion: The use of e-learning in dental education is an exquisite innovation with numerous benefits. However, poor electricity supply and poor internet access are major obstacles that may militate against its use as an instructional tool in dental education.

P124

Surgical Treatment of Odontogenic Infections with Acute Periapical Lesions in Children

Mohammadali Jalalian[1], Sadra Jalalian[2], Seyed Ali Banihashemrad[3]
[1]Department of Oral Surgery, Mashhad Dental School, Mashhad, Iran, [2]Department of Prosthodontics, Azad Dental School, Tehran, Iran, [3]Department of Periodontics, Mashhad Dental School, Mashhad, Iran

Introduction: Bacterial infections of odontogenic can progress into periapical lesions. In cases of periapical abscess, surgical incision and extraction of teeth is preferred to nonsurgical treatment.
Materials and methods: In this historical study, twelve patients under 10-year-olds took pant with variable periapical lesions. All teeth showed radiographic evidence of periapical lesions, varying in size from 5 to >10 mm.

Patients were take hydroxizin syrup as premedication before the application of local anesthesia (3% perilocain), incision with scalpel No. 15, drainage abscesses and then analgesic and systemic orally antibiotics prescribed for them.
Results: The rate of complete healing for each patient after procedure was good (95%).
Conclusion: Surgical treatment should be considered as the first choice in teeth with acute periapical lesions.

P125
HMGB1 Induced Alveolar Bone Cells Proliferation and Migration
Atithan Chitanuwat[1], Indra Wongyaofa[1], Narongsak Laosrisin[1], Nirada Dhanesuan[2]
[1]*Department of Conservative Dentistry and Prosthodontics, Faculty of Dentistry, Srinakharinwirot University, Bangkok, Thailand,* [2]*Department of Stomatology, Faculty of Dentistry, Srinakharinwirot University, Bangkok, Thailand*

High mobility group box 1 (HMGB1) is a protein released from damaged cells during inflammation. Upregulation of HMGB1 was found in many inflammatory diseases including periodontitis. Our previous study showed HMGB1 had proliferatory and chemoattractive activity in human gingival fibroblast (HGF) and human periodontal ligament fibroblasts (HPDLF) suggesting key role of HMGB1 in periodontal tissue healing.
Aim: In this study, we investigated the effect of HMGB1 on the proliferation and migration of human alveolar bone cells (ALV) as well as expression of its receptors, TLR2, TLR4 and RAGE.
Materials and methods: ALV was cultured in the presence of 10 and 50 ng/ml human recombinant HMGB1. Cells proliferation was determined by MTT assay. Migration assay was performed by culturing ALV in Transwells with 100 ng/ml HMGB1 in the lower chamber as a chemoattractant. The 16-h migration was determined by crystal violet staining of the cells migrated across the membrane. TLR2, TLR4 and RAGE expression was analyzed by real time PCR.
Results: HMGB1, at 50 ng/ml, was able to induce ALV proliferation and induced migration at 100 ng/ml. Surprisingly, HMGB1 receptor, TLR2 and TLR4, levels were found downregulated. Nevertheless RAGE expression was slightly upregulated.
Conclusions: Proliferation and migration are crucial abilities the cells required for appropriate wound repair. The data suggested HMGB1 promising role in alveolar bone healing. Detailed mechanism, possible through RAGE receptor, requires further investigation before future clinical application.

P126
Parotid Salivary Glucose Level in Diabetes Mellitus Patients
Zhaochen Shan, Beibei Wang, Juan Du, Chunmei Zhang, Zhao Zhu, Beibei Wang, Jun Du, Zhao Zhu, Chunmei Zhang, Zhaochen Shan
Department of Oral and Maxillifacial Surgery, School of Stomatology, Capital Medical University, Beijing, China

Purpose: The purpose of this report was to investigate the relationship among the blood glucose, salivary glucose and parotid glucose of type II diabetes,and to evaluate the signification of diagnosis on single gland salivary glucose to patients with type 2 diabetes.
Material and methods: Thirty patients with type 2 diabetes and 30 healthy controls were selected. For investigations, the samples of 30 people with diabetes and the age and sex matched 30 non-diabetic subjects were recruited. The salivary glucose was analyzed in unstimulated whole mixed and the parotid saliva samples using glucose oxidase peroxidase method. Statistical analysis was performed to assess the correlation between salivary glucose level and blood glucose level by *t* test. The present study was approved by the Research Ethics Committee.
Results: The blood glucose and parotid salivary glucose levels of the experimental group were significantly higher than the control group, respectively $p < 0.01$, $p < 0.05$. But the mixed salivary glucose concentration in the experimental group had no significant variation with the control group. In the experimental group the parotid salivary glucose levels had positive correlation with the blood glucose, $r = 0.810$.
Conclusion: The parotid salivary glucose levels in patients with type II diabetes were higher than in non-diabetic subjects. The single parotid salivary glucose concentration was a potential marker in monitor of the type II diabetes mellitus and may be useful in the management of diabetic patients

P127
An Evaluation of the Role of Community Pharmacist in Oral Healthcare
Hanan Omar, Saad Khan, Pei Hoon Tan, Wei Han Tea, Kaizia Chor, Kay Chee Lai, Shazia Jamshed, Imran Ahmad
International Medical University

Aims: To determine the oral healthcare advice, products and information provided by community pharmacists in Malaysia and to identify the barriers and needs of the community pharmacists to play their role as oral health promoters.
Materials and methods: A questionnaire was developed based on the available literature and validated. The questionnaire comprised of six sections addressing the information related to nearby dental practices, the advises sought by the public in relation to their oral health, the dental products available, the dental knowledge of the participants and the barriers and needs to improve their role as part of the primary healthcare team. Four hundred ninety six community pharmacies were approached and an interview with the pharmacist was arranged.

Results: The study yielded an 86% response rate. The participants were aware of the nearby dental practices (78%) but only few were aware of opening and closing hours (35%). The most common complaint received by the public was the mouth ulcers (62%). Electric tooth brushes were the products least available (54% of the pharmacies). The pharmacist were least confident in providing information regarding dental caries and tooth whitening (62% and 58% respectively) the pharmacist showed interest in playing an active role as an integral part of primary healthcare teams with the guidance of dental bodies.
Conclusion: Community pharmacists in Malaysia provide oral healthcare advice to public and they can be an integral part of oral healthcare workforce by providing them with more support and training.

P128

Bisphosphonate Related Osteonecrosis of Jaws (BRONJ)

Dena Sepehri, Farzin Sarkarat, Shirin Hassanvand
Department of Oral and Maxillofacial Surgery, Azad University, Tehran, Iran

Introduction: Bisphosphonates are widely used in the management of metastatic disease to the bone and in the treatment of osteoporosis. BRONJ is a serious condition that has been reported by dental practitioners and physicians in cancer and osteoporosis patients on bisphosphonate therapy.
Materials and methods: This is a computer based research that includes Medline and Pubmed databases. Out of 156 articles, eight of them were clinical trial and 38 of them were review article.
Results: People who receive frequent, high dose of bisphosphonates over long period of time and have periodontal disease, poor oral hygiene, invasive oral surgery such as dental extraction are the most one who is at greatest risk for developing BRONJ.
Conclusion: The dental practioners, physicians and patients must come to a consensus before any dental treatment begins and dental practioners must ask patients specifically about bisphosphonates as a part of their medical history.

P129

Oral Self Care in an Elderly Population

Abiola Zainab Pedro, Omolara G. Uti, Oyinkansola O. Sofola
Department of Preventive Dentistry, College of Medicine, University of Lagos, Idi-Araba, Lagos, Nigeria

Objectives: To assess knowledge, attitude and practice of oral self-care in an elderly population.
Method: A descriptive cross-sectional study of elderly people from the age of 65 years and above who resided at the Lagos Island Local Government Area was conducted using interviewer-administered questionnaires.
Results: Of the 200 elderly surveyed, 54.9% clean their teeth with chewing stick rather than toothbrush with fluoridated toothpaste while 48.5% clean their teeth twice daily. 72.6% have never visited the dentist in their lifetime. It was observed that there is a strong association between the level of education and the knowledge (p-value = 0.0000) and attitude (p-value = 0.0003) of oral self-care among the elderly.
Conclusion: From this study, it can be observed that there is poor oral self-care which can be directly related to the poor negative attitude towards the utilization of dental services due to little or no available funds for routine dental check-up. Therefore, an increased need for public enlightenment and awareness campaigns are highly recommended.

P130

Effects of Medicinal Plants on Candida Albicans

Ivan Mileusnic[1], Zoran Tambur[2], Slobodan Ivancajic[1], Desanka Cenic Milosevic[1]
[1]*Institute of Stomatology, Faculty of Stomatology Pancevo, Pancevo, Serbia,* [2]*Department of Microbiology, Military Medical Academy, Belgrade, Serbia*

Aim: There has been growing interest in recent years for the use of organically grown plants for medicinal purposes. The aim of this study was to determine which medicinal plant had the most in vitro antimicrobial activity on *Candida albicans*.
Material and methods: MATEthanolic extracts of Sinapis, Thymi, Rosmarini, Hyperici, Teucrii, Absinthii, Plantaginis, Salviae, Calendulae, Calami, Malvae, Tiliae, Hipocastani, Bursae, Majoranae and Millefolii and essential oils of Rosmary, Salviae, Satureae and Thymi were prepared. *Candida albicans* ATCC 10231 was first multiplied by growing overnight at 37°C in Mueller-Hinton Broth at pH = 7.4. Antimicrobial activity of medicinal plants extracts was determined by the dilution method. Four dilutions (300, 150, 75 and 36.5 μg/ml) of medicinal plants extracts and four dilutions (100, 50, 25 and 12.5 μg/ml) of essential oils were mixed with Saburaud dextrose agar and poured into Petri dishes in a 4 mm layer. *Candida albicans* was inoculated at about 106 mo/cm^3 and incubated at 37°C for 48 h. The presence of colonies on all samples was tested in triplicates.
Results: Results are shown as minimum inhibitory concentration (MIC). Extract of Hipocastani had a strong antimicrobial activity (MIC = 37.5 μg/ml) and Rosmarini, Hyperici and Salviae had no effect at all. The essential oil of Satureae was inhibitory at 12.5 μg/ml, while Thymi had no effect on the growth of *Candida albicans*.
Conclusion: The ethanolic extract of Hipocastani and the essential oil of Satuireae may be used for the preparation of antimycotic medicines for oral candidiosis.

P131

Quantitation of the Stem Cell Derived from Human Exfoliated Deciduous Teeth Using a Luminescent Cell Viability Assay before the Culture

Nikolaos Tsagias[1], Panagiotis Tsikouras[2], Koliakou Kouzi Kokkona[3], Koliakos Georgios[4]
[1]*Biohellenika Stem Cell Bank, Thessaloniki,* [2]*Democritus University of Thrace, Alexandroupolis, Greece,* [3]*Department of Histology Embryologyl, Aristotle University, Thessaloniki,* [4]*National Hellenic Research Foundation Stem Cell Bank, Athens*

Objective: Stem cells from human exfoliated deciduous teeth (SHED) have been identified as a novel population of stem cells capable of differentiating into a variety of cells types. Because of the small numbers that could be isolated from a single tooth the researchers avoid to count the total number of stem cells. Here we provide a new easy and useful method for the enumeration of SHED using a luminescent viability assay.
Materials and methods: 156 normal exfoliated human deciduous teeth were collected from young children under sterile conditions SHED were isolated using collagenase/dispase digestions solutions. Separated stem cells were placed in opaque-walled multiwall plates in culture alpha Modified Eagle's Medium. For dental pulp stem cells quantitation a simple method for determining the number of viable cells based on ATP concentration was used. Cells attached to the bottom of the multiwall plates were directed toward the osteogenic, adipogenic, lineages at the respective passages. Flow cytometry was used for immunophenotyping of cultured dental stem cells.
Results: Cells counted with the luminescent assay, after culture formed fibroblastic morphology and expressed the mesenchymal stem cell markers CD29, CD105, CD146, CD44. There was a correlation between the number of cells plated for culture and the number of mesenchymal stem cells after culture. Osteogenic and adipogenic differentiation of the cells was performed.
Conclusion: We provide a simple method for mesenchymal stem cells from human SHED count before culturing. This is important for tissue engineering purposes and for the stem cells banking.

P132

Antibacterial Effects of Propolis on Oral Aerobic Bacteria

Slobodan Ivancajic[1], Zoran Tambur[2], Ivan Mileusnic[1], Desanka Cenic Milosevic[1]
[1]Institute of Stomatology, Faculty of Stomatology Pancevo, Pancevo, Serbia, [2]Department of Microbiology, Military Medical Academy, Belgrade, Serbia

Aim: Propolis has bactericidal and fungicidal activities and is used as an alternative treatment for infections. The aim of this study was to determine which propolis solution had the most in vitro antimicrobial activity on three oral aerobic bacterial cultures and to determine if the solvents used had any such activity.
Material and methods: Propolis was extracted by four solvents: ether, acetone, benzene and methyl-chloride. *Enterococcus faecalis* ATCC 19433, *Pseudomonas aeruginosa* ATCC 10145 and *Staphylococcus aureus* ATCC 25923 were grown overnight at 37°C in Mueller-Hinton Broth at pH = 7.4. The antibacterial activity of propolis extracts was determined by the dilution method. Five dilutions (100, 50, 12.5 and 6.3 μg/ml) of propolis extracts were mixed with Mueller Hinton Agar and poured into Petri dishes. The tested bacteria were inoculated at about 106 bacteria/cm^3 and incubated at 37°C for 24 h. In order to test the antibacterial effects of solvents themselves, the whole method was repeated using the solvents instead of propolis extracts in concentrations ranging from 60 to 96%. All samples were tested in triplicates.
Results: Results are shown as a minimum inhibitory concentration (MIC). All tested propolis extrCTS demonstrated antibacterial activity on tested bacteria. When disolved in benzene, propolis showed the best antimicrobial activity (MIC = 6.3 μg/ml) against *Pseudomonas aeruginosa* and *Staphylococcus aureus*. Acetone solution of propolis had the strongest antibacterial effect against *Pseudomonas aeruginosa*. Increasing concentrations of solvents did not have any in vitro antimicrobial activity on tested bacterial strains.
Conclusion: Propolis extracted by non-polar solvents showed significant in vitro antimicrobial activity justifying further clinical investigations.

P133

The Effects of Medicinal Plants on Oral Anaerobic Bacteria

Desanka Cenic Milosevic[1], Zoran Tambur[2], Ivan Mileusnic[1], Slobodan Ivancajic[1]
[1]Institute of Stomatology, Faculty of Stomatology Pancevo, Pancevo, Serbia, [2]Department of Microbiology, Military Medical Academy, Belgrade, Serbia

Aim: Use of medicinal plants extracts as antimicrobial agents has received much attention recently. Therefore, the aim of this study was to determine which medicinal plant aethanolic extracts had the most in vitro antimicrobial activity against selected oral anaerobic bacterial cultures.
Material and methods: Aethanolic extracts of Sinapis, Thymi, Rosmarini, Hyperici, Teucrii, Absinthii, Plantaginis, Salviae, Calendulae, Calami, Malvae, Tiliae, Hipocastani, Bursae, Majoranae and Millefolii were prepared. Cultures of anaerobic bacteria, namely *Actinomyces odontolytics* ATCC 17929, *Streptococcus mitis* ATCC 6249, *Streptococcus sanguinis* ATCC 10556, *Eikenella corrodens* ATCC 23834, *Fusobacterium nucleatum* ATCC 25586 and *Streptococcus mutans* ATCC 25175, were multiplied overnight in Mueller-Hinton Broth at 37°C and at pH = 7.4. Antibacterial activity of medicinal plants extracts was determined by the dilution method. Four dilutions (300, 150, 75 and 37.5 μg/ml) of medicinal plants extracts were mixed with Mueller Hinton Agar and put into Petri dishes and the tested bacteria inoculated at about 106 bacteria/cm^3. The Petri dishes were put into anaerobic pots and incubated at 37°C for 24 h. All samples were tested in triplicates.
Results: Results are shown as a minimum inhibitory concentration (MIC). Aethanolic extracts of Thymi, Rosmarini and Salviae showed antimicrobial activity (MIC = 37.5 μg/ml) against all investigated oral anaerobic bacterial. Extracts of Hyperici and Calenduale inhibited the growth of all investigated bacteria except *Streptococcus mutans*. Only the extract of Majoranae at MIC = 150 μg/ml had the inhibitory effect on the growth of *Streptococcus mitis*.
Conclusions: Certain medicinal plants have shown in vitro antibacterial activity against known oral anaerobic pathogens which justifies further clinical investigations.

P134

Knowledge and Compliance with Post Exposure Management among Dentists

Ifeoluwa Bridget Olateju, Oyinkansola O. Sofola, Omolara G. Uti
Faculty of Dental Sciences, College of Medicine, University of Lagos, Lagos, Nigeria

Aim: To assess the knowledge and determine the level of compliance with post exposure management protocol among dentists.
Materials and methods: A descriptive cross-sectional study was done with a study population of 124 dentists. Using self-administered questionnaires, information was sought on knowledge of managing exposures- first aid and prophylaxis as well as compliance when exposed. Permission was obtained from the ethics committee.
Results: 112 (90.3%) of the 124 questionnaires distributed were completed. Majority of the respondents (74.2%) knew the correct steps to take in managing exposures however, a proportion of them were not familiar with first aid procedure when exposed. 51.8% of the respondents had experienced an exposure of which only 20.7% reported and 27.6% requested blood tests for the source patient(s).
Conclusion: The level of compliance with post exposure management is inadequate therefore; there is a need to update the knowledge and device methods of encouraging compliance with post exposure management among dentists.

P135

Infection Control Practices for Trainee Dentists in Japan

Masutaka Mizutani[1], Akira Yamaguchi[1], Kimito Sano[2], Jun Ueda[1], Toru Akashiba[1]
[1]*Oral & Maxillofacial Surgery, Niigata Hospital, The Nippon Dental University, Japan,* [2]*Department of Dental Anesthesiology, School of Life Dentistry at Niigata, The Nippon Dental University, Japan*

Introduction: In Japan, after passing the national board dental examination, dental graduates must train for a further year as a trainee dentist. This training can be in the dental hospital and private dental clinics. The aim of this study was to determine the compliance of the infection control procedures of trainee dentists in the two different environments.
Subjects and methods: A questionnaire about infection control procedures was completed by 58 trainee dentists. We asked about the practice of standard precautions of infection control procedures in the dental hospital (The Nippon Dental University at Niigata) and in private dental clinics. A Likert-type scale was used to gauge positive responses as "Always" and "Usual" and negative responses as "Sometimes" and "Never".
Results and discussion: The trainee dentists reported wearing gloves in the hospital (100%), in clinics (97%). Changing their gloves between patients in the hospital (100%), in clinics (66%). They washed hands before treatments in the hospital (100%), in clinics (88%). Take gloves when writing medical records in the hospital (95%), in clinics (74%). Finally, 25% of trainee dentists responded that they were not able to perform infection control procedures in private dental clinics.

Private dental clinics are usually small scale with a few full-time dentists. There may be differences in the standards of the infection control procedures between the dental hospital and private dental clinics. The training environment has a significant effect on the compliance of infection control procedures.

P136

Oral Cavity Mucosa Cytogram Peculiarities in Patients with Lichen Planus

Rudolf Yuy Tsun-Shu
Department of Histology, Kazakh National Medical University, Almaty, Kazakhstan

Objectives: To give cytological evaluation of oral cavity mucosa epithelium state in patients with lichen ruber planus.
Materials, methods and treatment: The object of our research was cheek tunica mucosa swabs of 20 healthy patients and 40 ones with erosive lichen ruber planus. Patients at the age of 32–47 were under study. Swabs were dried, fixed in spirit-acetone (1:1) and May-Grunvald and Romanovsky-Himsa stained. Combination therapy with liquid extract "Leyar" and phototherapy (helium-neon laser radiation of 20 mW output power) were used. Epithelial cells in various stages of differentiation, contaminated epithelial cells, dystrophicaly changed ones, epithelial cells with neutrophil invasion, mononuclears, segmentonuclear neutrophils and lymphocytes per 1000 cells were calculated in stained swabs. Basing on the cytogram results in order to evaluate the proliferation and differentiation processes of cheek tunica mucosa epithelium "left shift" index and "epithelial cells differentiation" index were calculated. The obtained data analysis and evaluation of credibility of differentiating averages were done using Student's test. Indexes changes were considered to be credible for $p < 0.05$.
Results: We observed considerable increase of neutrophils, monocytes and dystrophicaly changed epithelial cells in patients with erosive lichen ruber planus. Epithelial cells proliferation growth was also seen. The applied method has strong therapeutic effect. Most indexes have normalized by the 14th day of the session.
Conclusion: Oral cavity mucosa cytogram analysis in patients with erosive lichen ruber planus before and after the treatment can be used as a sensitive diagnostic test and for effectiveness evaluation of its treatment.

P137

Non-Syndromic Multiple Supernumerary Teeth: A Case Report

Derya Güler[1], Emine Şen Tunç[1], Emel Bulut[2], Yakup Sancar Barış[3], Nursel Arıcı[4], Sevki Güler[5]
[1]*Department of Pediatric Dentistry, Faculty of Dentistry, University of Ondokuz Mayıs, Samsun, Turkey,* [2]*Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, University of Ondokuz Mayıs, Samsun, Turkey,* [3]*Department of Pathology, Faculty of Medicine, University of Ondokuz Mayıs, Samsun, Turkey,* [4]*Department of Orthodontics, Faculty of Dentistry, University of Ondokuz Mayıs, Samsun, Turkey,* [5]*Department of Periodontology, Faculty of Dentistry, University of Ondokuz Mayıs, Samsun, Turkey*

Aim: Supernumerary teeth may be defined as any teeth or tooth substance in excess of the full complement of primary and permanent teeth. Multiple impacted supernumerary teeth are rare. This case report presents a case with nonfamilial and nonsyndromic multiple supernumerary teeth.
Case presentation: Nine-year old male patient referred with the chief complaint of the unpleasant appearance of his anterior teeth to Department of Pediatric Dentistry, University of Ondokuz Mayıs, Turkey. Medical and family histories were noncontributory. Extraoral findings did not show any abnormality. Intraoral examination revealed many deep caries lesions and a supernumerary tooth between his maxillary central incisor teeth. Radiographic examination revealed the presence of 11 supernumerary teeth in all four quadrants. The proposed treatment plan consisted of extraction of the erupted and unerupted supernumerary teeth in order to immediate initiate orthodontic treatment. The supernumerary teeth were surgically removed and sent for histopathological examination, which revealed features which are suggestive of odontoma of the compound type. At present the patient is undergoing orthodontic treatment and his regular clinical and radiographic follow ups scheduled.
Conclusion: This case highlights the treatment options of a patient with multiple supernumerary teeth and the need for multidisciplinary planning and treatment.

P138

Early Non Invasive Detection of Premalignant Lesions of Oral Mucosa

Petr Pošta, Daniel Hrušák, Pavel Andrle, Lubor Hosticka, Lukáš Hauer, Jan Jambura
Department of Oral and Maxilofacial Surgery, Clinic of Dentistry, University Hospital in Pilsen, Faculty of Medicine of Charles Univeristy in Pilsen

Aim: The aim of our report is to familiarize medical public with the possibility of early detection of malignant and premalignant lesions of the oral mucosa and to evaluate our experience with the method of light-induced natural autofluoresce of tissues.
Materials and methods: Carcinoma of the oral cavity is a serious and relatively common disease, which is often overlooked and underestimated by the lay and professional public. For this reason, we encounter bad or late diagnosed neoplastic disease of the oral cavity in our practice. Today's medicine offers several methods for early diagnosis of malignant neoplasms of oral mucosa. One of the methods – natural tissue autofluorescence provided by apparatus Velscope – is used at our clinic. Principles of the method and our clinical experience with Velscope device are summarized in our poster.
Results: Natural autofluorescence method seems to be beneficial for increasing success in early detection of malignant diseases of oral cavity, as well as for allowing radical surgery. For correct evaluation of the results of investigations using this method, it is required to have certain experience, because of the high sensitivity and low specificity of this examination.
Conclusion: By using the method of natural tissue autofluorescence we can early detect lesions, that are hard to recognize under polychromatic day light. With help of this device, we can also determine the range of safety margins in radical surgery or find the ideal biopsy sampling point. This method is also suitable as a dinspensarizating method by capturing control images.

P139

Chronic Conditions' Policies: Oral Health, A Felt Absence

Gerson Luis Schwab[1], Simone Tetu Moysés[1], Beatriz Helena Sottile França[1], Renata Iani Werneck[1], Erica Frank[2], Samuel Jorge Moysés[1]
[1]*Pontifícia Universidade Católica do Paraná (PUCPR),* [2]*University of British Columbia (UBC)*

Introduction: Dental caries is the most common non-communicable disease, affecting more than 90% of population. All other mouth diseases have significant impacts on general health, well-being and productivity. This research aimed to identify how oral health is considered in elaboration of public policies for non-communicable diseases.
Methods: This was a cross-sectional quantitative research and data were collected between 12/05/2012 and 12/10/2012 in WHO website, "media centre" section, with the expression "non-communicable diseases". It resulted in 12000 publications. Filtering in advanced search, asking for "Find results with all of the words, 100 results, Language English, File Format.pdf, Occurrences in the title of the page, Domain who.int, Sort by date" it produced 45 publications. Analysis occurred from 12/10/2012 to 12/15/2012, using the tool "Find" on Windows 7 to identify the key words: oral health, dental caries, and periodontal disease.
Results: "Oral health" appears seven times, "dental caries" 4, "periodontal disease" none.
Discussion: The inexpressive presence of "oral health" (7) could be credited to a wider approach of health, but what about "dental caries" (just 4) and "periodontal disease" (0), the most prevalent oral non-communicable diseases? The undisputed leadership that WHO plays in combating diseases, through admittedly efficient health policies, have already brought many benefits to millions of people. Partnerships with several organizations from different nature seem highly positive. But it is undeniable that oral health has been overlooked in policies to combat non-communicable diseases, particularly cardiovascular diseases and diabetes, which have more interactions and oral manifestations.

P140

Assessment of Dental Anxiety among Dental Students during Pre-Clinical and Clinical Year

Şirin Güner[1], Eda Haznedaroğlu[2], Ali Menteş[2]
[1]*Department of Pediatric Dentistry, Yeditepe University, Istanbul, Turkey,* [2]*Department of Pediatric Dentistry, Marmara University, Istanbul, Turkey*

Aim: Anxiety is a response to a perceived threat or danger and is recognized as a significant barrier to the utilization of oral health care service. The purpose of this study was to evaluate the factors

associated with dental anxiety and to assess the most provoking stimuli during the dental treatment among dental students in their pre-clinical and clinical years.
Materials and methods: All data were collected by self-report questionnaire. One hundred sixty-six dental students completed a 2-section questionnaire which consists of sociodemographic information including age, gender and frequency of dental visits and a second section in which students answered questions about factors related to dental anxiety. Chi-square test was used in statistical analysis.
Results: The most provoking stimuli were "seeing the needle", "the noise of dental equipment" and "the view of dental equipment" among pre-clinical students respectively. Post clinical training values were significantly decreased ($p = 0.0001$, $p = 0.0049$, $p = 0.0005$). No statistically significant difference was observed between genders according to the pre-clinical year questionnaire answers. Moreover statistically significant differences in anxiety values were found at female students between clinical and pre-clinical years.
Conclusions: According to our findings we suggest that the change in the reported dental anxiety of the students during the years of dental studies in the present study may be related with the increased dental education and clinical training that the students acquire throughout the dental school.

Theme: Implantology: Immunology

P141
Oral Lichen Planus in Relation toTransaminase Levels, Hepatitis C and B Virus
Filiz Namdar Pekiner[1], Mehmet Oğuz Borahan[1], Gülderen Yanıkkaya Demirel[2], Semih Özbayrak[1], Gaye Sezgin[1]
[1]Department of Oral Diagnosis and Radiology, Faculty of Dentistry, Marmara University, İstanbul, Turkey, [2]Department of Medical Microbiology, Immunology Section, Yeditepe University, Istanbul, Turkey

Aim: The aim of this study was to evaluate the relationship of transaminase levels, hepatitis C and hepatitis B virus infections in patients with oral lichen planus (OLP) and to compare to healthy controls.
Materials and methods: The study protocol was approved by the Local Committee of Research and Ethics of Marmara University. Thirty patients with OLP and 30 age-gender matched healthy controls were participated in the study. All patients were subjected to routine blood test and the estimation of serum glutamic oxaloacetic transaminase (SGOT) and serum glutamic pyruvic transaminase (SGPT), detection of anti-HCV antibody and hepatitis B surface antigen (HBsAg) by using the enzyme immunoassay. The data were statistically analyzed using Student-*t*, Mann-Whitney *U* and Chi-Square Fischer's Exact tests.
Results: The difference between OLP patients and healthy controls of SGOT, SGPT, anti-HCV antibody and HbsAg into group was not significant ($p > 0.05$).
Conclusions: This study identified that there was no association between OLP and elevated SGOT/SGPT levels, hepatititis C and/or hepatitis B virus.

Theme: Implantology: Implantology

P142
The Biomechanical Interest of Damping Materials in Dental Implantology
Ali Merdji[1], Ali Benaissa[2], Laid Aminallah[1], Bel Abess Bachir Bouiadjra[1], Boualem Serier[1], Osama Mukdadi[3], Rajshree Mootanah[4]
[1]Laboratory of Mechanical Physical of Materials (LMPM), Department of Mechanical Engineering, University of Sidi Bel Abbes, Algeria, [2]Laboratory of LSTE, Department of Mechanics, Faculty of Science and Technology, University of Mascara, Algeria, [3]Department of Mechanical and Aerospace Engineering, and Center for Cardiovascular & Respiratory Sciences, West Virginia University, USA, [4]Medical Engineering Research Group, Faculty of Science & Technology, Anglia Ruskin University, Bishop Hall Lane, Chelmsford, Essex, UK

Aim: Finite element analysis (FEA) has been frequently used to study the loading situation of dental implants and bone resulting from the fixation of non-passively fitting restorations. This work presents a numerical study performed with FEM of new dental implant system.
Materials and methods: A conventional dental implant system was redesigned and an artificial periodontal ligament was interposed between the implant and the bone. The aim was to attenuate the stress in the bone surrounding the implant. The new system was assessed and the interface stresses compared with the ones provoked by the conventional implant.
Results and conclusion: In general, the novel dental implant provoked lower interface stresses due to the stress shielding effect of the artificial periodontal ligament.

P143
An Alternative Healing Abutment Production Technique for Deeply Placed İmplants
Haydar Albayrak, Hasan Hüseyin Kocaağaoğlu, Hasan Önder Gümüş, Mehmet Dinçel, Hasan Akbaba
Department of Prosthodontics, Faculty of Dentistry, Erciyes University, Kayseri, Turkey

Aim: A healing abutment is placed into the implant to help the soft tissue healing around the implant after first or second stage surgery. Conventional prefabricated gingival formers are designed for a machined abutment and are produced in several lengths and project through the soft tissue into the oral cavity. Prefabricated healing abutments may fail to provide support for the supracrestal soft tissue in deeply placed implant sites. In some clinical cases, there is a need to be placed the implant deep subgingivally due to bone availability. Especially in patients with cleft palate and patients with severe bone resorption, the overlying soft tissue may be too thick to be transversed by the conventional highest length healing abutment. İf implants are placed deeply; an alternative technique can be used to achieve ideal tissue form.
Case: A 20-year-old-male patient presented with edentulous mandible and operated maxilla for cleft palate. Four tissue level

implants were placed in left and right molars region and tuber region of operated edentulous maxilla. During the prosthodontic phase, a custom healing abutment was planned. Because the implant was deeply placed. In this technique, implant transfer piece was used rather than healing abutment. The implant transfer piece was screwed on suitable analogues to ease handling during restoration procedures. The implant piece was fabricated using flowable composite resin. To create a strong bonding between composite and the implant transfer piece, circumferentially retentive grooves was attained and used adhesive bonding system.
Conclusion: The new custom healing abutment was produced 4 mm longer than the highest prefabricated healing abutment which was belonged to this implant system.

P144
Zigomatic and All on Four Implant Supported Rehabilitation: sEMG Study
Moara De Rossi, Carla Moreto Dos Santos, Reginaldo Migliorança, Simone Cecilio Hallak Regalo
Department of Morphology, Stomatology and Physiology, Ribeirão Preto Dental School, University of São Paulo, Ribeirão Preto, Brazil

Aim: The aim of this clinical study was to evaluate the muscular function of patients totally rehabilitated with Zigomatic (maxillar) and all on four (mandibular) implants, compared with those having natural dentition and complete denture.
Materials and methods: The present research was approved by the Ethics Committee and evaluated 72 patients, divided into three groups. The implant group was composed by 24 patients (12 men, 12 women; mean age 57.8 years) totally rehabilitated with Zigomatic (maxillar) and All-on-Four® (mandibular) implant-supported prostheses. The dentate and denture groups consisted of 24 subjects each, paired with members of the Implant group according to age and gender. Surface Electromyography of masseter and anterior temporalis muscles was carried out during clenching, non-habitual and habitual chewing and rest. All values were standardized as percentage of a maximum voluntary contraction. Inter-group comparisons were made using ANOVA and Tukey post hoc test (SPSS 17.0). Significance level was set at $p < 0.05$.
Results: No one statistical difference was found between Implant and dentate group. The sEMG activity of masseter and anterior temporalis muscles of denture group presented statistically significant differences ($p < 0.05$) from those of denture and implant groups.
Conclusions: Patients using implants and dentate patients demonstrated similar sEMG values, showing that Zigomatic an All on Four implants-supported prostheses can be considered a good treatment option for oral rehabilitation in edentulous patients.

P145
Comparative Study of Two Mandibular Partial Implant Overdenture Designs
Ahmed Mohamed Allameldein, Fadel El Said Abdelfattah, Eman Abd El Salam Shakal
Department of Prosthodontics, Tanta University, Tanta, Egypt

Objective: Comparison between two mandibular implant overdentures of class II Kennedy classification.
Method: Fourteen male patients were selected with age ranging from 30 to 45 years divided into two equal groups. Group I received a mandibular removable partial over denture retained with implant abutment at the first molar region and with extra coronal attachment to the first premolar. Cross arch stabilization was made by using double Aker clasp on the first and second molars of the opposite side. Group II received a unilateral mandibular removable partial over denture retained with implant abutment at the first molar region and with extra coronal attachment to a splinted first premolar and canine. Patient satisfaction, clinical and radiographic evaluations were carried out at regular appointments up to 1 year from implant loading.
Result: There was insignificant increase in the pocket depth and gingival recession, insignificant decrease in the perio test values and plaque index around implants and abutments and insignificant increase in the marginal bone loss around implants and abutments in both groups. All patients strongly disagreed the high cost of the treatment. Group II patients were more satisfied regarding aspects of the patients' comfort and phonetics.
Conclusion: Unilateral removable partial denture was more comfortable and more better with speech. The use of dental implant as a distal abutment in class II Kennedy classification reduces all the movements of denture base and results in better healthy condition for the gingival and periodontium of the abutment tooth than when using conventional partial denture

P146
Adhesion of HMS0014 Cells on Titanium Discs with Surface Modifications
Lian Guo[1], Michiko Nakatsuka[2], Shunji Kumabe[2], Yasutomo Iwai[2]
[1]Department of Oral Anatomy, School of Medicine, College of Stomatology, Shanghai Jiao Tong University, [2]Department of Oral Anatomy, Osaka Dental University

Purpose: The present study evaluates the microenvironments of titanium (Ti) discs having similar surface modifications of prevalent dental implants to acquire an optimal osseointegration of human bone marrow-derived mesenchymal stem cells, therefore contributes to an in vitro study of the dental implant therapy.
Materials and methods: Cell proliferation/differentiation of HMS0014 Yub62b cells (Riken BRC), and mineralisation of the ECM in monolayer culture were studied. Subsequently, the HMS0014 cells were GBR-engineered to initiate osteogenesis on either 99% Ti (JIS type 4; SPI, Thommen Med/Morita) or Ti alloy (Ti-6Al-4V; anodic oxidation (AO), hydroxyapatite coating (HA); JMM) discs modified with different surface substrates (Disc-SPI, Disc-AO, Disc-HA). The histology of attachment onto the substratum, extension and intercellular contact of the HMS0014 cells under inducing condition (POWEREDBY10/AA+β-GP+DEX; 14 days) were studied with fluorescence light microscopy (BIOREVO BZ-9000; Keyence) and SEM (H-4100; Hitachi).
Results: The SEM demonstrated that the spherical-to-polygonal (d = 10–40 μm) HMS0014 cells proliferated and differentiated

into flat polygonal ($30 \times 90 \sim 100 \times 200\ \mu m^2$) cells, showing prominent lamellipodia and dendritic filopodia, to employ cell-to-substrate and intercellular attachments on the Ti disc surface between 60 and 180 min of culture. The fluorescent immunohistochemistry demonstrated the co-expression of F-actin and CD51 (αV integrin) in the attached HMS0014 cells.
Conclusion: The matured osteoblast (Ob)-like HMS0014 cells initiated mineralisation since day 1 of culture; distribution of calcification loci in the ECM was prominently observed between day 7 and day 14 experiment. We concluded that the present GBR methods enhanced Ob-like cells to initiate contact osteogenesis on Ti/Ti alloy discs subject to different surface modifications.

P147
Osseointegration of HMS0014 Cells in Cellmatrix I-A around Ti Implants
Yasutomo Iwai[1], Michiko Nakatsuka[1], Lian Guo[2], Shunji Kumabe[1]
[1]*Department of Oral Anatomy, Osaka Dental University,* [2]*Department of Oral Anatomy, School of Medicine, College of Stomatology, Shanghai Jiao Tong University*

Purpose: We have investigated culture of HMS0014 Yub621b cells (Riken BRC) on titanium (Ti) discs, and revealed that (i) ECM mineralisation was initiated since day1 and became markedly deposited during days 7–14, (ii) 3-D culture acquired more Ca and OC volumes, and (iii) The cells were more expansively adhered on anodic-oxidized (AO) Ti discs. In this study, we cultured clusters of HMS0014 cells in a collagen scaffold on AO Ti implants (AO-IPs) and studied osseointegration by the GBR concepts in vitro.
Materials and methods: Straight root-shaped AO-IPs (FINAX; POI, JMM) were laid in dishes paved with Cellmatrix Type I-A Gel (Nitta Gelatin; layer I), cultured together with the cell cluster (immature HMS0014 + Cellmatrix; layer II) and sandwiched with another Cellmatrix layer overlaid with POWERBY10 (AA + β-GP + DEX, 21 days; layer III). AO-IPs with the growing peri-IP tissue (layers I-III) were either embedded (Technovit 7200; Herauus Kulzer) for ground-section by the Cutting-Grinding Technique (EXAKT BS-300CP-A/MG-400CS; MEIWAFOSIS) or cryo-sectioned (CM 3050S; Leica); the specimens were prepared for the LM (BX41/FX380; Olympus). Furthermore, the peri-IP tissue was prepared for the conventional TEM (H-7100; Hitachi).
Results: Contact osteogensis was commenced with osteoconduction of HMS0014 cells and sedimentation of cement lines. In the peri-IP GBR tissue, the distribution of elongated polygonal Ob-like cells, invasion of the ECM and appositional collagen-related minerlisation among/between the warp/weft of the 3-D collagen meshwork were demonstrated.
Conclusions: We cultured a tissue-engineering material by growing HMS0014 cells within a 3-D collagen gel scaffold on AO-IPs, and elucidated augmentation of IP osseointegration by the GBR.

P148
Effect of Surface Treatment of the Implant Collar Area on the Crestal Bone Resorption: A Comparative Study in Mandibular Implant-Denture Cases
Hazem Mourad Hassan[1], Gehan Fekry Mohamed[1], Mohamed Mohamed Fata[2], Mohamed Abdelmoniem Ebrahem[3]
[1]*Department of Prosthodontics, Faculty of Dentistry, Minia University, Egypt,* [2]*Department of Oral, Maxillofacial, and Plastic Surgery, Faculty of Dentistry, Alexandria University, Egypt,* [3]*Department of Oral Medicine, Periodontology, and Oral Diagnosis, Faculty of Dentistry, Minia University, Egypt*

The present study was designed to compare crestal bone resorption, up to 1 year, around immediately-loaded endosseous implants supporting mandibular implant-dentures, with different surface treatment of the implant collars (polished vs. sandblasted), using CAD/CAM-based surgical guides, flapless implant surgery, and split-mouth design.
Materials and methods: Ten healthy completely edentulous patients (eight males and two females) were selected, with their ages ranged from 58 to 65 years. Informed consents were signed by all patients. Pre-operative CBCT was performed for all patients and their mandibular stone models as well. CAD/CAM technology was used to fabricate stereolithographic surgical guides using data collected from CBCT.

According to split-mouth design, right canine areas received implants with polished collar, while left canine areas received implants with sandblasted collar. All implants were of the same length, diameter, and collar height. Implants were placed using punch technique and were immediately loaded over ball attachments.

Radiographic assessment of crestal bone resorption was carried out using standardized periapical digital radiographs. Readings were statistically analyzed using Wilcoxon-Signed Rank test.
Results: Statistical analysis of the results showed more crestal bone resorption around the implants with polished collar starting from the 3rd month of evaluation, however, no clinical significance difference was reported.
Conclusion: Surface treatment of implant collar area minimizes the rate of crestal bone resorption, specially when used in combination with punch technique, CBCT, and CAD/CAM technology. Split-mouth design research design is highly recommended in clinical trials for more accurate results, reduction of bias and cost, and to save resources.

P149
Regression Analysis of the Findings 1 year After Implant Placement
Susann Popp[1], Horst Popp[1], Maik Wagner[2], Harald Küpper[2], Kneist Susanne[2]
[1]*Dental Surgery, Oral and Maxillofacial Surgery, Erfurt, Germany,* [2]*Dental School, Biological Laboratory, Clinic for Prosthetic Dentistry and Dental Materials Hospital Jena, Germany*

Aim: In a clinical-microbiological and prospective study 108 patients were assigned to four groups [G] (G1: no residual teeth

with probing depth [PD] >3.5 mm, G2: at least one [alo] PD of 3.6 to <6 mm, G3: alo PD of 6–8 mm, G4: alon PD >8 mm) and received 194 implants (88 in the upper jaw, 106 in the lower jaw). One year after implant placement, 81 patients (74.2% implants) were reassessed. 95.5% of the implants in the upper and 91.1% in the lower jaw were free of plaque and in nearly all cases free of inflammation.

Material and methods: All findings before and after implant placement (dental visit [V] 3, V8) and after 1 year [V11] underwent a regression analysis using the method "step-wise" to determine influence factors and power (Beta) on pocket probing depth [PPD] of the patients.

Results: The model with 15 variables proved to be significant and explained PPD at 82.7%. Thus, the regression equation for PPD was: y = 2.386 + 9.619 × 10-9*V3 total bacterial count [TBC] deepest periodontal pocket + −0.591*past periodontal treatment +0.127*V3 Community Periodontal Index [CPI] 17/16 + −0.42*V3 maxillary prosthetic status +0.032*V11 status crown 24 + −0.189*V11 status root 43 + 3.045 × 10-6*V11 F. Nucleatum in implant sulcus +0.071*V3 CPI 26/27 + 0.069*V3 status crown 15 + 0.412*V3 CPI 31 + −0.295*V3 status root 41 + −0.180*V11 status root 46 + 0.187*V3 status root 35 + −0.164*V8 attachment loss 47/46 + 0.120*V11 smoking.

Conclusion: The highest influence on PPD exerted the maxillary prosthetic status at V3 (Beta = −0.549), the CPI 17/16, TBC of the deepest periodontal pocket and a past periodontal treatment.

P150

Retention and Stress Distribution in Implant Retained Overdentures

Bülent Cumhur Uludağ[1], Serdar Polat[2], Ali Alper Comut[3]
[1]*Department of Prosthodontics, Faculty of Dentistry, Ankara University, Ankara, Turkey,* [2]*Department of Prosthodontics, Faculty of Dentistry, Mustafa Kemal University, Hatay, Turkey,* [3]*Department of Prosthodontics, Colleage of Dentistry, New York University, New York, USA*

Objective and purpose: Osseointegrated implants have been used to improve denture support, stability and retention Retention should not be the only factor to consider when designing an implant-retained overdenture. As a patient functions with an implant-retained overdenture, loads are transmitted to alveolar bone surrounding the implants. The aim of this study was to evaluate the relationship between retention and stress distribution in overdentures retained by three implants.

Material and methods: A photoelastic model was fabricated with three parallel, vertically oriented, screw-type implants embedded in the interforaminal region. Three different attachment systems were tested on the model (Vario soft bar with VSS yellow matrix-medium retention, galvano bar and clear locator attachment with 5 lbs retention). Subsequent stresses in the supporting structure were monitored using a polariscope, and photographs were taken in order to evaluate stress. In addition, each design was attached to a universal testing machine and subjected to 10 consecutive retention pulls in order to evaluate retention. Data were subjected to analysis of variance and *t* tests to determine differences.

Results: Retention force ranged from 26.58 to 54.32. The clear locator attachment resulted in higher retention as well as higher stress values in comparison to the other systems tested ($p < 0.001$). The results of this in vitro study suggest that choice of attachment affects the clinical success of implant-retained mandibular overdentures

Conclusion: Higher retention value and stress was found at prosthesis with locator attachments. 3-Splinted designs were shown lower stresses than locator attachment.

P151

Bone Level 2.8 mm Implants Connected Bridge Placement on the Anterior Mandibula

Durra Mufida
Universitas Mahasaraswati Denpasar, Bali, Indonesia

Case: A 57 years old female patient came with removable partial denture replaced lower anterior teeth that were missing several years ago. The patient has been wearing partial denture for over 2 years, but complained of unaesthetic appearance, less comfort in speech and stomatitis that sometimes occurred on the bottom of the tongue. In this case, four pieces bone level implants with diameter of 2.8 and 14 mm height placed subcrestal on regio 43, 42, 32 and 33. The abutment and six unit bridge connected with four pieces implants inserted 5 months later.

Conclusions: These treatments fulfilled patient's expectance both appearance and speech function.

P152

Laser-Induced Implant Surface Decontamination: Evaluation of In Vitro Models

Marina Salah Kamel, Amardeep Khosa, Andrew Tawse Smith, Geoffrey Tompkins, Jonathan Leichter
Sir John Walsh Research Institute, University of Otago, Dunedin, New Zealand

Aim: To critically evaluate in vitro studies assessing the efficacy of dental implant surface decontamination by laser therapy, and to report on lasers that are likely to yield maximal decontamination and minimal surface morphological alterations.

Materials and methods: Pubmed and Medline via OvidSP electronic databases were used to search for articles relating to the use of lasers in the decontamination of titanium specimen surfaces. Clinical studies, case reports, case series, review articles, animal models and studies that did not include titanium specimens were excluded. Study selection was carried out by two authors independently and cross-checked through abstract viewing; data abstraction was achieved following full-text viewing.

Results: 16 articles were included with no discrepancies in study selection or data abstraction to be contended. Er:YAG laser induced decontamination over a large power range; meanwhile, carbon dioxide and GaAlAs diode lasers demonstrated differential microbial decontamination capacities indicating a potentially lower efficacy against a multi-microbial biofilm. Controversy surrounded Er:YAG's comparative efficacy to alternative treatment modalities and no comparative studies were available for the other

lasers; similarly, the likelihood of surface alterations occurring secondary to irradiation was controversial and depended on laser type and settings.
Conclusions: Outcomes varied between the included studies with little consistency in laser decontamination capacity or surface alteration potential. This may be due to researchers employing various test specimens, contamination methodologies, irradiation settings and outcome measures leading to limited study comparability. More investigations are required to provide guidelines for using laser therapy which has demonstrated promising results in in vitro trials to date.

Theme: Implantology: Oral Pathology

P153
Intraoral Localized Reactive Hyperplastic Lesions in the Turkish Population
Seref Ezirganli[1], Ufuk Tasdemir[2], Fahrettin Goze[3], Muhammed Isa Kara[4], Serkan Polat[5], Suphi Muderris[6]
[1]Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, Bezmialem Vakif University, Istanbul, Turkey, [2]Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, Cumhuriyet University, Sivas, Turkey, [3]Department of Pathology, Faculty of Medicine, Cumhuriyet University, Sivas, Turkey, [4]Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, Izmir Katip Celebi University, Izmir, Turkey, [5]Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, Inönü University, Malatya, Turkey, [6]Department of Otolaryngology, Faculty of Medicine, Cumhuriyet University, Sivas, Turkey

Aim: This retrospective study aimed to contribute to the literature by investigating the types and distribution of intraoral localized reactive hyperplastic lesions (LRHL) in the Turkish population.
Methods: The histological diagnostic records of the Department of Pathology at Cumhuriyet University were reevaluated for 210 patients who had been treated for lesions from 1987 to 2008. The lesions were classified into four groups–focal fibrous hyperplasia (FFH), pyogenic granuloma (PG), peripheral giant cell granuloma (PGCG), and peripheral ossifying fibroma (POF)–and were analyzed for histological diagnosis, age, gender, and site.
Results: The total of 210 lesions consisted of 82 (39.05%) FFH, 79 (37.62%) PG, 41 (19.52%) PGCG, and 8 (19.52%) POF. Age for all cases ranged from 6 to 80 years (mean age was 39.5 ± 16.8 years) with a female–to–male ratio of 1.1:1.
Conclusions: Despite some discrepancies, the characteristics of LRHL of Turkish patients are in line with those of patients from other countries according to lesion type, site distribution, and age and gender of patients.

Theme: Implantology: Oral Surgery

P154
Impacted Lower First Premolar Associated with Supernumerary Teeth
Fidan Alakuş Sabuncuoğlu[1], Mahmut Yılmaz[2]
[1]Marasal Cakmak Military Hospital Dental Center, [2]Private Sector

Aim: Supernumerary teeth often causes disturbances in the eruption of its associated tooth. Supernumerary teeth occur in the primary and permanent dentition. This case report documents a 12-year-old-child with a supernumerary teeth located in the mandible, which caused the impaction of the right lower first premolar.
Material and methods: Twelve-old-girl was referred to our clinic due to the failure of the right lower first premolar to erupt. Intraoral examination revealed a permanent dentition period, and all teeth except for the right lower first premolar was present in the mouth. Extraoral examination revealed no abnormal signs in gingiva, buccal tissue and alveolar bone of the right mandible. A lower first premolar in the vertical position and covered with primary and supernumerary teeth was determined to be present through panoramic and periapical radiographs and extracted in a surgical operation. After surgery, orthodontic treatment began with the fitting of upper and lower preadjusted edgewise appliances of 0.018-in slot. The arches were banded and bonded, and the teeth leveled and aligned.
Results: The impaction of the right lower first premolar was successfully brought into alignment through surgery treatment and orthodontic traction.
Conclusion: Detection and removal of a supernumerary teeth associated with an impacted tooth might have contributed to the favorable results for establishing acceptable occlusion.

P155
Surgical Approaching Of Endodontics Failure Teeth
Amet Demirali Demiri
Amet Demirali Demiri, Clinic for Oral Surgery, School of Dentistry, Faculty of Medical Sciences, State University of Tetova-Macedonia, Seha Amet Mustafai, "Oral Estetic Surgery" Tetova-Macedonia

Aim: The aim of this study is to analyze the difference of success by retreatment with orthograde and retrograde filling method of endodontically failure teeth.
Material and methods: In a period from 2010 to 2011 year were surgically treated 48 patients (27 males and 17 females) in age from 11 to 68 years old. 48 surgically treated teeth with periapical lesions were divided into two groups. First group (control group) was compound from 24 teeth with periapical lesions filled by orthograde way. Second group (study group) was also compound from 24 teeth with periapical lesions filled by retrograde way, because they have intra radicular restorations or metal ceramic crowns.
Results: After 12 months, bay all patients was made X-ray control, and by first group(control group) were evaluated eight cases with complete healing, ten cases with unfinished healing, four cases with suspect healing, and two failure cases. By second group (study group) were evaluated 14 cases with complete healing, six cases with unfinished healing, four cases with suspect healing. Concerning the postoperative healing of lesions, by X-ray controle there was no statistically significant difference between two groups after 12 months ($p = 0.59$).
Conclusions: From this study, we can conclude that application of a retrograde filling with surgical intervention-apicectomy, could

bee considered like a minimal invasive procedure, which has positive effect by postoperative clinic results.

P156

Excision of Benign Soft Tissue Formations with Er:Yag Laser and Reparative Process Follow up with Thermal Imaging

Mariya Dencheva, Martin Rubiev, Svetoslav Garov
Faculty of Dental Medicine, Medical University Sofia, Bulgaria

Aim: The usage of Er:Yag lasers in the surgery has proven advantages: lack of pain, reduced bleeding, possibility of haemostasis. A raise of the temperature is an indicator of inflammation or of a reparative process. The purpose of our survey is to assess and compare the date collected with the camera for thermal imaging (FlirA320 with resolution of 0.06°C) about the reparative process after excision of benign formations in the oral cavity with Er:Yag laser.
Material and methods: To all 15 participants so far were made photographic and thermal pictures before the excision, immediately after it, on the 3rd and on the 7th day.
Results and conclusion: The results showed that there was no raise in the local temperature with more than 0.8°C during the reparative process in the 7-day period of fallow up.

P157

Implants and Bisphosphonate Related Osteonecrosis of Jaws (BRONJ)

Dena Sepehri, Farzin Sarkarat, Shirin Hassanvand, Maryam Rezazadeh
Department of Oral and Maxillofacial Surgery, Azad University, Iran, Tehran

Introduction: Bisphosphonates are widely used in the management of metastatic disease to the bone and in the treatment of osteoporosis. BRONJ is a serious condition that has been reported by dental practitioners and physicians in cancer and osteoporosis patients on bisphosphonate therapy.
Materials and methods: This is a computer based research that includes Medline and Pubmed databases. Out of 156 articles, eight of them were clinical trial and 38 of them were review article.
Results: People who receive frequent, high dose of bisphosphonates over long period of time and have periodontal disease, poor oral hygiene and invasive oral surgery such as implant are the most one who is at the greatest risk for developing BRONJ.
Conclusion: Because of broad dental implant usage, dental practitioners must ask patients specifically about bisphosphonates as a part of their medical history.

P158

Multidisciplinary Rehabilition of Limited Interocclusal Spaces: A Case Report

Yavuz Fındık, Özge Kolkesen
Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, University of Süleyman Demirel, Isparta, Turkey

Aim: Prosthetic management of partial and total edentulism can be challenging with the presence of limited interocclusal space. The extrusion of opposing teeth combined with the alveolar extrusion of the edentulous areas reduces the space needed for fabricating a removable or fixed prosthesis when edentulous areas are present in the maxilla. This clinical presentation describes the treatment provided to a patient who presented with limited interocclusal space because of bone development disorders.
Case: The case who had partial edentulism was rehabilitated with extraction and alveoloplasty. The mandibular left first premolar, maxillary left and right first premolars were extracted and the maxillary right and left posterior alveolar crest was reduced by alveoloplasty. And also mandibular right posterior area was grafted with autogenous bone collected from the maxilla because of inadequate alveolar width. After gaining adequate space, prosthetic rehabilitation was completed with removable partial denture.
Conclusion: During the follow-up period, the patients chewing functions and physical appearance improved, and no complications occurred.

P159

Laser Therapy on Cultured Osteoblasts Submitted to Sodium Alendronate

Maria Da Graça Naclério Homem[1], Mariana Aparecida Brozoski[1], Leila Soares Ferreira[2], Maria Cristina Zindel Deboni[1], Andreia Aparecida Traina[1], Marcia Martins Marques[2]
[1]*Department of Oral and Maxillofacial Surgery, Dental School University of São Paulo, São Paulo, Brazil,* [2]*Department of Dentistry, Dental School University of São Paulo, São Paulo, Brazil*

Introduction: The management of bisphosphonates related osteonecrosis of jaw (BRONJ) remains a challenge. Literature describes different forms of treatment, almost all of the studies agree in minimal invasive procedures. Then, the laser phototherapy (LPT) using red wavelength has shown positive effects on BRONJ lesions healing.
Objective: This study aimed to evaluate the effect of LPT on the viability and proliferation of osteoblasts (OSTEO1 lineage) submitted to sodium alendronate.
Methods: Cells stayed in contact with DMEM containing sodium alendronate for 24 h, after this period cells were irradiated (6 J/cm^2), using a continuous diode laser (InGaAlP, 660 nm) in punctual and contact mode, 40 mW, spot size 0.028 cm^2. Two irradiations with 6 h-interval were performed. Cell viability and proliferation were determined with the MTT (3-[4,5-dimethylthiazol-2-yl]-2,5-diphenyltetrazolium bromide) reduction assay in three different periods 24, 48 and 72 h after first irradiation.
Results: Controls and cultures treated with sodium alendronate and LPT presented cell viabilities significantly higher than those of cultures solely treated with alendronate.
Conclusion: The alendronate showed to be cytotoxic to osteoblast in culture. The LPT in the parameter tested was able to reverse the cytotoxicity of the alendronate.

P160

Glanduler Odontogenic Cyst: A Rare Case Report

Fatih Asutay[1], Ahmet Hüseyin Acar[1], Ümit Yolcu[1], Neşe Karadağ[2]
[1]*Department of Oral and Maxillofacial Surgery, İnönü University, Malatya, Turkey,* [2]*Department of Pathology, İnönü University, Malatya, Turkey*

Introduction: Glandular Odontogenic Cyst (GOC) is a rare developmental cyst of jaws, which suggests an origin from the remains of dental lamina. GOC was first reported as a sialo-odontogenic cyst by Padayachee and Van Wyk in 1987. Gardner et al. described it as a glanduler odontogenic cyst in 1988 after understanding there is no relationship between salivary gland and cyst. In 1992, World Health Organization classified the lesion as a developmental odontogenic epithelial cyst and accepted GOC as the preferred term.

Magnusson et al. observed that GOCs account for only 0.012% of all cysts seen on the oral cavity. To our knowledge, only 111 cases of GOC has been reported in the literature.

GOC has a slight male predilection and occurs primarily in middle-aged patients. Clinically, the most common site of occurrence is anterior mandible. GOC may be asymptomatic or may cause pain, slow-growing swelling and tooth displacement. Radiographically, GOC appears as a well-defined multilocular or unilocular cystic lesion of jaws that often causes expansion, thinning, erosion or perforation of the cortical plates.

Case: In this study, clinical, radiographic and histopathological evaluation and treatment of a rare case of GOC with maxillary impacted canine tooth in a 39 years old female patient is presented. She was admitted to our clinic with the complaint of swelling of palate and pain in certain region. GOC may recur.

Conclusion: Because of similar views and recurrence capability, cystic lesions must be diagnosed carefully.

P161

Bilated Diagnosis of a Central Giant Cell Granuloma: A Case Report

Alper Kaya[1], Ayfer Aktaş[2], Mansur Ala[3], Beyza Kaya[1]
[1]*Department of Oral and Maxillofacial Surgery, Dentistry Faculty, Dicle University, Diyarbakir, Turkey,* [2]*Department of Histology and Embryology, Medicine Faculty, Dicle University, Diyarbakir, Turkey,* [3]*Department of Pathology, Medicine Faculty, Dicle University, Diyarbakir, Turkey*

Introduction: Central giant cell granuloma (CGCG) is a non-neoplastic intraosseous lesion of unknown etiology. They affect females more than males with the mandibular anterior region being the most common site of occurrence. Clinically CGCG's are slow growing, asymptomatic, which do not recur and as aggressive lesions, found in younger patients, painful with rapid growth, often causes root resorption and tendency to recur. Definitive diagnosis can be made only histologically.

Case: A 36 year old female patient was referred to our clinic with a chief complaint of swelling in the anterior maxilla which was noticed 7 months back and rapidly attained the present size. According to the patient's relatives' report (because of the patient was mental retarded); this growth had appeared after extraction of tooth 21. The patient was taken to Ear-Nose-Throat clinic about 3 months ago. After a biopsy she was not treated surgically, only an antibiotic had been prescribed. The growth had not been regressed, contrarily it continued enlarge. Intraoral clinical examination showed a swelling extending from teeth 11 to 25 obliterating the buccal sulcus, measuring 6 × 4 × 3 cm with a firm and erythematous surface. The CT scan revealed an unilocular radiolucency extending to basis of orbita and nose. Surgery was performed under local anesthesia. The tissue was removed and the histopathological diagnosis was a CGCG.

Conclusion: Giant cell granuloma outside the jaw was a non-neoplastic lesion, and extremely rare. It was somewhat difficult to make a correct diagnosis. Combining the clinical data and pathological feature were more helpful to the diagnosis.

P162

Biochemical and Biomechanical Assessment of Effects of L-Carnitine on Oral Mucosal Wounds

Harika A. Kutluay Köklü[1], Esra Küpeli Akkol[2], Dilek A. Uğar Çankal[1]
[1]*Department of Oral and Maxillofacial Surgery, Gazi University Faculty of Dentistry, Ankara, Turkey,* [2]*Department of Pharmacognosy, Gazi University, Faculty of Pharmacy, Ankara, Turkey*

Aim: The present study aimed to investigate the oral mucosal wound healing potential of L-carnitine, which is used to relieve inflammation and to heal skin wounds in the world.

Materials and methods: Twenty-four Wistar-albino rats were divided into four groups: Control group (Group I), L-carnitine groups (Group II and III), Vitamin E group (Group IV). A 1.5 cm linear incision was created on the buccal mucosa of each rat and was left to heal by secondary intention. Control group was not given any pharmacologic agent. The wound healing effect was comparatively evaluated with Vitamin E. L-carnitine (100 mg/kg/day and 200 mg/kg/day intraperitoneally) and Vitamin E (100 mg/kg/day, intraperitoneally) were used for 10 days. Wound healing were evaluated using biochemical methods and the tensile strength has been tested. The structure of this study was approved by the Gazi University Animal Experiments Local Ethics Commitee.

Results: The animals receiving the 100 mg/kg/day L-carnitine supplements healed more rapidly, with almost complete restoration of mucosa by 10 days. In the analysis of tissue samples; there was a statistically significant decrease in MDA levels in group II. Wound tension strength that was seen in groups II (%57.88) and IV (% 48.71) was better than the group III (%33.39).

Conclusion: L-carnitine has positive effects on wound healing rate and tensile strength in rats. Although there was a tendency toward faster healing in the groups receiving L-carnitine, it may have a dose-dependent positive effect for wound healing.

P163

Maxillofacial Rehabilitation and Treatments of Pilots and Flight Crew

Esra Yüce, Gülperi Koçer
Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, University of Suleyman Demirel, Isparta, Turkey

Aim: Actually, although number of the people who prefer to travel by airline because of the advantages of safety, time and comfort is gradually increasing, military air activities for security, cargo transport, agricultural protection, fire fighting, air taxi, air ambulance are increased busy traffic of air.

The main purpose of this article was to have sufficent knowledge and put emphasis on diagnosis and medical-surgical treatment of physiological problems among pilots, cabin crews and also passengers in oral and maxillofacial surgery.

Material and methods: Besides treatments, giving information about physiological problems conceivably experienced during flight have a great importance. Apply and advance scientific knowledge to promote and enhance the health, safety and performance of those involved in aerospace and related activities.

Results: During the flight, hypoxia, vertigo, air sickness, decompression illness (barotitis, bend, choke, the expansion of gases in the abdomen), visual illusions, jet-lag, caused by G forces of disorder, fear of flying are major problems due to the high-speed, altitude, low pressure, radiation, G forces and movements in three axises for pilots, cabin crews and passengers. Aerospace medicine concerns the determination and maintenance of the health, safety, and performance of persons involved in air and space travel.

Conclusion: Maxillofacial rehabilitation and treatments of pilots and fligt crew should be carried out by maxillofacial surgeons experinced on aerospace medicine.

P164

Primary Myelofibrosis: A Case Report

Hülya Çakır Karabaş[1], Hasan Sami Göksoy[2], Tamer Lütfi Erdem[1], İlknur Özcan[1]
[1]*Department of Oral and Maxillofacial Radiology, Faculty of Dentistry, Istanbul University, Istanbul, Turkey,* [2]*Hematology Clinic, Balıkesir State Hospital, Balıkesir, Turkey*

Introduction: Primary myelofibrosis is a myeloproliferative disorder in which an increase in reticulin and/or collagen fiber in bone marrow is accompanied by proliferation of atypical megakaryocytes resulting in anemia, bleeding problems, splenomegaly, and other secondary abnormalities.

Case: This case report documents the bleeding problem of a 51-year-old male patient in dental treatment which led to the diagnosis of primary myelofibrosis. The aim of this case report is to share the findings regarding diagnosis of a disease, which may be asymptomatic, by means of symptoms emerged after the tooth extraction.

Conclusion: In case of a massive bleeding in the dental treatment, primary myelofibrosis should also be taken into consideration besides the common hematologic diseases.

P165

Multiple Eruption Cysts: A Case Report

Derya Güler[1], Mustafa Erhan Sarı[1], Mehmet Ziya Yılmaz[1], Esengül Bekar[2], Şevki Güler[3], Neslihan Demirel[1]
[1]*Department of Pediatric Dentistry, Faculty of Dentistry, University of Ondokuz Mayıs, Samsun, Turkey,* [2]*Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, University of Ondokuz Mayıs, Samsun, Turkey,* [3]*Department of Periodontology, Faculty of Dentistry, University of Ondokuz Mayıs, Samsun, Turkey*

Introduction: Eruption cyst (EC) is a benign cyst associated with a primary or permanent tooth in its soft tissue phase after erupting through the bone.

Case presentation: 1-year 5-month age male baby was referred by his parents to Department of Pediatric Dentistry, University of Ondokuz Mayıs, Turkey, due to 1 × 1 cm diameter soft, smooth and bluish four lesions in the area of the primary first molar teeth of maxilla and mandibula. After the needle aspiration biopsy, incision and exposure of the associated teeth was performed. Follow-up examinations were performed 15 days later the surgery. By the end of the first year, the lesions had disappeared completely and the primary first molar teeth erupted to oral cavity without pathology.

Conclusion: It is clinically significant in that knowledge among general dentists is very essential regarding this developmental disturbance to reach the correct diagnosis and to provide proper treatment.

P166

Iatrogenic Paresthesia after Implant Surgery: Case Report

Çiğdem Tavusker, Melike Ordulu Sübay
Department of Oral Surgery, Istanbul University, Istanbul, Turkey

Introduction: Dental implant applications are frequently used in reconstructions of edentulous maxilla and mandibula. The risks of injury of the branches of the mandibular division of the trigeminal nerve (inferior alveolar nerve, lingual nerve, and mental nerve) are known complications of mandibular implant applications. Especially in atrophic cases, preoperative evaluation using advanced imaging modalities such as dental volumetric tomography scans can asist in localization of inferior alveolar canal and foramen mentale, thus decrease complication rates.

Case: Treatment of the patient who has sustained a nerve injury from dental implant procedures must be done immediately in order to treat neurosensorial disturbances.

P167

Assessment of Preemptive Analgesia for Third Molar Surgery

Akira Yamaguchi[1], Kimito Sano[2], Masutaka Mizutani[1], Toru Akashiba[1], Jun Ueda[1]
[1]*Oral and Maxillofacial Surgery, The Nippon Dental University Niigata Hospital, Niigata, Japan,* [2]*Department of Dental*

Anesthesiology, School of Life Dentistry at Niigata, The Nippon Dental University, Niigata, Japan

Aim: Preemptive analgesia is a method used to manage postoperative pain by preventing central sensitization. However, the preemptive effects on postoperative oral surgery pain is still controversial. We investigated the preemptive analgesic effect for third molar surgery by reviewing the latest randomized controlled trials (RCTs).
Methods: An electronic database was accessed to search for all relevant articles of RCTs published between 1996 and 2012. Characteristics of studies such as the study design, active drugs, method of preemptive analgesia and results were extracted from original articles and evaluated.
Results: In many studies, pre-administration of NSAIDs before extraction demonstrated that the severity of postoperative pain was reduced beyond the expected effect time. On the other hand, some studies reported that postoperative administration immediately after extraction was more effective than pre-administration. This suggests that peripheral sensitization caused by reactive inflammation following the tooth extraction and secondary central sensitization are more important factors than direct central sensitization caused by surgical tissue damage.
Conclusions: For the removal of mandibular third molars, central sensitization can be inhibited by the presurgical administration of analgesics. Re-administration of analgesics after extraction to inhibit postsurgical peripheral sensitization is a more successful method for suppressing postoperative pain. Acid NSAIDs are effective but there is a concern about adverse events. Accordingly, for presurgical administration, acetaminophen can be used since it has less of an anti-inflammatory effect and a limited COX inhibition effect. For postsurgical administration, a COX-2 inhibitor with anti-inflammatory effect is recommended.

Theme: Preventive Dentistry: Caries

P168
Effect of Temporary Cements on Microleakage of Composite Restoration
Maryam Moezizadeh
Depatment of Operative Dentistry, Dental School, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Purpose: Cements such as zinc oxide eugenol have been frequently used as temporary restorations, but, the presence of eugenol in cement can negatively affect the seal of the permanent restorations like composite resin.

Aim of this study was to evaluate the microleakage of composite restorations following pre-treatment with ZOE temporary cements of different powder: liquid ratios and compare them with eugenol-free temporary cement.
Materials and method: Class V cavities were prepared on the buccal surfaces of 32 freshly extracted human premolars. Teeth were divided into four groups of eight each. Gr. I-Received no temporary restoration. Groups 2 and 3 filled with Type III ZOE mixed at P: L ratio of 10: 1 g and 10: 2 g, respectively. Gr 4: Received eugenol-free cement (RelyX Temp NE). After 1 week storage in water, temporary fillings were removed and cavities were restored with composite resin (Z 100). The restorations were finished, thermally stressed for 500 cycles at $5 \pm 56°C$, subjected to dye penetration testing and observed under stereomicroscope at $\times 40$ magnification.
Results: Results were analyzed using Kruskal–Wallis and Mann–Whitney tests. At both enamel and dentin margins, the microleakage associated with group 3 was significantly more than group 1, 2 and 4. Pre-treatment of cavity with ZOE mixed at a P: L ratio of 10 g: 2 g significantly increased microleakage.
Conclusion: Pre-treatment of cavity with ZOE cement can increase microleakage and is not recommended clinically.

P169
Remineralisation Potential and Micropermeability of Invitro Fissure Sealant Study
Matea Lapas Barisic
Private Dental Office, Zagreb, Croatia

Objectives: The aim of this study is to determine a quantity of remineralisation ions which are released by materials for pit and fissure sealing and its adhesion.
Materials and methods: The clinical study included 39 molars which were treated with three different materials: Breseal (Bredent), Helioseal F (Ivoclar Vivadent) and Fuji 7(Triage) GC. The teeth were thermocycled at 0 and 55°, after that were stored in 1 l distilled water for 14 days and measuring of fluoride ions was done with ion chromatograph.

The teeth were dived in methyleen blue for 24 h and were cut through mesial, distal and central fissure and the penetration of colour was evaluated using stereomicroscope.
Resuls: The results shown that Helioseal F and Breseal do not release fluoride ions and Fuji 7(Triage) releases most fluoride ions and has the best adhesion.
Conclusion: Fuji 7(Triage) can serve as a reservoir and contribute to retainig a low fluoride level in mouth preenting thus the appearance of caries.
Key words: fissure sealing, microleakage, adhesion, fluoride ion release

P170
Supplementary Methods of Early Caries Detection
Toloo Jafari, Shaghayegh Razavi
Department of Restorative Dentistry, Babol University, Babol, Iran

Aim: Caries is a multifactorial dynamic process which is related to mineral equilibrium that is taken place at plaque.
Material and methods: At recent years multiple researches has been taken in early caries detection and assessment of new methods. Common used technologies are based on visual, optical and radiographic science.

There are detection systems based on electrical current measurement based on lower impedance of caries due to porosities with

regard to sound tooth structure. ECM is the device for measuring this.
Conclusion: The radiographic detection tools consist of digital and subtraction radiographies that shows the changes in opacities of radiographies as a guide for mineral change of tooth.

Enhanced visual techniques are DIFOTI using light scattering of hydroxyapatite crystals and fluorescent methods consist of QLF and DIAGNODent that has different outcomes. OCT and imaging with near infrared wavelength is also recently used techniques. USD is a ultrasonic technique used for detection of caries.

P171

Caries Status and Perceived Need for Dental Care in Adolescents

Oluwaseun Ajoke Olowe, Omolara G. Uti, Oyinkansola O. Sofola
Department of Preventive Dentistry, College of Medicine
University of Lagos, Nigeria

Aim: To compare the caries status and perceived need for dental care among adolescents in a public and private secondary school.
Methods: A descriptive cross-sectional study of 160 adolescents in a public and private secondary school was conducted using self administered questionnaires and oral examination to obtain required details. The schools selection was done randomly. The questionnaires covered background information, socioeconomic status, tooth brushing behaviour, self-rated oral health of the adolescents. Data analysis was done using epi-info.
Results: Caries prevalence and mean DMFT were 28.8%, 0.46 and 22.5%, 0.36 in the private and public school respectively, self perceived need was higher in the public school (60.2%) as compared to private school (39.8%) with scaling and polishing ranking first, self rating of oral health was generally good (private school 77.5% and 70% for the public school). Students in the public school had shocking sensation as a symptom in the last 6 months (38.8%) while those in the private school (35%) bleeding gums while brushing. There was an association between the symptoms respondents had in the last 6 months and the self perceived needs for dental care (p value = 0.0015).
Conclusion: Normative needs weren't fully matched by a similar level of self-perceived needs among these adolescents. Perceived need for dental care can be affected by parameters other than the demographics such as the presence of symptoms. Preventive therapy and restorative treatment would be beneficial to these adolescents as certain symptoms were significantly associated with perceived need for dental care.

Theme: Preventive Dentistry: Epidemiology

P172

The Oral Health of Children with Mental Retardation in Baku, Azerbaijan

Agha Chingiz Pashayev, Mekhriban Halil Gusejnova, Khumar Adishirin Alakbarova
Azerbaijan Medical University

Aim: The aim of this study was to assess the prevalence of dental caries and periodontal diseases among the schoolchildren with mental retardation in Baku.
Methods: Oral health examinations were performed on 236 children with mental retardation (169 boys and 67 girls) from the age groups: 6–8 years, 9–11, 12–16 were held among all of whom studied in four Special Secondary School in Baku city. The WHO 1997 criteria were used for diagnosis and recording of DMFT index and periodontal status, using a visual method with mouth mirrors, dental and periodontal probes, daylight illumination. Dental caries were diagnosed at the caries into dentine at the (D3) threshold. Ethical approval was obtained from the Ethical committee of the Azerbaijan Medical University.
Results: Results demonstrated an average caries prevalence of 97.9%. The mean DMFT for all ages was 5.31 of which a very high proportion of decayed teeth (D = 5.02) and a very low proportion of filled teeth (F = 0.02). Prevalence of gingivitis for all ages was 50.4% and increased with age. There were most often children with inflammatory form of gingivitis. Prevalence of periodontitis made 0.85% (early onset periodontitis) and found in last age group only. No gender differences were observed. In general the children exhibited very poor level of hygiene.
Conclusion: The study demonstrated a high prevalence of dental caries and gingivitis among children with mental retardation. The need to develop a program aimed at improving the dental health service provided for focusing group of children.

P173

Methods for Increasing Oral Health Indexes of the Patients during Treatments Phase – A Glance at 13 years Experience

Mehran Hemati
Dr. Mehran Hemati

Aim: Since the activity of bacteria has a major and increasing role in the oral tissues health and how patients care the treatments, oral hygiene instruction has a great effect for the health of the treatments.
Materials and methods: In this treatment pattern the plan was formed this way that at the beginning in the first visit of the patient we should check the "Mutans Streptococci" and "Lactobacilli" bacteria and check the condition of the saliva of the patient for neutralizing the acids that is made by bacteria. Due to the indexes of "DMFT" and "CPITN" we can get the risk appetite indexes. Then in the middle of treatment sessions we had tried to control the situation and ability to decay development of the bacteria with "Air Flew" techniques for "varnish fluoride", "varnish goluhexin", "profelaxin" and utilization of the oral hygiene instructions. After gums control and root treatments, then tooth was filled with composite materials and after that the patient was stood in the control phase which is about 6 months up to 2 years, then we had begun restoration with ceramic abutments.
Conclusion: Nowadays using CEREC device (with the combination of CEREC Dentistry and Adhesive Dentistry the accuracy of the treatments increased up to 25 μm) and practically with Dental Adhesives the growth of bacteria environment is limited to personal care. So although bacteria control is still a major issue but the role of personal cares is more important than past.

P174

Oral Health of Preschool Children in an Austrian Community

Ronaldo Lucio R. De Moura[1], Annerose Borutta[2], Susanne Kneist[2]

[1]*Private Dentist, Sarleinsbach, Austria,* [2]*WHO-CC Prevention of Oral Diseases, University of Jena, Germany*

Aim: The Austrian community of Sarleinsbach with about 2200 inhabitants became 2002 a healthy community and public health policy related activities are performed to promote general and oral health. Early childhood caries is still a problem in young children therefore an epidemiological study was performed 2010 to analyse oral health status and related social factors in preschool children.

Material and methods: Sixty-two children who attended the kindergarten of Sarleinsbach were involved in this clinical trial including saliva tests. Mothers answered a validated questionnaire concerning social status and oral health behaviour of both parents and children. A trained, calibrated dentist examined children in a dental office. Caries status (d3-4mft) was registred using WHO criteria. SPSS 15.0 software was applied for statistics.

Results: Results are based on the data of 42 children (male: 18, female: 23) with a mean age of 4.5 years. The majority of parents had finished compulsory school. More than 70% of parents reported they brush teeth two times daily. Twenty-eight children brushed their teeth after breakfast and 34 before bedtime. 71% of parents supervised the tooth brushing of chidren. Main meals and snacks of children were mostly cariogenic. Twenty-three children showed caries free dentition (dmft = 0). The dmft amounted to 1.39. 19% of children showed high counts of Mutans Streptococci, counts of Lactobacilli were low.

Conclusion: It was concluded that oral health among preschool children should be improved by more education of parents in terms of nutrition and tooth brushing behaviour.

P175

Production Trend of Oral Health Research in Africa, Period 2005–2010

Aïda Kanouté[1,2], Daouda Faye[2], Denis Bourgeois[1]

[1]*Department of Public Health, School of Dentistry, University Lyon1, France,* [2]*Public Oral Health Service, Department of Dentistry, Cheikh Anta Diop University, Dakar, Senegal*

Background: Publications play an important role in the scientific process and provide a key link between the production and use of knowledge. Research in oral health contributes effectively to decisions and strategies aimed at improving the oral health of populations. The objective of this study was to analyze oral health production in order to produce original information on the nature and volume of research in Africa.

Methods: PubMed database was searched for published articles on topics related to oral health research in Africa. Searches were limited by publication date to each year from 2005 to 2010. Nine hundred thirty five (935) publications were retrieved. Articles were classified according to the nationality of first author, the year of publication, the areas of study and the type of research described. Only articles in English and\or in French were selected.

Results: South Africa and Nigeria were responsible for the greatest output (68%) from published articles. Depending on the type of research, cross-sectional studies and case studies are predominant (55.5%); oral surgery and public health represent 62% of production. According to the nationality of first author, South Africa (34.7%), Nigeria (29.0%) and Tanzania (7.3%) have significantly published more in public health.

Conclusion: Contribution of Africa to oral health research production was limited. Strong variations among countries in the production of articles were underlined. So building and strengthening oral health research capacity are important for effective control of disease and the socioeconomic development of country.

P176

Salivary Secretion Rates in Children at 6 and 12 years-old from Two Different Climates

Leonor Sanchez Perez[1], Laura Saenz Martinez[1], Esther Irigoyen Camacho[1], Ignacio Mendez Ramirez[2], Enrique Acosta Gio[2]

[1]*Departamento de Atención a la Salud, Universidad Autonoma Metropolitana, Mexico city, Mexico,* [2]*Universidad Nacional Autonoma de Mexico, Mexico City, Mexico*

Aim: The stimulated salivary flow (SSF) increases with age and presents seasonal variations. Less is known about possible variations in unstimulated salivary flow (USF). The aim of this investigation was to analyze the SSF and the USF in school children from temperate (TC) and hot climates (HC) to assess whether their salivation rates show variations at 6 or 12 years of age.

Material and methods: School children living in TC (22°C), altitude 2240 m, humidity 52%, or HC (38°C) altitude 210 m, humidity 66% were evaluated in July. SSF was measured in children chewing paraffin tablets. USF was measured with global saliva test both for 5 min. Results are presented in ml/min. One-way ANOVA were applied to analyze differences between groups.

Results: In total, 928 school children were studied. 464 in each age group: 164 from TC and 300 from HC. Not differences were found by gender or climate. In 6-year-old children the mean of SSF was 1.1 from TC vs 0.9 ml/min from HC. At 12-years-old, 1.7 TC vs. 1.4 ml/min HC. No significant differences were observed in USF between children from TC or HC at 6 or 12 years-old. The USF at six was 0.41 ml/min. At 12 the mean was 0.44 (TC) vs 0.40 ml/min (HC). In 6-year–old children the USF was higher for boys (0.39 vs. 0.43 ml/min) from HC ($p = 0.0218$). At 12 years-old, the SSF was significantly higher ($p = 0.0001$) in boys (1.3 vs. 1.5 ml/min) from HC.

Conclusion: The SSF increases with age. However USF appears to be more stable.

P177

The Prevalence of Three Rooted Mandibular First Molars

Neslihan Şenel[1], Dina Erdilek[2], Tamer Lütfi Erdem[1], İlknur Özcan[1], Selmin Kaan Aşçı[3]

[1]*Department of Oral and Maxillofacial Radiology, Faculty of Dentistry, Istanbul University, Istanbul,* [2]*Department of Operative*

and Restorative Dentistry, Faculty of Dentistry, Istanbul University, Istanbul, [3]Department of Endodontics, Faculty of Dentistry, Istanbul University, Istanbul

Background and aim: The identification of number and morphology of the roots is very important for the success of endodontic treatment. This study aimed to determine the prevalence of three rooted mandibular first molars in patients, who applied to Istanbul University Faculty of Dentistry.
Material and method: Retrospective panoramic radiographs, which were already recorded in the Department of Oral and Maxillofacioal Radiology of Istanbul University Faculty of Dentistry, of a total of 720 patients (293 men, 427 women) were examined. The criteria for the indication of an extra root were justified by the crossing of the translucent lines defining the pulp space and the periodontal ligaments in the mandibular first molars. The prevalence of the bilateral and unilateral appearance of three rooted first molars were assessed.
Results: A total of 20 patients were found to have a three rooted mandibular first molar: ten males and ten females. The individuals with three rooted mandibular first molars were 2.77% of the overall patients. All of the three rooted mandibular first molars occured unilaterally. Of the 20 unilaterally occurring teeth, 17 occurred on the right side, and three occurred on the left side.
Conclusion: Our results indicate that prevalence of three rooted mandibular first molars among our patients was lower than those mentioned in the previous literature. The incidence did not differ between men and women, but there is a big difference between the prevalence of right and left side.

Theme: Preventive Dentistry: Orthodontics

P178
Orthodontic Treatment for All Practioners. Is it True ?
Mahmoud Ibrahim Elshenawy
Head of Orthodontic Department, Tanta Universit Egypt

Purpose: To simplify orthodontic treatment in daily practice and widen the area for tooth movements for all practioners.
Material and methods: Many orthodontic patients that treatment just need minor tooth movement or growth modifications have been selected. Most patients were selected from many offices after clinical examination and investigation of the diagnostic aids. Many removable and semi-fixed orthodontic appliances as well as growth modification appliances were used for treatment. These appliances can be simply designed and constructed with all dental practioners.
Results: All patients enrolled under treatment displayed excellent respond for these simple appliances as evidenced by clinical examination and diagnostic aids.
Conclusion: The treatment results for these patients support my believes as at least 40% of orthodontic patient could be treated with most of dentist. This view will enlarge era of orthodontics and dental field as well.

P179
Craniofacial Dysmorphology and Hypodontia in 22q11.2 Deletion Syndrome
Idil Alatli Burt
Department of Orthodontics, Eastman Institute, Folktandvarden, Stockholm, Sweden

Aim: The purpose of this study was to determine the craniofacial morphology, as assessed on lateral cephalometric radiographs and to investigate the presence and/or the prevalence of hypodontia and distribution of hypodontia in the sample of patients with deletion 22q11 syndrome attending the Eastman Institute, in Stockholm, Sweden.
Material and methods: The sample consisted of 11 patients diagnosed with del22q11 syndrome. These patients were chosen from a larger group of 76, using following criteria: del22q11 syndrome confirmed by FISH analysis as part of a prospective, multidisciplinary study; no orthodontic treatment had been provided prior to the taking of high quality cephalometric radiographs and orthopantograms. The cephalometric tracings were then digitized and measurements made using Dentofacial planner. Consequently taken orthopantograms were used to detect the missing teeth both in control group and patient group with 22q11 deletion syndrome.
Results and conclusion: This study indicates an increased cranial base angle (Ba/SN) in patients with 22q11.2 deletion syndrome. A slight correlation was found between the increased cranial base and increased SN/NL angle indicating a posterior rotation of the maxilla rather than the mandible. When each angle, apart from the cranial angle, was analyzed individually, they appeared to be relatively normal. The open bite features of these patients can be attributed to the hypotonic activity of the oromuscular forces rather than retrognathic features. There were no congenitally missing teeth in neither of the groups in this study.

P180
Study of the Needs in Ortho-Surgical Treatement in Tunisia
Dallel Ommezine Ines[1], Genioa Ommezine Moncef[2], Ben Rejeb Salwa[1], Khedher Mekki Nadra[1], Tobji Samir[1], Ben Amor Adel[1]
[1]Departement of Orthodontic, Dental Clinic, Monastir, Tunisia, [2]Departement of Prothetic, Dental Clinic, Monastir, Tunisia

Actually, man is more and more concerned by his aesthetic; consequently, the ask for orthognathic surgery is increasing to improve the facial profil.
Aim:
1 Evaluate the needs of ortho-surgical treatment in patients consulting the orthodontic department of Monastir dental clinic.
2 Seek a correlation between the ortho-surgical treatment and some quantitative and qualitative factors.
Materials and methods:
1 Including half of patients consulting the dento-facial orthopedics department of Monastir-Tunisia (175 patients: 31.9% Men, 69% Women) during 2004, 2005, 2006, 2007.
2 Based on an information sheet elaborated at this aim, tested and filled from clinical files.
3 Data codified and seized on computer material.

Results:

1 Five variables showed a highly significant correlation: ANB angle, SNB angle, FMA angle, Labial situation and chin position.

2 The chin position was the most decisive variable in the ortho-surgical treatment.

Discussion: Comparatively with other studies:

1 The sample of our study showed a protrusive position of the maxilla and the mandible and this could explain the indication of bimaxillar surgery for 50.5% of the ortho-surgical cases.

2 Through the two last decades, there is a clear increase in teenagers ask for orthognathic surgery to improve their facial profile.

Conclusion: This study investigated a very important approach in the decision of the ortho-surgical treatment. It opened the way for other studies to recruit a more important sample and be more conclusive in terms of complications. It took in consederation the decision of ortho-surgical treatment without fallow-up.

P181

Obstructive Sleep Apnea Syndrome and Maxillary Orthopedics

Almiro José Machado Júnior, Edilson Zancanella, Agrício Nubiato Crespo

Department of Otorhinolaryngology, Unicamp, Campinas, São Paulo, Brazil

Introduction: Obstructive sleep apnea syndrome (OSAS) is characterized by recurrent events that totally or partially obstruct the upper airway during sleep, associated with signs and symptoms. The standard treatment among children is adenotonsillectomy.

Objective: To report the case of a child with moderate OSAS.

Case: The patient was a white-skinned male aged 7 years and 4 months, presenting Angle class II, with complaints of agitated sleep, snoring, respiratory pauses and daytime somnolence and irritability. A polysomnographic examination showed that moderate apnea was present even after adenotonsillectomy. Treatment: The child underwent functional orthopedic treatment on the maxillae, with a modified indirect Planas track. After 9 months of treatment, the retrognathism was seen to have diminished, with increased airway size, as observed using lateral teleradiography. There was a noticeable decrease in the apnea index, with diminution of the initial symptoms, as seen using polysomnography.

Conclusion: The treatment accomplished was effective for improving the symptoms: it deobstructed the air passage, enabled better ventilation for the patient and controlled the side and secondary effects of OSAS on the orofacial structures.

P182

Cephalometric Study of Dental and Skeletal Variables of Lower Anterior Facial Height

Mustapha Amad Neto[1], Ana Carla R. N. Scocate[2], Israel Chilvarquer[1], Paulo Eduardo Guedes Carvalho[2], Carlos Augusto Olliveira Santos[1], Flavio Vellini Ferreira[2]

[1]*Department of Radiology, Universidade de São Paulo,*

[2]*Department of Orthodontis, Universidade Cidade de São Paulo*

Aim: Cephalometric norms commonly used for the assessment of the lower third of the face can difficult the diagnosis and treatment of malocclusions when applied to patients with developmental patterns different from what is considered as normal.

Material and methods: For this reason, in order to assess cephalometrically the actual role of maxilla, mandible and upper and lower dentoalveolar components on lower anterior facial height, we used 40 lateral telerradiographs taken from patients presenting Angle Class I and II malocclusions, with ages varying between 18 and 28 years, with no previous orthodontic treatment. All the subjects presented an LAFH measure varying between 45 and 80 mm, and ANB angle between 0° and 8°. Seven linear and two angular measures were obtained and statistically analyzed using Pearson's correlation coefficient to verify the existence of significative correlations between the several variables ($p \leq 0.05$), followed by the application of Student's *t* test to evaluate the significance of found correlations.

Results: Results showed a strong correlation between LAFH and anterior alveolar height (ANE-Me × A-Pm); LAFH and dentoalveolar heights (ANE-Me × 1i-Me; ANE-Me × 1s-A); and between upper and lower incisors (1s-A × 1i-Pm).

Conclusion: It can be concluded that maxillar, mandibular and both upper and lower dentoalveolar heights are correlated in LAFH composition. This work was approved by the Ethics Committee of University of São Paulo City, under protocol number 13314707.

P183

Evaluation of the Effects of Class II Activators

Zaur Novruzov, Saida Gulieva, Kiymet Sanich

Department of Pediatric Dentistry, Azerbaijan Medical University, Baku, Azerbaijan

Aim: Distal (Class II) malocclusions are the most commonly seen, and therefore, the most commonly treated type of abnormalities. Dental and skeletal factors are involved in development of distal malocclusions. Both maxillary protrusion and mandibular retrusion are evident in the development of skeletal Class II malocclusions.

Material and methods: The study was conducted on hand-wrist radiographs, together with lateral cephalometric radiographs at the beginning and at the end of treatments of a total of 27 individuals of whom were treated with a Class II activators; lateral cephalometric radiographs obtained from a total of 15 Class II individuals as a control group, which had been performed at a time interval, with which it was possible to evaluate the changes that had occurred in growth and development.

Results: Among the measurements for cranial base dimensions, only the increase in N-Ba in the treatment groups was lower when compared to that in the control group.

Conclusion: The increase in the N-Ba dimension being lower, brings about the idea that the activator treatment may influence maxillary development and consequently the nasomaxillary complex.

P184

Prevalence of the Distal Occlusion in Different Geographical Zones

Zohrab Garaev[1], Zaur Novruzov[2]
[1]*Department of Prosthodontic Dentistry, Azerbaijan Medical University, Baku, Azerbaijan,* [2]*Department of Pediatric Dentistry, Azerbaijan Medical University, Baku, Azerbaijan*

Introduction: The distal bite is widespread among orthodonthic anomalies. According to Ingerval distal bite makes 12% among orthodonthic anomalies, and 49% from the investigation of Kim.

Epidemiological researches showed that the distal occlusion meets at 20% of the population of Europe, North America and South Africa, and in Asia, in the Middle East and Latin America this anomaly meets at 10–15% of the population.

According to Ast and others among 1413 school children of Europe aged from 15 till 18 years the normal occlusion meets at 79.9%, and the distal occlusion meets at 23.8%. These data coincide with data of Goldstein and Stanton conducting research among the white American children, and data of Massler and Frankel conducting research among children aged from 14 till 18 years.

In Russia also the distal occlusion meets more often than others. According Pogodina conducting epidemiology research among 4000 Russia school children distal occlusion makes 16.8%, from data of Bobrov- 35.7%, from data of Sherbakov- 30.7%.

In Azerbaijan among 4875 teenagers aged from 12 till 17 years anomalies of occlusion meet at 32%. From them 10% are the share of distal occlusion, 3.2% are the share of mesial occlusion, and 18.8% are the share of others. Clinical and genetic investigations showed that in emergence of distal and mesial occlusion plays a role heredity and related marriages.

Conclusion: Results of the epidemiology researches conducted in different race conditions are similar. It shows that the distal occlusion is often widespread and doesn't depend on environment factors and race.

P185

Effects of Two Elastomeric Ligatures on Microbial Flora and Periodontal Status in Orthodontic Patients

Özlem Martı Akgün[1], Handan Altuğ[2], Şeniz Karaçay[3], Orhan Bedir[4], Günseli Güven Polat[1]
[1]*Department of Pediatric Dentistry, Gulhane Medical Academy, Ankara, Turkey,* [2]*Department of Orthodontics, Gulhane Medical Academy, Ankara, Turkey,* [3]*Section of Orthodontics, Gulhane Medical Academy, Haydarpasha Education Hospital, Istanbul, Turkey,* [4]*Department of Microbiology, Gulhane Medical Academy, Ankara, Turkey*

Aim: To compare the effects of a nonconventional elastomeric ligature (Slide, Leone Orthodontic Products, Sesto Fiorentino, Firenze, Italy) (SL) and a conventional elastomeric ligature (Ormco, Ormco Corp. Orange, CA) (CEL) on microbial flora and periodontal status in orthodontic patients.

Materials and methods: A total of 13 orthodontic patients (ten female, three male; mean age = 16.2) scheduled for fixed orthodontic treatment were selected for this randomized clinical study. The study protocol was approved by the Research Ethics Committee and written informed consent was obtained from all participants. Brackets on the left first premolars of the patients were ligated with SL, and brackets on the left second premolars were ligated with CEL. The gingival index (GI), plaque index (PI), gingival bleeding index (GBI) and pocket depth values were recorded and microbial samples were collected with a sterilized periodontal curette and analyzed before bonding (T0), 1 week later (T1), and 5 weeks after bonding (T2). For the statistical analysis and calculations SPSS for Win (Ver. 15.0; SPSS, Chicago, IL, USA) was used. The level of significance was set at $p \leq 0.05$.

Results: No significant difference was found between GI, PI, GBI and pocket depth values of SL and CEL groups in T1 and T5 ($p > 0.05$). Similarly, there were no statistically differences between aerobe and anaerobe bacteria counts of the groups in T1 and T5 ($p > 0.05$).

Conclusions: Although the SL covers the total surface of the bracket, it does not cause more plaque accumulation and periodontal problem than CEL.

P186

A Rare Phenomena Finding in Orthodontic Panoramic Radiograph (Case Report)

Surwandi Walianto
Deparment of Orthodontics, Mahasaraswati University, Denpasar, Indonesia

Introduction: Panoramic radiograph is one of the most important sources of information in orthodontic treatment. Dentist can visualize the relationship of both dentition, jaw and temporomandibular joint, studi of relative developmental status of the teeth and progressive resorption of primary teeth, and ascertain pathologic lesion, but sometimes the dentist found out a rare or unusual material in the picture. This material looked like a small needle which spread out in the soft tissue of the face. In our country this rare or unusual thing called "susuk" which planted by someone with supernatural force. The purpose for doing this is to make them attractive or enhance self confidence.

Case: This case report presented four cases and all the cases was a beautiful female.

P187

Effect of Breathıng on Cranıofacıal Structure: A Case Report

Fatih Çelebi, Mehmet Gedik, Sabahat Yazıcıoğlu
Department of Orthodontics, Ondokuz Mayıs University, Samsun, Turkey

Introduction: Normal nasal breathing ensures proper muscular action motivating adequate facial growth and bone development. For a well balanced craniofacial structure nasal breathing is one of the cardinal issues. Mouth breathing is an unavoidable result of upper airway obstruction. The effect of mouth breathing on craniofacial structure has been widely debated.

Case: In the present report, a pair of monozygotic twins (Twin A and Twin B) with a different breathing pattern is presented. These monozygotic twins were examined at age 16 years 5 months.

Twin B expressed the presence of mouth breathing. Furthermore, Twin A reported of Twin B's snoring. Medical and dental history, extraoral and intraoral examinations, radiological and otorhinolaryngological findings were used to show the dissimilarities between the twins. An otorhinolaryngological examination revealed a significant difference between twin A and twin B's nasal septum. Twin B had a deviated nasal septum toward the right. The otorhinolaryngologist stated that this deviation of the septum nasi was sufficient to cause mouth breathing.

Conclusion: The lateral cephalometric analysis revealed considerable differences in craniofacial structure and head posture. This case report supports the hypothesis that breathing pattern is one of the cardinal factors concerning craniofacial development.

P188

Dental Age Assessment by Using Demirjian Methods with OnyxCeph3™

Tuğba Ünver, Filiz Namdar Pekiner

Department of Oral and Maksillofacial Radyology, Faculty of Dentistry, Marmara University, Istanbul, Turkey

Aim: The assessment of dental age is useful in planning of orthodontic treatment, in pediatric dentstry, pediatric endocrinology and forensic medicine. It also adds some important knowledge of growth and development to human biology. Numerous methods exist that allow either the prediction of age or assessment of maturation. Most popular used method was first described by Demirjian, as based on a large number of French- Canadian children. The aim of our study was to investigate the applicability of Demirjian method for estimation of dental age by using Onyx Ceph3™ software.

Material and methods: In this retrospective study, dental volumetric tomography (DVT) of 50 Turkish children of known chronologic age and gender were selected; 26 were females and 24 were males and their ages ranged from 7 to 18 years. Dental age assessment was done by Demirjian method with OnyxCeph3™. The development of seven permanent left mandibular teeth is determined from panoramic reconstruction of DVT. The data obtained underwent statistical analysis. The p value of dental age and chronologic ages 0.001 ($p < 0.01$).

Results: No statistically significant difference was observed between the mean dental age of children in relation to gender ($p < 0.01$).

Conclusion: The analyses have shown that mean of dental age is greater than chronologic age. The standarts of dental maturation described by Demirjian may not be suitable for Turkish children. The data supports the need for population-spesific standarts.

Acknowledgement: The study was supported by Marmara University Scientific Research Project Council (project no: SAG-C-DRP 130612-0206).

Theme: Preventive Dentistry: Periodontology

P189

Association between Periodontal Disease and Pregnancy Outcomes among Patients Attending Luth

Modupeoluwa Omotunde Soroye[1], Patricia Omowunmi Ayanbadejo[2], Kofoworola Olaide Savage[2], Ayodeji Ayotunde Oluwole[3]

[1]Department of Preventive and Social Dentistry, University of Portharcourt, Rivers State, [2]Department of Preventive Dentistry, University of Lagos, Lagos State, [3]Department of Obstetrics and Gyneacology, University of Lagos, Lagos State

Aim: To evaluate the association between periodontal disease and pregnancy outcomes.

Materials and methods: Interviewer-administered questionnaires were completed by the subjects who attended the antenatal clinic of the Lagos University Teaching Hospital. Information obtained included; age, gestational age, marital status, educational status, occupation, baby's weight at birth, expected and actual date of delivery. Clinical assessment of the periodontium was done using Simplified Oral Hygiene Index (OHI-S) and Community Periodontal Index of Treatment Needs (CPITN), Scaling and Polishing and root planing were done for all patients with periodontal disease before and after delivery.

Results: Four hundred and fifty women took part in the study with a response rate of 94%. Age ranged between 18 and 34 years with mean age of 29.67($\pm$3.37). About 71% of the participants attained tertiary level of education.

The mean oral hygiene score for the participants was 1.94 ($\pm$1.31), maximum score being 2.62 $\pm$ 1.28, and the mean OHI-S of the test group was 0.86 $\pm$ 0.65. Prevalence of preterm deliveries for the entire participants was 12.5%, with the control group I having a higher prevalence than the others. Prevalence rate of low birth weight recorded in this study was 12.1% and that of spontaneous abortion was 1.42%. Overall the control group I had better pregnancy outcomes.

Conclusion: It is important for health care workers to encourage and promote good oral health among pregnant women as this would improve pregnancy outcomes. There is also the need to advocate for pre-conceptional and intra-conceptional periodontal assessment and treatment in this group of women.

P190

Association of Periodontitis with Overweight and Obesity in Pregnant Women

Kwang Hak Bae, Hyo Jin Lee, Hee Yong Yi, Bo Hyoung Jin, Dai Il Paik

Department of Preventive and Public Health Dentistry, Seoul National University, Seoul, Republic of Korea

Aims: The purpose of the present study is to investigate if overweight and obesity before pregnancy is associated with periodontitis during pregnancy in the pregnant women. Our hypothesis is that the prevalence of periodontitis during pregnancy is greater in overweight and obese people than in people of normal weight.

Materials and methods: 276 subjects in pregnant women at about 24 weeks of gestation were examined. Overweight and obesity was defined as criteria proposed by WHO Expert Consultation. Periodontal conditions were assessed by measuring periodontal clinical attachment loss (CAL). A comparison among underweight, normal weight, and overweight groups for explanatory variables was analyzed using the chi-square test for categorical variables and analysis of variance for continuous variables. Multivariate logistic regression analysis was carried out adjusting for age, health and oral health behaviors, and obstetric information.
Results: Age, delivery history, and periodontitis (two or more interproximal sites with CAL ≥4 mm, not on the same tooth) were significantly associated with body mass index (BMI) ($p < 0.05$). After adjusting for all the covariates, the adjusted odds ratio of periodontitis was 2.94 (1.25–6.89) for overweight (BMI ≥ 23 kg/m^2).
Conclusions: Overweight and obesity before pregnancy is associated with periodontitis during pregnancy in the pregnant women.

P191
Periodontal Surgical Treatment of Patient with Oral-facial-Digital Syndrome – 6 Years Follow up – Case Presentation
Zana Sllamniku Dalipi, Fatmir Dragidella, Metush Disha, Kastriot Meqa, Donika Dragidella, Saranda Disha, Edon Behluli
Department of Periodontology and Oral Medicine, Dentistry School, Medical Faculty, University of Prishtina, Kosovo

Aim: Oral-facial-digital syndrome is characterized by an X linked dominant mode of inheritance with lethality in males. Clinical features include facial dysmorphism with oral, tooth, and distal abnormalities, polycystic kidney disease, central nervous system malformations and abnormalities of the fingers.
Materials and methods: Patient EJ, age 24, female, had complains of functional and esthetic nature, inability of chewing, lip incompatibility, gum bleeding, feeling of itchiness in the gums and changes on the position of the teeth. Psychosocial discomfort due to incorrect position of the teeth was associated with speech impediment. After clinical periodontal screening and radiological examination she presented combined suprabony and infrabony pockets, gingival inflammation, tooth mobility and pathologic migration. We observed bi-maxillary protrusion with protrusion of maxillary frontal teeth. Dysmorphic features affecting the head include facial asymmetry, micrognathia, broadened nasal ridge and hemi-facial microsomia. The digital abnormities affecting the hands and feet include brachydactyly.
Results: After basic periodontal therapy and full mouth scaling and root planning, periodontal surgery was performed. During surgery teeth 12, 11, 21, 22, 26 were extracted. Six weeks after periodontal surgery patient had prosthetic rehabilitation.
Conclusions: Surgical periodontal treatment after 6 years follow-up results with functionality and esthetics, and satisfactory psychological impact to the patient with regards to oral health. As maintenance treatment, patient is advised for the reinforcement of the tooth brushing technique, with regular plaque removal and rigorous oral examination to control and maintain healthy and stable periodontal tissue status.

P192
Case Report: Treatment of Periodontal Bone Defect with PRF and Xenogreft Combination
Didem Özkal Eminoğlu[1], Taner Arabacı[1], Eda Kermen[1], Alper Eminoğlu[2]
[1]*Department of Periodontology, Atatürk University, Erzurum, Turkey,* [2]*Denterzurum Dental Clinic, Erzurum, Turkey*

Introduction: Periodontal regeneration can be defined as the complete restoration of the lost tissues to their original architecture and function by recapitulating the crucial wound healing events associated with their development. Currently, there is a variety of treatment modalities available for periodontal regenerative therapy, which includes bone grafts and substitutes, guided tissue regeneration, the use of growth factors, applications of tissue engineering, or combinations of two or more of the above-listed approaches

Bovine bone grafting material has been used to fill periodontal intrabony defects, which has resulted in clinically acceptable responses. Platelet-rich fibrin(PRF) is a leukocyte and platelet preparation that concentrates various polypeptide growth factors and therefore has the potential to be used as regenerative treatment for periodontal defects.
Case: A 35 years old female patient has guided to our periodontology department from oral diagnosis department. At clinical examination 11 mm periodontal pocket has measured and there was vertical bone defect, reaches to apical of maxiller lateral incisors apical area. After initial and nons-surgical treatment flap operation performed. Xenogreft and PRF combination was fitted into defected area and they were covered with membran material.
Conclusion: After 5 months foollow up pocket dept was 2 mm. Defected area has recovered completely bone regeneration and new bone growing area had same density as the adjacent areas.

P193
Carious and Periodontal Status of Patients with Thalassemia Major
Emona Anastasi[1], Eleni Nastas[2], Doris Mingomataj[3]
[1]*Dental Department, Albanian University, Tirana, Albania,* [2]*UHC "Mother Theresa", Department of Pediatrics, Center of Hemoglobinopathy, Tirana, Albania,* [3]*Private Practice, Tirana, Albania*

Aim: The oral health of thalassemic patients (periodontal and carious status).
Methods: Seventy thalassemic patients and 60 control subjects between 2 and 20 years old were included in this study. Clinical examination consisted in: Teeth check-up to investigate teeth decays, Lateral cephalometric radiograph and Panoramic X–rays as auxiliary method, facial, profile, and/or intraoral photos, periodontal charting, as well as collecting material from gingival crevicular fluid. Gingival biopsies were obtained in Thalassemic subjects in order to evaluate inflammation. Hematological data were collected also for each patient.
Results: In general, dental examination revealed a poor hygiene. Among 70 examined patients, 80% of them were diagnosed with gingivitis. It was observed a very high rate of caries (99%) and

serious malocclusion stages (deep bite, open bite, Angle's class II). VariOr®Dento test demonstrated pathogen bacteria in gingival in 80% of thalassemic subjects.
Conclusions: Thalassemia is associated with higher rates of caries, periodontal problems and malocclusion. These changes should be taken into account when planning orthodontic treatment and orthognathic surgery.

P194

Comparision of the Effects of Coronally Repositioned Flap Techniques with Releasing Incision and Withouth Releasing Incision for the Treatment of Localized Gingival Recession: 6 Month Controlled Clinical Study

Fatma Böke, Murat Akkaya
Department of Periodontology, Faculty of Dentistry, Ankara University, Ankara, Turkey

Aim: The aim of the present study was to compare clinical outcomes of split thickness coronally repositioned flap without vertical releasing incisions and full thickness coronally repositioned flap with vertical releasing incisions in the treatment of localized gingival recessions.
Material and methods: Nineteen systemically and periodontally healthy patients with bilateral Miller class I recession defects were enrolled in the study. Control recession defects were treated full thickness coronally repositioned flap with vertical releasing incisions and test recession defects were treated split thickness coronally repositioned flap without vertical releasing incissions. Porbing depth (PD), Recession depth (RD), Recession width (RW), Keratinized tissue width (KTW) and Clinical athacment level (CAL) were measured at baseline and 3 and 6 months after the treatment.
Results: Both groups showed statistically significant gain in Clinical Athacment Level and statistically significant reduction in Recession Depth, Recession Width, Probing Depth. The differences between groups were not statistically significant for Recession Depth; Recession Width; Probing Depth; Keratinized Tissue Width and Clinical Athacment Level after 6 months.
Conclusion: This clinical study showed that, new CRF technique is as effective as clasical CRF technique for the treatment of localized gingival recession.

P195

Periodontal Disease and Quality of Life

Sona Samadova, Sevinj Nagieva
Private Dentist

Aim: The puspose of the researchment is to compare correlation between level of quality of life and degree of pathological changes in periodontal tissue.
Material and methods: Reseachment was held among 200 people who had periodontal problems in Baku. Reserched were divided into three groups: group 1–95 persons with cataral gingivitis and mild form of periodontal disease, group 2–68 persons with moderate degree of periodontal disease and 3-rd group 37 persons with severe form of periodontal disease. Index of life quality were researched by Nottingham Health Profile. Authenticity of differences was determined with the method of *U*-test (Mann–Whitney–Wilcoxon, MWW).
Results: Analysis of results of Nottingham Health Profile survey revealed that in general average point of quality of life indexes for all researched patients was 8.94 ± 0.80. Indexes more than 30 points were $11.5 \pm 2.26\%$. The highest average point was revealed in the gropu of patients with severe form of periodontal disease 23.2 ± 1.79. That is accordingly 5.3 times ($p < 0.001$) and 3.1 times ($p < 0.001$) higher than indexes in the group 1 and group 2. Quality of life indexes higher than 30 points was revealed when patients with severe form of periodontal disease. This index in group 3 was 6.6 times higher ($p < 0.001$) than in group 2. In group 1 index more than 30 wasn't revealed.
Conclusions: In conclusion we can say that quality of life is drirectly connected with oral health, and progression of periodontal disease make it worse.

P196

The Dental Anxiety and its Effects on Obesity and Periodontitis

Zuhal Yetkin Ay[1], Fethiye Çağlar[2], Burcu Orun[1]
[1]*Department of Periodontology, Faculty of Dentistry, Süleyman Demirel University, Isparta, Turkey,* [2]*Department of Periodontology, Faculty of Dentistry, Bezm-i Alem University, İstanbul, Turkey*

Aim: The psychosocial factors and their effects on periodontal diseases initiation and progression have been widely investigated. The immuno-suppression, negative coping strategies and irregular dental visits are reported as being a predisposition to periodontitis in anxietic individuals. The association between periodontitis and obesity was also investigated. The worsened periodontal condition, decreased teeth number, and irregular dental visits were reported in obese subjects. The aim of this study is to determine the effect of dental anxiety in the association between obesity and periodontitis.
Materials and methods: One hundred-and thirteen volunteered subjects (71 female, 42 male) have participated in this study. The clinical periodontal parameters (gingival index, plaque index, bleeding on probing, probing depth and clinical attachment level), and socio-demographic characteristics (education, income, marital status, medical conditions, etc.) were recorded. The Modified Dental Anxiety Scale (MDAS) and Dental Hygiene Fear Survey (DHFS) were also applied.
Results: The anxiety scores have not presented any correlations with periodontal parameters ($p > 0.05$), but have negative significant correlations with obesity parameters ($p < 0.05$). Obesity and periodontal parameters were found to be significantly correlated ($p < 0.05$).
Conclusions: The results of this study have supported the literature, reported an association between obesity and periodontitis and between anxiety and obesity. Further studies with larger study groups including the subjects with higher anxiety, periodontitis and obesity parameters' levels might give the opportunity to make more clear comments about these relationships.

P197

Analysis of Daytime Variations in Gingival Crevicular Fluid: A Circadian Periodicity?

Sevim Günday[1], Ali Orkun Topcu[1], Esra Ercan[2], Nermin Yamalik[1]
[1]*Department of Periodontology, Faculty of Dentistry, Hacettepe University, Ankara,* [2]*Department of Periodontology, Faculty of Dentistry, Karadeniz Technical University, Trabzon*

Background: Volumetric alterations in gingival crevicular fluid (GCF) is widely accepted to be associated with periodontal health/disease. The volume/flow of GCF is shown to be affected by an array of methodological factors. However, relatively limited information is available whether GCF is subject to circadian rhythm. Thus, the main aim of the present study is to assess the possible presence/absence of circadian rhythm of GCF. The impact of the sampling technique on daytime volumetric variations was also analyzed.
Methods: In 80 tooth sites and a total of 480 GCF samples, the possible daily volumetric variations of GCF with 2-h intervals (08:00–18:00) were assessed. In order to eliminate any potential volumetric differences due to tooth dimensions, only maxillary incisors were included. To analyze the potential impact of sampling technique on GCF volume and daytime variations, at one site orifice inracrevicular sampling technique (OISM) was used, while the contralateral site was sampled by use of deep inracrevicular sampling technique (DISM). Clinical periodontal parameters of the GCF sampling sites were also recorded.
Results: No significant daily variations in GCF volume could be detected. Higher volumetric measures were observed in inflamed subgroups when compared to healthy subgroups ($p < 0.05$). OISM was equivalent to DISM with regard to mean GCF volumes and the possible daytime volumetric alterations.
Conclusions: In recent years our general understanding of GCF dramatically increased. However, there still are fields that need better clarification. Factors with the potential to impact the ideal methodology and diagnostic potential of GCF seem to deserve a particular interest.

P198

Poor Oral Hygiene Related Peripheral Giant Cell Granuloma

Melike Öztürk[1], Turgut Demir[1], Recep Orbak[1], Didem Özkal Eminoğlu[1], Eda Kermen[1], Elif Demirci[2]
[1]*Department of Periodontology, Atatürk University, Erzurum,* [2]*Department of Pathology, Atatürk University, Erzurum*

Introduction: Peripheral Giant Cell Granuloma is a reactive lesion derived from periodontal ligament and periosteum because of irritating factors such as trauma, tooth extraction, plaque, calculus, badly finished fillings, unstable dental prosthesis, chronic infections and impacted food. It is more common in women more than men. It can show recurrence after excision. PGCG in a man patient is discussed at literacy.
Case: A 41-year-old man patient was referred to the Department of Periodontology with the complain of the swelling of gum at the anterior mandibula. The patient told that he had had this sessile bluish red smooth lesion since 1.5 year with no pain. The teeth near to the lesion were vital, but had bleeding on probing. Radiographically around the central incisors and left lateral incisor there had been bone resorption.

After the conservative periodontal treatment, the lesion had been excised. At the surgery, central incisors and left lateral incisor had been removed. The lesion sent to the Department of Pathology. It had been reported as a Peripheral Giant Cell Granuloma. In this case, the patient was healthy, non-smoker, but had poor oral hygiene. The lesion is likely to be occurred because of poor oral hygiene in patient man.
Conclusion: It is very crucial to diagnose those lesions at their initial stage. Patients should be informed about the importance of the lesions even they do not cause any pain, they can lead to tooth or bone loss. In dental practice, for providing people qualified oral health, cases should be taken care of. Furthermore, early diagnose and treatment should be done.

Theme: Preventive Dentistry: Public Health

P199

Dissemination of New Japanese Cosmetic Acupuncture Techniques on New York

Yi Ru Fang, Kazuya Masuno, Aiko Kamada, Mamoru Uemura, Fumihiko Suwa
Osaka Dental University, Japan

Purpose: Today Acupuncture is often used in the treatment of common symptoms caused by stress such as painful neck and shoulders, tension headaches, digestive problems, dry eyes, insomnia, etc. Acupuncture works by stimulating your body's own natural healing power and unifying the vital energies "Qi".
Materials and methods: Cosmetic Acupuncture (CA) helps rejuvenate the skin and improves tone by stimulating healing and enhancing the skin's overall health. CA takes a very different approach to treatment compared with general acupuncture. To begin with, more needles are used in concentrated patterns particularly on the face.
Results: Natural beauty follows on from good health. Healthy body and spirit are the foundations for a youthful and beautiful appearance. For this reason, CA also promotes general health and treats any underlying medical conditions. CA is therefore a truly holistic approach to beauty, working on the body's general health and wellbeing as well as providing highly effective cosmetic treatments.
Conclusion: I gave a lecture about CA at New York College of Traditional Chinese Medicine, October 2012. The lecture was favorably received by most students and teachers. I would like to spread CA all over the world.

P200

Recognition of Chewy Foods among Guardians of 3-Year-Old Children

Taeko Osawa, Azusa Ishiguro, Masako Nakamukai, Naoko Ishida, Hirohisa Arakawa
Department of Oral Health, Graduate School of Kanagawa Dental University, Yokosuka, Japan

Purpose: We investigated some of the effects of food education, with a focus on foods cited as examples of chewy foods eaten by 3-year-olds during meals by their parents and guardians.

Materials and methods: Subjects were approximately 6000 children among those who underwent the official health checkup for 3-year-olds offered in Kanagawa Prefecture between July and October 2011. The final numbers of subjects were 4483. The survey was performed via a questionnaire that asked about attributes, actions to ensure dental health, and history of caries. In this report, we calculated the total number of cases of each type of chewy food cited as an example by parents and guardians who answered "Yes" to the question in the survey "Do you include chewy foods in your child's meals?" Foods cited as being chewy were divided into ten categories. This ranks foods on a scale of 1–10, with higher scores indicating greater chewiness.

None of the questions related to subjects' human rights, and individuals cannot be identified from the statistical results.

Results: A total of 2497 respondents cited actual examples of chewy foods. Because some of these gave multiple examples, 4654 valid responses were received in total. The level of chewiness is not necessarily consistent with the number of times a food is chewed.

Conclusions: The distribution of foods of different rankings did not exhibit a consistent trend, and no significant differences were evident in the goodness of fit of foods of different chewiness rankings.

P201

Follow-up Investigation after Implementation of Group Fluoride Mouthrinse Program

Hirohisa Arakawa, Wenqun Song
Department of Oral Health, Graduate School of Kanagawa Dental University, Yokosuka, Japan

Purpose: We conducted an investigation to clarify any changes in oral health status and habits from fluoride mouthrinsing at preschools, kindergartens, elementary and junior high schools that implement the group fluoride mouthrinse program in a city-run program.

Materials and methods: We administered questionnaire surveys to 5283 children in City A, which carries out group fluoride mouthrinsing. We requested the City A Board of Education to administer the surveys, who then requested the schools to distribute and collect them. The final numbers of subjects were 3698. Tests of goodness of fit were performed on selected conflicting responses, with a level of significance of 5%. This investigation was approved by the Ethics Committee at Kanagawa Dental College (no. 174).

Results: Only 18.9% responded that they observed changes in their child from the fluoride mouthrinse program. While 64.4% selected "Tooth brushing habits improved," 2.3% selected that "Tooth brushing habits became worse." In addition, 11.1% selected "Teeth look shinier," but 3.4% selected "Teeth look cloudier." A total of 7.3% selected "Gets canker sores less often," and 2.4% selected "Gets canker sores more often."

Conclusions: These results did not indicate neglecting of tooth brushing habits, the presence of dental fluorosis, or the presence of canker sores or other side effects on the mucous membrane.

This study was supported by Health Labour Sciences Research Grant (H24120701).

P202

Necessity of Pre-Testing and Re-Testing for Successful Questionnaire Surveys

Azusa Ishiguro[1], Hirohisa Arakawa[1], Masako Sasaki[2], Naoko Uchiyama[3], Hiroko Matsuda[4]
[1]*Department of Oral Health, Graduate School of Kanagawa Dental University,* [2]*Yokosuka Health Center, Yokosuka, Japan,* [3]*Health Promotion Division, Yokosuka Health Center, Yokosuka, Japan,* [4]*Department of Dental Hygiene, Tsurumi Junior College, Yokohama, Japan*

Purpose: We conducted a questionnaire survey of 3-year-olds and their parents/guardians to prepare guidelines that improve their understanding of ingredients for chewy foods.

Materials and methods: We conducted a pretest by questionnaire on eight male and female with experience raising children, and conducted a retest 3 weeks later. The contents of this questionnaire included personal attributes (gender, birth order, etc.), dietary habits, and dietary knowledge, etc.

This study is compliance with the Helsinki Declaration, and was approved by the Ethics Committee of Kanagawa Dental College (June 11, 2012, no. 189).

Results: Based on the opinions of respondents during the pretesting and retesting, we revised the wording and word arrangement, and underlined some parts to add emphasis. Despite the fact that questionnaires are frequently used in surveys, few of them examine question reproducibility or consider whether the intent of the questions is correctly conveyed to the respondents. The results of the current study revealed that answers to questions about personal attributes or current habits were highly reproducible, while those that required judgment based on past memories or vague knowledge were not very reproducible.

Conclusions: When carrying out questionnaire surveys, both pretesting and re-testing should be performed in order to ensure the stability of responses before the main survey is implemented.

This study was sponsored by Kanagawa Public Health Association Research Grant(2012).

P203

Emergency Care by Teachers of Dental Injury in Preschoolers

Peter Oluwaseun Bello, Omolara G. Uti, Oyinkansola O. Sofola
Department of Preventive Dentistry, Faculty of Dental Sciences, College of Medicine, University of Lagos, Nigeria

Aim: To determine the knowledge of private and public elementary teachers in the emergency management of dental injury in preschool children.
Method: The study was a cross sectional descriptive study. A total of 100 self administered questionnaires were administered to 50 teachers in eleven {11} private and 50 teachers in twenty-one {21} public randomly selected elementary schools. The questionnaire consisted of demographic data and sections to determine the knowledge of teachers concerning traumatic dental injury.
Results: In comparison between public teachers and private teachers on the knowledge of dental trauma and its emergency management, the association showed that there is no statistically significant association in the knowledge of the prevention of dental trauma {p = 0.3675}, the knowledge of the emergency treatment of dental trauma {p = 0.3574}, and overall knowledge of dental trauma {p = 0.8199}
Conclusion: The knowledge of preschool teachers in private and public elementary schools is poor. Therefore, it is imperative that dentists improve school health programme by helping to establish oral health promotion in schools and also include the training of teachers on oral health.

P204

Emergency Comprehension of Patients Who Attended to Dentists

Serhat Emre Özkır[1], Çiğdem Özkır[2], Ahmet Kürşad Çulhaoğlu[3]
[1]*Department of Prosthodontics, Faculty of Dentistry, Afyon Kocatepe University, Afyonkarahisar, Turkey,* [2]*Eskişehir Oral and Dental Health Hospital, Eskişehir, Turkey,* [3]*Department of Prosthodontics, Faculty of Dentistry, Kirikkale University, Kirikkale, Turkey*

Objective: Dental emergency is a contradictory situation. Both dentists and the patients have different opinions about the subject. As dental trauma or injuries are the main subjects of dental emergency, acute pain or abscess may be included in this. But, emergency is an unexpected situation while most of the dental problems give signs more or less before acute pain occurs. Most of the patients call their problems emergency because they had irresistible pains or aches but after the examination and the anamnesis another problem rises up, oral health neglect.
Material and methods: 234 (126 male and 108 female) patients data who attended to the emergency clinic during off-duty hours, from 00:00 to 08:00 hours and on weekends were recorded. With the data obtained sex-problem-duration tables were prepared. Data obtained from questionnaires were assessed statistically by SPSS for Windows version 15.
Results: 6.81% of the patients attended to the emergency dental clinic and average complaint duration was 31 days. The most common complaint was toothache which was followed by periodontal problems.
Conclusion: Dental emergency is misunderstood and emergency clinic is understood as a clinic where patient can get a treatment in whenever he wants, at any hour, without waiting and without taking a rendezvous.

P205

Prevalence of Tooth Wear Lesions among Patients

Akintayo Ayodeji Ogunji, Omolara G. Uti, Oyinkansola O. Sofola
Department of Preventive Dentistry, Community Dentistry Unit, College of Medicine of the University of Lagos, Lagos, Nigeria

Aim: To determine the prevalence of toothwear lesions in a population of patients attending a selected Dental clinic.
Methods and materials: The population consisted of consecutive patients attending the Dental Clinic of the Lagos University Teaching Hospital, Lagos, Nigeria. Self-administered questionnaires were designed to determine the knowledge and the prevalence of toothwear lesions among these patients with an intra-oral examination done for every patient. The Smith and Knight toothwear index was used in recording toothwear scores. Pre-tests were used to test the clarity of the questionnaires. Data collected was analysed using the Epi-info 3.5.1 statistical software.
Results: A total of 100 patients participated in the study, more than half of the respondents (54%) had not heard of toothwear lesions previously and 37% of the respondents were knowledgeable as to the cause of such lesions. The lesion with the highest prevalence was Attrition (45%), perhaps attributed to the high consumption of hard foods followed by the combination type (23.9%) with erosion (15.6%), abrasion (14.7%) and Abfraction (0.8%) coming in further down. The occurrence of both tooth sensitivity, associated mainly with erosion and abrasion; and pain, closely related with attrition; were the most common problems associated with the toothwear lesions.
Conclusion: From the result of this study, prevalence of toothwear lesions can be said to be on the increase when compared with previous publications, there is an increased clinical evidence to show that early detection as well as public awareness campaigns are the key to reducing the occurrence.

P206

Impact of Dental Healthcare Waste on Our Environment-Solutions

Naveen Kumar Pera
Manipal University, Manipal, India

Introduction: Global concerns, such as ozone layer depletion caused by green-house gases, melting of ice caps due to global warming etc. are already a matter of great concern today. The large volumes of health care waste if not managed properly can lead to a similar global hazard. Every system in nature progresses towards disintegration and it contributes to creating waste. A modern hospital is a complex multidisciplinary system which consumes thousands of items for delivery of medical care and is part

of physical environment. Infectious waste being generated at Dental Offices&laboratories has gained massive importance of late, legislations® ulatory bodies viewing it as a serious threat to Healthcare workers. Mercury is a potent neurotoxin, at very low level of exposure it can cause permanent damage to the human central nervous system. Certified amalgam separators installation to offices regardless of sewer disposal type (public system), as Mercury is an important component in amalgams. Properly manage and dispose of all other dangerous waste streams generated by the dental office (e.g., X-ray wastes, or lead foils/aprons). Dispose of all scrap amalgam waste from traps, filters and separators with a licensed treatment, storage, disposal or recycling facility. Lead, Cadmium, Chromium and even disinfectants like Glutaraldehyde, Bleach though are surface disinfectants but are toxic chemicals. Proper training on how to dispose off mercury will contribute to the prevention of environmental exposure. Staff training is a key element in the proper prevention and management of mercury spills.

Methods and conclusion: This poster depicts how dental waste management precautions in Dental Offices – help in reducing the impact on environment. Thank You.

P207

Sources of Health Information and Access to Publicly Funded Dental Care among Toronto Youth

Rafael Luis Fiori De Figueiredo, Hazel Stewart, Carlos Quinonez
Faculty of Dentistry, University of Toronto, Toronto, Canada

Objectives: The aim of this environmental scan is to develop better understanding of behavior of Toronto adolescents towards access to health information within their existing community.

Methods: The participation was on a voluntary basis with participation of 198 adolescents between the ages of 12 and 18. Data were collected from nine different sites of the city of Toronto with a self-administered feedback form, consisting of 13 multiple choice questions. The questions focused on the self-perception of the youth regarding their general and dental health and sources of health information they prefer and utilize.

Results: Overall, the participants classified their general health status better than their oral health status; 65.2% reported that their last visit to the dentist was during the previous year and 15.7% had not visited the dentist during the two previous years; and over 24% reported "tooth pain" as their main reason to visit a dentist. 36.9% of the sample indicated "cost of dental treatment" as a barrier to access dental care. As for the dental information, the most preferred sources were dental clinics (70.2%) and family doctor (31.3%).

Regarding the health advertisements, "Internet" and "Poster in schools" represented 42.4% of their preference, followed by "Pamphlets in health clinics" (34.3%) and "Poster in the TTC" (33.8%).

Conclusion: This study describes the information obtained from a small subset of the Toronto youth population. However, the findings of this scan present some discussion about the opportunities for improving ongoing processes of health communication and advertisement among youth in Toronto.

P208

The Association of Hormone Replacement Therapy and Periodontal Disease in Postmenopausal Women

Athanasia Stavroglou[1], Panagiotis Tsikouras[2], Petros Pinidis[2], Nikolaos Tsagias[2], Roland Csorba[1], Georgios Galazios[2], Georg Friedrich Von Tempelhoff[1]
[1]*Clinicum Aschaffenburg, Germany,* [2]*Democritus University of Thrace, Alexandroupolis, Greece*

Introduction: The physiological ovarian hormonal changes associated with natural or surgical menopause, cause some postmenopausal women (PMW) to experience climacteric gynecological symptoms, osteoporosis and increased risk of periodontal disease particularly in gingival and periodontium. The present study examined the effects of the hormone replacement therapy (HRT) in oral dental health of the women in particular in gingival, periodontium, pain and tooth mobility.

Materials and method: Total population of the study comprised 68 menopausal women and was divided in two groups (38 women Group A and 30 women Group B). Women were in good general health, within 2 years of menopause and free from any systemic disorder. Group A received a combined preparation containing 1 mg 17b estradiol and 2 mg drosperinone in a medication of estrogen valerate and dropsperinone in a continuous regimen for daily intake, while the group B did not received any therapy.

All participants were subjected to measurement of panoramic mandibular index (PMI) and assessed serum calcium and to dental examination in 3 months intervals for 2 years.

Results: The mean age of our participants was 48.5 years. Our results confirmed that this HRT regimen led to reduced dental pain and tooth mobility and acted as protective factor to gingival and periodontium disease. No significant differences were founded in gingival recession and calcium levels in both groups.

Conclusion: The effect of the HRT to oral health is probably depending on the existence of estrogen receptors in gingival and periodontal area and not on the calcium metabolism.

P209

Oral-Dental Health Evaluation of Children between Ages 6–14 in Serdivan-Sakarya

Bahar Güner[1], Sevda Gürsel[2], Aydın Erdoğan[1], Murat Alemdar[2]
[1]*Erenler Toplum Sağlığı Merkezi, Halk Sağlığı Müdürlüğü, Sakarya, Turkey,* [2]*Serdivan İlçe Sağlık Müdürlüğü, İl Sağlık Müdürlüğü, Sakarya, Turkey*

Aim: The aims are, to conduct oral examinations on primary, secondary school students, inform them about milk, permanent teeth decays, recommend treatment, raise conscious generations emphasizing brushing habit.

Persons and method: The study was conducted after receiving authorization, within school year of 2012–2013 with 9139 students who agreed to participate, study at 43 schools in Serdivan Province. Dentist examination results were evaluated using descriptive statistics in SPSS software. Teeth examinations, surveys were performed on 100 students before, 2 months after training to determine efficiency.

Results: 21,558 decayed, 166 filled milk teeth, df-t index (3.61) were investigated for 5431 kindergarten, primary school students. 73.6%, 18.3% of primary school students have milk, permanent teeth decaysrespectively.99.2%, 96.8% of students don't have fillings in milk, permanent teeth respectively.

6076 decayed, 1419 filled, 239 absent permanent teeth, DMF-T index (2.08) were investigated for 3708 secondary school students. 27.4%, 60.2% of students have milk, permanent teeth decays respectively. 99.2%, 81% of students don't have fillings in milk, permanent teeth respectively.

Considering results of surveys, favorable results were obtained regardingunderstanding the importance of 6-year-old teeth, improvement of oral hygiene.

Conclusion: Index values were below Turkey average, thus dental health of students is concluded not to be in an unfavorable situation. Decayed teeth were concluded to be untreated. Therefore; persistence of city-wide examinations, trainings will be beneficial for taking measures.

Thursday, August 29, 2013

FREE COMMUNICATIONS SESSIONS 17–32

Free Communication Session 17 | B332 | 29.08.2013 | 09:00–11:00

Theme: Preventive Dentistry: Orthodontics

FC100

Antimicrobial Efficacy of Salvadora persica Extracts on Orthodontic Brackets

Hassan Suliman Halawany[1], Nimmi Biju Abraham[2], Yunus Mohammed Siddiqui[1], Hanan Abdulgafur Balto[3], Vimal Jacob[1]
[1]Department of Periodontics and Community Dentistry, College of Dentistry, King Saud University, Riyadh, Saudi Arabia, [2]Dental Caries Research Chair, College of Dentistry, King Saud University, Riyadh, Saudi Arabia, [3]Division of Endodontics, Department of Restorative Dental Sciences, College of Dentistry, King Saud University, Riyadh, Saudi Arabia

Aim: The aim of the study was to investigate in vitro, the antimicrobial potential of hexane and ethanol extracts of *Salvadora persica* on a monospecies-biofilm model established on orthodontic brackets.
Materials and methods: *Streptococcus mutans* biofilm was formed on 48 orthodontic brackets following 3 days incubation at 37°C in anaerobic condition. The bacterial cell viability of this biofilm was measured after their exposure to saline, hexane extract of *Salvadora persica*, ethanol extract of *Salvadora persica* and 0.2% chlorhexidine using 3-(4, 5-dimethylthiazol-2-yl)-5-(3-carboxymethoxyphenyl)-2-(4-sulphophenyl)-2H-tetrazolium (MTS) assay. Half of the brackets were quantified by enumeration of the colony forming units (CFU). The absorbance values obtained from the MTS reduction assay were analyzed statistically using one-way analysis of variance comparing the test groups with the controls. Values of $p < 0.05$ were considered statistically significant.
Results: The absorbance values obtained from the MTS assay showed that the cell viability of *Streptococcus mutans* biofilm when exposed to 5 mg/ml of hexane extract <5 mg/ml ethanol extract <saline. The cell viability did not differ significantly when exposed to hexane extract and chlorhexidine separately ($p > 0.05$). The CFU counts of *Streptococcus mutans* obtained from chlorhexidine exposure were lower when compared to those obtained from hexane and ethanol extract exposure.
Conclusions: Hexane extract of *Salvadora persica* was found to have a high antimicrobial efficacy while the ethanol extract showed a moderate efficacy on *Streptococcus mutans* biofilm established on orthodontic brackets suggestive of its potential use as an oral antimicrobial agent for orthodontic patients.

FC101

Assessment of Fluctuating Asymmetry in Various Malocclusions

Saima Nizar Hirji
Aga Khan University Hospital, Nairobi, Kenya

Aim: Assessment of fluctuating asymmetry has clinical importance in the diagnosis and treatment planning of orthodontic patients. Analyzing presence of fluctuating asymmetry in various malocclusion, helps in recognition of asymmetry, for its input in treatment planning.
Objective: To assess fluctuating asymmetry in Angle Class I and Class II malocclusions. To assess pattern of fluctuating asymmetry in males and females in Angle Class I and Class II malocclusions.
Materials and methods: Its a cross sectional study conducted in dental clinic, AKUH during the period July 2010–July 2011 on 100 subjects using non probability purposive sampling technique. Digital vernier caliper is used as tool to measure mesiodistal and buccolingual dimensions of central incisors, canines and first molars in maxillary and mandibular arch.
Results: Fluctuating asymmetry was observed in both Class I and Class II malocclusions. Pattern of fluctuating asymmetry was different in males and females in Class II malocclusion.
Conclusion: Pattern of asymmetry is same in both Class I and Class II malocclusion, although gender dimorphism is seen in Class II malocclusion.

FC102

Camoflauge- A Viable Option for Treatment of Skeletal Class III Malocclusion

Vaishali Devidas Vadgaonkar[1], Girish Karandikar[2], Anita Karandikar[3], Parag Gangurde[1], Rahul Hegde[4], Varsha Rathod[5], Rajesh Koppikar[6], Arun Nayak[1], Manthan Patel[1], Aniket Gandhi[1], Nikhil Mahajan[1], Pallavi Shinde[1]
[1]Department of Orthodontics and Dentofacial Orthpaedics, Bharati Vidyapeeth Deemed University Dental College and Hospital, Navi Mumbai, India, [2]Department of Orthodontics and Dentofacial Orthpaedics, M.G.M. Dental College and Hospital, Navi Mumbai, India, [3]Department of Orthodontics and Dentofacial Orthpaedics, Yerla Medical Trust Dental College and Hospital, Navi Mumbai, India, [4]Department of Pedodontics and Preventive Dentistry, Bharati Vidyapeeth Deemed University Dental College and Hospital, Navi Mumbai, India, [5]Department of Periodontology, Bharati Vidyapeeth Deemed University Dental College and Hospital, Navi Mumbai, India, [6]Department of Periodontology, Bharati Vidyapeeth Deemed University Dental College and Hospital, Sangli, India

Treatment of Skeletal Class-III can be done by three modalities: Conservative, Camouflage and Surgical. In this paper we are describing Camouflage as a treatment modality for correction of Skeletal Class-III.

There are several advantages of camouflage treatment such as: it is Non-Surgical, Apprehension Free, Patient Friendly, Slow but Steady and economical. Decision for camouflage treatment depends mainly upon two main factors: Patient factors and Orthodontist factors.

Patient factors include: patient motivation, patient expectation, patient readiness, economics, priorities of the patient. Orthodontist factors include: diagnostic acumen, effective motivation of the patient, economic considerations, devotion, time and energy, co-operation with the other team.

The indications of camouflage treatment are: short average facial pattern, mild antero–posterior problem, crowding <4–6 mm, normal soft tissue features, no transverse skeletal problem. Contra-indications of camouflage treatment are long vertical facial pattern, moderate to severe a-p discrepancy, crowding more than 4–6 mm, exaggerated facial features, transverse skeletal problem. Several cases of Skeletal class-III will be presented with RME as an adjunct in some impacted teeth, extraction and non-extraction cases.

FC103

Comparison of Shear Bond Strength Between Waterlase Laser and Sandblasting Recycling Methods on Stainless Steel Orthodontic Brackets

Aida Nur Ashikin Abd Rahman[1], Faisal Ismail Bahnasi[1], Mohamed Ibrahim Abu Hassan[2]
[1]Faculty of Dentistry, Centre of Studies in Paediatric Dentistry & Orthodontics, Universiti Teknologi MARA, Shah Alam, Malaysia, [2]Faculty of Dentistry, Centre of Studies in Restorative Dentistry, Universiti Teknologi MARA, Shah Alam, Malaysia

Orthodontic bracket bond failure is common during orthodontic treatment. The main benefit of using debonded brackets after recycling is cost saving.

Aims: (1) to assess different methods of recycling orthodontic brackets, (2) to evaluate Shear Bond Strength (SBS) of (a) new, (b) recycled and (c) repeated recycled stainless steel brackets (i) with and (ii) without primer.

Methods: A total of 200 extracted human premolar teeth and 200 premolar stainless steel brackets were used. The sample was divided into ten groups; four groups were recycled using laser and sandblasting respectively, while the last two groups were control. Repeated recycling was done in each recycling method with application of primer on the orthodontic bracket base; to evaluate the effect of repeated recycled brackets and adding bracket base primer on SBS. 3M Unitek orthodontic composite was applied on all bracket bases. Brackets were subjected to shear force until brackets debond and SBS was measured.

Results: ANOVA and Levene's Test were done. There was no significant difference found between the mean SBS of the new bracket and recycled bracket using laser or sandblasting. Brackets with primer showed slightly higher SBS but not of significant with brackets without bonding agent. Repeated recycled brackets showed slightly lower SBS but not significantly difference compared to those of new and recycled brackets.

Conclusion: Recycling orthodontic brackets using Waterlase laser or sandblasting can be used as an alternative to new brackets. It is recommended to apply a bonding agent on the bracket base to provide greater bond strength.

FC104

The Effect of Water Flow Rate Used for Laser Surface Treatment on Shear Bond Strength of Orthodontic Brackets

Tolga Topçuoğlu[1], Rıdvan Okşayan[1], Kadriye Ebru Ademci[2], Merve Göymen[1], Aslıhan ÜŞümez[3]
[1]Department of Orthodontics, Gaziantep University Dentistry Faculty, Gaziantep, Turkey, [2]Department of Orthodontics, Bezm-i Alem University Dentistry Faculty, İstanbul, Turkey, [3]Department of Prosthodontics, Bezm-i Alem University Dentistry Faculty, İstanbul, Turkey

Aim: The aim of this study was to investigate the effect of different water flow rate used for laser surface treatment on shear bond strength of orthodontic brackets.

Materials and methods: Sixty-six sound premolars were selected for the study and divided into four groups: G1(n:15), control group, enamel etched with 37% phosphoric acid; G2(n:17), enamel etched with Er-YAG laser (120 mJ, 10 Hz, 1.2 W) 25 ml/min with water flow rate; G3(n:18), enamel etched with Er-YAG laser (120 mJ, 10 Hz, 1.2 W) 36 ml/min with water flow rate; G4 (n:16), enamel etched with Er-YAG laser (120 mJ, 10 Hz, 1.2 W) 48 ml/min with water flow rate. After the bracket bonding procedure, all bonded teeth were thermal cycled in deionized water at 5 ± 2–55 ± 2°C for 500 cycles. Shear bond strength (SBS) test was applied and all specimens were inspected under the digital stereomicroscope and SEM. The Kruskal–Wallis statistical test was used to determine significant differences in SBS between the four groups.

Results: Mean SBS results and standart deviations of the group 1, 2, 3 and 4 were 13,777 ± 6581, 12,1468 ± 5439, 13,289 ± 2242 and 13,945 ± 4183 MPa respectively. According to Kruskal–Wallis test no significant differences were found among the groups ($p \geq 0.05$). Er:YAG laser treatment can be an alternative method to conventional acid etching, Also water flow rate does not effect the SBS values in this surface modification method.

FC105

Dental Plaque Associated with Self-Ligating Brackets During Orthodontic Treatment

Saud A. Al Anezi
Department of Orthodontics, Bneid Al-Gar Sepcialty Dental Health, Ministry of Health, Kuwait

Objective: To compare changes in the amount and distribution of dental plaque associated with placement of elastomeric modules over a self-ligating bracket during orthodontic treatment and to relate these changes to the periodontal inflammation.

Materials and methods: A cross-arch randomisation trial was carried out at Bristol Dental School, UK. Clinical measurements of periodontal inflammation and plaque accumulation and microbiological test were made on 24 patients wearing fixed appliances (Damon 2 brackets) at the start and 3 months into fixed orthodontic treatment.

Results: In the first 3 months of treatment there was no statistically significant difference for bleeding on probing between incisors with and without elastomeric modules ($p = 0.125$ and 0.508 respectively).

The difference in plaque accumulation in was not statisctically significant ($p = 0.78$). Furthermore, the difference in probing depths between the incisors was not statistically significant ($p = 0.84$). The microbiological analysis using Denaturing Gradient Gel Electrophoresis (DGGE) technique showed no significant difference.

Conclusion: Elastomeric modules were not significantly associated with any increased risk during the initial 3 months of treatment when compared to self-ligating brackets. Long-term changes would be of great interest.

FC106

The Effects of Extremely Low Frequency Electromagnetic Fields on Orthodontic Tooth Movement

Atılım Akkurt[1], Mehmet Doğru[1], Mehmet İrfan Karaded[1], Arzum Güler Doğru[2], Veysi Akpolat[3], Beyza Karadede[4]

[1]Department of Orthodontics, Dicle University, Diyarbakır, Turkey, [2]Department of Periodontology, Dicle University, Diyarbakır, Turkey, [3]Department of Biophysics, Dicle University, Diyarbakır, Turkey, [4]Department of Orthodontics, Yeditepe University, İstanbul, Turkey

Purpose: The purpose of this study was to evaluate whether a 50 Hz extremely low frequency electromagnetic fields (ELF-EMF) affects the amount of orthodontic tooth movement in rats.

Materials and methods: The experiments were performed on 18 male Sprague–Dawley rats. The rats were randomly divided into three groups (n = 6): cage-control (Cg-Cnt) group (n = 6), SEMF group (n = 6), PEMF group (n = 6). In SEMF and PEMF groups, rats were subjected to 1.5 mT EMF exposure 8 h a day for 8 days. In order to obtain tooth movements, holes which far away 1.5–2 mm from gingiva were drilled on rats right and left maxillary central incisors and 20 gr orthodontic forces was applied to teeth. Generated Linear Model for Repeated Measures and Bonferroni tests were used to evaluate the differences between groups. Interactions among groups by days were found by using Pillari's Trace Multivariate test. Statistical analyses were carried out by using the statistical packages for SPSS 15.0 for Windows.

Results: According to the results, significant differences were found among groups ($F = 5.035$; $p = 0.03$) according to the amount of tooth movement. Significant differences between the amount of tooth movements were found especially after fifth day followed by sixth, seventh and eighth ($p < 0.001$).

Conclusion: Within the limitations, according to the results of present study, application of ELF-EMF was accelerated the orthodontic tooth movement on rats.

FC107

Disinfection of Thermoplastic Appliances

Atılım Akkurt[1], Mehmet Doğru[1], Arzum Güler Doğru[2], Nezahat Akpolat[3], Mehmet İrfan Karadede[1]

[1]Department of Orthodontics, Dicle University, Diyarbakır, Turkey, [2]Department of Periodontology, Dicle University, Diyarbakır, Turkey, [3]Department of Microbiology, Dicle University, Diyarbakır, Turkey

Aim: The aim of this in-vitro study is to evaluate the efficiency of 0.12% chlorhexidine gluconate (CH) on the number of mutans streptococci (MS) and lactobacilli (LB) on thermoplastic appliances.

Materials and methods: The material of this study is consisted of 58 sterilised thermoplastic appliances. Four groups (n = 14) were studied; in group 1 appliances were infected with MS and disinfected with CH, in group 2 appliances were infected with MS and disinfected with sterile tap water (STW), in group 3 appliances were infected with LB and disinfected with KH and in group 4 appliances were infected with LB and disinfected with STW. All microbiologic applications were made under aseptic conditions with using appropriate selective broths or incubation procedures according to the selected bacteria. After the microbial procedures, SEM micrographs were used for bacterial counting. Likely hood ratio (LHR) test was used to evaluate the statistical data. Pearson's chi square or Fisher's exact chi square tests were used if significant differences were found among groups. p-value of <0.05 was considered statistically significant.

Results: LHR test revealed significant differences between group 1 and 2 according to bacterial growth ($LR = 23{,}067$, $p < 0.001$). CH was significantly reduced the number of MS ($p < 0.001$). However no significant differences were found between Group 3 and 4 according to disinfectant.

Conclusion: Within the limitations, according to these results 0.12% CH was used for reducing the number of MS on thermoplastic appliance surface.

FC108

Do Intracoronal Bleaching Methods Effect on Shear-Bond-Strengths of Orthodontic Brackets?

Mehmet Akın[1], Yasin Erdem Akgül[1], İsmail Davut Çapar[2]

[1]Department of Orthodontics, Selçuk University, Konya, Turkey, [2]Department of Endodontics, Katip Çelebi University, İzmir, Turkey

Objective: The aim of this study was to evaluate the effects of different intracoronal bleaching methods on the shear bond strength (SBS) and bond failure site of brackets bonded to enamel.

Materials and methods: One hundred and five freshly extracted mandibular incisors were randomly divided into seven groups (n = 15). After finishing root canal preparation and filling, the root fillings were removed 2 mm apical to the cementoenamel junction, and a 2-mm-thick layer of glass-ionomer base was applied. Group I (Total-Etch) and II (Self-Etch) decide on as the control. Intracoronal bleaching was carry out with 35% Hydrogen-Peroxide in Group III, 37% Carbamide-Peroxide in Group IV, 16% Carbamide-Peroxide in Group V, 30% Hydrogen-Peroxide + Sodium-Perborate in Group VI and distilled-water + Sodium-Perborate in Group VII. All groups were bonded with self-etching primer system except Group I. The samples were stored in water for 24 h at 37°C and thermocycled. The SBS of the brackets were measured in megapascals (MPa).

Results: The mean SBS values of Group I (14.24 ± 2.74 MPa) was significantly higher than other groups ($p < 0.05$). Then Group II (9.58 ± 2.15 MPa) was higher values than other groups. The lowest mean SBS values were measured in Groups III, VI, and VII (5.12 ± 1.23, 4.22 ± 1.33, and 4.46 ± 1.25 MPa with

respectively). The results of the chi-square test showed that there were significant differences between seven groups in fracture analyses.
Conclusions: The SBS of orthodontic brackets are reduced by intracoronal bleaching bonded with self-etching primer system on human enamel. Bleaching with 35% HP, HP + SP, and Distilled Water + SP affects SBS more adversely than other agents.

FC109
Relationship Between Cervical Column Morphology and Skeletal Deep Bite
Shahin Emami Meybodi[1], Hajir Rahimi[1], Leyli Sadri[2]
[1]*Orthodontic Department, Islamic Azad University, Dental Branch, Tehran, Iran,* [2]*Students Research Center, Torabinejad Dental Research Center, School of Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran*

Aim: Cervical column morphology is related to head posture which is associated with craniofacial morphology and mandibular rotation pattern. Studies have shown connection between cervical column fusions and facial morphology. Since skeletal deep bite leads to many aesthetic and functional problems including respiratory and swallowing difficulties, and TMJ and facial pains, early diagnosis and treatment is critical to prevent abovementioned problems. This study aimed to compare the cervical column morphology in adults with skeletal deep bite and the control group with normal occlusion and craniofacial morphology.
Methods: In this case–control study, 25 deep bite patients (17 females and eight males, 17–30 years old) were compared with 25 controls (16 females and nine males, 17–30 years old). Angular measurements of craniofacial and cervical column dimensions were performed on lateral cephalograms. Anomalies of cervical column including fusion and arch deficiency were assessed. Jarabak index, ANB, SN-MP, and MM angles were also assessed. Data were analyzed by Chi Square and Fisher's Exact Tests using SPSS software.
Results: In the deep bite group, 72% had cervical column fusion which was significantly more than the control group in which 32% had fusion ($p < 0.001$). Fusions in control group were between C2 and C3. However, fusions in deep bite individuals were observed in C2–C3, C3–C4, and C4–C5 sites.
Conclusions: Skeletal deep bite and cervical column deviations are evidently associated, and most significant deviation in cervical vertebrae was observed in C2–C3 intervertebral space. This observation is useful in prevention and early treatment of related problems.

Free Communication Session 18 | B342 | 29.08.2013 | 09:00–11:00

Theme: Dental Treatment and Restorative Dentistry: Materials

FC110
Investigation of Cement-Y-TZP Bond-Strength After Different Surface Treatments
Ovul Kumbuloglu, Bengisu Yıldırım, Ahmet Saracoglu
Department of Prosthodontics, Ege University, İzmir, Turkey

Objective: The aim of this study was to evaluate the bond strength between Y-TZP and various luting agents following different surface treatment techniques.
Materials and methods: Y-TZP specimens (2 × 2 × 2 cm) were polished and then divided randomly into three groups as; (i) Control, (ii) Silica coating with Rocatec (3M-ESPE) and (iii) Experimental Zr Primer (Bisco). After surface treatments, cement specimens (2 mm×3 mm) of Super Bond C&M (Sun Dental), Bifix QM (VOCO), Panavia F2.0 (Kuraray), G-Cem (GC) and Poly-F (Denstply) were bonded onto testing surfaces. All specimens were subjected to thermocycling (5–55°C, 5500 cycles), followed by shear bond strength test on a universal testing machine with a crosshead speed of 0.5 mm/min. Surfaces were evaluated under SEM. All data were statically analyzed with SPSS ($p < 0.05$).
Results: Difference among bond strenght values of cements to zirconium oxide material groups investigated was statically significant. The highest bond strength in control group was observed in Panavia (11.8 ± 1.5 MPa,), where the lowest bond strength value was recorded with Poly F (1.27 ± 0.3 MPa). The highest bond strength in silica coating group was observed with Super Bond (25.32 ± 2.2 MPa), while the lowest value was in Poly F (1.73 ± 0.2 MPa). In Zr Primer group, the highest value was observed in Panavia (15.43 ± 1.9 MPa) where the lowest value was recorded in Poly F (2.24 ± 0.5 MPa).
Conclusion: Within limitations of this study, combination of silica coating Y-TZP and a 4-META/MMA-TBB based self-cure luting cement (Super-Bond C&B) yields the highest bond strength among the groups.

FC111
Effect of Curing Mode on Microhardness of Resin-Modified vs. Conventional Glassionomer
Mohamed Hussein Zaazou
Department of Restorative & Dental Material Research, Oro-Dental Division- National Research Center, Cairo, Egypt

Aim: To evaluate the micro-hardness of various thicknesses of resin modified glassionomer (RMGI) restoration cured with either LED or halogen curing unit, compared to conventional glassionomer (CGI) restoration, tested after one and 7 days.
Materials and methods: Two hundred and seventy cylindrical specimens with different thicknesses were prepared from the two selected materials. Half of the RMGI specimens (n = 90) were photopolymerized from the top surface by LED and the other half by halogen curing unit. Specimens were tested after one and 7 days. Mean Vicker microhardness values for the bottom and top surfaces of each thickness were calculated.
Results: CGI showed a significantly higher mean micro-hardness top and bottom values compared to RMGI after 24 h and 7 days. There was no statistically significant difference in mean microhardness values between top and bottom surfaces for CGI at the different tested thicknesses. For the top surface, the mean microhardness values of RMGI cured with LED was significantly higher than that cured with halogen, while there was no statistically significant difference at the bottom surface using different curing systems. Mean micro-hardness of the bottom surfaces of 2 mm thickness was significantly higher than 3 mm and 4 mm thicknesses. Seven days storage revealed significant higher mean microhardness values compared to 24 h.

Conclusion: Inclusion of resins in the RMGI does not improve the surface micro-hardness of these materials. The polymerization and acid/base reactions produced in RMGI did not insure adequate polymerization especially in thicker layers. Curing efficiency of LED was comparable to halogen light.

FC112

Effect of Different Exposure Times on the Amount of Residual Monomer Released from Adhesive Systems

Mustafa Altunsoy[1], Murat Selim Botsalı[2], Gonca Tosun[3], Ahmet Yaşar[4]

[1]Department of Pediatric Dentistry, Şifa University, İzmir, Turkey, [2]Department of Pediatric Dentistry, Selçuk University, Konya, Turkey, [3]Deparment of Pharmacy, Karadeniz Technical University, Trabzon, Turkey, [4]Deparment of Chemistry, Karadeniz Technical University, Trabzon, Turkey

Aim: The aim of this study was to investigate the effect of different exposure times on the amount of residual monomer released from adhesive systems by high performance liquid chromatography (HPLC).

Materials and methods: Six different adhesive systems were used in this study. The adhesives were applied on bovine dentin surface (length of an edge 7 and 0.9 mm thickness) according to the manufacturer instructions and polymerized using LED for 10, 20, 40 and 60 s, respectively (n = 5). After polymerization specimens were stored in 75% ethanol solution. Residual monomers (Bis-GMA, TEGDMA, UDMA) which eluted from adhesives (after 10 min, 1, 24 h, 7 and 30 days) were analyzed with HPLC. The results were analyzed with one-way analysis of variance and Tukey HSD tests.

Results: It was found that there was residual monomer release at all time periods There were statistically significant differences among adhesive systems according to the cumulative released Bis-GMA, UDMA and TEGDMA ($p < 0.05$). It was observed that increasing polymerization time did not have an effect on residual monomer release except All Bond 3 (TEGDMA) group ($p > 0.05$).

Conclusion: All Bond 3 showed the highest amount of Bis-GMA, UDMA and TEGDMA. Exposure time, recommended by manufacturers is sufficiant for polymerization except release of TEGDMA from All Bond 3.

FC113

Effect of Surface-Teratments on Bonding of Composites to Porcelain

Hatice Özdemir, Nuran Yanıkoğlu

Department of Prosthodontics, Faculty of Dentistry, Atatürk University, Erzurum

Purpose: The aim of this study was to evaluate the shear bond strength of nano-hybrid and nano-ceramic composite resins to two feldspathic porcelains (Vita and Ivoclar).

Materials and methods: One hundred and twenty ceramic disc, 7 mm in diameter and 3 mm thick, were fabricated from feldspathic porcelain. The following surface treatment was applied on the ceramic surface: (i) Hydrofluoric acid (9.5%) + silane, (ii) Air-abrasion (50 μm Al_2O_3 particles) + silane, (iii) Air-abrasion = Control group. Nano-hybrid and nano-ceramic composite resin was placed on the porcelain surface and they were polymerized. After the surface treatments, the surfaces of two marks feldspathic ceramics were analyzed topographically under scanning electron microscopy (SEM) at magnification of ×1000 and ×2000. Half of the specimens were stored in 37 ± 2°C distilled water and another half were subjected to thermocycling (5000 cycles between 5 and 55°C) before shear bond strength testing. The samples placed in an universal testing machine and applied shear force until seperation occured. The data were analyzed by multi-way analysis of variance (ANOVA) and Duncan test ($p < 0.05$).

Result: The results show that Ivoclar porcelain and Vita porcelain had almost equal fracture values. Nano-hybrid composite resin showed high bond strength than nano-ceramic composite resin. In the Ivoclar porcelain, hydrofluoric acid etching had highest fracture values than other surface treatments, and in the vita porcelain air-abrasion had a little difference from hydrofluoric acid etching.

Conclusion: Surface treatments and types of composite resin effected the bonding to the porcelin surface.

FC114

Effects of Boron on the Physical Properties of PMMA

Ali Kemal Ozdemir, Derya Özdemir Doğan, Faik Tugut, Hakan Demir, Hakan Akin

Department of Prosthodontics, Faculty of Dentistry, Cumhuriyet University, Sivas, Turkey

Objectives: The objective of this study was to determine whether the addition of different types of boron (Colemanite, Borax, Boric Acid) to polymethylmethacrylate denture base resin (PMMA) would improve the physical properties (transvers and impact strengths, surface roughness, and hardness) of PMMA.

Materials and methods: Different types of boron were added to heat-cured PMMA in different ratios (1%, 2%, and 3%). Four hundred PMMA specimens were prepared for transverse strength (65 × 10 × 2.5 mm), impact strength (50 × 6 × 4 mm), and hardness (20 × 6 × 4 mm) tests according to the manufacturers' instructions (n = 10). The surface roughness values were measured with a surface roughness profilometer. To determine transverse strength of the specimens, they were loaded until failure on a universal testing machine using a three point flexural test. Specimens were then subjected to the Charpy impact test machine. Hardness of the specimens was measured with an anolog shoremetre Shore D. The data were analyzed with Kruskal–Wallis and Mann–Whitney U tests ($\alpha = 0.05$).

Results: The lowest mean roughness value was observed in 1% and 3% Colemanite specimens. Moreover, the highest mean transverse strength value was seen in 3% Boraks specimens and followed by 1% Colemanite specimens. In addition, the highest mean impact strength value was recorded in 1% Colemanite specimens, and differences between 1% Colemanite group and control group were found to be statistically significant ($p < 0.05$). Furthermore, there was significant difference in hardness between control group and all other groups ($p < 0.001$).

Conclusion: The addition of 1% Colemanite to PMMA improved the physical properties of PMMA.

FC115

Effects of Calcium-Silicate Based Materials on the Dentine

Ewelina Mielko[1], Jakub Nowak[2], Renata Chalas[1]
[1]*Department of Conservative Dentistry, Medical University, Lublin, Poland,* [2]*Department of Chemistry, The John Paul II Catholic University, Lublin, Poland*

Aim: The study was designed to compare the composition and chemical reaction between analyzed bioactive calcium-silicate based materials and dentin during cavity lining.
Materials and methods: The standardized class 1 cavities were prepared in human extracted posterior teeth (collected in a written agreement with every patient) and, accordingly filled with Biodentine and MTA+. Next dentinal discs were prepared and the 1 mm specimens were sectioned longitudinally with diamond cutter Micracut 175. The samples were processed by SEM, EDS and Raman Spectroscopy to observe the structure and chemical composition of both of them in a contact with dentine.
Results: Significant differences in composition of organic phase and microelements between both materials were found. There were also visible differences in the structure of the new layer on the border with dentine (Transition Zone). Additionally, Biodentine showed higher bioactivity there than MTA+.
Conclusions: Biodentine and MTA+ are bioactive materials. Biomineralization reaction took the place between dentine and materials. Methods used in the research are suitable to investigate reaction initiated by Biodentine or MTA+.

FC116

Effects of Different Accelerators on Setting Properties of Mineral Trioxide Aggregate

Halenur Onat, Gül Tosun
Department of Pediatric Dentistry, Selçuk University, Konya, Turkey

Aim: The aim of this study was to examine the effect of different accelerators on setting time and crystalline formations of white Mineral Trioxide Aggregate (WMTA).
Materials and methods: WMTA mixed with 15% Na_2HPO_4, 15% Na_2CO_3, 10% $CaCI_2$, 23.1 wt% Calcium Lactate Glukonat (CLG). ProRoot white MTA (Dentsply Tulsa Dental, Tulsa, OK) was used as a control group. The setting times were evaluated using a vicatronic (Matest, Italy). To prepare samples for setting time experiments, stainless steel ring molds were. These ring molds have an inner diameter of 10 mm and a thickness of 4 mm. The setting time for using liquid phase of deionized water, with 15% Na_2HPO_4, 15% Na_2CO_3, 10% $CaCI_2$, 23.1 wt% CLG was recorded when the needle failed to create an indentation in three separate areas. Set materials were characterized by scanning electron microscopy (SEM), X-ray diffraction analysis (XRD). The final setting times were determined by the arithmetic mean of ten repetitions of the test for each experimental group. The data were analyzed by ANOVA and the Tukey test ($p < 0.05$).
Results: There was a statistically differences between control and experimental groups ($p < 0.05$). The final setting time was greater for CLG and 15% Na_2HPO_4.
Conclusions: The addition of amorphous CLG-based liquid phase and 15% Na_2HPO_4 to WMTA reduced the setting time and these combinations may be a viable option in single visit procedures.

FC117

Advantage of Combined Amalgam-Composite Restoration: In Vitro Leakage Study

Fadhel Ali Alsanabani[1], Ahmed Abdullah Madfa[1], Jaber Saleh Alsanabani[1], Nasr Hamid Alqudaimi[2]
[1]*Department of Conservative Dentistry, Faculty of Dentistry, Thamar University, Dhamar, Yemen,* [2]*Department of Orthodontic*

Purpose: Evalute the leakage of Class II box composite restorations and compared with composite lined by flowable composite and combined amalgam-composite restoration.
Method: Fifty-four Class II box shaped cavities were on the distal (1 mm below CEJ) surfaces, 18 cavities for each. Scotchbond Multi-Purpose adhesive system, Filtek Z250 composite, and a metal band system were used for all. After thermocycling test (1000 cycles, 5–55°C with 30 s) and dye immersion, the teeth were sectioned longitudinally in a mesio-distal direction and dye penetration was recorded.
Results: Combine amalgam-composite restorations showed less gingival leakage than composite alone and composite lined by flowable composite restorations, significantly.
Conclusion: For class II box composite restorations, the ginigival leakage, below CEJ with missing enamel, can be reduced by pacing amalgam ginigivally combined by composite occlusaly.

FC118

Influence of TiO_2 Nanoparticles on Surface Microhardness and Roughness of Experimental Resin Composites

Zeynep Yegin, Gül Tosun
Department of Pediatric Dentistry, Selçuk University, Konya, Turkey

Aim: The aim of this study was to evaluate the effect of additional TiO_2 nanoparticles on the surface microhardness and roughness of experimental resin composites.
Materials and methods: A light curing resin matrix was made by mixing 60 wt% Bis-GMA and 40 wt% TEGDMA. Silane coated glass filler was added in the ratio of 65 wt% of the resin composites. TiO_2 nanoparticles were added with the concentrations of 0.1, 0.25, 0.5 and 1 wt% by sol-gel methods. TiO_2 was not added in the control group.

Disk shaped specimens (diameter = 5.0 mm, thickness = 2.0 mm) were pressed between two glass slides to obtain standardized smooth surfaces. The disks were light polymerized for 40 s. After storage (37°C/1 week) the microhardness was

quantified by applying 0.05 kg load to a pyramid diamond point. The dimensions of three indentations produced on the surface of each sample were measured at the microscopic level, an average taken and used to determine the Vickers hardness number (VHN). For surface roughness test, specimens were prepared in the same protocol (diameter = 8.0 mm, thickness = 2.0 mm) then surface roughness were measured by profilometry. The data were analyzed by Kruskal–Wallis and Mann–Whitney U tests ($\alpha = 0.05$). Surface property were evaluated under a Scanning Electron Microscope (SEM).

Results: The results showed that microhardness of all experimental composites were significantly different when compared to the control group ($p < 0.05$). For surface roughness there were significant differences among groups ($p < 0.05$). According to SEM observations homogeneity of fillers and TiO_2 was similar among groups.

Conclusions: Surface microhardness and surface roughness increased by addition of TiO_2 nanoparticles in experimental resin composite.

FC119

Cytotoxicity of Resin Cements on Bovine Pulp-Derived Cells

Meral Arslan Malkoç[1], Necla Demir[2], Abdülkadir Şengün[3], Şerife Buket Bozkurt[4], Sema Sezgin Hakkı[5]
[1]*Department of Prosthodontics, Inönü University, Malatya, Turkey,* [2]*Department of Prosthodontics, Selçuk University, Konya, Turkey,* [3]*Department of Operative Dentistry, Kırıkkale University, Kırıkkale, Turkey,* [4]*Research Center, Selçuk University, Konya, Turkey,* [5]*Department of Periodontology, Selçuk University, Konya, Turkey*

Aim: The aim of this study was to evaluate the cytotoxicity of five resin cements on the bovine pulp-derived cells.

Materials and methods: The resin cements materials [Bifix QM (VOCO), Choice 2 (Bisco), Rely X U200 (3 M ESPE), Max Cem Elite (Kerr), Multilink Automix (Ivoclar] were evaluated. Totally, ten cylinders (5 × 2 mm), prepared by using different resin cements were incubated in αMEM culture medium for 72 h according to ISO 10993-5 standards. Bovine pulp-derived cells (SVNeo3, immotalized by Schmalz G. et al.) were maintained with αMEM containing 10% fetal bovine serum. A real-time cell analyzer (RT-CA, xCelligence system) was used to evaluate the effects of resin cements on the cell viability. After seeding 200 µl of the cell suspensions into the wells (7500 cells/well) of the E-plate 96, bovine pulp-derived cells were treated with bioactive components released by the cement and monitored every 15 min for 96 h. ANOVA and Tukey-Kramer tests were used.

Results: While Multilink Automix, Choice 2 resin cement reduced significantly cell viability, Bifix QM, Rely X U200, and Max Cem Elite were severely toxic ($p < 0.001$) for bovine pulp-derived cells when compared to untreated control during observation period. Inverted microscopy images of the bovine pulp cells confirmed the results of cell viability experiments.

Conclusions: The results indicate that tested resin cements were toxic, and further studies are required evaluating molecular level cytotoxicity markers.

Free Communication Session 19 | B343 | 29.08.2013 | 09:00–11:00

Theme: Preventive Dentistry: Caries

FC120

Dental Status of Primary School Pupils at Al-Sheik Othman District, Aden 2009

Taraji Ali Abdallah
Ministry of Health-Yemen-Aden

Objective: The purpose of this study was to identify the frequency of destruction and lost of the first permanent molars in school pupils aged from 8 to 16 years.

Methodology: This prospective, cross sectional study was carried out at two basic schools belonging to Al –Sheik Othman District, Aden governorate in June 2009. Two hundred school pupils aged from 8 to 16 years were randomly selected. They were classified according to the age into three groups (8–10, 11–13 and 14–16 years). Participants were examined for dental status and caries in the clinic room at each school. The data were analyzed using percentage and t-test.

Results: All participants showed erupted first permanent morals (FPMs). No female participants were found to extract any of the FPMs while 1% of the males lost the lower right one. Sound teeth were found in females and males by 31% and 39%, respectively. The incidence of caries in females was near to 60% in almost all three age groups. Interestingly, a significant increasing incidence of caries among males was found (46.4%, 57.1% and 73% correspondingly to age groups).

Conclusions: The most frequent cause of dental destruction of the first permanent molars was caries. Emphasis should be given to dental hygiene education for school pupils as well as parents.

FC121

A Minimal Invasive Technique in Managing Carious Primary Anterior Teeth

Dalia Mohammed Moheb, Mervat Rashed, Manal Ahmed Elsheikh
Pediatric Dentistry Departement, Oral and Dental Medicine School, Cairo University

Background: Several studies have provided the evidence that cariogenic bacteria once deprived of their source of nutrients by a restoration of sufficient integrity, die or remain dormant and thus the lesion does not progress. The Hall Technique appeared to offer an effective treatment option for carious primary molar teeth. This encouraged this trial of focusing on infection control rather than the surgical approach of caries management. Where a simplified minimal intervention, and child friendly approach to managing the carious primary anterior teeth was performed.

Methods: Sixty primary upper anterior teeth from 15 healthy children aged 2–4 were included in this case series study. The teeth were free of any clinical or radiographical signs and symptoms of pathological pulpal involvement. The teeth were prepared to receive full coverage crowns using the preformed Nu smile crowns.

Minimal caries removal was performed during the preparation; crowns were cemented using Riva, without local anaesthesia. The subjects were followed up clinically and radiographically at 6 and 12 months respectively.

Results: The technique was highly acceptable by the children and their parents. Clinical and radiographic follow up revealed that all treated cases did not show any signs of irreversible pulpitis throughout the follow up period.

Conclusion: Given the proper case selection this novel technique may offer a good alternative to conventional approaches of restoring decayed primary anterior teeth.

FC122

Effect of Acid Etching and Different Er:YAG Laser Procedures on Microleakage of Three Different Fissure Sealants in Primary Teeth After Aging

Murat Ünal[1], İhsan Hubbezoğlu[2], Recai Zan[3], Arife Kapdan[1], Feridun Hürmüzlü[2]

[1]Cumhuriyet Üniversitesi Dişhehimliği Fakültesi Pedodonti Anabilimdalı, [2]Cumhuriyet Üniversitesi Dişhekimliği Fakültesi Restoratif Dişstedavisi Anabilimdalı, [3]Cumhuriyet Üniversitesi Dişhehimliği Fakültesi Endodonti Anabilimdalı

Aim: The purpose of this study was to evaluate the effects of different surface conditioning procedures on microleakage and unfilled area proportions of three different fissure sealants (Aegis, Helioseal and Helioseal F) in primary molar teeth.

Methods: One hundred and fifty teeth were randomly divided into five main groups according to surface conditioning procedures. These main groups are: acid-etching (Group A); laser 3.75 W (Group B) and 5 W (Group D); acid-etching combined with laser 3.75 W (Group C) and 5 W (Group E). The samples were aged by thermocycling (10,000 cycles) and water bath (6 months). Afterwards, they were immersed in basic fuchsin solution for 24 h and bucco-lingual sections were obtained from each tooth. Digital images were taken using a stereo-microscope and the microleakage and unfilled area proportions were assessed by using a software system.

Results: The Aegis FS containing amorphous calcium phosphate was found to exhibit the lowest microleakage in all surface conditioning procedures. Unfilled areas in particular were not detected in Groups C and E of all FSs.

FC123

Antibacterial Effect of Novel Formulations Containing Lysozyme and Lactoferrin

Kübra Tonguç Altın[1], Nüket Sandallı[1], Gülengül Duman[2], Senem Selvi Kuvvetli[1], Emine Nursen Topçuoğlu[3], Güven Külekçi[3]

[1]Department of Pediatric Dentistry, Faculty of Dentistry, Yeditepe University, Göztepe, İstanbul, Turkey, [2]Department of Pharmaceutical Technology, Faculty of Pharmacy, Yeditepe University, Atasehir, İstanbul, Turkey, [3]Department of Oral Microbiology, Faculty of Dentistry, Istanbul University, İstanbul, Turkey

Aim: The aim of this study was to determine the antibacterial effect of different formulations containing lysozyme, lactoferrin and drug delivery system as poloxamer 407 and/or freeze dried liposome (FLD) containing N-[1-(2,3-Dioleoyloxy)propyl]-N,N,N-trimethylammonium methylsulfate on *Streptococcus sobrinus* and *Streptococcus mutans* in comparison with 0.2% chlorhexidine gel.

Materials and methods: The amount of biofilm formation of *Streptococcus sobrinus* and *Streptococcus mutans* for 24 h on 160 sterile hydroxyapatite discs after application of different formulations were evaluated. The study groups consisted of different formulations as: (i) Sorensen's Buffer Solution (SBS), (ii) the gel formulation containing poloxamer 407, (iii) lysozyme and lactoferrin dissolved in SBS, (iv) poloxamer 407 combined with third formulation, (v) FLD dissolved in SBS, (vi) FLD combined with poloxamer 407 which is dispersed in SBS, (vii) FLD combined with third formulation, (viii) lysozyme and lactoferrin dissolved in SBS, then incorporated into poloxamer 407 and combined with FLD. The positive control group was 0.2% chlorhexidine gel and negative control group consisted of empty hydroxyapatite discs. The statistical evaluation was carried out with Kruskal–Wallis and Dunn's multiple comparison tests.

Results: The formulations with poloxamer 407 were more effective in the inhibition of biofilm formation of tested bacteria ($p < 0.05$). In the positive control group, there was no bacterial growth.

Conclusion: Among formulations with poloxamer 407, the formulation containing Lysozyme and Lactoferrin with poloxamer 407 exhibited the highest efficiency on tested bacteria. The formulations which showed antibacterial effect, should be further evaluated for longer periods, using kinetic methods in addition to determining cytotoxicity.

FC124

Effect of CPP-ACP on Hard Dental Tissues Remineralization

Shady Ahmed Moussa[1], Samy Youssef El Bauomy[2]

[1]Department of Pediatric Dentistery, Zagazig University, Zagazig, Egypt, [2]Department Pediatric Dentistry & Dental Public Health, Faculty of Dental Medicine, Al-Azhar University, Cairo, Egypt

Aim: This vitro study was designed to investigate if Casein-Phosphopeptide with Amorphous Calcium Phosphate complex (CPP-ACP) containing paste affects remineralization of enamel, dentine and cementum.

Materials and methods: One hundred and fifty noncarious human premolar teeth extracted for nonpathogenic reason were used and divided into three equal groups each containing 50 teeth. First group for enamel specimens, 2nd group for dentine specimens and 3rd group for cementum specimens. These were obtained by grinding of teeth. All specimens were immersed 7 days in demineralized agent, after that CPP-ACP was applied on specimens in artificial saliva for 7 days. Remineralization and demineralization were evaluated by analyzing the mean of radiodensity of digital X-ray images of each specimen in all steps using Digora system.

Results: showed increase of remineralized enamel, dentine and cementum after application of CPP-ACP paste.

Conclusion: The increase of remineralization of all hard dental tissues could be attributed for using CPP-ACP and the decrease in the incidence of caries.

FC125

Effect of Water Rinsing After APF Gel on Plaque Acidity

Fatemeh Mazhari[1], Homa Noorollahian[2], Marjan Sharifi[3], Mahsa Sharifi[4]
[1]*Pediatric Department, Dental Material Research Center, Mashhad University of Medical Sciences, Mashhad, Iran,* [2]*Pediatric Department, Oral & Maxillofacial Diseases Research Center, Mashhad University of Medical Sciences, Mashhad, Iran,* [3]*Pediatric Department, Mashhad University of Medical Sciences, Mashhad, Iran,* [4]*Restorative Department, Mashhad University of Medical Sciences, Mashhad, Iran*

Purpose: The aim of this study was to determine whether rinsing with water or cleansing teeth after topical fluoride therapy affected plaque acidity.
Methods: This randomized, controlled, crossover, in situ study was conducted on 25 dental students who wore an acrylic mandibular appliance containing one enamel block. The patients were subjected to four treatment protocols: acidulated phosphate fluoride (APF) application followed by rinsing the mouth with water (i) after 30 min (APF-30); (ii) after 15 min (APF-15); (iii) immediately (APF-0), (iv) after cleansing the teeth with a cotton roll immediately following APF (APF-cotton); or no fluoride therapy (control). After 48 h, plaque pH was measured before and 5, 10, 15, 20 and 30 min after rinsing with 10% sucrose solution.
Results: The least pH changes, the lowest pH drop, and the fastest pH recovery were found in APF-30 and APF-15 groups. This was followed by APF-0 and APF-cotton groups.
Conclusions: The data suggest that rinsing with water or cleansing the teeth with a cotton roll immediately after APF application can reduce its effect on dental plaque acidity; however, the inclusion of a controlled water rinse 15 min after APF gel application did not seem to influence the inhibitory effect of fluoride on plaque acidity.

FC126

Mineral Mapping of Incipient Fissure Enamel Lesions

Mahdi Shahmoradi, Mike Swain
Department of Dental Biomaterials, University of Sydney, Sydney, NSW, Australia

Aim: The aim of this study was to characterize the mineral content and distribution of a typical uncavitated fissure enamel lesion.
Materials and methods: Human premolar teeth extracted for orthodontic purposes were collected from oral surgery department according to protocols approved by the University bioethics committee. Teeth were brushed clean, and the roots mounted in resin inside a container and the crown section stored in HBSS.

For evaluating the mineral density of the lesions, 3-D mineral density (MD) plots were generated using XRADIA, Xray microtomography system. Imaging was undertaken using continuous mode exposures at 0.5 s intervals and binning value of 2, resulting in a pixel resolution set to 14.8 μm. Reconstructed Tiff images were then imported into FIJI (The standard NIH image analysis software) and Gaussian blur function was applied to the images in order to reduce the noise. The adjusted images were then exported to Origin software to produce graphical plots of the fissure lesions.
Results: The results demonstrated the presence of a typical mineral dense surface layer on all external surfaces of the lesion. In addition, the pattern of the mineral loss showed that more mineral is lost from fissure walls, rather the fissure floor which is possibly due to the orientation and direction of the enamel rods.
Conclusions: The results from the MicroCT scans showed specific characteristics of the incipient lesions at the enamel fissure, indicating that this is a reliable method for enabling 3D observations of the initial stages of fissure carious lesions development.

FC127

Consequences of Untreated Caries in Preschool Children Expressed According to Pufa-Index

Agim Begzat Begzati, Teuta Kutllovci, Blerta Xhemajli, Ajtene Begzati, Fehim Haliti, Blerta Musliu, Rina Prokshi, Arijana Bytyci
Department of Pediatric and Preventive Dentistry, Dentistry School, Kosovo, Serbia

Introduction: Dental caries is one of the most widespread diseases of the world. High untreated caries with other complications especially in children, is accompanied not only with severe health problems but also with social problems.
Aim: To determine the prevalence of dental pathology (pulpal involvement, ulceration, fistula and abscess), as a complication of untreated dental caries, in preschool children.
Methodology: In the study, 478 children of both sexes, ages 3–6 years were included. This was a crross-sectional study conducted in randomly selected kindergartens in the municipality of Prishtina, capital of Kosovo. Data were collected through clinical examination. Diagnostic criteria were calibrated with an inter-examiner reliability of kappa index. The Pufa- index records, the presence of severely decayed teeth visible pulpal involvement (p), ulceration caused by dislocated tooth fragments (u), fistula (f) and abscess (a).
Results: The prevalence of caries (dmft > 0) was 76%, with a mean dmft of 5.97. The prevalence of Pufa index was 30%. The mean number of teeth affected (PUFA) was around 1. The "Untreated caries Pufa Ratio" was 18% of the decayed (d) component that had progressed to pulpal involvement.
Conclusion: Pufa- index in preschool children has shown the neglected problem of untreated caries and its consequences. Application of Pufa index could serve for epidemiological reasons to health care providers as a relevant indicator in the planning of dental treatments.

FC128

Natural Mouthwash Provides Long Term Dental Prevention

Bálint Bencze
Laboratory Medicine Insitute, PTE KK, Pécs, Hungary

Introduction: Mouthwashes used in daily dental prevention consist mainly of synthetic active agents increasing the chemical exposure of the body.

Aims: Our goal was to develop and analyze a new mouthwash based solely on natural medicinal herbs and volatile oils.
Materials and methods: Our mouthwash was prepared by 40% ethanol extraction of six well known medicinal plants completed with three different essential oils. Antimicrobial effects of the mouthwash were examined on oral pathogens *Staphylococcus aureus*, *Streptococcus sanguis*, *Escherichia coli*, *Lactobacillus plantarum* and fungi like *Candida albicans*, *C. krusei*, *C. glabrata* and *C. parapsylosis*. We used tube dilution method. Direct bactericide effect was studied by fluorescence microscopy with propidium-iodide stain. Bioautography was performed on Merck F254 silica layer, using *Staphylococcus aureus* and the mentioned bacteria and fungi. For controls gentamicine and/or fluconazole were tested. Flavonoid spectrum was analyzed by densitometry after separation with TLC. The effect on the saliva proteins was examined by SDS-PAGE (Laemmli).
Results: In tube assay the mouthwash showed dose dependent effect with highest inhibition effect of 188.7 times slower multiplication rate compared to the control. In the propidium-iodide assay the 40% ethanol control contained 4%, while the mouthwash treated sample expressed 92% dead bacteria. In bioautography, the largest inhibition zone of our mouthwash was 9 ± 1 mm, the controls were 6 ± 3 mm; we could separate 12 different flavonoids and the salivary protein pattern was not changed after mouthwash exposure.
Conclusion: Our completely natural mouthwash preparate possesses significant antimicrobial effect, is rich in flavonoids and does not modify salivary proteins.

FC129

Oral Hygiene and Dental Caries in 5- to 6-Year-Old Children in Ajman, UAE

Raghad Hashim[1], Sheila Williams[2], W. Murray Thomson[3]
[1]*Growth and Development Department, Ajman University of Science and Technology, Ajman, United Arab Emirates,* [2]*Social Sciences Department, Otago University, Dunedin, New Zealand,* [3]*Oral Science Department, Otago University, Dunedin, New Zealand*

Objective: To investigate the association between oral hygiene and dental caries in young children in the Emirate of Ajman, United Arab Emirates.
Methods: A one-stage cluster sample was used to randomly select children. Clinical examinations were conducted by a single examiner. Parents completed questionnaires seeking information on child and family characteristics, dietary habits and oral hygiene practices.
Results: The total number of children sampled was 1297. Dental examination and questionnaire data were obtained for 1036 (79.9%). Frequency of eating per day and snack consumption level were both significantly associated with plaque score. Children who brushed their teeth more often had lower plaque scores. The observed association between mean plaque score and mean dmft suggests that children with high plaque scores are more likely to experience caries.
Conclusions: Brushing with fluoride toothpaste was under-utilized in Ajman. Tooth brushing therefore needs better promotion and reinforcement.

Free Communication Session 20 | B360 | 29.08.2013 | 09:00–11:00

Theme: Implantology: Oral Pathology

FC130

E-Cadherin as a Marker for Nodal Metastasis in Head and Neck Squamous Cell Carcinoma

Saima Akram Butt[1], Anwar Ali[2], Lubna Avesi[3], Tazeen Mustansir Raja[3], Mehwish Hussain[4]
[1]*Department of Pathology, Dow University of Health Sciences,* [2]*Department of Oral Surgery, Dow University of Health Sciences,* [3]*Department of Histopathology, Dow University of Health Sciences,* [4]*Department of Statistics and Research, Dow University of Health Sciences*

Objective: To identify E-cadherin as a marker for prediction of lymph node metastasis in head and neck squamous cell carcinoma.
Materials and methods: Cross-sectional analysis of 54 subjects with head and neck squamous cell carcinoma, who underwent neck dissections, was carried out. Expression of E-cadherin was evaluated using immunohistochemical analysis and traditional histological parameters, and the correlation of E-Cadherin with the histologically verified presence of regional metastases was determined. The data was subjected to descriptive statistics and chi square using Spss v.16.0.
Results: Fifty-four patients included 33 males (61.1%) and 21 females (38.9%) aged from 18 to 73 (mean 44.8 ± 12.7). A statistically significant relationship between the Downregulation of E-cadherin and histologically verified presence of nodal metastasis was established (p-value: 0.000).
Conclusion: This study shows that low E-cadherin expression is useful for predicting lymph node metastases in cases of head and neck squamous cell carcinoma.

FC131

Expression of Alpha Smooth Muscle Actin on Stromal Myofibroblasts in Oral Squamous Cell Carcinoma

Afsheen Maqsood[1], Anwar Ali[2], Tazeen Mustansar[3], Mehvish Hussain[4], Naseer Ahmed[5], Saima Butt[6]
[1]*Department of Oral Pathology, Dow University of Health Sciences, Karachi, Pakistan,* [2]*Department of Surgery, Dow University of Health Sciences, Karachi, Pakistan,* [3]*Department of Histopathology, Dow University of Health Sciences, Karachi, Pakistan,* [4]*Department of Research, Dow University of Health Sciences, Karachi, Pakistan,* [5]*Department of Prosthodontics,* [6]*Department of Oral Pathology*

Objective: To find out the expression of alpha smooth muscle actin for myofibroblast identification by immunohistochemistry in oral squamous cell carcinoma (OSCC).

Materials and methods: Cross-sectional study of 80 specimens of excisional biopsy of oral squamous cell carcinoma, was carried out. Expression of alpha smooth muscle actin (ASMA) was studied by means of immunohistochemical analysis and histological grading parameters, and the association of ASMA with the histological grading was determined. The data was subjected to descriptive statistics and chi-square using SPSS version 16.
Results: Eighty patients included 50 males (62.5%) and 30 females (37.5%) aged from 18 to 78 (mean 45 ± 14.1). A statistically significant relationship between the expression of ASMA and histological grading of OSCC has been associated with poor prognosis was established. (p-value: 0.000).
Conclusion: This study displays that high expression of ASMA is useful for predicting tumoral invasive behavior of oral squamous cell carcinoma.

FC132

The Role of a Fluorescence Screening Method in the Detection of Oral Precancer and Cancer

Şebnem Erçalık Yalçınkaya[1], Nihan Aksakallı[2], Asım Dumlu[1], Canan Alatlı[2], Semih Özbayrak[1]
[1]*Department of Dentomaxillofacial Radiology, Marmara University, Istanbul, Turkey,* [2]*Department of Tumour Pathology and Oncologic Cytology, Institute of Oncology, University of Istanbul, Istanbul, Turkey*

Objectives: To evaluate the accuracy of a fluorescence screening system "VELscope®" (VE) and its ability to diagnose the dysplasia and malignancy comparing to cyto- and histopathological examination.
Study design: A total of 135 suspicious lesions of 105 patients (n = 53 female, n = 52 male) aged between 21 and 82 year-old (55.52 ± 15.04) were investigated with a standard oral examination (OE) and then with VE, followed by smear and/or biopsy. Association between OE and VE was evaluated and was compared to histopathology.
Results: The autofluorescence ranged from green to gray-brown fluorescence loss. Seventy-three lesions revealed fluorescence loss (gray-brown and brown-black) and six lesions showed orange-red, whereas 56 lesions revealed no visibility. When compared with gold standard histopathology, the sensitivity and specificity of VE were found to be 93.33% and 56.25%, whereas positive predictive value (PPV) and negative predictive value (NPV) were found to be 54.54% and 93.75% respectively. VE findings were statistically different from the gold standard histopathology and also from the cytopathology (Mc Nemar's Test, p = 0.001). There was no statistical difference between the results of OE and histopathology (p = 0.481).
Conclusions: Based on our clinical experience and the findings of this study, it can be concluded that VE is rather subjective, requires clinical expertise and also needs training in order to achieve correct interpretation. VE seems not to be effective for aiding the visualization of potentially malignant, malignant and reactive lesions. VE results have to be interpreted precisely, because benign reactive lesions may show similar fluorescence loss.

Theme: Implantology: Oral Surgery

FC133

A Case of Aggressive Calcifying Cystic Odontogenic Tumor

Ali Abu Hantash[1], Alaa Shuibat[2], Farid Museyibov[2], Benay Yıldırım[2], Serkan Dadakoğlu[1]
[1]*Oral Surgery Department, Ankara University, Ankara, Turkey,* [2]*Oral Pathology Department, Gazi University, Ankara, Turkey*

The calcifying cystic odontogenic tumor (CCOT) first identified as a separate and distinct lesion by Gorlin et al. in 1962, is an uncommon benign lesion, consisting of a proliferation of odontogenic epithelium and scattered nests of ghost cells with calcifications that may form the lining of a cyst or present as a solid mass. We report a case of calcifying cystic odontogenic tumor in 35 years old female in the body of the mandible.

FC134

A Rare Foreign Body within a Radicular Cyst in a Child

Marouene Bel Hadj Hassine, Hajer Hentati, Nour Ben Messaoud, Radhia Ben Ali, Jamil Selmi
Department of Oral Medicine and Oral Surgery

Aim: Radicular cyst is the most common odontogenic cystic lesion of inflammatory origin. Caries are recognized as the most common aetiological factor in radicular cyst formation, followed by traumatic injuries to the teeth.

We present a case of a rare foreign body within a radicular cyst in a child and we discuss the clinical and radiographic presentation, as well as the adequate treatment and follow up.
Observation: A healthy 11-year-old girl reported to the oral medicine and oral surgery department, University clinic of dentistry, Monastir, with a complaint of a gingival swelling surrounding the right maxillary central and lateral incisors.

Past history revealed that she had been subjected to a trauma. The girl claimed that sometimes, she used a toothpick in order to relieve the pain she felt, especially during acute episodes.

Intraoral examination revealed that the maxillary central incisors were extremely damaged by the caries. There was an overt tender swelling over the right maxillary lateral incisor. Orthopantomogram confirmed the presence of a well circumscribed radiolucency involving the root of the right maxillary lateral incisor and the distal aspect of the adjacent central incisor with a foreign body within it.
Conclusions: Based on history, clinical and radiographic examination, a provisional diagnosis of radicular cyst associated with the right maxillary lateral incisor was made. The treatment consisted in treating the right maxillary lateral incisor endodontically in association with the enucleation of the radicular cyst and the removal of the foreign body.

FC135

Assault Related Oral and Maxillofacial Injuries Reported at General Hospital Dental Centre, Lagos, Nigeria

Akanbi Olurotimi Olojede[1], Olutayo James[1], Olalekan Micah Gbotolorun[1], Segun Oluseye[2]
[1]*College of Medicine, University of Lagos, Idiaraba, Lagos,* [2]*Lagos State Health Service Commission Lagos*

Aim: The facial region has been the most common site of injury following violent episodes. The purpose of this study was to analyze the prevalence and pattern of assault-related maxillofacial injuries treated in General hospital Lagos.
Material: The present study comprised 33 patients with assault-related maxillofacial fractures treated in the Department of Oral-Maxillofacial Surgery, Dental center, General Hospital, Lagos, between May 2008 and April 2009.
Methods: This was a year prospective study of assault-related maxillofacial fractures treated in the Department of Oral-Maxillofacial Surgery, Dental center, general Hospital Lagos. A proforma was filled for study subjects to obtain patient biodata, etiology of injury, site of injury in the maxillofacial region, time interval between injury and presentation at hospital, treatment and associated complications.
Results: The mean age of the patients was 28.15 ± 7.4 year with only 12% having post-secondary education. The male-to-female ratio was 3:1. Twenty four (63.7%) of the patients did not have a skilled job. The most common causes of assault-related injuries were fights, most frequently facial blows, accounting for 87.9% of all patients. Thirty-nine per cent of the fractures occurred in the maxillary dentoalveolar region.
Conclusion: It seems that mostly young men suffer assault-related maxillofacial injuries. A contributing factor to the increased disposition for violence in our environment could be illiteracy and unemployment.

FC136

Clinicopathological Significance of Surviving Expression in Odontogenic Tumors

Ingy Ahmed Hussein[1], Hamed Anwar Fouad[1], Sahar Mohamed El Sheikh[1], Ibrahim Mohamed Zeitoun[2]
[1]*Department of Oral Pathology, Alexandria University, Alexandria, Egypt,* [2]*Department of Oral & Maxillofacial Surgery, Alexandria University, Alexandria, Egypt*

Aim: Aim was to evaluate the expression of the antiapoptotic Survivin in odontogenic tumors and its role in their tumorigenesis.
Materials and methods: Study was retrospective, where 20 specimens of odontogenic tumors were collected and analyzed with emphasis on the clinical data and pathological diagnosis of the tumor. Normal developing tooth germ sections were used as control.

Immunohistochemical markers of primary monoclonal antibodies of Survivin were used to stain those sections. Presence or absence of Survivin and intensity of its expression were then checked under light microscope using quantitative method.

Results: Survivin was detected in all benign and malignant odontogenic tumors, and to a much lesser extent in normal developing tooth germ.

Survivin Immunoexpression was very intense in malignant and locally invasive benign tumors.
Conclusion: Survivin proved to have a role not just in the tumorigenesis and cancer progression but also in the proliferation of benign and malignant odontogenic tumors.

Analysis of Survivin expression could be used as an important cancer diagnostic marker and a source of prognostic information in odontogenic tumors. Moreover, further research could open new ways for immunological treatment of odontogenic tumors using anti Survivin vaccinations.

Theme: Implantology: Implantology

FC137

The Contribution of 3D Navigation in the Implanto-Prosthetic Rehabilitation

Norina Consuela Forna
Implantology Departement, Faculty of Dental Medecine, UMF "Gr.T.Popa" Iasi

The fundamental characteristics of contemporary dental medicine are precision, avant-garde, technologization and successful clinical finality.

The purpose of this study is to individualize the opportunity of using the navigation systems in the implanto-prosthetic rehabilitation, quantifying the necessity of classical maneuvers of measurements and vizualisation in various dimensional spaces, in agreement with the particularity of the clinical case.
Materials and methods: For this study, the Robodent 3D navigation system was used for therapy of edentulous patients (200 patients) designed so as to increase the degree of precision of the insertion of dental implants. The devices and necessary materials are represented by a physiodispenser of implants with various sizes and lengths depending on the anatomical structure of the bony arch.
Results: The classical measurement of the implant site is carried out both on Computer Tomography and on pre and post-implant orthopantomographies. The practical aspects were pre-visualized by means of 3D Dentsim simulations, through the (Image Guided Implantology) system.
Conclusions: The use of the 3D navigation system ensures the visualization in real time of the implant intervention, accuracy, precision and a reduction of the working time in relation to the classical technique.

The benefits of using 3D navigation systems are related to the post-implant tissue regeneration time, which is much shorter, the decrease of ecchymoses and edema that occur post-surgery in the classical method, the reduction of pain intensity after surgery due to a decrease in the tissue trauma.

Theme: Implantology: Oral Surgery

FC138

Epidemiological Considerations for Stage 0 Bisphosponate-Associated Maxillary Osteonecrosis

Andreea Paula Moraru, Octavian Dinca, Tiberiu Nita, Cristian Vladan, Ana Falcan, Alexandru Bucur
Department of Oral and Maxillofacial Surgery, "Carol Davila" University of Medicine and Pharmacy, Bucharest, Romania

Introduction: The risk of maxillary osteonecrosis associated with bisphosphonate therapy has been observed during the last decade. The number of documented cases has risen spectacularly during this timespan. However, the risk factors and pathogenetic mechanisms have yet to be established.
Aim: In the present study, we aim to establish the epidemiological characteristics of patients with stage 0 bisphosphonate-associated maxillary osteonecrosis.
Materials and methods: We have conducted a descriptive study employing a group of 21 patients, aged 50–84 (medium age 67.14), diagnosed with stage 0 bisphosphonate-associated maxillary osteonecrosis, in accordance with AAOMS diagnostic criteria. The study was made during January 2011–March 2012. Epidemiological data have been processed using IBM SPSS Statistics v19 for Windows.
Results: It has been found that 9.52% of the analyzed patients had radiological changes, suggestive of manifest osteonecrosis and no significant correlations with age or sex have been observed. 9.52% of patients were undergoing corticotherapy, percentage which was found to be statistically significant ($p = 0.042$) and 76.19% of patients exhibited anemia, a correlation which was also found to be statistically significant ($p = 0.049$). 19.04% of the original group associated Type 2 Diabetes Mellitus, a correlation which was found to be statistically insignificant.
Conclusions: Corticotherapy and anemia have been found to be significant risk factors for bisphosphonate-associated maxillary osteonecrosis. Further studies employing extended sample sizes may clarify the significance of other findings.

Free Communication Session 21 | B332 | 29.08.2013 | 11:30–12:30

Theme: Preventive Dentistry: Public Health

FC139

Can Mothers Be Empowered to Screen Dental Caries in Their Own Preschool Children?

Syarifah Haizan Sayed Kamar, Nasruddin Jaafar
Department of Community Dentistry, University of Malaya, Kuala Lumpur, Malaysia

Objective: TTo assess whether mothers can be trained to screen caries in their preschoolers.
Methods: A cross sectional study involving 81 mothers of preschool children aged 4 and 5 years old from kindergartens in Pahang, Malaysia who were trained in a 3-h training programme by the researcher to detect caries in pre-schoolers based on a simplified (frank, cavitated) caries detection criteria by WHO (1997). After the training, all mothers performed caries screening on their children at the workshop and at home. The findings were checked for validity by comparing mothers' findings with researcher's finding as the gold standard.
Results: The overall prevalence of caries in the sample was 88.9%, with mean dmft of 7.10 (SD 5.07). The sensitivity, specificity, positive predictive value and negative predictive value of mothers' caries screening at child level were 93.1%, 66.7%, 95.7%, 54.5% and at tooth level were 76.1%, 93.7%, 90.7% and 87.9%, respectively. The reliability of mothers' screening within 24–48 h after training were substantial ($\kappa = 0.71$) at child level and almost perfect ($\kappa = 0.84$) at tooth level.
Conclusions: Mothers were able to achieve good level of validity values in the caries screening activity of their pre-school children. This study provided evidence that it was feasible to train and empower mothers with basic skill to screen caries in their own preschool children.

FC140

Caries Experience in 6–15 Years Old Type 1 Diabetic Children in Karachi

Anjum Younus Mirker[1], Ambrina Qureshi[1], Abdur Rasheed Rasheed[2]
[1]Department of Community Dentistry, DIIKIOHS, Dow University of Health Sciences, Karachi, Pakistan, [2]Department of Research & Ph.D. Program Dow University of Health Sciences, Karachi, Pakistan

Purpose: The Present study aimed to investigate the caries experience in a group of diabetic children and determine if correlation exists between the caries experience of diabetic patients and the metabolic control of diabetes and the duration of diabetes.
Subjects and methods: A total of 105 (36 males and 69 females), 6–15 year old children with Type 1 DM attending the outpatient diabetic clinic at public sector hospital, Karachi were examined during the study. The study protocol was approved by the ethical committee of Research at DUHS. The study was conducted during period of 2 months in 2012. Caries lesions were assessed using DMF-index and Diabetes-related data were collected from medical records and completed with the lab data on HbAlc.
Results: The mean $\pm$ SD DMFT for diabetic children was 4.18 ± 1.98 ($D/d = 3.44 \pm 1.7$, $M/m = 0.44 \pm 0.85$, and $F/f = 0.33 \pm 0.60$). The data showed a significant ($p < 0.05$) association between the level of glycemic control and mean DMFT score in children with primary and secondary dentition.
Conclusion: In conclusion, our findings show significantly higher DMFT scores were observed in our study regarding the caries experience of diabetic children at primary and permanent dentition level. significant correlation exist between DMFT scores and glycemic control.

On the other hand, our results suggest that the level of untreated dental decay among the diabetic children is considerably high indicating that the diabetic patients as well as their parents lack important knowledge about oral health problems.

FC141

Delay in Diagnosis of Oral Cancer in Malaysian Population

Ngah Nurul Aida[1], P. Shanmuhasuntharam[2], Jamaludin Marhazlinda[2]
[1]*Universiti Teknologi MARA,* [2]*University of Malaya*

Purpose of the study: A multicenter cross sectional study to determine the prevalence and referral pattern of delay in diagnosis of oral cancer in Malaysian population.
Materials and methods: Clinical records, referral letters and histopathological results of 87 patients with oral squamous cell carcinoma were retrieved from 1st April 2007 until 31st March 2008. An interview was conducted and a form of data collection was also implemented to retrieve information. "Delay in diagnosis" was defined as the period of time between the patient first noticing a symptom until definitive pathological diagnosis.
Result: Prevalence of patient and professional delay were 83% and 31% respectively. "Asymptomatic" and "hope of healing" were the major reason for patients delay whereas; "Awaiting biopsy report" was the main reason for professionals delay. Main determinants for patients delay were alternative treatment, alcohol, ulcers and swelling as initial symptoms and tumour stage. The only determinant for professional delay was duration of referral. More than half of the patients were referred directly to the appropriate centre upon first consultation with the health care professionals.
Conclusions: This study suggests that a continues formal education for health care professional, public education reinforced regarding sign and symptoms of oral cancer, selective screening programme and the need of comprehensive referral system are essential to achieve early diagnosis and to improve patients' quality of life as result of less aggressive and mutilating treatment.

FC142

Effect of Doctor Patient Communication on Patient Satisfaction

Afesobi Afunbiokin Leo Olagbaye, Omolara G. Uti, Oyinkansola O. Sofola
Department of Preventive Dentistry, College of Medicine, University of Lagos, Lagos, Nigeria

Objectives: To assess patients' perception of the communication between them and their dentist and to determine the level of patient satisfaction after treatment.
Methods: A descriptive cross-sectional study was done using 100 patients from a Tertiary Institution and 100 patients from a Secondary institution. Data collection was by interviewer administered questionnaires consisting of five sections. Data was analyzed using Epi info3.5.1, Fisher's Exact was used for test of association.
Results: Patients satisfaction is positively related to the level of information given by the dentist ($p = 0.004$, Fisher's exact), clarity of information about diagnosis ($p = 0.000$, Fisher's exact), informed consent ($p = 0.039$, Fisher's exact), adequacy of dentist explanation ($p = 0.000$, fisher's exact) and understanding of post-operative instructions ($p = 0.004$, Fisher's exact). There's statistical significance between overall level of satisfaction and how comfortable patient is talking to the dentist ($p = 0.002$, Fisher's exact).
Conclusion: Findings from this study suggests that patients' satisfaction is positively related to the communicative behavior of dentists. Dentist should not only give information to patients adequately, but should also pay attention to their personal communication style. It also indicate that Dentists need to be continuously trained on communication Skill and interpersonal Relationship which will improve the outcome of their treatment and patients' satisfaction. This will as well aid improvement of service quality management and communication in dentistry.

FC143

Primary Oral Health Care and Optimal Oral Health

Miljana Miljko Petrovic Punoševac[1], Slobodan Grašic[2], Slađana Mitic[3]
[1]*Preventive Paediatric Dentistry, Health Care Centre, Niš, Serbia,* [2]*Waterworks Kruševac, Kruševac, Serbia,* [3]*Preventive Paediatric Dentistry, Health Care Centre, Prokuplje, Serbia*

Aim: The analysis of oral health of patients up to 19 years old based on long-term dentistry work, calls for need of implementing legal obligations for personal responsibility for own oral health. Meanwhile, the Programme of Multidisciplinary Promotion of Children's Oral Health has been implemented in the City of Niš since 2010.
Materials: Within the Programme, the results of the systematic examination of oral health of 570 patients were analysed. The sample was composed of 19 generations, each containing 30 patients by random choice. Parameters used for oral health estimation were:
(1) caries prevalence and progression in frontal and lateral teeth, both primary and permanent,
(2) presence of dental plaque as the indicator of oral hygiene,
(3) condition of gums and periodontal tissues,
(4) presence of dental anomalies,
(5) oral health of the children and young with special needs and
(6) the results of interview with students of the final class in secondary schools.
Results: The analysis revealed a significant degree of poor oral health and indicated the necessity of educational work from the very beginning of family founding and the importance of establishing good practice of behaviour, habits and attitudes for achieving wellbeing.

Free Communication Session 22 | B342 | 29.08.2013 | 11:30–12:30

Theme: Dental Treatment and Restorative Dentistry: Prosthetics

FC144

Analysis of Incidence and Types of Complete Denture Fractures

Kazim Serhan Aksit[1], Gamze Mandali[1], Funda Erol[2], Aysegul Yurdakos[1]
[1]*Department of Prosthodontics, Private Provincial Administration of Istanbul, Oral and Dental Diseases Hospital, Istanbul, Turkey,*

[2]*Department of Prosthodontics, Faculty of Dentistry, Yeni Yuzyil University, Istanbul, Turkey*

Objective: The aim of this study was to determine and analyze the causes of complete denture fractures.
Materials and methods: A total of 1663 complete denture wearers who had experienced technical problems with their dentures were analyzed. For each patient the following variables (denture base fractures; the type and causes of fractures, fracture incidence, debonding of acrylic teeth) were recorded. The collected data was analyzed using Fisher's Exact test and the chi-square test at a significance level of test $p < 0.05$.
Results: 82.2% of the complete dentures were upper dentures and 17.8% were lower dentures. The fracture regions were 61.1% midline fracture, 13.5% anterior teeth region, 7.2% posterior teeth region, 6.8% paratuber region and 11.2% denture flange region. Most of the debonded acrylic teeth were anterior teeth (64%). 20.5% percentage of the fractured dentures had been previously repaired once or more. The midline fracture frequency was higher in lower dentures when compared with the upper dentures.
Conclusion: Midline fracture of the complete denture is the most common fracture type. Improvement of the processing techniques may reduce the incidence of fracture. Dentures should be constructed properly to strengthen the mechanical properties and to avoid inner stresses of acrylic resin. Strengthened acrylics are to be used for increasing fracture toughness of the conventional dentures. The surface area and the thickness of the acrylic portion of the lower complete dentures should be constructed carefully by the technicians. To eliminate denture base fractures thorough diagnosis, treatment plan and bilateral balanced occlusion is necessary.

FC145

Assesment of Dimensional Stability and Accuracy of Three Different Elastomeric Impression Materials Using Micro-Computed Tomography

Yılmaz Umut Aslan, Yasemin Özkan
Department of Prosthodontics, Faculty of Dentistry, Marmara University, Istanbul, Turkey

Purpose: Three dimensional accuracy and stability of impression materials are two topics still debated by researchers. The purpose of this study was to compare volumetric dimensional accuracy and stability of polyvinylsiloxane, polyether and newly formulated polyvinylsiloxaneether impression materials by using micro-computed tomography.
Materials and methods: A total of 42 impressions were made of stainless steel metal dyes. Polyvinylsiloxane, Polyether and Polyvinylsiloxaneether impressions were taken for volumetric dimensional accuracy and stability to measure by Micro-computed tomography (μCT). Impression materials were measured for dimensional stability after the impression was taken, 24 h later and 144 h later. For dimensional accuracy 21 impressions and 21 stone models of these impressions were measured. Volumes of digital models were calculated using 3D Studio Max.
Results: After polymerization, although polyether impression negative was shown to have the highest volumetric expansion, the highest shrinkage was observed in the same group after pouring to dental stone. Stone model of the polyether group was observed as the most accurate value of volume in comparison to the master model. The lowest volumetric dimensional change was observed in polyvinylsiloxaneether group at day 1 (-0.004 ± 0.001) and the highest change was observed in polyether group at day 7 (-0.052 ± 0.004).
Conclusion: From the standpoint of volumetric accuracy and stability, all three elastomeric impressions are clinically acceptable and μCT is a useful tool for assesments of volumetric dimensional changes.

FC146

Biomechanical Aspects in Prosthetic Rehabilitation Through Removable Partial Denture

Ovidiu Stamatin[1], Monica Andronache[1], Doriana Forna[2], Norina Consuela Forna[1]
[1]*Department of Implantology, Removable Prosthetics, Technology, Grigore T. Popa University of Medicine and Pharmacy, Iasi, Romania,* [2]*Faculty of Dental Medicine, Grigore T. Popa University of Medicine and Pharmacy, Iasi, Romania*

Purpose: Functional prosthetic rehabilitation of the patient through removable partial denture requires thorough understanding to achieve a balance between removable denture, maxillary bone and soft tissue. Biomechanical stability is the prerequisite of integration and meets morphofunctional main condition which is leading to general and local disease prevention in prosthodontics therapy.
Materials and methods: Evaluation of prosthetic rehabilitation was performed on a group of 22 patients, nine men and 13 women, which presented partial edentation, treated with removable partial dentures, over a period of 6 months. The residual ridges were assessed before and after prosthetic treatment and the data were analyzed by a group of four specialist in dental prosthetics, mathematically evaluating the biomechnics both static and dynamic.
Results: Static stability was achieved on prosthetic in the clinical cases, indicating that the prosthetic edges were correctly achieved, elastic extremities for retention were engaged in the cone of retention and adaptation was optimal. In three of the cases we observed tendencies for mesialisation which generated highly improper transmission of forces with impairment on occlusion curves. When assessing the dynamics we noticed in two cases a distal displacement trend when presenting descendant crest and a accentuated sagittal occlusion curve.
Conclusions: When evaluated by specialists, 23% (5) had cause the biomechanical changes, while only three cases encountered an additional force exerted on the dental-periodontal support ($p < 0.05$). Treatment plan through removable partial denture must include from the beginning the biomechanics, based on data obtained from the clinical examination and paraclinical diagnosis.

FC147

Bond Strength of Different Adhesive Systems on Resin-bonded FDPs with Different Inlay-Retainer Designs

Ediz Kale[1], Ayça Deniz İzgi[2], Remzi Niğiz[2]
[1]*Department of Prosthodontics, Mustafa Kemal University Faculty of Dentistry, Hatay, Turkey,* [2]*Department of Prosthodontics, Dicle University Faculty of Dentistry, Diyarbakir, Turkey*

Aim: Resin-bonded FDPs (RBFDPs) underwent many changes concerning design, over time; this induced the need for comparing the new fabrication methods with the old. The purpose of this study was to compare the resistance of modified inlay-retained RBFDPs with conventional inlay-retained RBFDPs to detachment from teeth using two different antibacterial adhesive system combinations for cementation.
Methods: Test groups were Mod-G1, Mod-G2, Gel-G1, and Gel-G2. Mod-G1 and Mod-G2 were representing the modified design; Gel-G1 and Gel-G2 were representing the conventional design. Mod-G1 and Gel-G1 were combining a 10-methacryloyloxydecyl dihydrogen phosphate dentin adhesive system with a chlorhexidine-based cavity disinfectant; Mod-G2 and Gel-G2 were using a 12-methacryloyloxydodecylpyridinium bromide antibacterial dentin adhesive system. Castings' fit surfaces were sandblasted and cemented with dual-cure adhesive cement. Specimens were subjected to tensile loading until separation and examined to determine the mode of failure. Results were statistically evaluated using one-way ANOVA and Tukey HSD ($\alpha = 0.05$).
Results: Gel-G1 and Gel-G2 had significantly higher separation forces than Mod-G1 and Mod-G2. The mode of separation was of high frequency of adhesive failure at the metal-cement interface and tooth fracture was observed nearly in all specimens. No significant difference was detected between the two antibacterial adhesive systems. Conventional inlay-retained RBFDPs were more retentive than the modified. However, the simple application procedure and the retentive performance of the modified inlay-retained RBFDPs had been persuading about their high clinical potential.
Conclusions: It has been concluded that using an adhesive system incorporating an antibacterial element, rather than adhesive system combined with a separate antibacterial agent would be more favorable.

FC148

Relationship Between Satisfaction with Complete Dentures and Basal Seat Characteristics

Bolanle Oyeyemi Akinboboye[1], Olufemi Peters Shaba[1], Patricia Tokunbo Akeredolu[1], Olabisi H. Oderinu[2]
[1]*Department of Restorative Dentistry, University of Lagos, Lagos, Nigeria,* [2]*Department of Restorative Dentistry, Lagos University Teaching Hospital, Lagos, Nigeria*

Aim: The purpose of this study is to investigate the relationship between self perceived satisfaction and basal seat characteristics among edentulous patients.
Method: Thirty patients participated in the study but only 24 complied with the study protocol. A digital caliper was used to determine the residual ridge width and height. The shape of residual ridge was determined using a reference scale and complete dentures fabricated and fitted. Subjects were followed up for a year and required to fill a structured questionnaire on satisfaction.
Result: The use of objective assessment in classifying maxillary residual ridge showed that there was a significant association ($p = 0.045$) between the ridge and self perceived satisfaction. There was no significant association between self perceived satisfaction and shape of mandibular ridge, palatal vault and vetibular depth.
Conclusion: There is a significant association between shape of maxillary residual ridge and satisfaction of complete denture. U shaped residual ridge augments satisfaction.

Free Communication Session 23 | B343 | 29.08.2013 | 11:30–12:30

Theme: Preventive Dentistry: Periodontology

FC149

Extrinsic Stain Removal with a Toothpowder: A Randomized Controlled Trial

Muhammad Khalil Khan[1], Syed Akhtar Hussain Bokhari[2], Ayyaz Ali Khan[3], Tasleem Hosein[4], Muhammad Usama Khan[5]
[1]*College of Dentistry, Qassim University, KSA,* [2]*University Medical & Dental College, Faisalabad, Pakistan,* [3]*Sheikh Zayed Federal Postgraduate Medical Institute Lahore, Pakistan,* [4]*Fatima Jinnah Dental College, Karachi, Pakistan,* [5]*Liaquat College of Medicine & Dentistry, Karachi, Pakistan*

Background: There is limited information on the use and efficacy of toothpowder in scientific literature. A commercially available toothpowder was compared with toothpaste in removing extrinsic dental stains.
Methods: In this single-blind, randomized controlled trial, 77 volunteers were included from a residential professional college. All study subjects (control toothpaste users and test toothpowder users) received a prophylaxis to remove all stains, plaque and calculus deposits by mechanical therapy. The study subjects were instructed to rinse with 5 ml of 0.12% chlorhexidine mouthwash for 1 min twice and one cup of double tea bag solution three times daily for 3 weeks. Subjects were randomized into test ($n = 36$) and control ($n = 36$) groups. Toothpaste (control) and toothpowder (test) was used for 2 weeks to see the effect on removing stains on the labial surfaces of 12 anterior teeth. For measuring dental extrinsic stains Lobene Stain Index was used.
Results: The amount of stain following the use of toothpaste and tooth powder was more controlled with the experimental toothpowder. For all sites combined, there was evidence that the experimental toothpowder was significantly superior to toothpaste in reducing stain area ($p < 0.001$), stain intensity ($p < 0.001$) and composite/product (area × intensity) ($p < 0.001$).
Conclusion: Stain removing efficacy of toothpowder was significantly higher as compared with toothpaste. A toothpowder may

be expected to be of benefit in controlling and removing extrinsic dental staining.

FC150

Findings in the Periodontium of Children Exposed to Environmental Tobacco Smoke

Basma Mostafa Zaki[1], Omnia Aboul Dahab[2], Somaya Abdel Lateef[3], Wessam Abd Elmoniem[2], Amany Mohy Eldin[1], Marwa Kamal[3], Abir El Mouelhy[1]

[1]Department of Surgery and Oral Medicine, National Research Center, Cairo, Egypt, [2]Department of Periodontology, Faculty of Oral and Dental Medicine, Cairo University, Egypt, [3]Department of Microbiology and Immunology, Faculty of Medicine, Cairo University, Egypt

The aim of the study was to clinically evaluate the association between the periodontal health of children and exposure to environmental tobacco smoking (ETS). Also to detect the cotinine levels in saliva and gingival crevicular fluid (GCF) in those children and to determine the count of anaerobic (strict and facultative) micro-organisms in the gingival crevice.

Subjects and methods: The study included 80 children with an age range 8–12 years. They were divided into two groups. Group (A) included 40 children who were exposed to passive tobacco smoke (PTS-exposed), and group (B) included also 40 children who were the unexposed controls (PTS-unexposed). Plaque index (PI), gingival index (GI), and gingival bleeding on probing (BOP), pocket depth (PD) and clinical attachment level (CAL) were measured. Gingival crevicular fluid (GCF) and saliva samples were collected to evaluate the level of cotinine using ELISA technique. For cultivation and detection of the count of anaerobic microorganisms GCF samples were also taken.

Results: The study showed no significant difference in PI, GI, BOP, and PD between the exposed and the unexposed groups. The mean total count of aerobes and facultative anaerobes was significantly less in the PTS-exposed group. The level of cotinine in the GCF was below the detection limit, while the mean salivary cotinine level in the PTS- exposed group was significantly higher than that of the unexposed controls.

Conclusion: It can be concluded that ETS exposure has an impact on the periodontal health of the selected children.

FC151

Using of Ibandronic Acid in Therapy of Periodontal Disease

Iryna Mazur, Pavlo Leonenko

Department of Dentistry, National Medical Academy of Postgraduate Education named after PL Shupyk, Kiev, Ukraine

Objective(s): Bisphosphonates are used to prevent and reduce the bone resorption that occurs in metabolic bone diseases, such as osteoporosis. Bisphosphonates were used in the treatment of periodontitis in our clinic during 17 years.

Aim: The aim of this study was to investigate the effectiveness of ibandronic acid in treatment of periodontitis.

Materials and methods: The 194 patients (96 men and 98 women, mean age – 46.7 ± 6.3 years) with periodontitis (GP) were randomly selected on two groups – control group (85 patients) received basic initial periodontal treatment (SRP), main group (109 patients) – SRP and additionally prescribed ibandronic acid 150 mg/month during 3-month course and calcium supplement.

Metabolic processes of bone tissue were evaluated by the serum levels of biochemical marker bone tissue formation – osteocalcin (OC), bone resorption marker – deoxypyridinoline (DPD) in urine.

Results: Among 100% of patients in the main group was not revealed any exacerbation of disease, among 18.8% (16 persons) ($p < 0.005$) in the control group exacerbation of periodontitis was revealed.

The concentration of DPD in the urine in the Ibandronat-treated group (4.64 ± 0.49 nmol) was persistently low compared with the baseline value (6.42 ± 0.76 nmol), and than in the control group (6.73 ± 0.57 nmol) after periodontal treatment ($p < 0.05$).

The serum concentration of OC (27.52 ± 0.29 ng/ml) was significantly higher in the Ibandronic group than the baseline level (21.17 ± 0.43 ng/ml) and in the control group (19.36 ± 0.82 ng/ml) ($p < 0.05$).

Conclusions: The application of ibandronic acid in complex therapy of periodontitis can inhibit the progression of alveolar bone resorption, normalization bone metabolism.

FC152

Romanian Young Adults' Periodontal Risk Exposure and Oral Health Behavior – A Pilot Study

Mariana Caramida, Claudiu Calin, Loredana Cristina Dumitrascu, Ruxandra Ionela Sfeatcu, Claudiu Ciortea, Mihai Ciortea, Adina Mihaela Dumitrache

Department of Oral Health, Faculty of Dentistry, "Carol Davila" Medicine and Pharmacy University, Bucharest, Romania

Aim: The study was conducted to assess the level of oral health knowledge, oral hygiene behavior, periodontal disease perception and risk exposure of a group of Romanian students, to establish the necessity for a periodontal disease prevention program among Romanian young population.

Methods: The sample group included 338 first-year students from four randomly chosen faculties in Bucharest. A 25-question survey (16 multiple-choice questions, nine open-ended questions) was distributed in November–December 2012, aimed to evaluate oral health knowledge and practices, risk factors and symptoms of periodontal disease. The survey was approved by each faculty board. Data were analyzed using descriptive and correlational statistical methods.

Results: Response rate was 100%, the participants' mean age was 19.4 years (±1.7), 80% females. Though 76% of subjects self – evaluate their oral health as good or very good, only 11.5% floss daily and 7.1% use mouthwash twice-a-day. Forty percent are smokers, 7.8% of women use contraceptives and 13% reported periodontitis cases in family history. Seventy-three percent felt gingival pain, 2% were informed by their dentist about having bone resorption, 39% received dental scaling in the past. Seventy-one percent saw a dentist in the last year, but 45% don't feel confident about their periodontal status. No statistical significant correlations

were obtained between the level of exposure to risk factors and the reported signs and symptoms of periodontal disease.
Conclusion: In this study, young adults were not exposed to risk factors in large proportions but their oral health behavior was unsatisfactory for the periodontal health maintenance; primary prevention programs are necessary.

FC153
The Effect of Secondary Hemodialysis Therapy on Periodontium
Martu Silvia, Rudnic Ioana, Martu Alexandra, Solomon Sorina, Balan Adriana, Sincar Dorina Cerasella
Gr.T. Popa Medicine and Pharmacy University, Iasi, Romania

Aims: The purpose of this study was to examine the effect of secondary HPT on the periodontium of patients on hemodialysis.
Methods: The experimental group consisted of 35 patients with secondary HPT, with chronic renal failure treated by hemodialysis (B group). A control group (C group) was formed from 35 healthy subjects. Blood samples were taken from the group, and the active intact parathormone was assayed. Also a clinical and X-ray periodontal examination was performed.
Results: Demographically, both groups were similar with no statistical difference. PI was also similar and GI was slightly greater in the C group. PD in the B group was identical to that of the C group. Likewise, CAL in the B group did not differ from CAL in the C group.
Conclusion: From this study it can be concluded that secondary HPT does not hyperparathyroidism have an appreciable effect on periodontal indices and radiographic bone height.

Free Communication Session 24 | B360 | 29.08.2013 | 11:30–12:30

Theme: Implantology: Implantology

FC154
Accuracy of a Novel Stereolithographic Guide for Computer-Aided Impant Placement
Helin Kara, Sule Bulut, Serif Bayazit Bagci
Department of Periodontology, Baskent University Faculty of Dentistry, Ankara, Turkey

Aim: Surgical guides prepared with stereolithographic CAD/CAM prototyping techniques are used to transfer the planned implant position to the surgical side. Operations may be safer and less invasive when individualized surgical guides are used for implant placement. A novel stereolithographic surgical guide is developed to overcome the disadvantages of conventional stereolithographic surgical guides. StentCad Beyond provides effective cooling of the surgical zone, tubeless application discard the possibility of contamination of the osteotomy side and only one surgical guide is suffcient to achieve placement of implants with different diameters. The aim of this study was the optimization of a new developped surgical guide system StendCad Beyond, and by using this system to place in implants in systemically healthy patients to calculate deviations between planned and placed implants.
Methods: Twenty-four implants placed on nine systemically healthy patients using StentCad Beyond system. Preoperatively patients scanned with CBCT, these images transferred to the interactive treatment planning programme and implant treatment plans were done. After implant placement postoperative CBCT scan taken from patients, planned and placed implant positions and angulations superimposed. Angular, coronal, apical and vertical deviations were calculated, found 3.09°, 1.45, 1.15 and 0.76 mm respectively.
Results: Within the limits of this study implant planning can be transferred to the surgical side successfully, StendCad Beyond system has many advantages over conventional stereolitographic surgical guides but further studies consisting more implants are needed to evaluate the accuracy of the system.

FC155
Advanced Modalities in Dental Implant Imaging
Walid Samir Salem
Oral and Maxillofascial Surgery and Diagnostic Science, Qassim University, Saudi Arabia

Introduction: Radiography has been one of the frequently applied aids in human biometric research. It is essential to check for the accuracy of reproduction with respect to enlargement and projection. Without this accuracy errors can be incorporated into the measurement. Measurement is a vital aspect of interpretation, either of anatomical structures or pathological entities.

More recently, an increasing demand for dental implants for rehabilitation of edentulous jaws has raised an interest in the available imaging techniques to perform an accurate preoperative planning. It is essential to measure accurately the height of bone available for implant placement to avoid compromising vital structures such as the inferior alveolar nerve or maxillary sinus during placement of implants.

The introduction of Cone Beam Computed Tomography (CBCT) represents a radical change for dental and maxillofacial radiology. CBCT is a technology that provides cross-sectional images without superimposition or blurring and reduces the risk of radiation significantly. CBCT provides 3D imaging dedicated to the maxillofacial region at low cost and low dose of radiation.
Conclusions: CBCT allows 3D visualization of the oral and maxillofacial complex. This imaging modality eliminates the shortcomings of 2D imaging, produces a smaller radiation dose than that of conventional CT and enables clinicians to make more accurate treatment planning decisions, which should lead to more successful surgical procedures. It helps to measure the quantity and the quality of the bone available for the placement of implants.

FC156

Avoiding Crestal Bone Overload and Microgaps – Biomechanics of Conical Implant-Abutment Connections

Philipp Streckbein[1], Roland Streckbein[2], Jan Falco Wilbrand[1], Christoph Yves Malik[1], Heidrun Schaaf[1], Hans Peter Howaldt[1], Matthias Flach[3]

[1]Department of Cranio-Maxillo-Facial Surgery, Justus-Liebig-University, Gießen, Germany, [2]Institute for Postgraduate Education in Dental Implantology (IZI), Limburg, Germany, [3]Department for Virtual Prototyping, University of Applied Sciences, Koblenz, Germany

Introduction: Avoiding crestal bone loss around oral implants is one of the major objectives in implant engineering. According to the well-accepted theory by Frost unphysiologic mechanical overload causes high peak bone stress that could lead to bone loss. Other studies conclude bacterial contamination promoted by micro-gaps in the implant-abutment connection may cause bone loss as well. Previous biomechanical studies demonstrated the positive effect of conical connections with an angle <15°. These studies were based on limited mechanical principles. The objective of this study is to theoretically determine the influence of physiological dynamic loading forces on micro gapping and crestal bone stress.

Materials and methods: Seven three-dimensional non-linear finite element models with different angles of implant-abutment connections were generated and dynamic forces were applied. The respective bone strains and the resulting micro gaps were analyzed.

Results: Applying physiological dynamic forces (150 Ncm) to conical connections of dental implants with small angles (<15°) lead to absence of micro-gaps but to significantly higher bone loading compared to flat connections. Conical connections with an angle of 45° lead to absence of micro-gaps combined with a significant reduction of bone loading.

Conclusion: Despite the limitations of an in silico study, our results revealed, that under physiological conditions a 45° angle is the optimized conical implant-abutment connection to avoid micro-gaps and to reduce unphysiological bone overloading forces around dental implants.

FC157

Can Implants Successfully Supports Fixed Ceramic Fused to Metal Prosthesis in Periodontally Compromised Mouths

Saad Yasin Nori

Mosul Dental College, Prosthodontic Department, Iraq

Aim: To investigate by clinical and radiological measures the success of implants in supporting fixed prosthesis after extracting periodontally affected teeth.

Materials and methods: Three patients (one female and two males} of age range of (44–52 years) were having posterior and anterior teeth with gingival and periodontal disease with mobility of (1–3)°. These teeth were extracted with debridement and removal of granulation tissues. Then implants of different diameters and lengths of two systems were implanted with filling of resorbed area and sockets by bone substitute material in two cases. Antibiotic were given pre and postoperatively for aperiod of 5 days. Chlorhexidine mouth washes and calcium and vit. D tablets were prescribed also. After aperiod of 3–4 months these implants (15) were loaded successfully with (31 units- four fixed ceramic fused to metal prosthesis).

Image analysis and clinical examination by gingival and mobility index of these supporting implants and their periimplant soft tissues revealed excellent osseointigration and soft tissue attachment to implant collars after loading immediately and after 2–30 months period.

Results:

(1) Extraction with debridement of sokets of affected teeth can provide safe bed for implants.

(2) Antibiotic and chlorhexidine mouth washes are essential for healing process.

(3) A period of 3–4 months is sufficient for osseointigration and soft tissue attachments of and around the implants before loading.

Conclusion: Implants can replace periodontally affected teeth and supports fixed prosthesis to restore function and aesthetic of teeth in both sexes.

FC158

Block Allografts with and without Membranes in Horizontal Ridge Augmentation

Omid Moghaddas[1], Omid Moghaddas[2]

[1]Department of Periodontology, Islamic Azad University, Dental Branch, Tehran, Iran, [2]Department of Periodontology, Kerman University of Medical Sciences, Kerman, Iran

Aim: The aim of this study was to compare the potential of cortico-cancellous block allografts with and without using membranes in horizontal ridge augmentation.

Materials and methods: Sixteen partially edentulous patients (nine males, seven females) with a total of 18 localized alveolar ridge defects (ten maxillary, eight mandibular) were enrolled in this paralleled designed study. Baseline evaluations for horizontal dimensions were done by periodontal probe at the crestal area and with a ridge mapping caliper at 2 and 4 mm below the crest. Sites were randomly assigned to two groups: block allografts with and without barrier membranes. After a period of 6 months, at the reentry phase the measurements were done again. Independent t-test for comparing the results between the groups and paired t-test for comparing the results in groups were used for statistical analysis.

Results: No exposure happened except one of the cases in control group and no adverse effects were observed. The maximum gain in width was 5.4 mm (test group) and 5 mm (control group ($p > 0.05$). The mean gain in ridge width at the crest, 2 and 4 mm apically to crest were 4, 4.4 and 4.7 mm (test) 3.5,4 and 4.4 mm (control), respectively and the differences didn't reach the significant level. Twenty-two dental implants were installed in the augmented areas and were successfully loaded with single crowns and fixed partial dentures.

Conclusions: The present study indicates that corticocancellous block allografts with and without membranes both could be effective in ridge augmentation and using barriers can be more logical in conjunction with particulate bone grafts.

Free Communication Session 25 | B332 | 29.08.2013 | 14:00–15:00

Theme: Preventive Dentistry: Epidemiology

FC159

Oral Health Knowledge and Behavior Among 12-Year Olds Female Students

Eman Abdalhamed Almenezaa[1], Huda Shaker Nazar[1], Sabiha Abdulkadir Almutawa[1], Jitendra Ariga[2], Pramod Soparkar[3]
[1]Ministry of Health, Dental Department, Kuwait, [2]School Oral Health Program, MOH, Kuwait-Forsyth Institute, Cambridge, United States, [3]Forsyth Institute, Cambridge, United States

Aim: To assess the oral health knowledge and behavior of 12-year olds female students in Kuwait. To evaluate the oral health promotion program in the SOHP.
Materials and methods: From 2011 to 2012, 977 self-reported questionnaire were answered by a convenience sample of female students belonging to middle schools either at the SOHP centers or in their schools. All the six governorates in Kuwait were included in this cross-sectional study. Seventeen oral health knowledge and eight behavior questions were included in the questionnaire. These questions were focused on the oral health education information that had been delivered to schoolchildren by the SOHP oral health promotion team.
Results: Nine hundred and seventy-seven female students aged 12.8 ± 2.3 participated in this study. Overall, 40% of mothers and 43% of fathers had bachelor degree. Almost half of the questionnaires were answered at the SOHP centers (44%) and half at the schools (55%). The most of the participants were from Al-Ahmadi (25%) and Al-Jahraa (24%) governorates. Knowledge questions were answered correctly by 65% of the students. Almost half (44%) brushed their teeth twice a day and 66% of the participants did not use floss. Only 33% visited the dentist for routine check-up. Half of the participants visited the dentist in last 6-months.
Conclusion: Oral health knowledge among 12-year olds female students was satisfactory. This is not reflected in their oral health behavior which was not satisfactory. More efforts should be laid in future toward improving the oral health behavior of our schoolchildren.

FC160

Malaysian Adult Oral Health Scenario: Changes Over a Decade

Siew Lian Yaw[1], Khairiyah Abdul Muttalib[1], Jamalludin Ab Rahman[2]
[1]Oral Health Division, Ministry of Health Malaysia, WP Putrajaya, Malaysia, [2]Department of Community Medicine, International Islamic University Malaysia, Kuantan, Malaysia

Aim: NOHSA 2010, Malaysia's fourth national adult oral health survey was conducted to assess trends in oral health status and treatment needs and, to obtain utilization and socio-dental information.
Materials and methods: A two-stage stratified cluster population-based survey targeted 14,444 adults aged 15 and above. A bilingual validated face-to-face questionnaire and a clinical format adapted from WHO (1997) were used. Complex sample survey analysis used SPSS and sampling weights by state and strata (urban and rural) based on 2010 census data. Estimated population, percentage with 95% CI and mean (SE) were generated. Ethical approval was obtained from the Medical Research Ethics Committee, MOH.
Results: Comparing NOHSA 2000, there was increased prevalence of periodontal disease (87.2–94.0%), slightly decreased caries prevalence (90.3–88.9%) and increased prevalence of oral lesions (7.1–51.1%). One in three adults experienced oral health problems affecting their quality of life in the last 3 months and 95.2% of adults perceived they had good oral health. Only 27.4% and 40.1% had a dental visit in the last 1 and 2 years respectively and, only 15.9% had a preventive visit in the last 2 years.
Conclusions: Over a decade, there is still a high burden of caries and periodontal disease. Substantial gap exists between oral health perception and normative needs. Preventive oral health-seeking behaviour was low although annual utilization was within probability of a dental visit in the past 12 months in OECD countries. These findings would be used to revisit the national oral health plan.

FC161

Odontogenic Infections Due to the Untreated Caries in Children

Teuta Ademaj Kutllovci, Agim Begzati, Aida Rexhepi, Blerta Xhemajli, Nita Kutllovci
Department of Pediatric and Preventive Dentistry, University of Pristina, Dentistry School, Pristina, Republic of Kosovo

Introduction: Odontogenic infections are characteristic pathology encountered our children as a result of untreated caries. They can be manifested in acute and chronic form.

The aim of this study is to present the types of odontogenic infections as a caries complications, particularly from second decidues molars and first permanent molars.
Materials and methods: In this study were included 707 children (541 school and 166 preschool children) from Prishtina, Republic of Kosova, age 5–15 years. It was determined the prevalence of caries and defined the level and types of infections from carious teeth. Also were researched the predisposed teeth for these infections.
Results: The results show high levels of odontogenic infections (15.7%) due to the high level of untreated caries (80%). In the primary dentition have dominated parulis infections (35.6%), while in permanent dentition, chronic apical periodontitis (31.5%). Absces and flegmona were more rare. The most frequent causative teeth were: second primary molars (49.7%) and the first permanent molars (66.1%).
Conclusions: The untreated molars of the both dentitions are the most predisposed teeth that caused the odontogenic infections. Prevention and early treatment of initial caries can be associated with lower incidence of odontogenic infection.

FC162

Epidemiological Study of Oral Cancer in Colombia: 1990–2009

Angel Emilio Bernal
Department of Morphology, Faculty of Medicine, National University of Colombia, Bogotá, D.C., Colombia

Aim: This paper provides a statistical analysis of epidemiological behavior of oral cancer in Colombia for a period of 20 years, 1990–2009, according to incidence based data provided by the Epidemiology Division at National Cancer Institute.
Materials and methods: Among the most outstanding results of the study highlights are: for 15 years oral cancer has ranked among the top ten diseases affecting the body. From 1990 to 1994 it was 8th with 2.64% among both sexes. The year 1999 had a staggering 3.05%, among both sexes. Men repeatedly stood among the top five most affected, reaching 4.5% in 1994. The tongue is the most affected area of the mouth.
Conclusions: The cultural multidiversity of Colombia combined with its vast territorial dimension produces the most diverse regional customs and habits. It is assumed that severity is much more dramatic. The findings have brought a focus on implementing a National Programme of Prevention and Early Diagnosis of Oral Cancer.

FC163

Assessing Oral Health Related Quality of Life in Oncologic Patients

Süleyman Ziya Şenyurt[1], Kemal Üstün[1], Eda Çetin Özdemir[1], Ufuk Sezer[1], Ozan Balakan[2], Mutan Hamdi Aras[3]
[1]*Department of Periodontology, Faculty of Dentistry, Gaziantep University, Gaziantep, Turkey,* [2]*Department of Medical Oncology, Faculty of Medicine, Gaziantep University, Gaziantep, Turkey,* [3]*Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, Gaziantep University, Gaziantep, Turkey*

Aim: The aim of this study was to determine the oral complications and oral health related quality of life in oncologic patients receiving chemotherapy and radiotherapy.
Materials and methods: One hundred and fifty-seven oncologic patients were investigated in this cross-sectional study between 2010 October and 2011 February. Socio-demographic data, medical history, cancer types and treatment modalities were recorded. Dental status was evaluated by using DMF-T indices. Oral mucositis was measured by the WHO scale. QoL was assessed by oral health impact profile-14 (OHIP-14) and oral health related quality of life (OHQoL) questionnaires.
Results: There was statistically no significant differences in the ages, sex and education levels between chemotherapy (CT) and radiotherapy (RT) groups ($p > 0.05$). Furthermore, there was no significant differences OHQoL and OHIP-14 subscale scores between CT and RT groups ($p > 0.05$). The prevalence of oral complications such as presence of mucositis, tooth loss, xerostomia and dental caries in patients with head and neck cancer was significantly higher than the other types of cancer ($p < 0.05$).
Conclusion: The result of this study suggested that treatment modalities were associated with oral health related quality of life in oncologic patients, and the oral complications of patients with cancer may be more affected by head and neck radiation according to chemotherapy and the other's regions radiotherapy.

Free Communication Session 26 | B342 | 29.08.2013 | 14:00–15:00

Theme: Preventive Dentistry: Orthodontics

FC164

Orthodontic Management of Impacted Teeth

Amr Nabil Asker
Asker Orthodontic Center and Institute-Masnoura-Egypt

Aim: Orthodontic management of impacted teeth is interesting topic in orthodontic, so i'll give small hint on impacted tooth management in orthodontic-traction techniques and will present two cases of my work with photos and X-rays.
Case: First case female pt. 13 years old came to the clinic complaining of unesthetic appearence of incisors, after examination and panoramic X-ray i found retained tooth no. 63 and impacted 23 at the position of the apex of upper lateral, this had formed dentigerous cyst around it and caused flaring of lateral incisors- after examination i diagnose its position labially with some bulging.
– I made open window above it, marsupialization of cyst-extract retained C-then attach bracket to upper impacted canine and began traction steps by double wire techniqe untill it become in its normal position.
– Dentigerous cyst disappear after complete alignment and bone formed in old canine place with normal gingiva archticture, it took 1 year.
– Second case male patient complaining of unerupted upper centrals at age of 9.5 years, and erupted upper laterals-the space of upper centrals still found
– After examination I found labially impacted upper centrals with two supernumerary palatal to them that prevent centrals from eruption.
– I opened flap labially and palatally, remove two supernumerary and expose upper centrals removing any bone above them-attach eyelets on them and began traction steps, i did closed traction in this case as it was highly impacted as appear in X-ray.
Conclusion: After 10 months complete alignment-healthy gingiva so i made retainer untill complete eruption of other permenant teeth.

FC165

Effect of Intra-Arch Tooth-Size Arch-Length Discrepancy on the Accuracy of Digital Models in Orthodontic Diagnosis

Ramy Mohammed Fathy, Islam Tarek Hassan, Noha Ezzat Sabet
Department of Orthodontics, Ain-Shams University, Cairo, Egypt

Aim: The aim of this study was to evaluate the effect of intra-arch tooth size arch length discrepancy (TALD) on the accuracy of the digital models in orthodontic diagnosis.
Methods: A sample of 45 subjects having different types of malocclusion was included. For each subject, a set of plaster study model and digital model (OrthoCAD, Cadent, Carlstadt, NJ) were

obtained. Space analysis and arch width measurements were performed on both models. To evaluate the effect of intra-arch tooth size arch length discrepancy on the accuracy of the digital models, the sample was divided, considering each arch separately, into four groups; spacing, mild crowding, moderate crowding and sever crowding. All the measurements were statistically analyzed.

Results: When comparing the various measurements obtained from OrthoCAD digital models with those of conventional plaster study models in relation to the amount of intra-arch tooth size arch length discrepancy, no statistical significant difference was found. No correlation was found as well between the accuracy of OrthoCAD digital models and the amount of intra-arch tooth size arch length discrepancy.

Conclusions: OrthoCAD digital models were found to be as accurate as conventional plaster models in orthodontic diagnosis with no effect of intra-arch tooth size arch length discrepancy on its accuracy.

FC166

Effect of Menstrual Cycle on Orthodontic Pain Perception

Zehra Ileri, Zeliha Muge Baka, Mehmet Akin, Seza Apiliogullari, Faruk Ayhan Basciftci
Department of Orthodontics, Selcuk University, Konya, Turkey

Aim: The aim of this prospective, randomized, controlled, crossover study was to evaluate the effects of the menstrual cycle phases on orthodontic pain perception.

Materials and methods: Twenty-five women, aged 16–20 years old, had regular menstrual cycles, scheduled to undergo the extraction of two upper first premolars for orthodontic treatment were enrolled in this study. Laceback ligatures were used to move canines distally. After activating lace back ligatures (T1) and 24 h later after activation (T2), each patient completed the Oral Health Impact Profile-14 (OHIP-14) and recorded the degree of pain on the visual analogue scale (VAS) and the verbal rating scale-4 (VRS-4). In the appointment, the phase of menstrual cycle of each patient was determined by asking some questions about her cycle. The next appointment was arranged in the other phase of each patient's menstrual cycle. For statistical analysis of data, Mann–Whitney U- and Wilcoxon tests were used at $p < 0.05$ level.

Results: The mean orthodontic pain score was found 1.96 ± 0.79 and 47.20 ± 21.6 in follicular phase, 1.92 ± 0.81 and 46.40 ± 18.73 in luteal phase at T1 for VRS and VAS scales, respectively. Pain scores were similar in both groups. No statistically significant change was found between pain scores at T1 and pain scores at T2 in both luteal and follicular phases.

Conclusion: The menstrual phase did not change the perception of orthodontic pain due to activation of laceback ligatures and orthodontic pain did not increase significantly in the next 24 h after activation.

FC167

Effect of the Bracket Types on Microbial Colonization and Periodontal Status

Fatma Deniz Uzuner[1], Emine Kaygısız[1], Zeynep Turgut Çankaya[2]
[1]*Department of Orthodontics, Gazi University, Ankara, Turkey,*
[2]*Department of Periodontology, Gazi University, Ankara, Turkey*

Aim: To investigate the effect of fixed orthodontic treatment with different bracket types on the levels of *Streptococcus mutans* (SM) and Lactobacillus (LB) in saliva and plaque and on the periodontal condition as well.

Methods: Thirty orthodontic patients (age range 14–16 years) were selected according to the following inclusion criterias: Angle Class I malocclusion with minimal crowding, nonsmoker, free of dental plaque, and no systematic disease. Patients who had used antibiotics and oral mouth rinses during the 3-month period before the study were excluded.

The patients were subdivided into two groups with random allocation of bracket type (conventional and self-ligating). Conventional brackets were ligated with ligature wires.

Microbial and periodontal records were obtained before bonding (T1), 1 month after bonding (T2).

Microbial samples were collected from the stimulated saliva and labial surfaces of the upper and lower lateral incisors. To estimate the number of colony-forming units of SM and LB per mililitre of saliva and plaque Dentocult SM and LB Kits (Orion Diagnostica, Espoo, Finland) were used. The periodontal index (PI), gingival index (GI) and pocket depth (PD) values were recorded for evaluation of periodontal condition.

Bonferroni corrected Mann–Whitney U and Wilcoxon signed rank tests were used to compare the groups. $p < 0.05$ was considered significant.

Conclusions:

(1) The self-ligating brackets do not have an advantage over conventional brakets with respect to the periodontal status and colonization of SM and LB.

(2) Colonization of LB and SM and also the periodontal condition primarily depends on the patients hygiene motivation.

FC168

Effects of Self-Ligating Brackets on Halitosis, Periodontal and Microbial Parameters

Ruhi Nalçacı[1], Yener Özat[2], Serpil Çokakoğlu[1], Muhammet Hakan Türkkahraman[1], Süleyman Önal[3], Selçuk Kaya[3]
[1]*Department of Orthodontics, Faculty of Dentistry, Suleyman Demirel University, Isparta, Turkey,* [2]*Department of Periodontology, Faculty of Dentistry, Suleyman Demirel University, Isparta, Turkey,* [3]*Department of Medical Microbiology, Faculty of Medicine, Suleyman Demirel University, Isparta, Turkey*

Aim: The purpose of this study was to investigate the effects of self-ligating brackets on halitosis, periodontal status and microbial colonization.

Materials and methods: Ethical approval was obtained from the ethical committee and 46 patients (27 female, 19 male) scheduled for fixed orthodontic treatment (ages, 11–16) in the permanent dentition were selected for this study. Patients were randomizely divided into two groups: 23 patients treated with self–ligating brackets (Group SLBs) and the others with conventional brackets (Group CBs). Halitosis, periodontal parameters including plaque index (PI), gingival index (GI), bleeding on probing (BOP) and microbial measurements were obtained before bonding (T0), 1 week later (T1) and 5 weeks after bonding (T2) and were statistically analyzed by SPSS software. Repeated measurement analysis was used to evaluate the means difference of times. Bonferroni and independent samples-T tests were used to compare the groups' means.
Results: Group SLBs showed significantly lower halitosis and BOP parameters in T2. Also, these values showed no significant differences among T1–T2 in Group SLBs. But there were statistically significant increases between all the time intervals in Group CBs. PI and GI values are statistically significant between groups and all the time intervals. But, no significant difference between the microbial colonization of the groups was found at any time point.
Conclusion: Bracket types seems to have an effect on halitosis and periodontal status. Thus, self-ligating brackets may be advised to prevent patients from halitosis and maintain good oral hygiene during orthodontic treatment.

Free Communication Session 27 | B343 | 29.08.2013 | 14:00–15:00

Theme: Dental Treatment and Restorative Dentistry: Esthetics

FC169
Evaluation of Maxillar Incisor Proportions in Turkish Population
Gökçe Meriç, Selim Günsoy, Simge Taşar,
Mutahhar Muhammed Ulusoy
Department of Prosthetic Dentistry, Faculty of Dentistry, Near East University

Introduction: In order to achieve excellent aesthetics several authors have presented guidelines regarding anterior aesthetics which include recommendations for the optimal anterior tooth proportions and tooth dimensions.
Objectives: To study the prevalence of golden standart of 75–80% concerning the width-to-height ratio of the upper central incisor and 62% concerning the tooth-to-tooth proportions of the widths of the maxillary central, lateral and canine teeth proportions in a selected group of Turkish population and to determine gender differences.
Materials and methods: Seventy participants in the age group of 18–26 from seven different geographic regions of Turkey (35 men and 35 women) were selected. Irreversible hydrocolloid impressions were taken from their maxillar dentition and poured in type V stone. Clinical crown dimensions were measured with a digital calliper. All measurements were performed by three times. The measurements were compared using intraclass correlation coefficient (ICC). The results of the measurements in different groups were investigated by independent-sample t-test at a 95% significance level using Number Cruncher Statistical System.
Results: Ideal golden ratios for the maxillary anterior teeth were not found in the Turkish population. The width-to-height ratio of upper central insicor was 86.09 ± 09.73. The ratios between the widths of central to lateral and lateral to canine were 67.14 ± 11.40 and 95.85 ± 14.93, respectively. There was no significant difference between men and women in the population concerning the width-to-height and tooth-to-tooth proportions.

FC170
Effect of In-Office Bleaching Units on Composite Shear Bond Strength
Homayoon Alaghehmand, Marzieh Rohaninasab
Department of Esthetic & Restorative Dentistry, Babol University, Babol, Iran

Aim: This study evaluated the best and most effective method for in-office bleaching with the least affect on microshear bond strength (MSBS) of composite fillings.
Materials and methods: Class 5 cavities were prepared on buccal surface of 50 third human molars, pulpal wall of 25 teeth were in dentin and for 25, in enamel. Then cavities were restored with single bond 2 bonding system and composite (Z250). Teeth were studied in ten groups (n = 5 dentin and enamel): bleached with Hydrogen peroxide (HP) + Zoom, with HP + LED, with HP + Diode laser, with HP and 1 control groups that was not bleached. Teeth colors were monitored before and after bleaching with Easy shade unit and MSBS were performed. The MSBS and deltaE results were analyzed with Kolomogorov–Smirnov to evaluate normal distribution of data. Kruskal–Wallis test for abnormal distribution data and Tukey's test for data with normal distribution used. A value of $p < 0.05$ was considered significant.
Results: Bleaching can reduce MSBS of composite in all groups but there are not statistically differences. deltaE changed more in diode laser group.
Conclusion: Diode laser is preferred for accelerate bleaching process and rebonding of composite restoration margins after bleaching is recommended.

Theme: Preventive Dentistry: Orthodontics

FC171
Er.YAG Laser Assisted Labial Frenectomies
Marina Jugoslav Kacarska[1], Maja Gjorovska[2]
[1]*Department of Oral Surgery, Faculty of Dentistry, University St. Cyril and Methodius,* [2]*Depratment of Oral Surgery, University Dental Clinical Center, St. Pantelejmon'*

Aim: To evaluate the Er.YAG laser assisted labial frenectomies, regarding the type of anesthesia, patients' compliance, hemosthasis and postoperative outcomes.
Background: In the treatment of low and overactive buccal frenulum Er: YAG laser surgery has an inherent characteristic outcome of minimal bleeding, a reduced need for anesthesia and excellent healing process. (Litwak E: Diastema closure and frenectomy with Er. Yag. laser. Clinical Bulletin 34/10). Postoperative findings showed no complications. The healing process was very fast,

showing fibrin coating on the following day (Schindler G: Laser assisted frenectomy in pediatric dentistry. Case report; 32–35).
Materials and methods: Ten healthy patients who were referred for upper labial frenectomies (from February to July 2912) were included in this study.

The clinical examinations and evaluations revealed the existence of medial diastemas due to persistent aberrant labial frenulums.

Numbness of the surgical field was obtained with either topical or infiltration anesthesia, depending on the frenulums' morphology and patients cooperation.

Er. YAG laser (FOTONA FIDELIS III) was engaged with non-contact hand piece and preset parameters. The patients were advised to avoid hot and sour beverages. The check-ups were made the following day.
Results: Topical anesthesia was used in cases with thin frenulums, while for the treatment of wide frenulums, small amounts of infiltrative anesthesia were sufficient, in accordance with patients' compliance. Bleeding was scarce, so sutures weren't necessary.

The postoperative period was uneventful, with fibrine coating visible the following day.
Conclusion: Er.YAG laser frenectomies are minimally invasive procedures followed by uneventful postoperative recovery and promoted healing.

FC172

The Use of the 5 Year Index by Dental Students for Assessing Dental Arch Relationships in Patients with Unilateral Cleft Lip and Palate

Beyza Tagrikulu[1], Hatice Ozlem Carsanbali[2],

Asuman Deniz Gumru Celikel[1], Elif Fatma Erbay[1]
[1]*Department of Orthodontics, Faculty of Dentistry, Istanbul University,* [2]*Faculty of Dentistry, Istanbul University*

Objective: The purpose of this study is to evaluate reproducibility and reliability of 5-year Index when used by a dental student and also to assess localization of fistula and cleft; arch form and congenitally absent teeth.
Materials and methods: Research material comprised of panoramic radiographs and study models of 24 unilateral primary and secondary cleft palate patients (eight girls and 16 boys, with mean age 5.8 years). The dental arch relationships of the patients were assessed using the 5-year index by a dental student and an orthodontist separately. Study models were categorized into five scores according to 5 year index. All study models were assessed two times by the dental student. Then the results of the student were compared to the results of the orthodontist.
Results and conclusions: High correlation between the first and second time scores of the cases given by the dental student shows that this index is reproducible. Five year index was proved to be reliable as the scores of the dental student and the orthodontist were similar. These results showed that 5 year index can be used successfully by dental students.

There were fistulas in the palate in 67% of the cases and in vestibular sulcus area in 33%. Fourteen of the cases (58%) had symmetrical arch form and 10 (42%) had an asymmetrical arch form.

Incidence of congenitally absent teeth was 75%. In 11 patients the missing tooth was lateral incisor. Four patients has missing premolar whereas in three patients both of them were missing.

FC173

Replacement of Missing Teeth on Adolescent Patients After Orthodontic Treatment

Edlira Papa
Department of Stomatology, American University of Tirana, Tirana, Albania

Introduction: At the end of the orthodontic treatment in a adolescent patient with missing teeth, a temporary replacement may be necessary for several years, while waiting to reach the physical maturity.
Aim: The aim was to present a retainer which is a fixed space maintainer, low cost, hygienic, functional, aesthetic, it does not compromise the self confidence of the adolescent and it offers unlimited time of using.
Materials and methods: At the end of the orthodontic treatment the first molar bands has being used to fabricate a passive palatinal/lingual bar like a lingual arch has done. After the identification of right color and shape of the replacement tooth it have been taken a impression with the passive palatal bar in the mouth. At the laboratory the replacement teeth have been attached to this passive palatinal bar and the appliance have been cemented at the firs molars.
Results: In 8 years of using this kind of appliance during the function it has been provided a very good distribution of the mastication forces in all the dental arch without pressing at the implant site, the orthodontic treatment has been stabilized, the aesthetic has been achieved, the self confidence and the oral hygiene of the adolescent has not been compromised at all.
Conclusions: This appliance can be an excellent treatment to postpone definitive treatment. Once growth has been completed and the parents are financially ready then implant therapy can be initiated.
Keywords: replacement of missing teeth, orthodontic treatment, fixed space maintainer, the implant site.

Free Communication Session 28 | B360 | 29.08.2013 | 14:00–15:00

Theme: Implantology: Oral Surgery

FC174

Comparative Evaluation of Chronic Periapical Lesions Diagnosis Based on Conventional Radiography Semi-Serial Sections Histopathology and Serial Sections Histopathology

Resmije Ademi[1], Lumnije Gashi Luci[2], Fisnik Kurshumliu[2], Feriale Perjuci[1], Ali Gashi[1], Zana Agani[1], Jehona Ahmedi[1]
[1]*Deparment of University Dental Clinical Center of Kosova,* [2]*Department of Pathology, Univerity Clinical Center of Kosova*

Objective: Was to find the accurate method for chronic periapical lesions diagnosis. It was achieved performing comparative evalua-

tion of diagnosis based on conventional radiography, semi-serial histopathologic and serial sections histopathologic examinations. The accuracy of radiographic and semi-serial histopathologic diagnosis was estimated using the serial sections histopathologic diagnosis as the standard.

Methods: Study included 42 frontal teeth surgicaly treated for first time and 46 surgicaly retreated teeth. The radiographic examination was performed before apicoectomy. Bioptic material was obtained with lesions curettagae during apicoectomy and submited the routine semi-serial histopathologic examination. The same bioptic material submited the serial sections histopathologic examination.

Results: Show that at surgicaly retreated teeth, based on radiographic and semi-serial histopathologic examinations dominated granulomas with 45.7%, respectively 69.56%, while serial sections histopathologic examination resulted with cysts domination at 50.0%. At first time surgicaly treated teeth, radiographic and semi-serial histopathologic examinations show granulomas presence at 35.7%, respectively 76.2%, whereas serial sections histopathologic examination show cysts domination at 59.5%.

Conclusion: Study results confirmed that diagnosis based on conventional radiography, semi-serial histopathologic and serial sections histopathologic examination, show the significant difference at both groups of teeth (surgicaly retreated ansd first time treated teeth). Therefore neither conventional radiography nor routine semi-serial sections histopathologic examination can not be considered as credible diagnostic method for differentiating radicular cysts from granulomas. So the standard procedure for accurate diagnosis of chronic periapical lesions should be considered the serial sections histopathologhic examination.

FC175

Immediate Implant Placement in Esthetic Zone for Class III Patient

Rafaa Taher Swesi

Department Oral & Maxillofacial Surgery, Faculty of Dentistry, Tripoli University, Libya

Aim: The most challenging area of modern implant dentistry remains the "esthetic zone" in the anterior maxilla and mandible. Certainly much literature exists for the immediate replacement of extracted teeth with implants for the advantages of maintenance of alveolar bone volume and avoiding future implant surgery.

Case: The current clinical case is a 35-year-old healthy female patient with a Class III malocclusion underwent extraction of four anterior maxillary teeth and had immediate implants. The extracted teeth were in cross bite and had Gr 3 mobility that could not be saved by neither periodontal nor orthodontic measures. Furthermore, replacing these teeth was very challenging that required careful consideration of the location of residual bone, soft tissue esthetics, and room for the implants and prosthesis for ideal esthetic and satisfaction, which were our goal for this case.

Conclusions: It can therefore be concluded that while initial research and clinical use were directed primarily toward the edentulous patient, more recent studies have focused on the esthetic and functional use of immediate implant placement. Moreover, in many studies, high survival rates with immediate implant placement have been reported compared to those placed in healed ridges.

FC176

Impact of Local Vitamin D Application on Alveolar Bone Regeneration: A Pre-Clinical Study

Gabriella Dvorak, Uwe Yacine Schwarze, Stefan Tangl, Hermann Agis, Alexander Fügl

Division of Oral Surgery, Bernhard Gottlieb Dental University, Medical University Vienna, Austria

Background: Vitamin D deficiency is associated with a diminished capacity of bone to regenerate. As osseointegration requires bone regeneration to occur, oral implantologists must face the situation of vitamin D deficiency in their elderly patients. Recent pre-clinical studies indicate an impact of vitamin D deficiency on osseointegration, which may be reversed by systemic vitamin D administration. Yet raising vitamin D serum levels before oral surgery may take months. Local application of the active vitamin D metabolite has shown a beneficial impact on bone.

Aim of the study: Thus, it becomes important to know the effect of local vitamin D application on alveolar bone regeneration.

Materials and methods: To test this hypothesis, 60 adult male rats were divided into three groups. The vitamin depletion groups were fed a vitamin D free diet for 4 weeks. The control group was fed the standard diet for 4 weeks. After 4 weeks of housing two standardized defects were created in the diastema of the maxilla and mandible. In the vitamin D+ group (n = 20) Lyostypt soaked in calcitriol was placed, in the vitamin D- group (n = 20) and control group (n = 20) Lyostyt with soluble was placed. Sacrification took place after 1 and 3 weeks. Serum levels of 25-hydroxyvitamin D and parathyroid hormone were determined at the time of sacrification. Histologic, histomorphometric analysis and micro CTs were performed to determine the static parameters of osseointegration.

Hypothesis: We hypothesize that vitamin D has a positive impact on alveolar bone regeneration in a vitamin D insufficient rat model.

FC177

Documentation of WHO Surgical Safety Checklist in Oral Surgery

Gezala Umar, Sarah Taylor, Ming Wei Tang

Department of Oral Surgery, King's College Hospital, London, United Kingdom

Background: In 2008 the World Health Organisation launched the Surgical Safety Checklist (SSC) in line with "Safe Surgery Saves Lives" challenge to reduce surgical deaths worldwide. Structured checklists enhance the quality and safety of surgical patient care. In 2009 NHS trusts in England and Wales were advised to utilize an appropriately adapted SSC for each patient undergoing a surgical procedure by the National Patient Safety Agency. The SSC was piloted in the Oral Surgery department, modified accordingly and incorporated into the Oral Surgery Operative Sheet.

Aim: To measure the compliance of surgeons in Oral Surgery in completing the SSC.
Standards: The standard was set to 100% completion due to its importance in patient safety.
Method: The sample size required for an accurate representation was determined using a sample size calculator. Patient notes were inspected over several cycles for completed data entry.
Results: Correct documentation of the SSC was as follows:

Cycle percentage compliance	%
1	71.8
2	73.7
3	76.3
4	53.5
5	70.5

Changes implemented:
(1) Several emails were sent to staff, highlighting the importance of record keeping, as well as compliance with the SSC.
(2) Results from the audit were presented to the department emphasising the importance of SSC and improving compliance
(3) Staff who repeatedly fail to complete the SSC were individually addressed and encouraged to comply.
Conclusions: Compliance had steadily improved but then decreased dramatically when there was a lapse in the regular reminders sent to staff. Since individual training, the compliance has improved radically, although falling short of the standards set.

FC178

Dry Socket Incidence After Third Molar Extraction Using Chlorhexidine Gel 1%

Jehona Reçica Ahmedi[1], Osman Sejfija[2], Enis Ahmedi[3], Zana Agani[1], Feriale Perjuci[1], Resmije Ademi[1], Ali Gashi[1], Vjosa Hamiti[1]
[1]*Department of Oral Surgery, University Dental Clinical Center of Kosova,* [2]*Depatment of Maxillofacial Surgery, University Clinical Center of Kosova,* [3]*Department of Prosthodontics, University Dental Clinical Center of Kosova*

Aim: Aim of this prospective study was to compare the pain course, presence or absence of clot and bone exposure, as main symptoms of dry socket, after surgical extraction of third molar, using chlorhexidine gel 1% in alveola post extracted tooth.
Materials and methods: The sample consisted of 25 patients with bilaterally impacted lower third molars indicated for extraction. Importance of this paper consisted on, that the same subject belong to a control group and a study group. Randomly in one side the extraction of third molar was done without using any of preparates while after extraction of lower third molar in the other side 2 weeks later, was used chlorhexidine gel 1% implicated directly in the alveola post extracted tooth. Pain intensity was assessed by means of VAS (0–100) on first, third and seventh day after surgery. Also the objective measurements was used to assessed the presence of clot in alveola and the bone exposure.
Results: Incidence of dry socket was 12% in cases without using chlorhexidine gel 1% after tooth extraction, wich is statistically significant.
Conclusion: Reduce of dry socket after surgical third molar extraction and the simplicity of using the chlorhexidine gel 1% justifies its use in oral surgery.

Free Communication Session 29 | B332 | 29.08.2013 | 15:30–16:30

Theme: Dental Treatment and Restorative Dentistry: Periodontics

FC179

Antimicrobial Activities of Essential Oil of *Nigella sativa* Against Periodontal Diseased

Tir Touil Meddah Aicha[1], Kiari Fatima[2], Leke André[3], Meddah Boumediene[2]
[1]*Bioconversion, Microbiological Engineering and Health Security Laboratory, FSNV, University of Mascara, Algeria,* [2]*Laboratoire de Recherche ur les Systems Biologques et la Géomatique, FSNV, University of Mascara, Algeria,* [3]*Departement of Pediatry, CHU Nord Amiens, Amiens, France*

Aim or purpose: To assess the in vitro antimicrobial activities of essential oil of Nigella sativa on some common and pathogens strains from the oral cavity of 26 peoples two sex, aged from 35 ± 4 divided in two group: healthy (n = 07) and with periodontal disease (n = 09).
Materials and methods: The effect of essential oil extract of Nigella sativa against oral microflora strains isolated from the oral cavity of healthy people and with periodontal disease using both agar disc diffusion and microdilution method. The protocol was approved by the Local Ethical Comity of the University. Analysis of variance (ANOVA) (Fisher's test) was used for statistical analysis. A p-value of 0.05 was considered as a significant difference.
Results: A significant difference in colonization levels between the two groups was recorded. Six genera (Staphylococcus, Streptococcus, Escherichia, Enterobacter, Pseudomonas and Lactobacillus) and *Candida albicans* were commonly identified in all subjects at different colonization levels. Five pathogens genera (Acinetobacter, Streptocoques group D, Bacteroides and Porphyromonas – Prevotella) were isolated only in periodontal disease group. *Nigella sativa* extract essential oil more significantly inhibited the growth of pathogen bacteria from the dental plaque of periodontal disease.
Conclusions: *Nigella sativa* extract essential oil displayed a strong in vitro, antimicrobial effect on the oral cavity of healthy and patient's periodontal disease.

FC180

The Influence of CD4+ T Cell Counts on HIV-Associated Periodontal Disease

Cathy Nisha John[1], Lawrence Xavier Graham Stephen[1], Charlene Wilma Joyce Africa[2]
[1]*Department of Oral Medicine and Periodontics, University of the Western Cape, Cape Town, South Africa,* [2]*Department of Medical Biosciences, University of the Western Cape, Cape Town, South Africa*

Aim: To determine whether CD4+ T cell counts, age or oral hygiene methods practiced by HIV positive patients has a greater impact in causing chronic inflammatory periodontal disease.

Materials and methods: A cohort descriptive study was conducted involving 120 male and female HIV positive patients irrespective of their antiretroviral therapy, attending the infectious diseases clinic at Tygerberg Medical Hospital, South Africa. Ethical clearance was obtained from University of the Western Cape. Periodontal clinical measurements such as plaque index, gingival index, probing depth and clinical attachment level were taken at the mesial aspect of six Ramfjord teeth using Williams periodontal probe. The mean age of the study population was 33.3 years with a median of 32 years. Significant positive correlation was found between age and plaque index ($p = 0.0018$). Significant positive correlations were found between CD4+ T cell counts with probing depth ($p = 0.0434$) and clinical attachment level ($p = 0.0268$) (Spearman's correlation). When CD4+ T cell counts relative to brushing frequency and use of interdental aids were evaluated, statistically significant associations were found with p-values of 0.0190 and 0.0170 respectively (Wilcoxon rank sum test). No correlation was found between CD4+ T cell count and the age of the individuals (Spearman's $\rho = 0.16452$, $p = 0.0726$).
Results: Statistically significant association was observed between CD4+ T cell counts and clinical indices. Statistically significant association was observed between CD4+ T cell counts and oral hygiene practices rather than the age groups.
Conclusion: The immunosuppression along with oral hygiene and plaque control characteristically influences the progression of periodontal disease in HIV positive patients.

FC181

Impact of Scaling and Root Planing on Red Complex Periodontopathogens in Generalized Aggressive Periodontitis

Çiğdem Paşalı[1], Alpdoğan Kantarcı[2], Gülnur Emingil[1]
[1]*Department of Periodontology, School of Dentistry, Ege University, İzmir, Turkey,* [2]*The Forsyth Institute, Cambridge, United States*

Objective: The aim of the present study was to investigate the clinical and microbiologic efficacy of scaling and root planing (SRP) in the management of generalized aggressive periodontitis (G-AgP).
Methods: Sixteen patients diagnosed with G-AgP and 14 healthy subjects were included. G-AgP patients received scaling and root planing. Probing depth (PD), clinical attachment level (CAL), presence of bleeding on probing (BOP) and plaque index (PI) scores were recorded at baseline and at 1, 3 and 6 months after SRP. Red complex bacteria were analyzed at baseline, at 3 and 6 months after treatment by DNA–DNA checkerboard method. Parametric tests including repeated measures ANOVA and one-way post hoc analysis were used to test significance of changes.
Results: Statistically significant improvements were observed in clinical parameters of G-AgP patients ($p < 0.05$). *P. gingivalis* levels were significantly reduced at 3 months compared to baseline while *T. forsythia* and *T. denticola* levels remained the same. All bacteria levels were significantly reduced at 6 months compared to the baseline ($p < 0.05$). *P. gingivalis* and *T. denticola* reached the levels of the healthy subjects at 6 months while *T. forsythia* levels were still significantly higher than the healthy subjects ($p < 0.05$).
Conclusion: While successful in reducing the levels of *P. gingivalis* and *T. denticola* in the subgingival plaque samples of G-AgP, SRP was not effective on T. forsythia suggesting the use of adjunctive therapeutics to the mechanical treatment.

FC182

Subantimicrobial-Dose Doxycycline as Adjunctive Treatment for Periodontitis in Diabetics

Marwa Abdelhakim Gomaa[1], Hoda Mohamed El Guindy[2], Mohamed Abdallah Mahmoud[2], Enas Arafa El Zamrany[3]
[1]*Dental Department, Benha University Hospital, Benha University, Benha, Egypt,* [2]*Oral Medicine, Periodontology, Oral Diagnosis and Oral Radiology Department, Faculty of Dentistry, Tanta University, Tanta, Egypt,* [3]*Clinical Pathology Department, Faculty of Medicine, Tanta University, Tanta, Egypt*

Aim: To evaluate the effectiveness of adjunctive combination therapy of subantimicrobial-dose doxycycline (SDD) and locally delivered doxycycline (LD) in the treatment of chronic periodontitis in patients with type 2 diabetes mellitus (T2DM).
Materials and methods: Forty patients with a controlled T2DM and moderate chronic periodontitis were selected. They were randomly divided into four groups, ten patients each: Group (1) patients treated by full mouth scaling and root planing (SRP), LD gel 10% and SDD 20 mg bid for 6 months. Group (2) patients treated by full mouth SRP and LD gel 10%. Group (3) patients treated by full mouth SRP and SDD 20 mg bid for 6 months. Group (4) patients treated by full mouth SRP as a control group. Periodontal pocket depth (PPD), clinical attachment level (CAL), and bleeding on probing (BOP) were recorded at baseline, 3, 6 and 9 months. Gingival crevicular fluid (GCF) samples were collected and a quantitative measurement of matrix metalloproteinase-8 (MMP-8) was carried out by using Enzyme-Linked Immunosorbent Assay (ELIZA) at baseline, 3, 6 and 9 months.
Results: Significant reductions in clinical parameters (PPD, CAL, BOP), the amount of GCF MMP-8, were demonstrated at 3, 6, and 9 months evaluation period compared to the baseline for all study groups, with a significantly greater improvement for group (1) compared to other study groups.
Conclusion: Combination therapy including SRP, SDD, and LD, provided significantly greater clinical benefits than SRP alone in the treatment of chronic periodontitis in patients with T2DM.

FC183

Treatment of Periodontal Infrabony Defects with Demineralised Freeze Dried Bone Allograft Alone or in Combination with Platelet Rich Fibrin

Arundeep Kaur Lamba
Department of Periodontics, Maulana Azad Institute of Dental Sciences, New Delhi, India

Aim or purpose: Aim of the present randomized, double-masked, split mouth clinical trial was to compare clinical and radiographic outcomes obtained with the combination of platelet rich fibrin and

decalcified freeze dried bone allograft (PRF + DFDBA) to those obtained with DFDBA alone in infrabony periodontal defects.
Materials and methods: Twelve patients with chronic periodontitis and displaying bilateral infrabony defects with probing depth of ≥5 mm were treated with PRF + DFDBA on one side and DFDBA alone on the other side. The following clinical and radiographic parameters were evaluated at baseline and at 6 months after treatment: plaque index (PI), gingival index (GI), probing depth (PD), clinical attachment level (CAL), and bone fill (BF). The primary outcome variable was CAL.
Results: No statistically significant differences in any of the studied parameters were observed between the two groups at 6-month reevaluation. Healing was uneventful in all patients. Six months after therapy, the sites treated with PRF + DFDBA showed a reduction in mean PD from 8.50 ± 2.34 to 3.25 ± 1.06 mm and a change in mean CAL from 9.50 ± 2.714 to 4.42 ± 1.44 mm. In the group treated with DFDBA, mean PD was reduced from 8.17 ± 1.949 to 4.25 ± 0.754 mm, and the mean CAL changed from 8.92 ± 1.730 to 5.50 ± 0.90 mm. The mean bone fill for test site was 2.45 ± 1.31 mm and for control site it was 1.32 ± 0.70 mm.
Conclusion: Within its limits, the present study has shown that, at 6 months after regenerative therapy in periodontal infrabony defects, optimal clinical results were obtained with DFDBA with or without the addition of PRF.

Free Communication Session 30 | B342 | 29.08.2013 | 15:30–16:30

Theme: Implantology: Oral Surgery

FC184
Effect of Menstrual Cycle on Frequency of Alveolar Osteitis in Women Undergoing Surgical Removal of Mandibular Third Molars: a Single-Blind Randomized Clinical Trial
Majid Eshghpour[1], Naser Mohammadzadeh Rezaei[2], Amirhossein Nejat[3]
[1]*Department of Oral and Maxillofacial Surgery, Mashhad University of Medical Sciences, Mashhad, Iran,* [2]*General Dentist, Mashhad, Iran,* [3]*Student Research Committee, Mashhad University of Medical Sciences, Mashhad, Iran*

Purpose: To measure the association between the menstrual cycle and the frequency of alveolar osteitis (AO).
Methods: In a single-blind study, patients with bilateral impacted third molar teeth underwent randomized surgical extraction: one tooth during the menstruation period and the other in the middle of the cycle. Ethical Committee of Mashhad University of Medical Sciences approved the study protocol. The predictor variable was timing of the menstrual cycle (grouped as mid-cycle and menstruation period) and the outcome variable was AO. Other study variables included birth control pill (BCP) use, smoking status, irrigation during surgery, extraction difficulty, surgeon experience, number of local anesthetic(s) used, and age. Appropriate bi- and multivariate statistics were computed and the level of statistical significance was set at p-value < 0.05.
Results: A total of 145 patients, with a mean age of 24 years old, underwent 290 surgeries. The overall frequency of AO was 23.45%. The frequency of AO was significantly higher in the middle of the cycle compared to during the menstruation period in both BCP takers and non-takers (p-value < 0.05). Although BCP takers revealed a significantly higher frequency of AO in comparison to non-takers (p-value < 0.05), there were no statistically significant differences between the two groups during the menstruation period (p-value > 0.05).
Conclusion: Menstrual cycle could be a determinant risk factor in the frequency of AO. It is recommended that elective surgeries be performed during menstruation period (regardless of BCP-taking status) to eliminate effect of cycle-related hormonal changes on development of AO.

FC185
How Much Should the Dentist Know About Medical Conditions?
Awad Omran Ashekhi
Al-Zahra Hospitals

Introduction: This is clinical cases presentation, which will show how important it is for the dentist to know about the relation and the connection between dental and medical diseases.
Conclusions: The dentist must have enough solid medical knowledge to treat his patient safely and to avoid any serious problems or complications, which may be caused by lack of medical knowledge and procedure.

Theme: Implantology: Implantology

FC186
Cell- and Gene-Expression in Peri-Implant Soft Tissue During Dental Implant Healing
Stefan Schultze Mosgau, Stefanie Prinz
Department of Oral and Maxillofacial Surgery, University Hospital of Jena, Germany

Objectives: This study aimed at elucidating the influence of implant shoulder design and insertion protocol on peri-implant soft tissue healing.
Materials and methods: In 12 mini-pigs four dental implants were installed in each quadrant. According to the shoulder design of the implants pigs were assigned to three treatment groups: 1: rough, 0.4 mm shoulder; 2: smooth, 3 mm shoulder and 3: smooth, 0.4 mm shoulder. One quadrant was randomized to flapless insertion, while the other was chosen for conventional flap surgery in each animal. Biopsies were retrieved from the healing area 1, 2, 4, 12 weeks post surgery, analyzed for the expression of integrin α6β4chainβ4 and laminin5γ2, marker molecules of the implanto-epithelial junction. Samples were subjected to standard histology, leukocyte count, pangenomic gene expression analysis.
Results: Following exposure of the alveolar crest by the punch technique a significantly higher expression of ITGB4 was found at the 2 (p = 0.009), 4 (p = 0.001) as well as 12 week (p = 0.005) follow up. Furthermore, the expression of lamc2 was significantly higher following punch exposure after 1 (p = 0.033), 2

(p = 0.041), 3 (p = 0.004) as well as 12 weeks (p = 0.002) of transmucosal implant healing. A significant difference in leukocyte influx was detectable between flapless and flapsurgery. The microarray indicated reduced proliferation in flap surgery. Reduced inflammation was detectable for the implants with smooth, 0.4 mm shoulders.
Conclusions: Flapless surgery induces less inflammation and results in enhanced cellular proliferation and migration as compared with flap surgery. Regarding design the smooth, 0.4 mm shoulder should be preferred. Flapless placement improved the formation of a sufficient implanto-epithelial junction.

Theme: Dental Treatment and Restorative Dentistry: Esthetics

FC187
Placement and Replacement of Restorations in General Dental Practice
Svend Richter, Sigfus Thor Eliasson
Faculty of Odontology, University of Iceland, Reykjavik, Iceland

Aim: To study the restorative pattern in Icelandic general dental practice, the selection of restorative materials, the reason for placing restorations and compare it to reported results in 1983 and 2000.
Materials and methods: One hundred and ninety general dentists were invited to participate. They were asked to register patient's gender and age, clinician's gender and years in practice and information for placement and replacement of 100 restorations. Statistical significance was calculated in SPSS using chi-square analysis. The study was approved by The National Bioethics Committee.
Results: Ninety seven dentists (51.1%), 59 males and 38 females, registered information on 9.647 restorations, 48.9% in male and 51.1% in female patients with average age of the patients 36.5 years. 85.2% were composite restorations, 7.1% amalgams, 4.4% glass ionomers, 3.3% other materials and composite was the predominant material used for Class I (89.7%) and Class II (83.7%) while amalgam was used 3.3% in Class I and 10.6% in Class II and the use of amalgam was significantly more frequent ($p < 0.001$) in males (9.2%) than females (6.2%), but not in the use of composite (93.8% in female, 90.8 in male). Of primary restorations 82.1% were placed due to primary caries, 15.3% noncarious defects and for replacements which comprised 50.3% of all restorations, secondary caries was the main reason (45.6%), followed by marginal and bulk fractures (28.8%).
Conclusions: Composite is the most common restorative material used and primary and secondary caries is still the main reason for placing restorations as in 1983 and 2000.

FC188
Screening and Identifying Tooth Shade in Group of Sudanese Patients
Neamat Hassan Abu Bakr, Habab Osman Alamin, Yahia Eltayeb Ibrahim
Conservative Dentistry Division, Department of Oral Rehabilitation, Faculty of DentistryUniversity of Khartoum, Khartoum, Sudan

Objectives: The aim of the present investigation is to identify tooth shade and to correlate Classical tooth shade to age, gender and state of origin.
Methods: This observational descriptive cross-sectional study was conducted on patients attending the Faculty of Dentistry clinics at university of Khartoum. Total number of patients was 227. Participant's age, ranged from 15 to 72 years which, was divided into four groups. The tooth included in the study was either right or left sound maxillary central incisors. Vita Easyshade (Vident, Brea, CA, USA) was used to select the tooth shade. Investigation of the differences of CIELab coordinates among gender and state of origin was conducted together with examination of the relationship between CIELab coordinates and age. One-Way Analysis of Variance was used to test the differences in L*, a* and b* according to state of origin. All tests significance level was taken at level of p-value ≤ 0.05.
Results: Results showed that A3, A2 and A1 were the most common classical tooth shade respectively. There was highly significant difference in L* between males and females (p-value = 0.002). There was a significant relation between tooth shade and age (p = 0.026). There was a high significant association between Classical Tooth Shade and Sudan regions (p = 0.00).
Conclusions: In conclusion, most common classical shade was A3, women's teeth were lighter than men's. There was relation between ethnic background and tooth shade.
Keywords: Tooth shade, Aesthetics, CIELab.

Free Communication Session 31 | B343 | 29.08.2013 | 15:30–16:30

Theme: Dental Treatment and Restorative Dentistry: Prosthetics

FC189
The Effect of Liquid Polishing Materials on Stainability of Provisional Material
Umut Cakan, Haluk Baris Kara
İstanbul Medipol Üniversitesi Diş Hekimliği Fakültesi, Istanbul, Turkey

Purpose: The purpose of this study was to investigate the effect of liquid polishing materials on color stability of bis-acryl provisional material.
Materials and methods: Two liquid polishing materials, Biscover LV and G-Coat Plus, and one auto-cure bisacryl provisional material Acrytemp were tested. Ninety specimens (10 × 2 mm) were divided into three groups including, Group A, the control group with no liquid polishing material applied and groups B and C, the liquid polishing materials G-Coat Plus and BisCover LV were applied. The specimens were then divided into three subgroups (n = 10) and strored for 24 h at 37°C in different staining solutions: coffee, coffee with sugar and cola. Color of specimens was measured at baseline and after immersion with a spectrophotometer using CIE L*a*b* system, and color changes (ΔE) were calculated.
Results: The means of color change for each specimen were analyzed using a one-way ANOVA test and Bonferroni post-hoc comparison. Liquid polishing material was the most significant factor

for color change (F-value = 679.89), followed by the staining agent (F-value = 346.34). The application of liquid polishing materials significantly decreased staining of auto-cure bis-acryl provisional material where the difference between G-Coat Plus and BisCover LV was statistically insignificant ($p < 0.01$). When comparing the three staining solutions, coffee with sugar demonstrated higher ΔE values than coffee without sugar and cola respectively.

Conclusion: The use of liquid polishing materials significantly decreased staining when compared to bis-acryl specimens without liquid polish.

FC190

Comparison of Aging and Repair Methods on Composite-Zirconia Bonding

Gözde Çelik, Artur Ismatullaev, Tuğrul Sarı, Aslıhan Üşümez
Department of Prosthodontics, Bezmialem Vakif University, Istanbul, Turkey

Purpose: Intraoral repair of chipped veneering porcelain provides an option when the restoration cannot be removed and replaced. This in vitro study investigated the shear bond strength (SBS) of two porcelain repair methods to the zirconia ceramic after different aging methods.

Materials and methods: One hundred and twenty zirconia discs (InCeram Zirconia) were embedded in an acrylic resin base and polished under water-cooling. Sixty specimens received airborne-particle abrasion with 110 μm AL_2O_3. Sixty specimens had no airborne-particle abrasion. Each group was divided into two subgroups (n = 30). Two repair methods were applied to the subgroups. The first method was using a porcelain repair kit (Bisco), and the second method was using a silane (Single Bond Universal Adhesive) and a composite resin (Z100). Subgroups of ten specimens each, were stored in 37°C water for 1 week, or exposed to thermal or mechanical cycling. SBS tests were performed in a universal a testing machine. Three-way ANOVA was used to analyze the data. The Tukey HSD test was performed for multiple comparisons ($\alpha = 0.05$).

Results: The SBS between zirconia disc and repair composite was affected by repair and aging methods ($p < 0.05$). Among the groups, mechanically cycled, conventionally repaired group with no surface conditioning had the highest bond strength with a value of 29.8 MPa, while water-stored, repair kit group with no surface conditioning showed the lowest bond strength with a value of 7.84 MPa.

Conclusions: Thermocycling had a significantly negative effect on bond strength compared to storing in water or mechanical cycling. Surface conditioning is recommended when using repair kit.

FC191

Effects of Boron on the Cytotoxicity and Antiseptic Properties of PMMA

Ali Kemal Ozdemir[1], Hakan Akin[1], Hakan Demir[1], Faik Tugut[1], Derya Ozdemir Dogan[1], Zubeyde Akin Polat[2]
[1]*Department of Prosthodontics, Faculty of Dentistry, Cumhuriyet University, Sivas, Turkey,* [2]*CUTFAM Research Center, Faculty of Medicine, Cumhuriyet University, Sivas, Turkey*

Objectives: The objective of this study was to determine whether the addition of different types of boron (Colemanite, Borax, Boric Acid) to polymethylmethacrylate denture base resin (PMMA) would reduce bacterial and fungal adhesion on the surface of PMMA.

Materials and methods: Different types of boron were added to heat-cured PMMA in different ratios (1%, 2%, and 3%). Two hundred PMMA specimens were prepared for cytotoxicity test (5 × 1 mm) and assessment of bacterial and fungal growth (26 × 2 mm) according to the manufacturers' instructions (n = 10). Specimens were sterilized with ethylene oxide gas and then placed on to the L929 fibroblast cell culture. According to the 1999 ISO 10993-5 protocols, cytotoxicity were determined by means of agar overley test. In addition, antiseptic properties were assayed against ten reference strains (*Neisseria sicca*, *Streptococcus mutans*, *Klebsiella pneumonia*, *Bacillus subtilis*, *Streptococcus pyogenes*) and three laboratory strains (*Candida albicans*, *Lactobacillus acidophilus*, *Candida tropicalis*) standardized suspension.

Results: There was no cytotoxic effect in all Colemanite and boric acid groups. However, 2% and 3% Borax specimens revealed cytotoxic effects (mildly and moderately, respectively). Furthermore, there was significant difference in the number of bacterial and fungal colonies in all Colemanite groups. After 36 h, both Colemanite and Boric acid groups presented a statistically significant difference in the reduction of the number of bacterial and fungal colonies.

Conclusion: The addition of Colemanite and Boric acid to PMMA inhibited both bacterial and fungal growth on the surface of PMMA. It also proved that it did not alter cytotoxicity of the PMMA.

FC192

Compatibility of Hard Chairside Reline Resins and Denture Cleansers: Influence on Surface Roughness

Umut Cakan[1], Ozlem Kara[2], Haluk Baris Kara[1]
[1]*Faculty of Dentistry, İstanbul Medipol University, İstanbul,* [2]*Faculty of Dentistry, Selçuk University, Konya*

Statement of problem: Immersion in chemical solutions has been the most recommended method for denture disinfection. However, the effect of this method on the surface roughness of hard chairside reline resins has not been thoroughly investigated.

Purpose: The purpose of this study was to evaluate the effect of chemical disinfection on the surface roughness (Ra, μm) of two hard chairside reline resins (Ufigel Hard, New Truliner) and one heat polymerizing denture base resin (Meliodent).

Materials and methods: Specimens (10 × 2 mm) were divided into one control and four test groups (n = 10). Surface roughness measurements were performed before and after immersion in distilled water and four prepared different denture cleanser solutions 8 h for 14 days. Measurements (Ra, μm) were analyzed using Kruskal–Wallis and Wilcoxon Signed Ranks test ($p < 0.05$).
Results: Immersion in chemical solutions significantly increased the surface roughness of Ufigel Hard and Meliodent, regardless of the denture cleanser used. For New Truliner, an significant increase in roughness was observed whereas effect of immersion in sodium perborate solutions was significantly higher when compared to acid type cleanser and distilled water.
Conclusions: Immersion in chemical solutions did affect the surface roughness of all materials evaluated. For New Truliner, the effect of denture cleansers on the surface roughness varied among materials.
Clinical implications: This study suggests that immersion in denture cleanser solutions affect the surface roughness of denture base and hard chairside reline resins. However, the effect of different cleansers on surface roughness may be variable.

FC193
The Prosthetic Rehabilitation of a Patient with Down Syndrome
Teuta Pustina-krasniqi, Kujtim Shala, Gloria Staka, Teuta Bicaj, Enis Ahmedi, Linda Dula, Zana Lila Krasniqi
Prosthetic Dentistry, Dentistry Branch, Medical Faculty, University of Prishtina

Aim: Aim of this case report was to present the difficult approach on treating patient with Down Syndrom, selecting the most conservative prosthetic protocol.
Materials and methods: The dental manifestation that we have inspected were: development of gingivitis, the underdevelopment of the maxilla, incomplete development of the midface complex, soft hypotonicity of muscles, extracted teeth that contributed to malocclusion, scalloped, fissured tongue. A smaller maxilla contributed to an malocclusion, leading to poor positioning of teeth. Present teeth were as follows: days 17, 15, 13, 21, 22 and 26. After analyzing X-ray panoramic (OPG), clinical examination and study models, we came to the treatment plan, as follows: an overdenture in the upper jaw anchored on the remaining teeth and removable partial denture (RPD) in the lower jaw. The simple procedures for making overdenture and RPD with framework were used.
Discussion: The overdenture was chosen as a treatment alternative to overcome a smaller maxilla that contributed to a negative overbite and overjet.

We can suggest what people with Down syndrome have no unique health problems, an so far we should be careful on selecting the most conservative and appropriate treatment protocol. At the end of therapy, it was patient satisfaction that matters the most.

Free Communication Session 32 | B360 | 29.08.2013 | 15:30–16:30

Theme: Dental Treatment and Restorative Dentistry: Endodontics

FC194
Efficacy of Platelet-Rich-Fibrin and Mineral-Trioxide-Aggregate in Pulpotomy of Decayed Permanent Teeth with and without Low-Level-Laser-Therapy: A Clinical Trial
Fayaz Ahmed Ahangar[1], Riyaz Farooq Shah[1], Aamir Rashid Purra[1], Mohammed Imran Kaiser[2]
[1]*Department of Conservative Dentistry & Endodontics, Govt Dental College & Hospital, Srinagar, India,* [2]*Department of Conservative Dentistry & Endodontics, Bapuji Dental College & Hospital, Davangere, India*

Aim: Low-level-laser therapy (LLLT) has been reported to be responsible for promoting photostimulatory and photobiomodulatory effects in-vivo and in-vitro, stimulating cell growth, increasing cell metabolism, improving cell regeneration and invoking an anti-inflammatory response. The aim of this study was to compare the clinical and radiographic efficacy of platelet rich fibrin (PRF) and mineral trioxide aggregate (MTA) as pulpotomy medicament on pulpally exposed decayed permanent teeth with and without LLLT having observation periods of 1, 3, 6 and 12 months.
Materials and methods: A clinical trial was performed in which a total number of 90 patients were treated and divided randomly into two groups. In Group-A, teeth were treated by placing PRF and MTA as pulpotomy medicaments and in Group-B, teeth were irradiated with magneto-infra-red low-level-laser (MiltaLED/PhysioQuanta, France; 400–850 nm, 50 mT at 300 mW/cm^2) for 3 min prior to the placement of PRF and MTA. All teeth were finally restored with GIC. The outcome variables considered were pain, tenderness, pulp test response, mobility, exudation, periodontal ligament space, tubercular bone pattern and pulp canal space. The appearance of any of these signs or symptoms was considered to be a failure of treatment.
Results: The results were favorable in case of Group-B as compared to Group-A in all the outcome variables. A t-test showed a statistically significant difference ($p < 0.05$) between the study groups.
Conclusion: Within the limitations of this study, the technique used for pulpotomy on decayed pulpally exposed permanent teeth is recommended on the basis of the obtained clinical and radiographic results.

FC195
Morphometric of Upper First Premolar Among Different Ethnic Groups in Klang Valley, Malaysia
Normaliza Ab Malik, Hanisah Hamdan, Amelia Farhana Mohd Hanafiah
Faculty of Dentistry, Universiti Sains Islam Malaysia, Malaysia

Aim: The objective of this research is to study the morphometric of upper first premolar among different ethnic groups in Klang Valley, Malaysia.

Materials and methods: A total of 59 samples of upper first premolar had been collected from randomly selected dental clinics in Klang Valley. Each tooth was cleaned and measured for tooth length and mesiodistal width dimension with a digital caliper. Number of roots, furcation area and inclination of the roots were observed.
Results: This study found that the mean length for one-rooted was 21.12 mm (SD ± 1.66), for teeth that has two rooted, the mean length was 20.92 mm (SD ± 1.86) for buccal root and 20.41 mm (SD ± 1.72) for palatal root. For three rooted, mesiobuccal root length was 19.77 mm (SD ± 3.35), distobuccal length was 19.92 mm (SD ± 1.67), and palatal length was 20.69 mm (SD ± 1.13). The study showed that the number of teeth that has one root were 61%; 35.6% were two rooted, and 3.4% were three rooted. The mean mesiodistal width was 7.59 mm (SD ± 0.39). The furcation area were observed to be located at coronal third (3.4%), middle third (10.2%), apical third (25.4%). The root inclination was observed as no inclination (25.4%), inclination towards mesial (8.5%), inclination towards distal (62.7%). There is a negative correlation ($p > 0.05$) of tooth length, number of root, mesiodistal width, furcation area, root inclination between races.
Conclusion: Morphometric of upper first premolar are variable. However there is no statistical significant relationship of morphometric of upper first premolar between races in this study.

FC196

Multidisciplinary Approach to a Complicated Crown-Root Fracture: A Case Report

İsmail Davut Çapar[1], Tuba Gök[1], Sema Belli[2]
[1]*Department of Endodontics, Faculty of Dentistry, İzmir Katip Celebi University, İzmir, Turkey,* [2]*Department of Endodontics, Faculty of Dentistry, Selcuk University, Konya, Turkey*

Objectives: The purpose of this 3 years follow up report is to present treatment of a complicated crown-root fracture with conservative restoration techniques and re-treatment under periodontal surgery after failure.
Case: A 30 year-old patient was consulted for fractured left maxillary central incisor. Clinic and radiographic examination revealed that her maxillary left central incisor had a crown-root fracture with pulp exposure, although the fractured segment remained in place. The fractured segment was removed and the root canal was filled with gutta-percha and resin sealer using lateral condensation technique. Then, the fractured segment was placed in its original position and reattached with a bondable glass fiber-reinforced post. After 15 months clinical and radiographic examinations revealed detachment of fragments, discoloration of treated tooth and radiolucency close to fracture line of the root. Periodontal surgery was performed and voids causing coronal leakage were restored using composite resin. At 3 years, clinic and radiographic examinations showed satisfactory esthetic and functional outcome.
Conclusion: Nonsurgical treatment of complicated crown root fractures with subgingivally fracture line might result in failure. Thus complicated crown root fractures should be reconsidered with respect to the multidisciplinary approach.

FC197

New Root Canal Sealer Based on Calcium Silicate – Chitosan

Raid Fahim Salman, Dara Hamarasheed Saeed, Bassam Karim Amin
Department of Conservative Dentistry, Dental College, Hawler Medical University, Erbil, Iraq

Objective: The aim of this study was to develop new root canal sealer and test it in vitro for leakage and solubility studies.
Method: Calcium silicate had been prepared from different traces of pure powders of different constituents and 2% of chitosan powder was added to the final preparation to be mixed with distilled water. ADA specification for root canal sealer was applied to this preparation and it was passed the requirements. Thirty extracted human adult straight single-canaled palatal separated roots of maxillary 1st molar teeth were collected. The length of the teeth was measured using digital vernier caliper from the tip to the apex of the roots. The roots were instrumented and obturated with either thermafil gutta-percha with AH plus sealer (15 in no.) or with experimental material (15 in no.). Bacterial micro-leakage using two chambers model was executed later on. Solubility test was done using ADA specification standardized models with 15 specimens in no. for the experimental material for 24 h, 3 and 7 days.
Result: The experimental material had higher mean values over the control material that the root canal contaminated within 17 days. However, there was non-significant difference between these materials at $p = 0.462$. The experimental material had solubility percentage values within 2% of the original set material and this comply with the ADA specifications.
Conclusion: A new root canal sealer material was prepared and passed the ADA specifications. Bacterial micro-leakage and solubility studies revealed that the experimental material had comparable results with the control material.

FC198

Microleakage of Root Canals Treated with Laser, PDT and NaOCl

Tzvetelina Gueorgieva Gueorgieva[1], Mariya Garova Dencheva[2], Vasil Petrov Kalchinov[1], Julia Emilova Kamenova[3]
[1]*Department of Conservative Dentistry, Sofia, Bulgaria,*
[2]*Department Oral and Imaging Diagnostics, Sofia, Bulgaria,*
[3]*Department of Prosthetic Dentistry, Sofia, Bulgaria*

Introduction: It is necessary apical part of root canals to be very good hermetically sealed to prevent the passage of bacteria and endotoxins to the peri-radicular tissues. The use of lasers and photoactivated disinfection in endodontic treatment may cause morphological changes in the dentin of the root canal.
Aim: The purpose was to compare the degree of hermetic obturation of root canals after endodontic treatment and disinfection with Nd:YAG laser, PDT with Fotosan, NaOCL 2.5% + EDTA 17% and filled with AH 26 sealer and gutta-percha.
Materials and methods: We used 30 freshly extracted single rooted teeth. All teeth are prepared with K3 – endodontic files and

divided into three groups, depending on the mode of additional disinfection: I-group– PDT with Fotosan; II-group –Nd:YAG laser; III-group –2.5% NaOCl and 17% EDTA. The teeth are filled with gutta-percha and AH26 sealer by warm condensation. After that the teeth are isolated with nail varnish, leaving free apical 5 mm. To establish a hermetic obturation of the root canals, teeth are cut longitudinally with a microtome and observed under a microscope.

Results: Microleakage was observed in all studied groups. Least leakage was at group no. I and III, and the most leakage in a group no. II.

Conclusion: The application of PDT with Fotosan does not lead to increase in root canal microleakage and can be safely used in endodontic treatment. After application of Nd:YAG laser is appropriate to rinse the root canal with a solution of 17% EDTA to elimination the smear layer.

POSTERS SESSION 02 (P210–P418)

Theme: Dental Treatment & Restorative Dentistry: Caries

P210

The Prevalence of White Spot Lesions After Using Glassionomer Cement and Composite in Fixed Orthodontic Appliances

Etleva Qeli[1], Dorjan Hysi[1], Celjana Toti[1], Elizana Petrela[2], Ina Droboniku[3]

[1]Faculty of Dental Medicine, University of Medical Science, Tirana, Albania, [2]Faculty of Public Health, University of Medical Science, Tirane, Albania, [3]Droboniku Dental Clinic

Aim: The aim of the study was to evaluate the white spot lesions prevalence after using glassinomer cement (GIC) and lutting composite (CR) for bonding brackets and bands of fixed orthodontic appliances.

Material and method: Sample size was 38 patients age group 12–18 years old. The patients were treated in an orthodontic specialized clinic. The patients received full brackets therapy.

Written permission was received by parents.

The total of examined surfaces was 912. In 22 patients brackets and bands were bonded with glassionomer cement, total of surfaces bonded with GIC n = 528.

In 16 patients brackets and bands were bonded with composite, total of surfaces n = 384. There was no professional fluoridation treatment planned for both groups. The final examination was done after 24 months.

Results: At baseline the prevalence of white spot lesions was 7.9% (n = 72) for the 38 patients.

At debonding after 24 months, the prevalence of white spot lesions of the surfaces bonded with GIC was 17.6% (n = 93) significantly lower than 30.7% bonded with CR ($p \leq 0.05$).

No difference regarding gender was observed.

Statistical analyses: The discrete variables were presented in absolute number and percentages. Chi-square test was used to analyse the differences between proportions. The statistical analyses was performed using SPSS 19.0. A p-value ≤ 5%was considered significant.

Conclusion: The presence of white spot lesions is more frequent in surfaces bonded with CR compared with surfaces bonded with GIC.

P211

Nd: Yag Laser in the Therapy of Hypersensitivity Teeth: Clinical Evaluation

Ivona Kovachevska[1], Cena Dimova[1], Zlatko Georgiev[2], Marjan Denkovski[3], Mihaijlo Petrovski[1]

[1]Dentistry, Faculty of Medical Science, University "Goce Delčev" Štip, [2]Faculty of Dentistry, University "Kiril and Metodij" Skopje, [3]Private Dental Clinic: d-r Marijan Denkovski

Aim: The aim of this study was to evaluate the clinical effectiveness of Nd: YAG laser in the therapy of hypersensitive teeth.

Material and methods: The study consisted 43 individuals of both sexes at the age 26–54. Out of all 58 teeth with diagnosis of hypersensitivity – 48 teeth were at the teeth necks and 10 of them at the occlussal surface. Nd:YAG laser irradiation was used with adequate treatment protocol in three visits depending of the subjective symptomatology. Laser irradiation was applied on the teeth's gingival third with the fiber optic hand piece. The distance between the fiber and the target tissue was 1.5 mm, the whole neck surface of the teeth was exposed with slow motions in a period of 60 s and the procedure was repeated three times per session.

Results: The results of this clinical evaluation showed that Nd: YAG laser has a significant and quicker clinical effect in reducing the dentine hypersensitivity. The rate of success was 100% after the first session at the patients with occlusal surface hypersensitivity. Most of the patients had second visit to respect the appointment, not for second session of the therapy. Necessity for a third laser irradiation was found in only three cases.

Conclusions: The Nd: YAG laser is a suitable tool for immediate successful reduction of dentinal hypersensitivity and has better patient satisfaction, shorter treatment-time, and lower rates of pain. Positive clinical effects recommended laser as a new technology in everyday clinical practice.

P212

Clinical Performans of Atraumatic Restorative Treatment: Clinical Follow-Up and SEM Study

Meltem Tekbaş Atay[1], Fatma Koray[2]

[1]Department of Restorative Dentistry, Trakya University, Edirne, Turkey, [2]Istanbul, Turkey

Aim: The purpose of this in vivo and in vitro study was to investigate the clinical performance of atraumatic restorative treatment (ART) on the molar tooth of the adults according to the modified criteria of United States Public Health Servise (USPHS) by clinical examination of the teeth and scanning electron microscopy (SEM) on the replicas of the restored teeth.

Materials and methods: Nineteen to 35 years old 25 volunteers at high caries risk were involved in the study (Approved by the ethics committee of Istanbul University on the 23/05/2007 with Protocol Number 2007/808). ART were performed under the field

conditions. After the soft layers of the caries dentin were removed using excavators cavities were filled with glass ionomer cement (Ketac^{TM} Molar Easymix, 3M ESPE). At the first week and sixth month after the treatment, clinical performances in retention, marginal adaptation, caries and postoperative sensitivity of ART restorations were assessed according to USPHS criteria. Additionally, gaps on the taken replicas were studied using SEM. Mc-Nemar, Qi-Square and Wilcoxon Signed Rank test were used for the statistical analysis. Statistical significance was evaluated at the $p < 0.05$.

Results: At the end of sixth month, marginal adaptation of ART restorations exhibited a poor performance compared with that of the baseline ($p < 0.01$); however, there were no totally or partially loss of restorations, caries development, postoperative sensitivity and pulpitis ($p > 0.05$). SEM examination also showed an 8.9% increase in the frequency of marginal gaps ($p < 0.01$).

Conclusion: ART is reliable method in dental clinic over a 6 month period.

Theme: Dental Treatment & Restorative Dentistry: Endodontics

P213

Antimicrobial Efficiency of Photodynamic Therapy with Different Irradiation Durations

Aslıhan Usumez[1], Cihan Yildirim[2], Emine Sirin Karaaslan[3], Semih Ozsevik[3], Yasemin Zer[4], Tugrul Sari[1]

[1]Department of Prosthodontics, Bezmialem Vakif University, Istanbul, Turkey, [2]Department of Endodontics, Gaziantep University, Gaziantep, Turkey, [3]Department of Operative Dentistry, Gaziantep University, Gaziantep, Turkey, [4]Department of Microbiology, Gaziantep University, Gaziantep, Turkey

Aim: Photodynamic therapy (PDT) has been introduced as an alternative disinfection method in order to overcome the limitations and potential complications of conventional root canal disinfection methods. This study aims to evaluate the antimicrobial efficiency of PDT and the effect of different irradiation durations on the antimicrobial efficiency of PDT.

Materials and methods: Sixty freshly extracted human teeth with single root were decoronated and distributed into five groups. Root canals were instrumented and irrigated with sodium hypochlorite, ethylenediamine-tetraacetic acid and saline solution during instrumentation and then autoclaved. All of the roots were inoculated with *Enterococcus faecalis* suspension and brain heart infusion broth and stored for 21 days to allow biofilm formation. Control group received no treatment. Group 1 was treated with 5% NaOCl solution. Group 2, 3, and 4 were treated with methylene-blue photosensitizer and 660 nm diode laser irradiation for 1, 2 and 4 min in following order. Microbiological data about the load of microorganisms were collected before and after disinfection procedures and analyzed with Wilcoxon ranged test, Kruskal–Wallis test and Dunn test.

Results: The load of microorganisms in the control group was increased. The lowest reduction of the load of microorganisms was observed in the "1 min irradiation" group (Group 2 = 99.8%) which was very close to the results of other experimental groups (99.9%). There were no significant differences among the groups.

Conclusions: PDT is as effective as conventional 5% NaOCl irrigation with regard to antimicrobial efficiency against *Enterococcus faecalis*.

P214

Management of Extruded Maxillary Incisors: Case Report

Sibel Koçak, Neslihan Yılmaz

Department of Endodontics, Faculty of Dentistry, Bulent Ecevit University

Aim: To present a successful treatment of extruded maxillary incisor teeth.

Materials and methods: A 22-year-old male patient reffered to our clinic as a result of traumatic injury after a bicycle accident. The patient refered to the clinic 1 day after the accident. Panoramic and periapical radiographs were taken. During the intraoral examination, it was seen that the maxillary right central and lateral incisors were extruded. Following the local anesthesia, both teeth were carefully repositioned with finger compression. The teeth were splinted with orthodontic wire and composite. Root canal treatment was initiated after 15 days. Calcium hydroxide was placed as root canal medicament and was changed every 7 days for 2 weeks. The root canal treatment was completed with guttapercha and root canal sealer. The patient was recalled for control after 3, 6 and 12 months.

Results: In clinical examination both teeth were symptom-free and in radiographic assessment, no resorption was observed on the root surfaces of both teeth.

P215

Pulp/Tooth Ratio in the Estimation of Age: A Study on Mandibular Premolars

Amitha Juanita Lewis

Department of Oral Pathology and Microbiology, Manipal College of Dental Sciences, Mangalore, Manipal University, Mangalore, Karnataka, India

Aim: The aim of the study was to use the radiographic method of age estimation by Cameriere et al. technique using pulp/tooth ratio of mandibular premolars on an Indian sample and derive population-specific equations for a more accurate estimation of age.

Materials and methods: This retrospective study was carried out using 200 orthopantomograms of patients (age between 20 and 70 years) of Indian origin from the records of Manipal College of Dental Sciences, Mangalore. Approval from the institutional ethics committee was obtained prior to commencing the study. The orthopantomograms were digitized with a scanner, and the images recorded on computer files. Following the technique proposed by Cameriere et al. the radiographic images were saved as high resolution JPEG files and imported to Photoshop Image processing software and Image J (NIH USA). The focus of the study was the mandibular first and second premolar. A lasso tool was used to delineate the external perimeter of the tooth as well as the pulpal perimeter and two variables obtained. Intra-observer variability was examined with a random sample of 25 orthopantomograms.

Linear regression equations were derived for predicting the age of the individuals separately for each gender.
Results: The pulp/tooth area ratio of lower premolar was seen to decrease significantly with age. Multiple regression equations were derived based on age as the dependent variable and the tooth/pulp ratios as predictors.
Conclusion: Thus, the pulp/tooth ratio is a valuable method in the estimation of age of subjects of Indian origin.

P216

Effects of Different Irrigating Solutions and Disinfection Methods on Push-Out Bond Strengths of Fiber Posts to Root Dentin

Hüseyin Ertaş
Department of Endodontics, Izmir Katip Celebi University, Izmir, Turkey

Aim: The aim of this study was to evaluate the effects of various irrigating solutions and photoactivated disinfection (PAD) on the push-out bond strengths of fiber posts to root dentin.
Methods: Thirty-two human teeth were divided into eight groups, as follows: (i) irrigation with physiologic saline (control), (ii) NaOCl irrigation, (iii) chlorhexidine (CHX) irrigation, (iv) ethanol (EtOH) irrigation, (v) NaOCl followed by 17% EDTA irrigation, (vi) NaOCl-EDTA supplemented with CHX irrigation, (vii) NaOCl-EDTA supplemented with EtOH irrigation, and (viii) NaOCl-EDTA irrigation supplemented with PAD. After the posts were cemented, the roots were transversally sectioned to obtain four slices (1 mm thick) (n = 16). Push-out tests were conducted by applying a load at 0.5 mm/min, types of fracture failures were recorded, and data were analyzed with one-way ANOVA and Tukey post hoc tests ($p = 0.05$).
Results: Push-out bond strength was significantly affected by the type of irrigating solution and the disinfection protocol ($p < 0.05$). The bond strength of the EtOH, NaOCl, and NaOCl-EDTA-CHX irrigated groups was significantly higher than that of the other groups. The highest bond strength was observed in the EtOH irrigated group, and the lowest was the NaOCl-EDTA irrigated group.
Conclusions: Irrigation with NaOCl and EDTA combined caused lower bond strength than observed in the control group. However, supplementing this combination with CHX improved the post-dentin bond strengths; supplementing with PAD did not.

P217

Efficacy of Self-Adjusting File and Passive Ultrasonic Irrigation on Removing Calcium Hydroxide from the Root Canals

Fuat Ahmetoğlu[1], Neslihan Şimşek[1], Ali Keleş[1], Mevlüt Sinan Ocak[1], Kürşat Er[2]
[1]*Department of Endodontics, Faculty of Dentistry, Inonu University, Malatya, Turkey,* [2]*Department of Endodontics, Faculty of Dentistry, Akdeniz University, Antalya, Turkey*

Aim: The aim of this study was to evaluate the efficiencies of the self-adjusting file (SAF) system and passive ultrasonic irrigation (PUI) in the removal of calcium hydroxide (CH) from the root canals.
Material and methods: Thirty-six mandibular premolar teeth were used. Root canals were instrumented with the Revo-S rotary files. The canals were then filled with a premixed CH preparation. Specimens were randomly assigned to two experimental groups according to the CH removal technique: SAF system (n = 15) and PUI (n = 15). The remaining specimens served as positive (n = 3) and negative (n = 3) controls. The specimens were then evaluated with SEM analysis and scored. Data was analyzed with Kruskal–Wallis and Mann–Whitney *U*-tests.
Results: Residues of CH were found in all experimental groups. There was statistically significant differences in the results for removal of the CH among the groups ($p < 0.05$). Group 2 (PUI Group) was superior to the Group 1 (SAF Group) in all the thirds of the canal ($p < 0.05$). Intragroup differences in all the thirds of the canal were not statistically different in two experimental groups. Intergroup differences in all the thirds of the canal were statistically different in two experimental groups ($p < 0.05$). Positive control teeth in all groups showed densely packed remnants in all thirds as opposed to the negative control.
Conclusion: According to the findings of this study, none of the techniques removed the CH completely. But, PUI technique was significantly more effective than SAF system.

P218

Healing of a Wide Periapical Lesion Using Calcium Hydroxide. A Follow Up Using CBCT

Gülsüm Çarkcı, Hatice Kübra Altınoluk
Department of Endodontics, Bezmialem Vakıf University, Istanbul, Turkey

Aim: Calcium hydroxide [Ca(OH)2] is widely used as short- or long-term intracanal antibacterial dressing material during endodontic treatment. This case report demonstrates application of [Ca(OH)2] as a long-term medication in the canals of a posterior tooth with a wide periapical lesion.
Case: A 42 years old female patient history had referred to the Department of Endodontology, Bezmialem University, Turkey. Her chief complaint was the contuined pain in the right side of her maxilla, during the past 1 year. The patient indicated that her pain started after renewal of her maxiller first molar tooth filling. Root canal treatment was implemented according to her pain but the pain didn't stop. The fourth canal was found while retreatment. When she came, four root canal fillings of the patient's tooth had been removed and there were broken files in the mesiobuccal and palatinal canals. A fistula had been occurred and there was pus coming from the canals. We applied [Ca(OH)2] in the canals for short and then long term.
Conclusion: Obturation has been done after we observed healing of the lesion. The stages of the treatment has been documented by using CBCT.

P219

The Necessity of Three Dimensional Imaging: A Case Report

İsmail Özkoçak[1], Evrim Meriç Altun[2], Fatma Aytaç[3], Nihat Akbulut[4]

[1]Department of Endodontics, University of Gaziosmanpasa, Tokat, Turkey, [2]Department of Endodontics, University of Ankara, Ankara, Turkey, [3]Department of Restorative Dentistry, University of Gaziosmanpasa, Tokat, Turkey, [4]Department of Oral and Maxillofacial Surgery, University of Gaziosmanpasa, Tokat, Turkey

Aim: To present a clinical case of superposition of granülation tissue in the middle third level of root canal and role in the evaluation of endodontic treatment.

Summary: A 20 year old male was referred to the department with strong pain in the upper right lateral incisor. On the clinical examination; the tooth was found have caries and dens invaginatus and also have high vertical and horizontal percussion sensitivity. The patient was being treated orthodontic teraphy. On the radiological examination irregularity was determined in the root canal. Canal preparations were completed in the first appointment, and calcium hydroxide dressing were performed to root canals for 2 weeks. Then, the root canal was filled with AH Plus and gutta-percha. Root canal preparation and filling were repeated for three times because of irregularity in root canal taken radiography. After final canal filling decided to performing apical endodontic surgery because of the radiolucency at the middle third. At the surgical appointment buccal bone deffect and granülation tissue determined in the middle third level of root canal. The granülation tissue removed by using surgical curette carefully. There was no perforation or resorption on the root canal surface. The patient was called routine controls. After 2 years from treatments the tooth was healthy.

Conclusion: Superposition of the granülation tissue on the middle third level of root canal confused and made the clinican thougth that there was a pathology in the root canal. In such cases the use of computerized tomography could be a good method.

P220

Treatment of Large Cyst-Like Periapical Lesion: A Case Report

Begüm Büşra Özkoçak[1], İsmail Özkoçak[2], Fatma Aytaç[3]

[1]Department of Oral Diagnosis and Radiology, University of Gaziosmanpasa, Tokat, Turkey, [2]Department of Endodontics, University of Gaziosmanpasa, Tokat, Turkey, [3]Department of Restorative Dentistry, University of Gaziosmanpasa, Tokat, Turkey

Aim: To present clinical results of nonsurgical root canal treatment of large cyst-like periapical lesion.

Case: A 45-year old female was referred to the our department with strong pain in the upper right lateral incisor and a feeling of swelling in the face of her. On the clinical examination; we determinated light color change, old composite restorations on the tooth and a sinus on buccal gingiva. There was moderate vertical and horizontal percussion sensitivity. On the radiological examination inadequate root canal filling and wide periapical pathosis reaching middle third of root canal found. In the first appointment inadequate root canal filling was removed and in the second appointment root canal preparation was repeated. The root canal was dresssed six times in 3 days apart because of pus flowing through the canal. For each season different root canal irrigants were used. Then calcium hydroxide dressing were performed to root canal. During the application a liquid crystalline began to flow by pressure. Therefore cavity didn't sealed for a day. Calcium hydroxide dressing were performed to root canal three times intervals 2 weeks. When the root canal was dry root canal filling had been performed by using AH Plus root canal sealer and gutta-percha. Restoration of tooth were made with composite resin. The patient was called periodic controls. After 6 years from treatment the tooth was healthy and functional.

Conclusion: Large cyst-like periapical lesions can heal by using calcium hydroxide dressing without performing apical surgery.

P221

Clinical Management of an Infected Immature Tooth with Dens Invaginatus – A Case Report

Işıl Kaya Büyükbayram[1], Emre Aytugar[2], Şerife Özalp[3]

[1]Endodontist, Acıbadem Hospital, Istanbul, Turkey, [2]Department of Oral Diagnosis and Radiology, Faculty of Dentistry, Bezmialem University, Istanbul, Turkey, [3]Department of Pedodontics, Faculty of Dentistry, Bezmialem University, Istanbul, Turkey

Aim: To present the regenerative endodontic treatment of a necrotic immature tooth with dens invaginatus and its 1-year follow.

Case: A 9-years-old female was referred to Acibadem Hospital with a complaint of pain on her maxillary right lateral incisor. She suffered from swelling associated with the tooth. A diagnosis of dens invaginatus (Oehler's type III) with pulp necrosis and chronic apical periodontitis was established. CBCT was taken to see the three dimensional images of this complex endodontic condition.

With local anaesthesia, endodontic access was performed. A single canal orifice was revealed. The root canal was so thin and instrumented up to 25 h- files and irrigated with 2.5% sodium hypochlorite solution. Then the tooth was medicated with calcium hydroxide paste. In 3 weeks' time, tooth was still symptomatic. Then tri-antibiotic paste (mixing of 250 mg ciprofloxacin, 250 mg of metronidazole and 250 mg Minocycline with sterile water) was applied into the canal. One month later tooth was asymptomatic. Regenerative process was initiated; removal of tri-antibiotic paste followed by stimulation of haemorrhage clot formation and MTA placement. At the same appointment final composite restoration was placed.

Results: The clinical examination in the 6th and 12th months showed no clinical signs of pathology. Radiographic examination revealed complete healing of periapical lesion but apex was not formed yet.

Conclusions: It is important that dentists recognize the potential of regenerative endodontics in the treatment of necrotic immature teeth.

P222

Push-Out Bond Strenght of New Calcium Silicate Based Materials and MTA in Simulated Furcation Perforations

Ceren Feriha Uzuntaş, Berkan Çelikten, Derya Özen, Semra Sevimay
Department of Endodontics, Ankara University, Ankara, Turkey

Material and methods: In this study, freshly extracted single-rooted human 60 canine teeth were used. The crown of each tooth was sectioned at the cemento-enamel junction using a water-cooled diamond disk and the midroot dentin was sectioned horizontally into slices with a thickness of 1.0 mm by using a water-cooled IsoMet diamond saw. In each slice was made a perforation model, the existing canal space of the dentin slice was instrumented with Gates Glidden burs no. 2 through no. 5 to a diameter of 1.3 mm. Then, the root sections were randomly divided into three groups ($n = 20$), and the following test materials were used: Group 1: Mineral trioxide aggregate (MTA, ProRoot; Dentsply Tulsa Dental, Tulsa, OK), Group 2: Endosequence root repair material putty (ERRMP, Brasseler USA, Savannah, GA), Group 3: Biodentine (Septodont, Saint-Maurdes Fosses, France) These test materials were inserted into the prepared root canal specimens by using an appropriate root canal condenser. Subsequently, the samples were wrapped in wet gauze, placed in an incubator, and allowed to set for 10 min. After incubation, the samples were immersed into 30 min 5.25% NaOCl. Then all samples were rinsed with distilled water and then allowed to set for 48 h at 37°C with 100% humidity in an incubator.
Results: Statistical Analysis indicated that the push-out bond strenght values were significantly affected by between MTA and ERRMP, between MTA and Biodentine ($p < 0.05$). ERRMP and Biodentine which were significantly higher bond strength values than MTA ($p < 0.05$). whereas no significant difference was detected between ERRMP and Biodentine ($p > 0.05$).

P223

Antimicrobial Efficacy of Diod and Nd:YAGG Lasers in Root Canals

Parla Meva Gerni[1], Banu Uygun Can[2], Tanju Kadir[2], Mahir Günday[1]
[1]*Department of Endodontics, Faculty of Dentistry, Marmara University, Istanbul, Turkey,* [2]*Department of Microbiology, Faculty of Dentistry, Marmara University, Istanbul, Turkey*

Aim: The aim of this study is to evaluate the addictive effect of Diod and Nd:YAGG laser on the antibacterial activity of 2.5% NaOCl against contaminated root canals with *Candida albicans*.
Materials and methods: This study was approved by the Research Ethics Committee of Marmara University, Istanbul, Turkey. Root canals of 30 human extracted teeth with single straight canals were used for this in vitro study. After preparation and sterilization, the specimens were inoculated with Candida albicans for 7 days at 37°C. The contaminated roots were divided into three experimental groups. In group 1, 10 teeth were irrigated with 5 ml 2.5% NaOCl for 2 min. In group 2, after %2.5 NaOCl irrigation, Diod laser at 1W output was performed for 4 × 10 s. In group 3, Nd:YAGG laser at 1.5 W output was performed for 4 × 10 s after irrigation with NaOCl. Intracanal sampling was done with paper points and the samples were plated to determine the CFU (colony forming units) count before and after disinfection procedure. Data were analyzed statistically using Kruskal–Wallis and Mann–Whitney *U*-tests.
Results: There was a significant reduction in the bacterial population after all treatments ($p < 0.01$). Group 3 had the lowest number of remaining microorganisms, and followed by group 2 and group 1. There was no statistical difference among the groups.
Conclusion: Both laser systems have a significant bactericidal effect when combined with 2.5% NaOCl irrigation in infected root canals. Nd:YAGG and Diod lasers might be possible supplements to existing protocols for root canal disinfection.

P224

Effect of Moisture on Push-Out Bond Strength of Resin and mta Based Sealers

Ali Erdemir[1], Ayce Unverdi Eldeniz[2], Merve Ozguven[1], Sefika Nur Akyuz[1], Ali Turkyilmaz[1]
[1]*Department of Endodontics, Kirikkale University, Kirikkale, Turkey,* [2]*Department of Endodontics, Selcuk University, Konya, Turkey*

Aim: The aim of this study was to evaluate the effect of moisture on push-out bond strength of two resin and mta based root canal sealers.
Material and methods: Thirty six mandibular premolars were used in this study. The crowns were removed and the root canals were prepared using ProTaper Rotary instruments. Smear layers were removed using passive ultrasonic technique. The root canals were randomly assigned to three experimental groups with respect to the moisture condition tested: (i) dehydration with 95% ethanol for 20 s and dried with four ProTaper paper points, (ii) dried with four ProTaper paper points, (iii) dried with only one ProTaper paper point. The root canals were further divided into four subgroups according to the sealers used and obturated with AH Plus, EndoRez, MTA Fillapex, iRoot SP. The specimens were transversally sectioned from coronal to apical. Push-out tests were performed and data were analyzed by using two way analysis of variance and Tukey tests.
Results: EndoRez did not set at all samples and therefore the bond strength values were not established. Push-out bond strengths were not significantly affected by the type of drying procedure of root canals ($p > 0.05$). The MTA Fillapex sealer showed significantly lower bond strength compared to the other sealers ($p < 0.05$).
Conclusion: The use of ethanol and excess paper points did not affect push-out bond strength of sealers. AH Plus and iRoot SP were showed higher bond strength than MTA Fillapex.

P225

The Effect of Different Irrigation Solution on the Apical Sealing of Bioceramic Root Canal Sealer

Emre Bodrumlu[1], Elif Kalyoncuoğlu[1], Hakan Göktürk[2]
[1]*Ondokuz Mayis University Faculty of Dentistry, Department of Endodontics, Samsun, Turkey,* [2]*Amasya Oral and Dental Health Centre, Amasya, Turkey*

Aim: The aim of the present study was to evaluate the effect of different irrigation solutions on apical sealing of bioceramic root canal sealer.
Material and methods: Forty freshly extracted human maxillary and mandibular teeth with single straight root canals were selected. The root canals were instrumented crown-down technique using Mtwo rotary system up to no. of 40 size file. Root canals were irrigated 2 ml of 2.5% NaOCl after each instrument. The specimens were randomly divided into five groups (n:15 each) according to final irrigation solutions [5% NaOCl, 1,3% NaOCl + MTAD, 5% EDTA, Propolis, 2% Chlorhexidine (CHX)]. Root canals were obturated with lateral condensation technique using gutta-percha and bioceramic root canal sealer. The specimens were placed in Rhodomine-B dye solution and centrifuged at 30 G for 12 min and evaluated using stereomicroscope.
Results: The highest levels were determined Propolis and CHX groups, although the least levels were occurred MTAD and EDTA groups. The difference between MTAD, NaOCl and EDTA groups and Propolis and CHX groups was statistically significant ($p < 0.05$).
Conclusion: In conclusion, using of chelating agent has advantages of improving apical sealing of bioceramic root canal sealer.

P226

Comparison of Different Irrigant Agitation Methods in the Removal of Root Canal Debris

Merve Ozguven, Sefika Nur Akyuz, Ali Erdemir
Department of Endodontics, Kirikkale University, Kirikkale, Turkey

Aim: The purpose of this study was to assess the cleaning efficacy of different irrigant agitation techniques on debris removal in root canals.
Material and methods: Sixty extracted human maxillary canines were instrumented using ProTaper rotary system under irrigation with 2.5% NaOCl. A standard groove was cut on the wall of one half of each root canal and filled with the same amount of dentin debris before irrigation procedures. Root canals randomly divided into six groups according to the final irrigation protocol of 2.5% NaOCL and 17% EDTA: Group 1: no-activation group; Group 2: Manual-dynamic activation group; Group 3: Endovac irrigation system; Group 4: Passive ultrasonic irrigation (PUI) with its power set at ½ of the scale (EMS; Optident, UK); Group 5: PUI with its power set at full power and Group 6: CanalBrush (Coltene Whaledent, Langenau, Germany) group. All irrigation protocols were performed in a closed system. Before and after irrigation procedure, the root halves were separated and the removal of dentin debris in the groove was determined under 40× magnification. The data were analyzed by means of the Kruskal–Wallis test and the Mann–Whitney *U*-test.
Results: The debris score was statistically significantly lower in group 5 than other irrigation procedures ($p < 0.05$). Manual-dynamic activation (Group 2) and PUI with its power set at ½ of the scale (Group 4) were not produced better cleaning efficacy than conventional syringe irrigation (Group 1) ($p > 0.05$).
Conclusion: PUI with its power set at full power was significantly more efficient in the removal of root canal debris than other techniques.

P227

The Radiographic Features of C-Shaped Canal System in Mandibular Second Molars

Enver Alper Sinanoğlu[1], Dilek Helvacioglu Yigit[2]
[1]*Department of Oral and Maxillofacial Radiology, Faculty of Dentistry, Kocaeli University, Kocaeli, Turkey,* [2]*Department of Endodontics, Faculty of Dentistry, Kocaeli University, Kocaeli, Turkey*

Aim: The purpose of this study was to investigate the radiographic features and the cross-sectional root canal configuration of C-shaped mandibular second molars.
Material and methods: The study group consisted of patients who had undergone both panoramic radiography and cone beam computed tomography (CBCT). The radiographs and the CBCT images were investigated retrospectively and this study was approved by the Ethics Committee of the University. The root canal morphology of the mandibular second molars was evaluated for the presence of a C-shaped root canal. The configuration of the C-shaped canal was categorized using the classification of Fan et al. Detection of the C-shaped root canal in CBCT scans was used as a ground radiographic truth. Then the second mandibular molars were classified in five categories according to their root shape viewed on panoramic radiographs. The presence of C-shaped root canal and the root types were correlated and results were subjected to chi-square statistical test. The interexaminer reliability was calculated using the Cohen's Kappa test.
Results: A total of 339 mandibular second molars were analysed, out of which 29 (8.6%) molars exhibited C-shaped root canal system. The fused root morphology (Type III, IV and V) presented statistically higher C-shaped root canal ($p < 0.01$). Type II and IV root morphology demonstrated C3 canal configuration in all cross-sectional areas.
Conclusions: Evaluation of root shape from panoramic radiographs provide valuable information for detection and interpretation of C shaped root canal systems.

P228

Antibacterial Activity of Endodontic Irrigants Against *E. faecalis*

Blerim Kamberi[1], Ferit Koçani[1], Donika Bajrami[1], Miranda Stavileci[1], Shuhreta Omeragic[2]
[1]*Department of Dental Pathology and Endodontics, University Dentistry Clinical Center of Kosovo, Prishtina, Kosovo,*

[2]*Department of Microbiology, Directory of Water High Quality, Prishtina, Kosovo*

Aim: The aim of this study was to assess the antibacterial activity of NaOCl and CHX against *E. faecalis* in contaminated root canals.
Methodology: Forty-two single rooted extracted human teeth were inoculated with *E. faecalis* and incubated for 4 weeks. The samples were divided in two control and two experimental groups irrigated with 3% NaOCl and 2% CHX. After a 1-week incubation, complete disinfection was confirmed by the absence of turbidity in the incubation media. Dentin shavings were taken from samples with no turbidity to verify whether *E. faecalis* was present in dentin tubules. Results were analyzed statistically using Fisher's exact test, with the level of significance set at $p < 0.05$.
Results: Two out of six samples in 3% NaOCl group were infected after 1 day of incubation (33.3%) and an additional sample od dentin shavings become infected (16.7%), indicating that three out of six sample teeth were infected (50%). None of the samples in the 2% CHX group were infected, including dentin shavings after 1 week incubation. Fisher's exact test demonstrates that 2% CHX was significantly more effective than 3% NaOCl ($p < 0.01$).
Conclusion: CHX possesses superior bactericidal acivity compared with NaOCl against *E. faecalis* in contaminated root canals.

P229

Endodontic Retreatment of Lower Premolars

Paula Perlea[1], Cristina Coralia Nistor[1], Marian Vladimir Constantinescu[2]
[1]*Departament of Endodontics, Carol Davila University, Bucharest, Romania,* [2]*Departament of Prosthetic Dentistry, Carol Davila University, Bucharest, Romania*

Aim: The endodontic retreatment of the lower premolars is due to the misconception that all lower premolars show an endodontic system with a predictable morphology, having one root and one canal. Our study reveals the frequency of retreatments in our clinic, due to the presence of the second canal.
Materials and methods: Five hundred and twenty-nine clinical cases of lower premolars requiring endodontic treatment where registered over a period of 4 years. The retreatment cases were separately indexed and retreatments due to the presence of the second canal or second root where separately recorded for this study.
Results: Out of 529 endodontic treatments, 106 were retreatments and among those, a number of 33 cases revealed a second canal.
Conclusions: The endodontic treatment of the lower premolars is frequently addressed with superficiality, thinking that they have a simple morphology. The clinical cases presented reveal though, a complex morphology, that exemplify all four classification types according to Weine and even cases with two roots. The CBCT can help visualize the endodontic pattern of those teeth.

Lower premolars tend to reach retreatment in 20% of the clinical cases because of the complex morphology of the endodontic system, this situation being showcased through our clinical cases study.

P230

Quality of Root-Canal Treatments Performed by Undergraduate Students in University of Marmara

Sema Sönmez, Burçin Arıcan, Emre İriboz, Dilek Erbay Türkaydın, Hesna Sazak Öveçoğlu
Department of Endodontics, Marmara University, Istanbul, Turkey

Aim: The aim of this study was to determine the radiological technical quality of root-canal fillings (RCF) performed by third grade dental students for the first time in Faculty of Dentistry, Marmara University, Turkey.
Materials and methods: Digital periapical radiographs taken from 120 single-rooted teeth treated by third grade students in Department of Endodontics during 2011–2012 were assessed. Technical quality was evaluated in terms of length and homogeneity. Length of RCF was evaluated based on three criteria as short, adequate and overfilled. Homogeneity was assessed based on two criteria as adequate and inadequate. The taper of the RCF was determined as either appropriate or inappropriate. Following radiological assessment, data were statistically analysed using Chi-square test.
Results: With regard to length, of the 120 RCFs, 79.2% were appropriate, 7.5% were short and 13.3% were overfilled. Homogeneity of the RCFs was found to be appropriate in 72.5% and inappropriate in 27.5%. Taper was found to be 65% adequate and 35% inadequate. There was no significant relationship between either the length and homogeneity or the length and taper of the RCFs ($p > 0.05$). In terms of length, of the RSFs with appropriate homogeneity, 74.7% were adequate, 55.6% were short and 68.8% were overfilled. With regard to taper, of the RCFs with appropriate taper, 65.3% were appropriate, 66.7% were short and 62.5% were overfilled.
Conclusions: The general technical success rate of RCFs in single-rooted teeth performed by third grade students for the first time in Dentistry Faculty of Marmara University was found to be 75.5%.

P231

Comparison of Debris Removal Efficacies of Four Different Irrigation Techniques

Emre İriboz[1], Koral Bayraktar[1], Dilek Erbay Türkaydın[1], Bilge Tarçın[2], Hesna Sazak Öveçoğlu[1]
[1]*Department of Endodontics, Marmara University, Istanbul, Turkey,* [2]*Department of Restorative Dentistry, Marmara University, Istanbul, Turkey*

Aim: The purpose of this study was to compare the debris removal effectiveness of EndoVac (EV), Passive Ultrasonic Irrigation (PUI), Self-Adjusting File (SAF), and needle irrigation (NI).
Materials and methods: Forty-two extracted single-rooted teeth were divided into four groups of 10 teeth each. Two teeth were left intact as negative control. The teeth were mounted in resin blocks and instrumented to an apical size of no. of 30. After standard irrigation protocols, the teeth were sectioned at 1 and 3 mm from the apex using a precise saw. The sectioned samples were observed under a stereomicroscope at ×128 magnification and were digitally photographed. The amount of remaining debris was

calculated as the percentage of the area. Data were analysed using One-way ANOVA and Student *t*-tests.
Results: The amount of remaining debris at 1 mm from the apex was 18.11%, 12.71%, 7.12%, 4.42% for the NI, PUI, SAF and EV groups, respectively. The amount of remaining debris at 3 mm was 9.61%, 8.42%, 5.22%, 2.61% for the NI, PUI, SAF and EV groups, respectively. The amount of remaining debris for the EV group was significantly lower compared to the other groups ($p < 0.01$) and the amount of remaining debris at 3 mm was significantly lower compared to the amount at 1 mm ($p < 0.01$).
Conclusion: In comparison to other irrigation techniques, EV irrigation resulted in significantly lower amount of remaining debris. Better results were obtained with all of the tested irrigation techniques at 3 mm from the apex when compared to 1 mm.

P232

Comparison of the Antimicrobial Effects of Six Different Intracanal Medicaments on *Enterococcus faecalis*

Burçin Arıcan[1], Tuna Kaplan[1], Emre İriboz[1], Salih Gümrü[2], Hesna Sazak Öveçoğlu[1]
[1]*Department of Endodontics, Marmara University, Istanbul, Turkey,* [2]*Department of Pharmacology, Marmara University, Istanbul, Turkey*

Aim: The purpose of this study was to determine the in vitro antimicrobial ability of six different intracanal medicaments on *Enterococcus faecalis* (*E. faecalis*).
Materials and methods: An agar well diffusion test and was used to determine the efficacy of the experimental medicaments in removing *E. faecalis* (ATCC 29212). Medicaments were divided into seven groups; calcium hydroxide (Ca(OH)2) with saline, Ca (OH)2 with anaesthetic solution, Ca(OH)2 with propylen glycol, commercially available premixed Ca(OH)2 paste, chlorhexidine gluconate gel, triple antibiotic powder (metronidazole, ciprofloxacin, doxicycline) with propylen glycol and talk powder with saline as negative control group. The diameters of the growth inhibition zones for each group were measured after 24 and 48 h. Differences between groups were analysed using Kruskal–Wallis and Mann–Whitney *U*-tests, and intragroup differences were analysed using Wilcoxon sign test.
Results: Diameter of the inhibition zone observed for the triple antibiotic mixture was significantly larger ($p < 0.01$) and the diameter of the inhibition zone observed for the chlorhexidine gluconate gel was significantly smaller in comparison to the other tested medicaments ($p < 0.05$). Increase in time resulted in greater antibacterial effects in all groups, especially in Ca(OH)2 with propylen glycol and commercially available premixed Ca(OH)2 paste ($p < 0.01$, $p < 0.05$).
Conclusion: All of the tested medicaments were found to be effective on *E. faecalis*. However the results suggest that the triple antibiotic paste would be the preferred medicament against *E. faecalis* as it has the greatest antibacterial effect among the tested medicaments.

P233

Efficacy of Different Activation Regimes of Chitosan

Esin Özlek[1], Betül Özçopur[1], Sıddık Keskin[2]
[1]*Department of Endodontics, Yuzuncu Yıl University, Van, Turkey,* [2]*Department of Biostatistics, Yuzuncu Yıl University, Van, Turkey*

Introduction: The purpose of this study was to assess the effect of various irrigation protocols for smear layer removal on the bond strength of MTA fillapex.
Methodology: Twenty-four extracted single-rooted human teeth were prepared by a crown down technique. The roots were divided into four groups of six roots each. After standardization of canal spaces, root segments were randomly assigned into four groups ($n = 6$) according to irrigation procedure (3 min and 3 ml for each solution): group 1; % 5,25 NaOCl + %17 EDTA and 30-s ultrasonic passive irrigation; group 2; %5,25 NaOCl + %0.2 chitosan and 30-s ultrasonic passive irrigation; group 3; % 5,25 NaOCl + %17 EDTA and 40-s Er,Cr: YSGG laser treatment (Biolase Technology, Inc, San Clement, CA), and group 4; %5,25 NaOCl + % 0.2 chitosan, 40-s Er,Cr: YSGG laser treatment (Biolase Technology, Inc, San Clement, CA, USA). Then the canal spaces were filled with MTA fillapex (Angelus, Brazil) using single cone technique to achieve 0.03 mm sealer thickness. After incubation for 1 week, samples were sectioned into 1 mm thickness and dislodgement resistance of the samples was measured using a universal testing machine at a crosshead speed of 0.5 mm/min. Data were analyzed using Kruskal–Wallis test ($p = 0.05$).
Results: No significant difference was found between the tested groups ($p > 0.05$).
Conclusion: The results of this study indicated that either passive ultrasonic irrigation or Er,Cr: YSGG laser can improve the bond strength of MTA fillapex-root dentin when compared with the conventional methods.

P234

Dental Students' Awareness of Ergonomic Postural Requirements During Endodontic Treatments

Diana Berechet, Marius Bud, Lucia Timis, Sanda Cimpean, Ada Delean
Department of Conservative Odontology

Aim: It is well known that endodontists are exposed to various occupational risk factors, especially postural ones that may lead to work-related musculoskeletal disorders.

The aim of or paper is to asses dental students' awareness concerning requirements of ergonomic posture during endodontic treatments, as well as how they clinically apply these requirements.
Materials and methods: Three hundred and fifty dental students from 4th and 5th year, officially registered in the University of Medicine and Pharmacy, aged 22–24, were invited to participate in the study. They had to answer a 31 items questionnaire. The participant students were photographed during a standard clinical treatment session to evaluate ergonomics compliance. The students

were then evaluated using Pearson's test of visual perception. We used the analysis of variance (ANOVA), Mann–Whitney *U*-test, χ^2-tests for the statistical analysis.
Results: According to the given answers, more than half (60%) of the dental students had knowledge about ergonomics. A third (33.3%) of the photographed cases were in compliance with ergonomic requirements.
Conclusion: The students showed satisfactory knowledge of ergonomics postural requirements and clinical application during endodontic treatments. We consider that it is of utmost importance that the dental students should be aware of a good working posture as early as possible during endodontic care.

P235
Root Canal Configuration of Maxillary Molars in a Turkish Population
Nermin Yönel Köse, Leman Özkan, Sıla Korun, Serap Çetiner, Kaan Orhan
Department of Pediatric Dentistry, Near East University, Nicosia, North Cyprus

Objective: To investigate variations in root canal systems of the permanent maxillary first and second molar teeth in a Turkish population using cone-beam computed tomography (CBCT).
Material and methods: Twenty-two boys and 26 girls (age range of 8–16 years) were enrolled in the study. The CBCT examinations (Newtom 3G, QR Verona, Italy) which were required previously for their investigations were retrospectively evaluated. One hundred forty-nine maxillary first and second molars were examined. The number of roots and their morphology; the number of canals per root; the canal configuration; the frequency of mesiobuccal/distobuccal and palatinal roots in the maxillary molars were evaluated. The root canal morphology was categorized and compared according to Vertucci (1984). Mann–Whitney *U*-test was performed in this study ($p \leq 0.05$).
Results: All of the first and second molars had three separate roots. Three canals were found in 45.8% of maxillary first molars and 53.1% of them had four canals. In the maxillary second molars, 58.5% of them had 3% and 41.5% had four canals. Most distal and palatinal roots had a type I configuration. The mesiobuccal root tended to have more variations in the canal system followed by the distobuccal root, whereas the palatal root had the least. No statistical significant difference was found among canal configurations, gender and sides ($p \geq 0.05$).
Conclusions: Morphological variations in the root canal system were found to be common in our study. CBCT can be powerful tool for examination of this region with capable of making measurements and 3D representations with less ionizing radiation.

P236
Bony Defects Healing Using Grafting with GTR After Endosurgery
Mohamed Nageh[1], Medhat Kataia[2], Geraldine Ahmed[2], Gihan Omar[3]
[1]*Department of Endodontics, Ministiry of Health, Cairo, Egypt,* [2]*Department of Endodontics, Cairo University, Cairo, Egypt,* [3]*Department of Oral Radiology, Cairo University, Cairo, Egypt*

Aim: To compare the efficiency of bone graft material (tri calcium phosphate) alone or its combination with bioabsorbable Guided tissue regeneration (GTR) barrier membrane (collagen membrane) to heal large periapical bony defects.
Materials and method: After the approval of the university's ethical committee, a total of 45 patients of both sex with age from 20 to 40 years old and with large periapical radiolucency related to two teeth with at least 10 mm in diameter were divided equally into three groups. Group A: Filling osseous defect with bone graft material only. Group B: Filling osseous defect with bone graft material and Membrane. Group C: Open Flap debridement only (Control group). Pre-operative radiograph was taken using the intraoral digital imaging system for the assessment of lesion size and bone density. Then, root canal and periapical surgical procedures were done, including root-end cavity preparation using ultrasonic technique and retrograde filling with MTA. Healing was evaluated by the densitometric analysis of the periapical lesions using digital imaging system software (Digora) immediately postoperative, at 2 weeks, 1 and 6 months later to assume the density of the bone formed.
Results: The statistical results showed that the use of bone graft material alone or with GTR accelerated the healing of periapical bony defect. Also it was found that group (B) was the best among the other two groups with a significant p-value < 0.05.
Conclusion: Use of GTR technique and bone graft material enhanced the healing potentiality of periapical bony defects.

P237
Bactericidal Effect of Different Power Parameters of KTP Laser Against *Enterococcus faecalis*
Dilara Arslan[1], Alper Kuştarcı[2], Cem Çelik[3]
[1]*Department of Endodontics, Bezmialem University, Istanbul, Turkey,* [2]*Department of Endodontics, Akdeniz University, Antalya, Turkey,* [3]*Department of Microbiology, Cumhuriyet University, Sivas, Turkey*

Aim: The objective of this study was to evaluate the antimicrobial activity of different power settings potassium-titanyl-phosphate (KTP) laser in experimentally infected root canals.
Materials and methods: A hundred nineteen single-rooted mandibular premolars teeth were employed. After preparation and sterilization, the specimens inoculated with 15 µl *Enterococcus faecalis* for 24 h at 37°C. The contaminated roots were divided into five experimental (1 W, 1.5 W, 2 W, 3 W, 4 W KTP laser) groups, one negative control (NaOCl) group and one positive control (saline) group of 17 teeth each. Before and after carrying out applications in groups, samples received with sterile paper points from the root canal were transferred to tubes containing 5 ml of brain

heart infusion broth. Then 10 µl of these suspensions were received and placed in two different sides of the blooded agar medium. Bacterial reduction was counted according to the CFU and data were analyzed statistically using Kruskal–Wallis and Tukey's tests.
Results: Maximum decrease has occurred in the group that 2.5% of NaOCl was employed. This decrease was followed by the KTP laser groups in order of 4 W, 3 W, 2 W, SF, 1.5 W and 1 W. Statistically, the difference between 1 W KTP laser group and all groups, and the difference between the group that 2.5% of NaOCl was used and all groups except of 4 W KTP laser group were found significant ($p < 0.05$).
Conclusions: The high power KTP laser irradiation showed more antibacterial activity against *Enterococcus faecalis*.

Theme: Dental Treatment & Restorative Dentistry: Esthetics

P238
Risk in Esthetic Rehabilitation of Patients with Direct Composite Veneers
Jovan Cabunac, Zeljka Cabunac, Vesna Markovic
Dental Practice Dr Jovan Cabunac, Belgrade, Serbia

Objective: To investigate risk factors in esthetic rehabilitation of patients with direct composite veneers.
Material: The study included 328 patients, who were esthetically rehabilitated with direct composite veneers applied by multi-layering technique, from 1 January 2008 to 31 December 2012. In all patients were analyzed: gender, age, professional sports activity, indications for teeth veneers and method of application. In cases of patients with correction of direct composite veneers were analyzed: number of corrections, localization of facets and type of complications. Data analysis was performed using standard statistical methods (SPSS 17.0).
Results: Of the total number of patients (328), correction of direct composite veneers was required in 36 (11.0%) cases. Number of corrections varied: one correction in 3.7%, two corrections in 4.9% and three corrections in 2.4% patients. Complications for corrections were: debonding in 2.4% and breaking in 8.5% patients. Analysis determined no association between correction of composite veneers in patients with gender and age ($p > 0.05$) and found a significant correlation with professional sports activity ($p < 0.01$). Analysis found a significant correlation between correction of dental veneers with tooth abrasion ($p < 0.01$) and did not find connections to other indications in patients ($p > 0.05$). Analysis established no association between correction of direct composite veneers in patients and method of applications, such as preparation, adhesives and composites ($p > 0.05$).
Conclusion: Potential risk factors for correction in esthetic rehabilitation of patients with direct composite veneers are professional sports activity and teeth abrasion.

P239
Outcome of Direct Composite Veneers in Patients as Esthetic Rehabilitation
Zeljka Cabunac, Jovan Cabunac, Vesna Markovic
Dental Practice Dr Jovan Cabunac, Belgrade, Serbia

Objective: To examine outcome of direct composite veneers in patients as esthetic rehabilitation.
Material: The study included 328 patients with direct composite veneers applied by multi-layering technique, from 1 January 2008 to 31 December 2012. In all patients were analyzed: gender and age. Test data of direct composite veneers was included: number, localization, indications, method of application and outcome. Data analysis was performed using standard statistical methods (SPSS 17.0).
Results: Of all patients (328), there were 92 males (28.0%) and 236 females (72.0%). The average age in the patients was 34.5 ± 11.8 years. The total number of direct composite veneers in the patients was 1972, with the average number of 6.0 ± 4.1. Indications for teeth facets were: change in color (70.7%), change of form (91.5%), change in position (36.6%), non-vital tooth (18.3%), diastema (32.9%), "gummy smile" (8.5%), caries (39.0%), fractures (15.9%), abrasion (14.6%), anondontia (4.9%), "crossbite" (3.7%), teeth crowding (8.5%). Localization of teeth facets was: on both jaws (19.5%), on the upper jaw (79.3%) and on the lower jaw (1.2%). Method of direct application of teeth veneers was with preparation (96.3%), using self-etching adhesive 7th generation (98.8%) and micro-hybrid composite (95.1%). In the follow-up period from 1 to 5 years, 272 (82.9%) patients still had the direct composite veneers.
Conclusion: Direct composite veneers applied by multi-layering technique are an appropriate esthetic rehabilitation and a fast solution for numerous indications in patients with a favorable outcome.

P240
Evaluation of the Aesthetic Problems Encountered in Restorative Dentistry
Oya Ulu[1], Isıl Karaduman[2], Onur Öznalçın[3], Can Dörter[2]
[1]Department of Restorative Dentistry, Istanbul Aydin University, Istanbul, Turkey, [2]Department of Restorative Dentistry, Istanbul University, Istanbul, Turkey, [3]Med. Dent., İstanbul, Turkey

Aim: The aim of the present study was to evaluate, aesthetic problems encountered by the dentists (working at private health institutions or dental faculties) in the areas with distinct socio-economic conditions and their preferred methods of treatment by using a multi-center questionnaire.
Materials and methods: Our research is based upon a questionnaire including five questions related with five different aesthetic problems. One hundred dentists were asked to complete the questionnaire. The areas of aesthetic problems were determined as fluorozis, common abrasion, common discoloration, crowding and excessive material loss. The questionnaire includes the questions such as dentists' age, gender and the faculty he/she graduated from, graduation year, location of occupation and if they were

holding any specialization or not. Thirty-seven female and 63 male out of 100 dentists had participated in our research.
Results: Statistical analysis was performed using Student *t*-test was used. It revealed that there were no statistically significant differences between the aesthetic problems and features of dentist ($p > 0.05$). Besides, differences were observed between the treatment choices of dentists' for patients with higher economic status and for patients with lower income levels. However these differences were found to be statistically insignificant.
Conclusion: Based on the results of our research it was concluded that, having a specialization on any field of dentistry is not found to be the major factor in the choice of treatment for the dentists. Besides, while preferring the treatments for the aesthetic problems, dentists consider the economic conditions and aesthetic concerns of the patients.

P241

Crown Fracture of Maxillary Central Incisors: Restorative Aspects in Children

Marija Abdovic, Slaven Abdovic
Department of Dentistry, JU Dom zdravlja Zenica, Zenica, Bosnia and Herzegovina

Introduction: Crown fractures of maxillary incisors are frequent traumatic injury to the permanent dentition. The purpose of this case series was to determine the efficacy of crown fracture restoration in children with permanent dentition.
Case series: During 2012, 18 teenagers aged 14–17 with extensive, uncomplicated crown injury without the pulp involvement (class II fracture based on the Ellis classification) were treated and followed-up. Fractures developed during recreational sport activities (bicycle ride, skateboarding, sledding, skating, rollerblading). Boys and girls were equally represented and developmental or psychological risk factors for crown fracture were absent in our sample. After diagnosis, teeth and oral cavity inspection, radiographs, and electric pulp vitality testing, crown was restored 1–5 days after trauma with composite material with or without the use of pulpal pins. Children were followed up at regular intervals, at 1, 3, 6, and 12 months after reconstruction. During follow-up, in all patients reconstructed teeth retained vitality, esthetics and function.
Conclusion: Crown of maxillary central incisors damaged after recreational activity trauma can be completely restored with composite materials and pulpal pins attaining previous and satisfying function and esthetics.

P242

The Multidisciplinary Treatment of Subgingivally Fractured Central Incisor Tooth

Ahu Acar[1], Kadir Beycan[1], Melis Akbayar[2], Kemal Naci Köse[2], Coşkun Yıldız[3], Bahar Kuru[2], Yasemin Özkan[3]
[1]*Department of Orthodontics, Marmara University, Istanbul, Turkey,* [2]*Department of Periodontology, Marmara University, Istanbul, Turkey,* [3]*Department of Prosthodontics, Marmara University, Istanbul, Turkey*

Aim: Obtaining the marginal adaptation is one of the most important factors in both maintaining the health of the dentition and obtaining the esthetics for the long term in the treatment of subgingivally fractured anterior teeth. Multidisciplinary treatment of such a case treated successfully from the orthodontic, prosthetic and periodontologic points of view will be described.
Method: A 17 years old female patient presented with subgingivally fractured right central incisor. Her clinical and radiological examination revealed the complex horizontal tooth fracture below the gingival margin. Since sufficient root length was present, we decided to restore the tooth. After the endodontic treatment, an orthodontic pin was fixed in the residual root dentin, the brackets were placed on only upper anterior teeth and forced eruption technique was used in conjunction with circumferential supracrestal fiberotomy and root planning every 10 days. After a total of 40 days, teeth were stabilized for 4 weeks and limited crown lengthening was carried out to level the gingival margins for better esthetics. Six weeks after the surgery the tooth was restored with all an ceramic crown for optimum esthetic results.
Results: The 6 month follow up period demonstrated periodontally and prosthetically satisfactory results both from clinical and radiographic point of view.
Conclusion: Forced eruption combined with circumferential supracrestal gingival fiberotomy allows the tooth to assist in the support of a single crown and maintain its individual integrity while contributing to esthetics and function in the treatment of subgingivally fractured tooth.

P243

Effects of Blue Light to Mitochondria in Human Gingival Fibroblasts

Ayaka Yoshida, Fumihiko Yoshino, Yojiro Maehata, Chihiro Miyamoto, Shunsuke Takahashi, Satoko Wada Takahashi, Masaichi Chang Il Lee
Division of Pharmacology, Department of Clinical Care Medicine, Kanagawa Dental University, Kanagawa, Japan

Aim: We have investigated effects of the blue light used for dental esthetic treatment, such as official bleaching or class V composite resin treatment, on human gingival fibroblasts (HGFs).
Material and methods: We performed the absorbance measurement for the cell proliferation activity by 3-(4,5-dimethylthiazol-2-yl)-5-(3-carboxymethoxyphenyl)-2-(4-sulfophenyl)-2H-tetrazolium assay, fluorimetry for determination of reactive oxygen species (ROS) with CellROX as biochemical examination and observed the morphology by transmission electron microscopy on HGFs irradiated by Quartz Tungsten Halogen Lamp (QTH) and Light Emitting Diode (LED). Tukey's multiple comparison tests were used for the statistical analyses. A p-value of <0.05 was considered to be statically significant.
Results: The both blue light irradiation of QTH and of LED decreased the cell proliferation activity in time-dependent manner on HGFs, in addition, it was shown a significant decrease by 5 min light irradiation using LED comparison with QTH. Regarding as morphologic study, the cytotoxic effect was observed in cell organelles, especially mitochondria. Furthermore, ROS generation

induced by blue light irradiation was detected in HGFs mitochondria using fluorimetry.
Conclusion: These results suggested that the blue light irradiation, especially using LED, might be adverse effects on the human gingival tissue in dental esthetic treatment include tooth bleaching. Hence, it would be necessary to develop a new dental esthetic treatment for protection on HGFs from the blue light.

P244

Adaptation of Maxillary Anterior All-Ceramic Crowns and 2-year Randomized Controlled Clinical Trial

Aslı Akın[1], Suna Toksavul[2], Muhittin Toman[2]
[1]*Oral and Teeth Health Public Center, Eskişehir, Turkey,*
[2]*Department of Prosthetic Dentistry, Ege University*

Aims: The aim of this randomized-controlled clinical trial was to compare marginal and internal adaptation of all-ceramic crowns fabricated with CAD/CAM and heat-pressed techniques before luting and clinical outcomes at baseline and 6, 12 and 24 months after luting.
Methods: This study was approved by Ethical Committee of Faculty of Medicine, Ege University (09-5/4). Fifteen CAD/CAM (CC) and 15 Heat-pressed (HP) all-ceramic crowns were placed in 15 patients. Silicone replica was obtained to measure marginal and internal adaptation of each all-ceramic crown before luting, and they were sectioned bucco-lingually and mesio-distally. Marginal and internal adaptation were measured using computerized light microscope at 40× magnification. Clinical evaluations took place at baseline (2 days after luting) and at 6, 12 and 24 months after luting. Replica scores were analysed with Mann–Whitney *U* and student *t*-test ($\alpha = 0.05$). Survival rate of crowns was determined using Kaplan–Meier statistical analysis.
Result: Median marginal gap for CC group was 132.25 and 130.25 μm for HP group. Mean internal adaptation for CC group was 220.31 ± 51.31 and 210.57 ± 31.05 μm for HP group. There were no statistically significant differences with respects to marginal opening (Mann–Whitney *U*-test, $p = 0.95$) and internal adaptation (student *t*-test, $p = 0.535$) between two groups. Based on modified Ryge criteria, 100% of the crowns were rated satisfactory during 2 years period.
Conclusion: In this in vivo study, CAD/CAM and heat-pressed all-ceramic crowns exhibited similar marginal and internal adaptation. 100% success rate was recorded for both 15 CAD/CAM and 15 Heat-pressed all-ceramic crowns during 2 years period.

Theme: Dental Treatment & Restorative Dentistry: Materials

P245

Study of Microleakage Using OptibondTM XTR, Through Radioisotopic Methods

Sofia Laranjo, Margarida Abrantes, Maria Filomena Botelho, João Casalta, Anabela Paula, Carlos Miguel Marto, Diana Rebelo, Pedro Ambrósio, Manuel Marques Ferreira, Eunice Carrilho
Faculty of Medicine, University of Coimbra, Coimbra, Portugal

Aim: Evaluate the microleakage of dental restorations using OptibondTM XTR (Kerr). The null hypothesis was that the type adhesive system didn't have influence in what concerns to microleakage.
Materials and methods: Sixty noncarious extracted human molars were selected and cut in two equal halves occlusogingivally. Class V cavities (4/3/3 mm) were prepared on the buccal or lingual surfaces of each tooth with gingival margin walls in enamel. The specimens were divided randomly in four groups: (i) was applied OptibondTM XTR; (ii) was applied ClearfillTM SE BOND (Kuraray); (iii) the cavities weren't restored; (iv) was applied OptibondTM XTR. In groups 1, 2 and 4 the enamel was conditioned (37% orthophosphoric acid) before the adhesive application and restored with SonicFillTM (Kerr). The specimens were stored in distilled water (37°C, 7 days) and after thermocycling (500 cycles, 5 and 55°C, dwell time 30''). Two coats of nail polish were applied to the external surface around of each cavity except the negative control group, where the crowns were completely sealed. The specimens were submersed in a solution of 99mTc-Pertechnetate. The radioactivity was counted. The nonparametric Kruskal–Wallis test with Bonferroni correction at a significance level of 5% were used for the statistical analyses.
Results: Results showed that there weren't statistically significant differences ($p > 0.05$) among the groups restored with the adhesives ClearfillTM and OptibondTM.
Conclusion: Based on the results of this study, the OptibondTM XTR doesn't reduce microleakage compared to ClearfillTM SE BOND.

P246

Durability and Bond Strength of One and Two-Parts Silanes

Afshin Nateghifard[1], Amir Ghasemi[2], Hasan Torabzadeh[2], Sina Seyyed Abbas Zadeh[3], Ardalan Nateghifard[4]
[1]*School of Dentistry, Tehran University of Medical Sciences, Tehran, Iran,* [2]*Department of Restorative Dentistry, School of Dentistry, Shahid Beheshti University of Medical Sciences, Tehran, Iran,* [3]*Dental Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran,* [4]*San Jose State University, San Jose, CA, USA*

Aim: The purpose of the present study is to assess the effect of commonly used and experimental one and two-part silane coupling agents on the microshear bond strength of composite to porcelain after 24 h and 6 months.
Materials and methods: One hundred and twenty VMK95 porcelain blocks were fabricated in similar laboratory conditions, and were polished by silicon carbide papers and ultrasonically cleaned. One-part (Porcelain Primer; Bisco, USA) or two-part (Bis-Silane; Bisco, USA) silane coupling agents and experimental one or two-part silane coupling agents were applied on the surfaces of samples. Micro cylinders of composite (3M; ESPA, USA) were bonded to blocks after 24 h and 6 months of water storage. The specimens were subjected to microshear bond strength device (Microtensile tester; Bisco). Repeated measure ANOVA and Tukey multiple comparison tests were used to analyze the data.
Results: Twenty-four hours after silane application, the mean microshear bond strengths were 24.03, 21.64, 21.19 and 10.18 MPa using commercial two-part, experimental one-part, experimental

two-part and commercial one-part silanes respectively. After 6 months, the mean bond strengths between composite and porcelain were 7.49, 10.05, 6.89 and 10.05 MPa using these silanes. The effect of silane coupling agent and time were significant on the bond strength values ($p < 0.0001$).
Conclusion: As suggested by results, microshear bond strength of experimental one and two-part silanes were similar to commercial two-part group in 24 h and 6 months. Silane coupling agents and all treatments experienced significant reductions in bond strength after 6 months with the exception of commercial one-part silane.

P247
Investigation the Effect of Adhesives to Water or Ethanol Saturated Dentin by Using Cavity Cleansers
Alev Özsoy[1], Uğur Erdemir[2], Taner Yücel[2]
[1]*Department of Restorative Dentistry, School of Dentistry, İstanbul Medipol University, İstanbul, Turkey,* [2]*Department of Restorative Dentistry, School of Dentistry, İstanbul University, İstanbul, Turkey*

Objectives: The purpose of this study was to evaluate the effect of adhesives on the microtensile bond strength to water or ethanol saturated dentin by using cavity cleansers.
Methods: Thirty-six occlusal carious and non-carious extracted human molars were used for this in vitro study. The middle 1/3 of the occlusal crown was removed and the surfaces were flattened. A caries detecting dye solution was used to identify caries-infected, caries affected and sound dentin. The specimens were assigned to 12 groups. Cavity disinfectants (Cavity Cleanser and HealOzone), dentin bonding agent (Optibond FL) were applied to acid etched and ethanol or water saturated dentin and then a resin-based composite (Tetric Ceram) were placed according to manufacturer's instructions. Bonded specimens were sectioned to form sticks with a cross sectioned area of approximately 1 mm^2. Data were statistically analyzed by using one-way ANOVA followed by post-hoc Tamhane test.
Results: Ozone application significantly decreased the μTBS when compared with the other groups (sound: 21.56 ± 2.42 MPa/caries affected: 16.98 ± 3.97 MPa) ($p < 0.0001$). The use of ethanol in carious affected dentin group showed the highest μTBS when compared to other groups ($p < 0.0001$). μTBS test results indicated that use of a 2% chlorhexidine and ethanol showed similar values in caries affected dentin while demonstrating higher results in sound dentin.
Conclusion: The μTBS to caries affected dentin were lower than sound dentin. Ozone application reduced the μTBS both caries and sound teeth. Ethanol application showed good results both caries and sound groups.

P248
Microleakage of Composite Restorations in Class V Cavities Etching by Er-YAG Laser
Nazmiye Dönmez[1], Şeyda Hergüner Siso[1], Aslıhan Üşümez[2]
[1]*Department of Operative Dentistry, Faculty of Dentistry, Bezmialem Vakif University, İstanbul, Turkey,* [2]*Department of Prosthodontics, Faculty of Dentistry, Bezmialem Vakif University, İstanbul, Turkey*

Aim: The aim of this study was to investigate the effect of different Er:YAG laser pulse modes on microleakage of composite resin restorations using a self-etch adhesive systems.
Materials and methods: Standard class V adhesive cavities were prepared on the buccal and lingual surfaces of sound human premolar teeth. The cervical cavity margins were below the CEJ. The teeth were randomly divided into three groups: Group 1; acid etching, Group 2; Er:YAG laser etching with MSP mode, Group 3: Er:YAG laser etching with QSP mode. Cavities were restored with a hybrid composite (Clearfil Majesty Posterior A3.5 Kuraray). After thermocycling for 1000 cycles between 5 and 55°C, the specimens were stained with 0.5% aqueous basic fuchsin dye and sectioned bucco-lingually. Dye penetration was then scored. The data were analyzed using the Kruskal–Wallis and Mann–Whitney *U*-tests with Bonferroni correction. The Wilcoxon signed ranks test was used to compare occlusal and gingival scores.
Results: Even though no statistically significant differences were found between any of the groups ($p > 0.05$), the cavities etched with Er:YAG laser QSP mode showed less microleakage and also there were no significant differences between the microleakage at the dentin margins and the enamel margins in all groups ($P > 0.05$).

P249
Compressive Strength, Fluoride Release and Recharge of Giomer
Sheikh Muhammad Abdul Quader[1], Mohammad Shamsul Alam[2]
[1]*Department of Conservative Dentistry & Endodontics, Update Dental College, Dhaka, Bangladesh,* [2]*Department of Conservative Dentistry & Endodontics, Faculty of Dentistry, Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh*

Current restorative materials with high fluoride release generally have lower mechanical properties. Therefore they may not be as durable clinically as lower fluoride release materials, particularly in load bearing areas. The aim of the present study is to explore the fluoride release and recharging ability as well as its compressive strength of the newly developed material called Giomer. The name Giomer is a hybrid of the words Glass Ionomer and Composite. Giomer contain a revolutionary PRG (Pre Reacted Glass) filler technology. They have properties of both conventional Glass Ionomer (fluoride release and recharge) and resin Composite (excellent esthetics, easy polishability and biocompatibility).
Materials and methods: Seven disk specimens of Giomer, Compomer and Glass Ionomer restorative materials were prepared for measurement of fluoride release and recharge using Ion Chromatography (IC) anion analyzer machine. Another seven disk specimens of Giomer, Compomer and Composite restorative materials

were prepared for measurement of compressive strength using Universal Testing Machine (UTM).
Data analysis: Data was analyzed using SPSS by one way ANOVA and Bonferroni multiple comparison tests at 5% level of significans.
Results: The value of compressive strength of Giomer is greater than that of Composite and Compomer but the fluoride release capability of Giomer becomes low in comparison to Glass Ionomer but not significant in comparison to compomer.
Conclusions: Giomer have high compressive strength (271 Mpa) and an initial fluoride (1.41 ppm) release. It also exhibit fluoride recharge capabilities. So, Giomer to be a better restorative material other than any fluoride releasing materials.

P250
Microtensile Bond Strength of a Self-Adhesive Resin Cement to Dentin After Different Pretreatment Protocols
Tansu Erakman, Ufuk Hasanreisoğlu, Sadullah Üçtaşlı
Department of Prosthodontics, Faculty of Dentistry, Ankara University, Turkey

Aim: To evaluate the effect of different pretreatment protocols to dentin on the microtensile bond strength (μTBS) of a self-adhesive resin cement with and without simulated hydrostatic pulpal pressure (PP).
Materials and methods: Prefabricated composite blocks were bonded to mid-coronal dentin with one of the following resin-based cements and/or bonding agent combinations; G 1: RelyX Unicem (RU), G2: RelyX Unicem + total-etch Adper Single Bond Plus (RUSB), G3: RelyX Unicem + self-etch Clearfil SE Bond (RUSE). Additionally, conventional adhesive cementation techniques including total-etch RelyX ARC + Adper Single Bond Plus (RXSB)(G4) and self-etch Panavia F 2.0 + Clearfil SE Bond (PFSE) (G5) were evaluated. Each test group was further subdivided into two groups according to the different experimental conditions as those stored in water under either 0 cm H_2O PP, or 20 cm H_2O PP following the bonding procedure. After μTBS testing, the data were statistically analyzed using two-way ANOVA and Least Square Distance tests ($p < 0.05$).
Results: Pretreatment of dentin with SB or SE adhesive system significantly increased the μTBS of RU to dentin in the absence of PP ($p < 0.05$). Application of PP reduced the bond strength values of all the treatment protocols eliminating the differences between those of RU, RUSB and RUSE ($p < 0.05$).
Conclusion: Pretreatment of dentin surface with total-etch (SB) or self-etch (SE) adhesive system did not improve the μTBS of self-adhesive cement (RU) to dentin considering simulated clinical conditions.

P251
Marginal Sealing of Class V Resin Composite Restorations with Low-Viscosity Resins
Işıl Bayrak, Nazmiye Dönmez, Şeyda Hergüner Siso, Deniz Selin Saltık
Department of Restorative Dentistry, Bezmialem Vakif University, Istanbul, Turkey

Objectives: Sealing of Class V composite restoration margins with low-viscosity resins may reduce or avoid problems related to marginal interface. This study evaluated in vitro effect of several low-viscosity resins on reducing microleakage of Class V resin composite restorations.
Methods: Class V cavities (n = 8) with coronal margins in enamel and cervical margins in cementum were prepared on buccal and lingual surfaces of molars and restored with self-etch adhesive (Single Bond Universal Adhesive) and resin composite (Filtek Z550). Following finishing and polishing procedures; surface-penetrating sealant (GroupII-PermaSeal), liquid polish (GroupIII-BiscoverLV) or one-bottle bonding agent (GroupIV-Single Bond Universal Adhesive) was applied onto restoration margins. Restorations in group I were non-sealed for control. After restorations had been aged by thermocycling and loading, teeth were immersed into 2% basic fuchsin solution. Teeth were sectioned; dye penetration was analyzed under stereomicroscope using 0–3 ordinal grading scale. Statistical analyzes were conducted using Kruskal–Wallis and Mann–Whitney *U*-tests at 0.05 level of significance.
Results: At enamel margins, bonding agent exhibited significantly less microleakage compared to control and BiscoverLV groups; whereas results of PermaSeal group were comparable with results of bonding agent and BiscoverLV groups. At dentin margins, all sealed groups revealed significantly less microleakage than control group; however differences among sealed groups were not statistically significant. No remarkable difference was found between enamel and dentin margins within each group, except for control.
Conclusion: Marginal sealing is effective on reducing microleakage of Class V composite restorations. Of low-viscosity resins evaluated, bonding agent showed the highest marginal sealing ability.

P252
Microleakage of Class V Cavities Restored with Novel Glass-Ionomer System
Nazmiye Dönmez, Isil Bayrak, Deniz Selin Saltık, Şeyda Hergüner Siso
Department of Restorative Dentistry, Bezmialem Vakif University, Istanbul, Turkey

Objectives: Novel glass-ionomer system introduced is claimed to be used as long-term restorative material in Class I, II, V cavities. Purposes of this in vitro study were to comparatively investigate microleakage of class V cavities filled with glass-ionomer system, compomer or resin composite; and to evaluate if application of bonding-agent before inserting restorative material affects microleakage of Class V glass-ionomer restorations.
Methods: Class V cavities (n = 8) with coronal margins in enamel and cervical margins in cementum were prepared on buccal and

lingual surfaces of molars and restored with glass-ionomer system (Group A-Equia), bonded glass-ionomer sytem (Group B-Equia), compomer (Group C-Dyract) or resin composite (Group D-Filtek Z550) as per the manufacturers' directions. A self-etch bonding (ClearfilSE Bond) was used in groups B, C, D. After all restorations had been aged by thermocycling and loading, all teeth were immersed into 2% basic fuchsin solution. Teeth were sectioned; dye penetration (microleakage) was analyzed under stereomicroscope using 0–3 ordinal grading scale. Statistical analyzes were conducted using Kruskal-Wallis and Wilcoxon sign-rank tests at 0.05 level of significance.

Results: At enamel margins group A exhibited significantly less microleakage than group B; however mean microleakage score of group C is significantly less than group A's. At enamel margins group B revealed significant leakage compared to all other groups; whereas groups C and D revealed comparable results. No remarkable difference was observed between enamel and dentin margins in groups A and B.

Conclusion: Microleakage continues to be a pending problem in Class V novel glass-ionomer restorations irrespective of being bonded with an adhesive or not.

P253

Effect of Resin Coating Against Acidic Challenge on Eroded Enamel

Ayşe Dündar[1], Abdülkadir Şengün[2]
[1]*Department of Restorative Dentistry, Abant Izzet Baysal University, Bolu Turkey,* [2]*Department of Restorative Dentistry, University of Kirikkale, Kirikkale, Turkey*

Materials and methods: The crowns of extracted 75 bovine incisors were embedded with acrylic resin and enamel surface was flattened by abrasive papers. The surface of each sample was covered with adhesive tape except for an enamel window (2 × 3 mm). After in vitro pellicle formation, each erosion cycle involved a 1 h exposure to 1.0% w/v citric acid, pH 3.2, followed by a 60 min immersion in artificial saliva. The samples were randomly allocated to five groups (n = 15/per group), as follows: Positive control: 1% citric acid (pH 3.2), Negative control: Distilled water, BC: BisCover LV, OG: OptiGuard, Icon: Icon Smooth Surface. The resin materials were applied to the eroded surface according to manufacturer's instructions. After tape was removed, surface roughness, enamel loss and surface analyze were determined using stylus profilometer, SEM and AFM. The data were analyzed with Kruskal–Wallis and Mann–Whitney *U*-test with Bonferroni correction.

Results: Amongst groups, erosive wear occurred in only positive control group. All resin materials protect enamel surface from citric acid but Icon showed significantly the best performance on prevention of dental erosion. The surface roughness decreased in only negative control group.

Conclusion: Resin coating of eroded enamel effectively prevented further damage. Application of Icon was considered as best method on prevention of erosion. It can be advised that the resin surfaces were polished with extra-fine abrasive papers to minimize the roughness of the surface in resin groups.

P254

Physico-Chemical Assessment of Mechanically Degraded Interface of Biodentine Base

Heba Ahmed Shalaby[1], Amal K. Sakr[2], Mones M. Abdelhameed[3], Monazah G. Khafagi[4], Mohamed F. Shaban[5]
[1]*Dental Biomaterial Department, Faculity of Oral and Dental Medicine, Nahda University, Beni Sweif, Egypt,* [2]*Operative Dentistry, Faculty of Dentistry, King Abdulaziz University, Jeddah, Kingdom of Saudi Arabia,* [3]*Operative Dentistry Department, Faculty of Oral and Dental Surgery, Misr University for Science and Technology, Cairo, Egypt,* [4]*Departments of Spectroscopy, Physics Division, National Research Center, Cairo, Egypt,* [5]*Nanophotonic and Applications (NPA) Lab, Department of Physics, Faculity of Science, Beni-Suief University, Egypt*

Aim: Study aimed to physico-chemical assessment of the mechanically degraded interface of Biodentine (BD)/composite as a substitution to glass ionomer in Sandwich technique.

Methods: Twenty freshly extracted sound teeth were ground to expose dentin to be used as reference substrate. Forty discs of Biodentine (Septodont) and Glass Ionomer (3M ESPE) were prepared. Each group was divided into two groups (n = 10) according to the adhesive tested, Adper™ Single Bond Plus (3M ESPE) representing two step total etch adhesive (TE) and Scotchbond™ Universal (3M ESPE) representing self-etch adhesive (SE). Adhesives were applied to substrates, and composite cylinders (0.9 mm diameter × 0.7 mm length) were formed. After 24 h. distilled water storage specimens were subjected to micro-shear testing. The spatial structure, mineral, collagen and amide I quantities of degraded interfaces were assessed using Fourier transform infrared spectroscopy and field emission scanning microscope.

Results: Chemical analysis of FTIR spectra of Biodentine revealed the right shift of spectra and higher mineral contents than glass ionomer (0.04 and 0.03 au respectively). Mineral/collagen ratio for (BD) were higher than glass ionomer samples (2 and 1.5 au respectively). At the same time there was no difference between TE &SE treatments to either BD or GI.

Conclusions: (i) Biodentine can substitute glass ionomer base under composite restoration. (ii) Adhesive strategies didn't affect mechanical degradation of Biodentine base under composite.

P255

One-year Clinical Evaluation of Class 5 Composite Restorations

Duygu Tuncer, Çiğdem Çelik, Kıvanç Yamanel, Neslihan Arhun
Department of Restorative Dentistry, Baskent University, Ankara, Turkey

Purpose: Aim of this double blind study was to compare the 12-month clinical performance of cervical restorations placed with the use of two different microhybrid resin composites.

Subject and methods: Twenty patients with at least one pair of non-carious cervical lesion participated in this study. Ninety-seven cervical lesions were restored with either TPH Spectrum (n = 48) or Filtek Z250 (n = 49) using a two-step etch&rinse adhesive (Single Bond 2) Restorations were evaluated using modified USPHS

criteria after 12 months. The statistical comparison of resin composites for each category was performed with the Pearson chi square test and the performance of restorations at the baseline and after 12 month recall time was evaluated by McNemar's test ($p < 0.05$).
Results: The recall rate of the patients was 100%. The retention rates were 89.6% and 91.8% at 12-months for TPH and Z250, respectively and no statistically significant differences were observed with each evaluation criteria ($p > 0.05$).
Conclusion: Cervical restorations placed with two different microhybrid compositeand a two step etch and rinse system showed satisfactory clinical performance after 12-months.

P256

Effect of Light-Curing Modes on Staining Susceptibility of a Nano-Hybrid Resin Composite

Işıl Bayrak[1], Günçe Saygı[2], Pınar Karakoç[2], Murat Tiryaki[2]
[1]Department of Restorative Dentistry, Bezmialem Vakif University, Istanbul, Turkey, [2]Department of Restorative Dentistry, Istanbul University, Istanbul, Turkey

Objectives: This in vitro study investigated staining susceptibility of a nano-hybrid resin composite light-cured in different modes and immersed in different staining media.
Methods: Disc-shaped specimens (8 × 2 mm; n = 7) were prepared from nano-hybrid resin composite (Filtek Z550) of shade A2 and light-cured according to one of following modes: Halojen (GI), LED standard (GII), LED pulse (GIII) or LED ramp (GIV). Half of the specimens of each group were stored in one of the staining media (red wine or coffee) for 10 min/day during experimental period. Colour measurements were performed using spectrophotometer (VITA Easyshade) according to CIEL*a*b system at predetermined evaluation periods: baseline, 7, 28 and 56 days. Colour differences (ΔE) between the groups (for each immersion medium) were submitted to Chi-square and Kruskal–Wallis tests at 0.05 level of significance.
Results: In 7-day evaluation period, colour change values of specimens immersed in coffee revealed no remarkable difference among the groups ($p > 0.05$); whereas specimens in GIV were significantly less stained compared to specimens in GII, GIII when immersed in red wine ($p < 0.05$). After 56-days of immersion in red wine, specimens in GIV showed statistically significant colour change compared to other groups ($p < 0.05$). However specimens in GI revealed the least staining after 56-days of coffee immersion, and the result was statistically different from all LED groups ($p < 0.05$).
Conclusion: The findings of this study suggest that light-curing mode influences the staining susceptibility of the tested nano-hybrid resin composite. Halogen mode showed lower susceptibility of resin composite to staining than all LED modes in long-time.

P257

Shear Bond Strength of Orthodontic Brackets to Fluorosed Enamel

Mónica Mendes[1], Pedro Mesquita[1], Sofia Arantes Oliveira[2], Jaime Portugal[2]
[1]Faculty of Dental Medicine, University of Oporto, Oporto, Portugal, [2]Faculty of Dental Medicine, University of Lisbon, Lisbon, Portugal

Aim: To evaluate the influence of etching time on shear bond strength (SBS) of orthodontic brackets to fluorosed enamel.
Materials and methods: Sixteen healthy and 32 fluorosed human maxillary central incisors were used (n = 16). Healthy teeth were assigned to group 1 and fluorosed teeth were randomly allocated in groups 2 and 3. Bucal enamel was etched with 35% phosphoric acid for 30 s (groups 1 and 2) or for 60-s (group 3) and metal brackets were bonded with light-activated composite resin (Transbond XT, 3M Unitek – 1200 mW/cm^2 – 10-s). Specimens were stored in distilled water (37°C) for 72 h, thermocycled (500 cycles, 5–55°C) and SBS tests were preformed using an universal testing machine (Instron, 1 KN, 1 mm/min). Bond failure modes were classified with a modified Adhesive Remnant Index (ARI). SBS data were analysed with one-way ANOVA followed by Tukey post-hoc tests ($p < 0.05$). Kruskal–Wallis and Mann–Whitney non-parametric tests were used to analyse the failure mode ($p < 0.05$).
Results: No statistically significant differences were found between SBS of the two groups with fluorosis ($p = 0.763$). But both groups with fluorosed teeth yielded SBS values significantly lower than the group with healthy teeth ($p < 0.05$). Failure mode of the groups with fluorosis was significantly different than non-fluorosed group ($p < 0.05$).
Conclusion: Bond strength of brackets to fluorosed teeth was lower than to healthy teeth and increasing etching time to 60-s was not enough to achieve similar results to those obtained in the healthy teeth with 30-s conditioning.
Acknowledgement: Work developed at UICOB, FCT-R&D unit nº4062.

P258

Preparation of Ciprofloxacin Nanoparticles for Local Drug Delivery in Periodontology

Solmaz Eskandarion[1], Rasoul Dinarvand[2], Mehdi Esfandyari[2]
[1]Dental Materials Department, Dental School, Shahid Beheshti University of Medical Sciences, [2]Pharmaceutics Department, Pharmacy School, Tehran University of Medical Sciences

Aim or purpose: Periodontal diseases are one of the most important problems in dentistry that can result in teeth lost. Therapy is aimed primarily at reduction of etiologic factors to reduce inflammation. The objective of this work was to improve the antibacterial effect with preparing the poly lactic-co glycolic acid (PLGA) nanoparticles (NPs) containing ciprofloxacin, appropriate antibiotic against periodontal infections. Such NPs could be used as a local delivery system and decreasing the side effects of systemic administration of antibiotics.
Materials and methods: The NPs were prepared using double solvent evaporation emulsion method. The properties of resulted NPs were analyzed. Ciprofloxacin NPs were spherical. The average par-

ticle size of ciprofloxacin NPs was 376 ± 9 nm. The entrapment efficiency (E.E) and drug loading (D.L) of ciprofloxacin NPs were 10.91 ± 0.68% and 1.07 ± 0.03%, respectively. Release studies indicated the initial burst release and following with slow release for prepared NPs that is adapted with the periodontal therapy.
Results: The antimicrobial activity of NPs was compared with that of the free drug by well diffusion method and broth macrodilution method using Aggregatibacter actinomycetocomitans (A. a) ATCC 43718. The inhibition zone of ciprofloxacin loaded NPs (8.4 mm) were greater than that of free ciprofloxacin (2.7 mm). The minimum inhibitory concentration (MIC) and minimum bactericidal concentration (MBC) of antibiotics NPs was two times lower than free antibiotics.
Conclusions: Totally, the Ciprofloxacin NPs prepared in this study showed higher antibacterial activity compared to free drug. So, antibiotic NPs as a local therapy may act more effectively than systemic antibiotic therapy.

P259

Influence of Gingival Margin on the Microleakage of Bulk-Fill Composites

Nihan Gönülol, Bilinç Bulucu, Simin Özböler
Department of Restorative Dentistry, Ondokuz Mayıs University, Samsun, Turkey

Aim: To evaluate the influence of location of the gingival margin on the microleakage of proximal restorations restored with bulk-fill composites.
Materials and methods: Thirty-six freshly extracted human third molars were used. Standardized Class II cavities were prepared on both mesial and distal sides as follows: mesial gingival margins located 1 mm above the CEJ (cemento-enamel junction) and distal gingival margins located 1 mm below the CEJ. The cavities were etched and rinsed and a total-etch adhesive system (Prime and Bond NT, Dentsply) were applied. The teeth were randomly divided into three groups (n = 12): In Group G; the cavites were restored with GrandioSO (Voco) in 2 mm increments. In Group S and M the cavities were restored with bulk-fill flowable composites (SDR, Dentsply and Filtek Bulk Fill, 3M Espe, respectively) in the first 4 mm layer and GrandioSO for the residual height of the cavity. The specimens were thermocycled (1000 cycles, 5–55°C) and immersed in 0.02% Rhodamine B solution for 24 h. The specimens were examined under a stereomicroscope. The data were subjected to Kruskal–Wallis and Wilcoxon tests at $p < 0.05$.
Results: No statistically significant differences were observed between composite groups in enamel and dentin margins ($p > 0.05$). Although in Group G and Group M significant differences were observed between enamel and dentin margins ($p < 0.05$), with enamel margins exhibiting lower degrees of microleakage, in Group S the difference was not significant ($p = 0.317$).
Conclusion: SDR flowable resin composite would be preferable in proximal caivities located below the CEJ.

P260

Comparison of Two New Commercial Calcium Silicate–Based Materials

Merve Akçay[1], Hüseyin Ertaş[2], Ebru Küçükyılmaz[1], Elif Tarım Ertaş[3]
[1]*Department of Pediatric Dentistry, Izmir Katip Celebi University, Izmir, Turkey,* [2]*Department of Endodontics, Izmir Katip Celebi University, Izmir, Turkey,* [3]*Department of Oral and Maxillofacial Radiology, Izmir Katip Celebi University, Izmir, Turkey*

Aim: The purpose of this study was to compare two new commercially available calcium silicate–based materials with regard to setting time, compressive strength and radiopacity.
Materials and methods: Biodentine (Septodont, Saint-Maur-des-Fosses, France) and MM-MTA (Micro-Mega, Besançon Cedex, France) were tested in this study. Seven specimens were mixed freshly for each group and each test. The initial and final setting time, compressive strength and radiopacity were assessed by Gilmore apparatus, universal mechanical testing machine, and phosphor plates of a digital imaging system with an aluminum stepwedge, respectively. Data were analyzed by analysis of student t test at 5% significance level.
Results: The initial (7 ± 0.8 min) and final setting times (15 ± 2 min) of Biodentine were significantly lower than MM-MTA (20 ± 2.6 and 49 ± 6 min). The mean compressive strength of Biodentine (119.6 ± 29.8 MPa) was significantly higher than MM-MTA (21 ± 6.1 MPa) On the contrary, MM-MTA presented significantly higher radiopacity values (5.0 mm Al) than Biodentine (2.5 mm Al) ($p < 0.001$).
Conclusions: Biodentine would be a potentially useful material because of the short setting time and high compressive strength values for clinical application especially during apical surgery. Nevertheless, radiopacity value of Biodentine was not above the minimum level recommended by ANSI/ADA Specifications.

P261

Posterior Resin Composites: Are the Compressive Properties of Composites Affected by Water Sorption?

Vasiliki Maseli[1], Maria M. Karabela[2], Konstantinos Kyritsis[3], Dimitrios Tsivoulas[4], Vasileios Prantsidis[5]
[1]*Department of Cariology, Restorative Sciences and Endodontics, The University of Michigan, School of Dentistry, Ann Arbor, MI, USA,* [2]*Laboratory of Organic Chemical Technology, Department of Chemistry, Aristotle University of Thessaloniki, Greece,* [3]*DMP Ltd, Department of Research and Development, Markopoulo, Greece,* [4]*School of Materials, The University of Manchester, Manchester, UK,* [5]*College of Engineering, Chemical Engineering Department, Swansea University, Wales, UK*

Purpose: The aim of this study is to determine the compressive properties and water sorption characteristics of dental light-curing resin based composites used in direct posterior restorations. The null hypothesis of this study is that a prolonged immersion of composites in aqueous environment will affect the compressive properties of the materials.

Methods: The following commercially available light curing composites were studied: Filtek P60 (3M-ESPE), Rok (SDI), Surefill (Dentsply), Tetric EvoCeram Bulk Fill (Ivoclar Vivadent), x-tra fill (Voco) and Bright Posterior (DMP). The compressive strength was measured according to the ANSI/ADA No.27 specification, after storage of the composites in distilled water (37oC), for 24 h and 30 days. Water sorption characteristics were determined according to the method described in ISO 4049. The uptake of water was recorded for 30 days.
Results: The compressive strength of all the studied materials ranked within the range of clinically-accepted composites. Filtek P60, Bright Posterior, and x-tra fill composites showed higher values of compressive strength after 24 h of water storage. After 30 days of immersing the composites in distilled water, a change in compressive strength was observed. Lower water sorption values were shown for x-tra fill and Bright Posterior.
Conclusions: Resin-based composites used in posterior restorations are subject to compressive loads due to mastication. In addition, the aqueous oral environment affects the stability and longevity of the restoration. Therefore, composites with low water sorption values combined with high compressive strength will enhance the clinical performance of the restoration. The hypothesis of this study was confirmed.

P262

Surface Morphology of the Bulk Fill, Nanohybrid and Silorane Composites

Mehmet Burçin Pişkin[1], Aysel Kanturk Figen[2], Pınar Yılmaz Atalı[3]
[1]Department of Bioengineering, Yıldız Technical University, Istanbul, Turkey, [2]Department of Chemical Engineering, Yıldız Technical University, Istanbul, Turkey, [3]Department of Operative Dentisty, Marmara University, Istanbul, Turkey

Aim: The aim of this study was to compare the surface properties and filler size of Surefill SDR (Dentsply), Xtra Base (Voco), Xtrafill (Voco) and Quixfill (Dentsply) bulk fill resins; Nanohybrid Grandio and Filtek Silorane (3MESPE) composites under scanning electron microscope (SEM).
Material and method: 10 mm × 2 mm disc shaped 30 composite samples (n = 5) were prepared. Finishing and polishing were procedure was done with OptiDics (Kerr). All samples were waited distilled water at 37°C for 24 h. Scanning electron microscopy (SEM) was used to qualitatively characterize filler morphology and size. SEM analysis was performed to compare the filler size of the composite materials. Surface properties were investigated under ×500 magnificent and particle size analysis were done under ×5000 magnificent.
Results: Nanohybrid compostite showed the smoothest surface and the silorane showed the roughness surface. The average particle size of and the biggest filler are: SDR 1.61 and 2.27 μm; Xtrabase 652.11 nm and 1.05 μm; Xtrafill 1.39 and 4.20 μm, Quixfill 1.06 and 1.45 μm; Grandio 794.68 nm and 4.88 μm; Siloran 756.13 nm and 1.48 μm.
Conclusion: SEM analysis revealed different patterns of surface roughness depending on the composite material. Bulk fill materials showed similar surface charcteristics to nanohbrid composites; siloranes shows different matrix structure due to its siloxane based.

P263

Spectroscopic Properties of Bulk Fill Resin Composites Cured by LED Light Source

Aysel Kanturk Figen[1], Pınar Yılmaz Atalı[2], Mehmet Burcin Piskin[3]
[1]Department of Chemical Engineering, Yıldız Technical University, Istanbul, Turkey, [2]Department of Operative Dentisty, Marmara University, Istanbul, Turkey, [3]Department of Bioengineering, Yıldız Technical University, Istanbul, Turkey

Aim: The aim of this study was to determine the spectroscopic properties of bulk fill flowables as Surefill SDR (Dentsply) and Xtra Base (Voco); and bulk fill composites as Xtrafill (Voco) and Quixfill (Dentsply) resin composites cured by light emitting diode (LED).
Material and method: Spectroscopic properties of bulk fill resin composites were invistiagted by means of infrared spectroscopy. Degree of conversion (DC) (n = 5) was investigated in real time for 5 min by Fourier transform infrared spectroscopy (ATR-FTIR) in a filling depth of 4 mm at irradiation time of 40 s. DC was evaluated by using by using the aliphatic/aromatic double bond peak ratios in the region (1680–1580/cm) before and after the photopolymerization. The results were analyzed with one way ANOVA and Tukey HSD test $p < 0.05$ was considered significant.
Results: The results in DC determinations with FT-IR demonstrate that Surefill SDR (15.27 + 1.02), Xtra Base (39.01 + 1.12), Xtrafill (30.87 + 1.14) and Quixfill (17.39 + 1.18). There is a significant difference between Voco and Dentsply bulk fill materials ($p < 0.05$).
Conclusion: DC is influenced by both resin matrix and photo initator type. Xtrafill and Xtrabase have the same DC due to their same photoaccelerator. LED cured bulk fill composites achieved sufficient polymerization.

P264

Microhardness of New Generation Posterior Composite Materials: BulkFill, Nanohybrid, Silorane

Pınar Yılmaz Atalı[1], Mehmet Burçin Piskin[2], Aysel Kanturk Figen[3]
[1]Department of Operative Dentisty, Marmara University, Istanbul, Turkey, [2]Department of Bioengineering, Yıldız Technical University, Istanbul, Turkey, [3]Department of Chemical Engineering, Yıldız Technical University, Istanbul, Turkey

Aim: The aim of this study is to compare the Vickers microhardness (VHN) of Xtrafill (Voco), Quixfill (Dentsply), Xtrabase (Voco), SDR (Dentsply) as bulkfills; nanohybrid as Grandio (Voco);and Filtek Silorane (3M, ESPE) after 1st, 7th and 14th days of distilled water storage.
Material and methods: Seventy disc shaped samples were prepared (n = 10). Samples were cure by LED with 40s.; polished with OptiDics (Kerr), waited for 24 h at 37°C before the tests. VHN were measured from three points from each samples after 1st, 7th and 14th day.
Results: The results were analyzed with one way ANOVA and Tukey HSD test p-value <0.05 was considered significant. SDR has the lowest VHN at 24 h (21.5 ± 1.14) and 14th day

(22.96 ± 1.45) in all groups. There is no significant difference between 1st and 14th day of VHN of SDR (p = 0.189), Xtrafill (p = 0.131) and Silorane (p = 0.151); there is a significant decrease in VHN of Xtrabase (p = 0.033) and Quixfill (p = 0.006) after 14 days. Grandio showed the highest VHN at 1st (77.79 ± 4.07) and 14th days (99.7 ± 1.53) and there is a significant increase in VHN after 14 days (p = 0.008).
Conclusion: Bulkfill composites could be an alternative to nanohybrids/siloranes; and bulk-filled flowable restorations may be a viable when occlusal layer is constructed with high inorganic content composites in posterior restorations.

P265

Alternatives on Surface Treatment to CAD Glass Ceramics
Nuran Noyan Ozyoney, Dilek Tagtekin, Funda Yanıkoglu, Sertaç Peker
Department of Restorative Dentistry Marmara University, Istanbul, Turkey

Aim: The aim of this study was to evaluate two surface treatments as an alternative to HF acid etching on the bond strength of two luting resins on CAD ceramic.
Material and methods: Sixty CAD ceramics were divided into three groups according to the surface treatments such as HF acid etching (n = 20), laser treatment (n = 20) and Tribo chemical coating process (n = 20). Then all specimens were divided into two subgroups according to luting resins such as Maxcem Elite and Biscem. Following the cementation procedure, all specimens subjected to 10,000 cycles of thermocycling. Shear bond strength was measured by use of Zwick Z010 universal testing machine until failure. One-way ANOVA, Tukey HDS and Student *t*-test were used for determination of the statistical significance of the differences between the mean shear bond strength values.
Results: According to surface treatments, the highest bond strength was obtained with the groups treated with HF acid etching. There was no statistical differences between laser and Tribo chemical coating process. According to resin cements, in all groups there was no statistical differences between Maxcem Elite and Biscem resins.
Conclusion: Although HF acid etching is still the most effective method used, Tribo chemical coating process seems a good alternative on surface treatment of CAD ceramic system.

P266

Comparative Experimental Tests for Mechanical Properties of Different Types of Dental Space Maintainers
Maria Antonela Beldiman[1], Oana Tanculescu[1], Bogdan Leitoiu[2], Raluca Maria Mocanu[1], Corina Cristescu[1], Dan Nicolae Bosinceanu[1]
[1]Department of Prosthetics, Dental Technology and Dental Materials, Faculty of Dentistry, University of Medicine and Pharmacy, Iasi, Romania, [2]Department of Mechanical Engineering, Technical University, Iasi, Romania

Aim: Usually, after premature loss of temporary teeth, are applied space maintainers, so it is important to know the mechanical proprieties of the appliances and to observe their behavioral response to the forces developed in oral cavity.
Material and methods: The study determined, by static tests, the fracture strength of four types of space maintainers, fixed and removable, applied on four samples realized with human teeth extracted for orthodontic purposes. The forces, of maximum 5kN, were applied with a charging speed of 5 mm/min, by a special testing machine, with an innovative appliance. Experimental determinations included two aspects: to determine the maximum force that can be support by each sample, and to observe model deformation.
Results: For each sample were obtained diagrams of force variations in kN depending on the stain (in mm) vs. time (in seconds). So, for first sample, fixed appliance, according force applied, the chart is redrawn to deformation (0.04kN). For the removable space maintainer, the diagram is an ascending one according to force applied (0.42kN), until the fracturing moment; this was the type of space maintainer that had the weakest response to maximum force.
Conclusion: The values obtained indicate that the best option in terms of behavior under the conditions specified is the removable appliance, and the less functional version is the fixed space maintainer using brackets. Also, the fracture strength was more important for fixed space maintainers (band and loop) so, in practice is using more frequent these types of space maintainers.

Theme: Dental Treatment & Restorative Dentistry: Pedodontics

P267

Awareness of TMJ Disorders Among Pediatric Dentists
Dilara Özenay Dergin, Ahu Muesser Durhan, Burak Kitiki, Didem Kural, Ilknur Tanboga
Department of Pedodontics, Marmara University, Istanbul, Turkey

Aim: TMJ disorders have generally been presumed to be conditions affecting only adults; however, epidemiological studies have reported signs and symptoms in children and adolescents to be as frequent as in adults and the prevalence varies widely in the literature from 16% to 90%, in clinical studies. This aim of this study was to evaluate the diagnostic procedures of pediatric dentist used to assess signs and symptoms of TMJ disorders and treatment methodology in children and adolescents
Material and methods: A self-designed questionnaire included questions about routine dental examination and diagnostic methods of TMJ disorders was given to pediatric dentists to evaluate the clinical approaches to the TMJ disorders of children.
Results: The results of this study emphasize that pediatric dentists rarely interested in TMJ disorders in children. This is because of the multiple etiological factors contributing to TMJ disorders of rapidly growing patient besides to the cooperation problems and difficulties associated with MRI imagining phobias of children.
Conclusions: The current perspective regarding TMJ disorder is multidimensional, with an appreciation that a combination of physical, psychological and social factors may contribute to the overall presentation of this disorder. Pediatric dentist should be aware of TMJ disorder in children.

P268

Fiber Posts Treatments on Severely Damaged Endodontically Trated Teeth in Children

Ümit Candan[1], Mehmet Sinan Evcil[1], Nazan Ersin[2], Ece Turan[2], Fahinur Ertuğrul[2]
[1]*Izmir Dental Hospital, Izmir, Turkey,* [2]*Department of Pediatric Dentistry, Ege University, Izmir, Turkey*

Purpose: Endodontically treated teeth with insufficient tooth structure due to traumatic injuries or caries are often restored with crowns. But knowing prosthetic failure has been cited as the most common cause of failure in endodontically treated teeth, for children it is preferable to restore the teeth with posts. The aim of the study was to reconstruct endodontically treated teeth with insufficient tooth structure by using glass fiber posts due to trauma or caries in children.

Materials and method: Severely damaged endodontically treated maxillary incisors were reconstructed using glass fiber posts and direct resin composite systems in six patients who had trauma history or caries. Patients were examined clinically and radiographically every 3 months.

After 1 year clinical and radiographic follow ups all fiber posts were intact and no signs of root fractures, post fractures and post dislodgement were observed.

Results: Fiber posts could be an alternative treatment option in the restoration of severely damaged endodontically treated teeth because it fullfills all of the requirements necessary for clinical success with good esthetics. It conserves remaining tooth structure and could be completed in a short term and cheaper treatment than prostethic restorations.

P269

Developmental Enamel Defects and Dental Treatment Conditions in Cardiac Children

Kenan Cantekin[1], Hüsniye Gümüş[1], Hakan Şahin[2], Yasemin Altuner Torun[3]
[1]*Department of Pediatric Dentistry, Faculty of Dentistry, Erciyes University, Kayseri, Turkey,* [2]*Department of Pediatric Dentistry, Faculty of Dentistry, Izzet Baysal University, Bolu, Turkey,* [3]*Division of Pediatric Hematology, Department of Pediatrics, Kayseri Education and Research Hospital, Kayseri, Turkey*

Objective: The aim of this study was to determine developmental enamel defects and their treatment conditions in children with Congenital Heart Disease (CHD) by comparing them with a control group of healthy children.

Methods: Children included in the study were referred to pediatric dentistry for dental examination and treatment after undergoing routine examination in pediatric cardiology clinic.

Results: The CHD group included 72 children, and the control group included 56 healthy children. Children ages 3–14 were included in this study. The mean age of CHD group and control group was 6.24 (±2.85 SD) and 6.73 (±3.01 SD), respectively. The mean dmft and DMFT values in CHD group were 2.80 (±3.77) and 0.81 (±1.63), respectively. In the control group, they were 1.87 (±3.31) and 0.72 (±1.46), respectively. The care index for primary teeth was 3.6% in CHD group and 13.3% in the control group. The enamel defect was detected in at least one permanent tooth in seven out of 72 children (9.7%) in the CHD group and in three out of 56 (5.3%) in the control group.

Conclusion: Although there was no significant difference in the development of dental caries or the prevalence of enamel defects between children with CHD and healthy children, the care index was low in children with CHD. In addition, children with CHD had a higher rate of pulled primary teeth and delayed treatment of decayed teeth.

P270

In-Vitro Bond Strength of a Flowable Compomer to Dentin

Tuğba Bezgin, Duygu Öcal, Ece Karaahmetli, Levent Özer
Department of Pediatric Dentistry, Ankara University, Ankara, Turkey

Aim: The study aimed to investigate the impact of different restorative techniques on the micro-tensile bond strength (μTBS) of a flowable compomer used in primary teeth.

Materials and methods: Occlusal surfaces of 30 extracted primary molar teeth were cut to expose a flat dentin surface and abraded with wet 600-grit silicon carbide paper to evaluate μTBS of materials. Specimens were randomly divided into three groups for restoration: Group 1, compomer (Glasiosite, VOCO GmbH, Cuxhaven, Germany) filling alone; Group 2, flowable compomer (Twinky Star Flow, VOCO GmbH, Cuxhaven, Germany) lining/pre-cured and overlaying compomer; and Group 3, flowable compomer lining/co-cured with overlaying compomer. Specimens were stored in distilled water at 37°C for 24 h and tested for μTBS (1 mm/min) using a micro-tensile testing machine (Micro Tensile Tester, T-61010Ki, Bisco, Schaumburg, USA). Failure modes were determined under a stereomicroscope. μTBS results were analyzed using the Kruskal–Wallis H test. A p-value of <0.05 was considered statistically significant.

Results: Compomer showed higher bond strength (15.3 MPa) than pre-cured flowable compomer (10.6 MPa) and co-cured flowable compomer (14.5 MPa); however there was no statistically significant difference between the groups ($p > 0.05$). Mixed cohesive failure of both adhesive and dentin was the most common failure type in all of the groups (73.3% in Group 1and 3, 53.3% in Group 2).

Conclusion: Flowable compomer with different restorative techniques showed similar bond strength to dentin with compomer.

P271

Postoperative Discomforts in Children After Dental Rehabilitation Under General Anesthesia with Nasotracheal Intubation

Kenan Cantekin[1], Ebru Delikan[1], Seçil Çetin[1], Mustafa Denizhan Yıldırım[2]
[1]*Department of Pediatric Dentistry, Faculty of Dentistry, Erciyes University, Kayseri, Turkey,* [2]*Department of Anesthesiology and Pediatric Dentistry, Faculty of Medicine and Dentistry, Erciyes University, Kayseri, Turkey*

Purpose: The objective of this study was to determine the postoperative discomfort in the first 24 h following dental care under

general anesthesia (GA) with nasotracheal intubation using sevoflurane in healthy children.

Materıals and methods: Twenty six premedicated patients with high dental fear (Score I according to Frankl scale) underwent GA for their dental treatment. Nasotracheal intubation was used for GA in the dental treatment of young anxious children. They were given anesthesia maintained with sevoflurane (2–3%) after receiving inhalation induction either with sevoflurane (8%). The patients' age, gender, type of dental treatment, and duration of anesthesia and operation were recorded from the impatient service. Other postoperative morbidities, which include crying, nausea and vomiting, bleeding, and drowsiness, were also noted for 24 h after the operation.

Results: The mean age of patients was 6.38 (SD 1.06) years and their ages ranged from 5 to 8 years. There was no significant difference among genders. Minor post-operative symptoms, such as pain, bleeding and nausea, have been reported to occur frequently in immediate period. Of the 26 participants, approximately 62% and 47% had preoperative and post-operative discomfort, respectively. Immediately discomfort was influenced by number of extraction.

Conclusions: Bleeding following dental treatment under general anesthesia was the most prevalent symptom of postoperative discomfort in this study. Moreover, children undergoing dental rehabilitation under general anesthesia commonly experience pain, agitation, sleepiness, nausea and vomiting.

P272

Abnormal Maxillary Central Diastema Treatments Caused by Mesiodens

Eko Sri Yuni Astuti

Department of Pediatric Dentistry (Pedodontic), Faculty of Dentistry, Denpasar Mahasaraswati University, Bali, Indonesia

Aim: Mesiodens in primary or mixed dentition periode cause many clinical anomalies, such as delayed eruption of permanent teeth, root resorbtion of successor permanent teeth, abnormal maxillary central diastema, etc. Many treatments for closing abnormal central maxillary diastema have published with their advantages and disadvantages. The aim of these study was to evaluate many treatments for closing abnormal maxillary central diastema caused by mesiodens.

Conclusion: The treatment using brakect and safety pin resulted reciprocal and controlled force, thus maxillary central incisives had moved bodily in closing abnormal maxillary central diastema.

P273

Treatment of the Uncomplıcated Crown Fracture Using Natural Tooth Structure: Three Case Reports

Olcay Kopaç, Levent Demiriz

Department of Pedodontics, Bülent Ecevit University, Zonguldak, Turkey

Introduction: Epidemiological researches dental traumatic injuries were widespread in the population and are a frequent pathology among children and teenagers. Crown fractures in 10 years-old population is considered a real and serious public health problem owing to the high prevelance and leading serious problems that can affect social relationship. The most common is uncomplicated crown fracture without any pulp exposure. Recent developments in restorative materials and adhesive techniques allow cliniınians to predictably restore fractured teeth. If the original tooth fragment is retained following fracture or is kept by patient in suitable conditions, the natural tooth structures can be reattached using adhesive protocols to ensure reliable strenght, durability, and aesthetics.

Case: The aim of these reports were to present treatments of traumatizied maxillary anterior central incisors, in three different cases, with reattachment of natural tooth structures and their periodical follow-up.

P274

Oligodontia, Ectrodactyly, Syndactyly Associated with Maternal Acetazolamide: A Case Report

Afnan Ibrahim Alsaleem[1], Asma Aljoubar[2]

[1]*Dental Department, Prince Sultan Medical Military City, Riyadh, Kingdom of Saudi Arabia,* [2]*Department of Pediatric Dentisrty and Orthodontics, College of Dentistry, King Saud University, Saudi Arabia*

Introduction: Oligodontia is a severe type of teeth agenesis involving six or more congenitally missing teeth. Oligodontia has been classified as isolated or non-syndromic and syndromic hypodontia. The causes might be attributed to environmental or factors, or to both. Acetazolamide is a Carbonic Anhydrase Inhibitor and its use in pregnant women has not been recommended because of reported teratogenic risks. Congenital malformations such as ectrodactyly, syndactyly, cleft lip and retarded incisor teeth development have been reported in experimental animals.

Case: Although there is no convincing evidence for an adverse effect for acetazolamide use in human pregnancy, this case report described a case of 11-year-old Saudi boy who was exposed to a maternal acetozolamide (1000 mg/day) for the treatment of the benign intracranial hypertension during the first trimester and beyond which might resulted in ectrodactyly, syanodactyly, and possibly oligodontia.

P275

Methods of Deciduous Dental Pulp Research

Zlatko Georgiev[1], Ivona Kovacevska[2], Ana Sotirovska Ivkovska[1], Efka Zabokova Bilbilova[1], Cena Dimova[2]

[1]*Faculty of Stomatology, University St. Cyril & Methodius, Skopje, Macedonia,* [2]*Faculty of Medicine, University Goce Delcev, Stip, Macedonia*

Aim: The aim of our study was to evaluate the condition, particular structure and properties of the pulpal tissue by using various methods.

Material and methods: The pulps used for this research had originated from intact teeth of healthy children, (five deciduous teeth without, and five deciduous teeth with physiological resorption).

Immediately after the extraction (performed due to orthodontic reasons, under local anaesthesia), each tooth was cut perpendicularly to its long axis with a rotating carborundum disc under a water jet. The separated halves were dissected with plastic instrument, and the tooth pulp was excavated completely.

Results and discussion: The extracellular matrix is the major constituent of the connective tissue. This is composed of ground substance and fibrillar proteins. The main cells of the connective tissue are the fibroblasts. The pulp also contains odontoblasts (the highest differentiated cells), undifferentiated mesenchymal cells, and immunocompetent cells (lymphocytes, macrophages, leucocytes).

Adequate pulp preparation has always been a challenge, because artefacts resulting from inadequate fixation often are described as evidence of pathosis. Methods with dropping a tooth in a jar of formalin, even if done immediately after extraction, are inadequate to permit subsequent critical examination of the dental pulp. Other methods are with section the apical 2–3 mm of the root with a fissure bur, and an opening was made into the pulp chamber with a round bur and fixed with 10% buffered formalin.

Conclusion: The developments of models are needed for better investigation of deciduous dental pulp, but also for better her preservation.

P276

Caries Management of Young Children Using Their Mother's Cariogram Data

Aya Sato, Sachie Warita, Yuma Ogawa, Madoka Kimura, Marie Enomoto, Ai Sakuma, Yukio Aso
Aso Kids Dental Park

Aim: The aim of this study was to compare the caries risk profiles obtained from the modified Cariogram model for under 3-year-old Japanese children and the conventional Cariogram model for their mothers for improving the caries predictive ability in young children.

Materials and methods: Data required for a caries risk assessment with Cariogram at the first visit were collected from 55 pairs of mother and child.

The modified Cariogram was produced with exclusion of lactobacilli count, salivary secretion rate and buffering capacity for young children. These pairs were divided into two groups by child's age at first visit, the one was under 1.5-year-old children group (U1.5, n = 25) and another was over 1.5-year-old group (O1.5, n = 30).

Theirdata were compared for each caries-related factor by statistic analysis.

Results: There was no significant difference between two groups, except for the child's caries experience ($p < 0.05$). In U1.5, significant correlations were detected between mother's and child's diet frequency($p < 0.05$), mother's availability of fluoride and child's amount of plaque ($p < 0.05$) and mothor's salivary secretion rate correlated with both of child's chance of avoiding caries and diet frequency ($p < 0.05$). Also there was significant negative correlation between mother's DMFT and child's diet frequency ($p < 0.05$).

Conclusions: There results suggested that mother's Cariogram data might be able to complement the caries prediction of her child in his/her early childhood.

P277

Dental Students' Perception of Pre-Clinical Practice in Pediatric Dentistry

Sachie Warita Naoi[1], Hiroyuki Karibe[1], Tomomi Kawakami[1], Atsuko Suzuki[2], Yuko Umezu[2], Yoshimori Uchikawa[2]
[1]*Department of Pediatric Dentistry, Nippon Dental University, Tokyo, Japan,* [2]*Department of Pediatric Dentistry, Nippon Dental University Hospital, Tokyo, Japan*

Aim: The aim of this study was to identify the dental students' perception of the change of practice form in pediatric dentistry prior to clinical training performed by 4th-year dental students in Japan.

Materials and methods: An anonymous questionnaire survey was conducted and the differences between the students in 2011 (n = 123) and 2003 (n = 117) were examined in terms of the influence of "increase of the number of the practice subjects," "introduction of the preliminary assignment" and "changes of the practice form" for the 4th-year dental students in 2010 (n = 130). The differences in the students' perceptions were statistically analyzed.

Results: Valid response rates of 100%, 94.6% and 100% were recorded for the students in 2003, 2010 and 2011 respectively. On the content of "topical application of fluoride," significant differences were found in two questionnaire items, "difficulty for practice" and "propriety of practice time," between the 2003 group and the 2010 ($p<0.001$). More than 95% of the students in each group were satisfied with their dental educators.

Conclusions: It was confirmed that the students' degree of satisfaction with the practice was maintained however the contents were increased without longer overall practice time. It was suggested that the practice is attained more efficiently by considering the students' practice evaluation.

P278

Evaluation of Family Awareness on Bruxism in Mixed Dentition

Serhan Didinen, Neşe Akal
Department of Paediatric Dentistry, University of Gazi, Ankara, Turkey

Aim: During sleep, awareness of tooth grinding (as noted by sleep partner or family members) is reported by 8% of the population. Sleep bruxism is a behaviour that was recently classified as a 'sleep-related movement disorder'. Because of this, sleep bruxism is a condition that is really difficult to diagnose. Polysomnographic tests and masseter muscle activity measurment devices are used to diagnos sleep bruxism. However, their results are only valuable when the patient makes active grinding and clenching. If the patient doesn't have bruxism all the nights, these tests may not be reliable. Also tooth wear is not accepted as a diagnostic criteria

for bruxism. Hence, the parental observation is accepted as the most reliable method to diagnose sleep bruxism.
Material and methods: In this study we applied a survey to the parents of patients who approved to Department of Paediatric Dentistry, Faculty of Dentistry, Universtiy of Gazi. Then the results evaluated. If the parents answered the question 'does your child make grinding or clenching when he/she sleep', negatively; we adviced parents to sleep with their child for a week.
Results: We noticed that parents are generally controlling their children during sleep. Also many of them are aware of sleep bruxism.

P279
Clinical Monitoring of MIH by Novel Light Induced Flourescence Systems
Basak Durmus[1], Ahu Durhan[1], Berna Gokkaya[1], Burak Kıtıki[1], Funda Yanıkoglu[2], Betul Kargul[1]
[1]*Department of Pediatric Dentistry, Marmara University, Istanbul, Turkey,* [2]*Department of Restorative Dentistry, Marmara University, Istanbul, Turkey*

Background: The Light Induced Flourescence System is based on an innovative approach quantifying enamel health called Fluorescence Enamel Imaging. Enamel is both highly mineralized and semi-translucent. Because of its mineral composition, enamel will fluoresce when exposed to certain light wavelengths. The semi-translucent nature of enamel results in different enamel densities emitting different levels of fluorescence. As a result, with FEI technology, one can measure the density of tooth enamel by measuring its fluorescence when subjected to specific light wavelengths. The fluorescence image of enamel with incipient lesions can be digitized and then the fluorescence loss in the lesion can be quantified. Changes in fluorescence radiance and lesion area can be followed in time to measure lesion development. Real-time fluorescent images are captured into the computer and stored in an image database. The objective of this clinical study is to determine the ability of visual and instrumental procedures to monitor MIH lesions by Novel Light Induced Flourescence Systems.
Methods: The study comprised children with Molar-Incisor Hypomineralisation (MIH), at the Department of Pediatric Dentistry, Marmara University. Ten patients with MIH was diagnosed by visual MIH scale and by Light Induced Flourescence Systems. The equipment, the data processing and the interaction between equipment and operator were described.
Results: Fluorescence loss integrated over the lesion area (deltaQ; deltaF × A; % × mm^2), were determined and compared with MIH scale results.
Conclusion: These preliminary data from an ongoing clinical study suggest that measurements with FluoreCam is able to monitor MIH. It also provides visual and quantitative feedback to patients.

P280
Postoperative Discomforts Related to Oratracheal Intubation for Dental Rehabilitation Under General Anesthesia in Children
Kenan Cantekin[1], Seçil Çetin[1], Ebru Delikan[1], Mustafa Denizhan Yıldırım[2]
[1]*Department of Pediatric Dentistry, Faculty of Dentistry, Erciyes University, Kayseri, Turkey,* [2]*Department of Anesthesiology and Pediatric Dentistry, Faculty of Medicine and Dentistry, Erciyes University, Kayseri, Turkey*

Objective: The aim of presentstudy was to assess the postoperative adverse events in the first 24 h following dental care under general anesthesia (GA) with oral intubation in anxious children.
Materials and methods: Sixty premedicated patients who are unable to cooperate, incompatible and have high dental fear (Score Iaccording to Frankl scale) underwent GA for their dental treatments. The children were orally intubated for the treatments under GA. Sevoflurane with 2% and 8% were given to induction and maintain in anesthesia, respectively. The patients' age, gender, type of dental treatment, and duration of anesthesia and operation were reported from the impatient service. Other postoperative complications, which include crying, nausea and vomiting, bleeding, and drowsiness, were also noted for 24 h after the operation.
Results: The mean age of patients was 5.78 (SD 0.98) years and their ages ranged from 2 to 11 years. There was no significant difference between genders. Minor post-operative discomforts, such as pain, bleeding and nausea, have been recorded to occur frequently in immediate period of the 60 participants, approximately 60% and 55% had preoperative and post-operative complication, respectively. It was found that there was a positive relation between number of extracted teeth and post-operative discomfort include of pain and bleeding.
Conclusions: The results of present study demonstrated that the most common complaint after dental treatment under general anesthesia was bleeding. Also, children frequently experience dagitation, sleepiness, pain, nausea and vomiting.

P281
Effects of Oxalate and Tri-Calcium Phosphate Gels on the Primary Teeth Dentin Permeability: A Pilot Study
K. Görkem Ulu Güzel, Zuhal Kırzıoğlu
Department of Pediatric Dentistry, Faculty of Dentistry, Süleyman Demirel University, Isparta, Turkey

Objectives: The aim of this study was to evaluate the effects of oxalate and tri-calcium phosphate fluoride gels to the permeability of extracted primary molar teeth with a new system with photosensors'.
Materials and method: This study was approved by the Research Ethics Committee. A total of 20 non-carious primary molar teeth with 1/3 root resorption, which were with no restoration, fracture or crack were selected and randomly divided into two groups. Similar cavities were prepared on the coronal segment of teeth using diamond fissur bur and placed in the electronic hydraulic conductance measurement system. The dentine permeability (Lp) of each specimen was measured before and after the application of

oxalate and tri-calcium phosphate. The amount of distilled water passed through each dentin disk (μl/min) under a constant pressure (50 cmH_2O) was determined. Dentin permeability data of the teeth were recorded and analyzed statistically.
Results: The dentin permeability respectively presented significant decrease after the application of oxalate and tri-calcium phosphate fluoride gel ($p = 0.015$, $p = 0.024$, $p < 0.05$)
Conclusion: Topical application of oxalate and tri-calcium phosphate gels leads to a decrease the dentine permeability in the primary molar teeth as observed in the present study.

P282
Prevelance of Dental Anomalies in Turkish Population
Gamze Aren[1], Ceren Güney Tolgay[1], Tamer Erdem[2], Gülsüm Ak[3], Özlem Filiz Bayar[3], Taha Emre Köse[2], Gülhan Koyuncuoğlu[1]
[1]Department of Pediatric Dentistry, Istanbul University, Istanbul, Turkey, [2]Department of Oral Radiology, Istanbul University, Istanbul, Turkey, [3]Department of Oral and Maxillofacial Surgery, Istanbul University, Istanbul, Turkey

Objectives: The aim of this study was to determine the prevalence of dental anomalies in Turkish dental patient population with respect to gender and age.
Methods: A retrospective study was performed using panoramic radiography of 2025 patients attending Istanbul University, Faculty of Dentistry, Department of Oral Radiology between the ages 3–86. All data were analyzed for hypodontia, hyperdontia, taurodontism, microdontia and root anomalies.
Results: Among 2025 patients, 885 (43.7%) were male and 1140 (56.29%) were female with the mean age of 36.61. Hypodontia was the most common dental anomaly (1.77%) which is more prevalent in females (63.88%). 1.18% of the patients had taurodontism and 62.5% of them were male. Hyperdontia was determined in 0.79% of the patients. Microdontia (0.54%) and root anomalies (0.44%) occur less frequent according to our results.
Conclusion: Hypodontia is the most common dental anomaly followed by taurodontism and hyperdontia.

P283
Preference of a New Colored Compomer Material in Children
Eda Haznedaroğlu, Fatma Varol, Serhat Karaca, Ali Menteş
Department of Pediatric Dentistry, Marmara University, Istanbul, Turkey

Objective: The purpose of this study was to evaluate the clinical performance of a new colored flowable compomer material in primary molars and the effect on the pleasantness of the child patient.
Materials and methods: Our study was designed as split-mouth-One hundred class I and V restorationswere placed in a total of 50 child patients. A newly developed flowable compomer materials (Twinky StarFlow, Voco, Germany) was placed on 50 primary molars and a compomer restorative material (Dyract extra, Dentsply, USA) was used as a control. Behaviour assessment of each child was done using Frankl's behaviour rating scale at the beginning of treatments. All children were exposed to live modelling and tell-show-dobehaviour management technique while having their treatments. Modified facial image scale was used to determine the dental anxiety before and after treatment. The children were asked to point at which face they felt most like at that moment.
Results: Colored flowable compomer material (Twinky Star, Voco, Germany) was preferred by the patients more frequently 86% ($p < 0.005$). Female and 5–6 years old patients were the most pleasantness group to the colored fillings in our study.

P284
Multidisipliner Treatment of an Immature Tooth with Cervical-Root Fracture: A Case Report
Sema Çelenk[1], Demet Süer Tümen[2], Behiye Bolgül[1], Buket Ayna[1]
[1]Department of Pediatrics, Faculty of Dentistry, Dicle University, Diyarbakır, Turkey, [2]Oral and Dental Health Center, Diyarbakır, Turkey

Introduction: Cervical root fracture of a tooth below the gingival attachment presents a very difficult restorative problem and have a worse prognosis compared with other root fracture types. Orthodontic extrusion of such teeth allows elevating the fracture line above the epithelial attachment and so the proper finishing margins can be prepared.
Case: The aim of this case report is to move the tooth to supracrestal position and to maintain the healty periodontium in a maxilary lateral incisor. In this case, fallowing the removal of the epithelial attachment on the root surface, apexification procedure and orthodontic extrusion was initiated. Then the root was filled with MTA (Mineral Trioxide Aggregate) and esthetic coronal restotration was made using FRC (fiber reinforced composite).

Theme: Dental Treatment & Restorative Dentistry: Periodontics

P285
Diode Laser in Treatment of Chronic Periodontitis
Teodora Nikolaeva Bolyarova Konova[1], Raya Georgieva Grozdanova Uzunova[2], Gergana Petrova Micheva[1], Maria Stoianova Dencheva Garova[2]
[1]Department of Periodontology, Faculty of Dental Medicine, Medical University, Sofia, Bulgaria, [2]Department of Oral and Imaging Diagnostics, Faculty of Dental Medicine, Medical University, Sofia, Bulgaria

Aim: The aim of this study was to compare the effect of conventional non-surgical treatment by scaling and root planning – SRP to treatment by SRP and additional application of diode laser (808 nm) in patients with moderate chronic periodontitis.
Materials and methods: The study involved 40 patients with chronic periodontitis – moderate degree. Patients were divided into two groups. The first group included 20 patients to whom the procedure SRP has been performed – control group (no adjunctive treatment). The second group included 20 patients with the same treatment and additional application of diode laser (808 nm) – test

group. In both groups the treatment has been applied in four visits twice a week.

The clinical parameters of Papilla bleeding index, Hygiene index, Bleeding on probing, Probing pocket depth and Clinical attachment level were measured at baseline and 1 month after treatment.

Microbiological testing for periodontal pathogens and immunological detection of IL-6 levels in gingival exudate were conducted before treatment and 1 month after treatment completion.

Results: One month after treatment all groups showed significant improvements with regard to all clinical parameters compared to baseline. The test group with additional application of diode laser have better clinical and laboratory parameters compared to the control group.

Conclusions: Application of diode laser in addition to conventional treatment of patients with moderate chronic periodontitis have a beneficial effect.

P286

Using of Photodynamic Therapy in Patients with Generalized Periodontitis

Aleksiy Pavlenko, Nataliya Savichuk, Viktoriia Peredrii
P.L. Shupik National Medical Academy of Post-Gradute Education

Background/Aims: Periodontitis is the disease of periodontal tissues which is being characterized by progressive destruction of bone tissue. Additional treatment using the photodynamic therapy (PDT) reduced periodontal gingival inflammation, decrease amount of pathogenic microorganisms.

Method: Thirty subjects 25–55 years old presenting periodontal pockets at least 5 mm deep in each quadrant received initial periodontal treatment. The study had a split-mouth design. The control side (SRP) only received scaling and planing (SRP), and the test side (SRP + PDT) was treated by both SRP and PDT. Clinical conditions were evaluated at day 0 and day 10 the bleeding on probing (BOP), probing pocket depth (PPD). The PDT using a photosensitizer a toluidine blue in a mode 30 s each periodontal pocket during 5 days.

Results: There was no statistically significant difference between test and control sites concerning clinical criteria (BOP, PD) at baseline. The difference between day 0 and day 10 was highly significant, statistical differences existed between test and control sites.

Average BOP value was initially 0.7 in both treatment and control sites. Both treatments modified the BOP ($p > 0.001$), but differences between groups were significantly different ($p > 0.05$).

The initial PD average was 4.5 mm (SD = 0.9) in the control and 4.6 (SD = 0.9) in the test sites. After treatment, PD changed to 3.8 mm (SD = 1.0) in the control and 2.4 mm (SD = 0.4) for the test sites. Both treatments demonstrated a decreased PPD ($p > 0.05$).

Conclusion: The results clearly show that both treatment modalities were effective in decreasing the values of the clinical parameters used to evaluate periodontitis.

P287

Clinical Effectiveness of Photodynamic Therapy in the Treatment of Chronic Periodontitis

Tuğçe Sümer, Leyla Kuru, Bahar Kuru
Department of Periodontology, Marmara University, Istanbul, Turkey

Aim: The aim of this study was to assess the effect of adjunctive photodynamic therapy (PDT) in the mechanical treatment of chronic periodontitis patients.

Material and methods: Twenty systemically healthy non-smoking patients with untreated chronic periodontitis were included. All teeth received mechanical periodontol treatment comprising oral hygiene instruction and scaling/root planing. Using a split-mouth design, three quadrants (test groups) were additionally treated with various modes of FDT. Plaque index (Pİ), gingival index (Gİ), probing depths (PD), relative attachment levels (RAL), bleeding on probing (BOP) were assessed at baseline and 3 months after treatment. The study was approved by the Institutional Review Board of Health Sciences of Marmara University.

Results: No significant differences were found in any of the clinical parameters at baseline between the groups. Pİ, Gİ, PPD, RAL and BOP showed significant reduction 3 months after the treatments in all groups ($p < 0.001$). The intergroup difference was not significant in any clinical parameters ($p > 0.05$).

Conclusion: Within the limits of this study, no significant adjunctive effects of the FDT were detected in the mechanical periodontal treatment of chronic periodontitis patients.

P288

Clinical Evaluation of Non-Surgical Periodontal Treatment in Generalized Aggressive Periodontitis

Dilek Gürbüz, Bahar Kuru, Başak Doğan
Department of Periodontology, Marmara University, Istanbul, Turkey

Aim: To evaluate the clinical outcomes of non-surgical mechanical periodontal treatment in generalized aggressive periodontitis (GAgP) patients.

Material and methods: Eleven patients (19–36 years of age; mean 30.55 ± 5.96) diagnosed as GAgP in the Department of Periodontology, Marmara University were included in the study. All subjects were treated at four sessions with 1 week intervals without using any antimicrobials. Oral hygiene instructions and supragingival debridement were repeated every 2 weeks during the first 3 months and every 4 weeks during the last 3 months. Plaque index (PI), gingival index (GI), probing depth (PD), bleeding on probing (BOP) and clinical attachment level (CAL) were recorded at six sites per tooth at baseline and after 3 and 6 months. Patients were instructed not to use any systemic and/or local antimicrobials during this period. The study design was approved by Yeditepe University Clinical Research Ethics Committee (2012-257).

Results: All clinical parameters showed a significant ($p < 0.05$) improvement at 6 months post-treatment. The whole-mouth PD

significantly decreased from 4.9 ± 0.6 to 3.4 ± 0.5 mm and CAL from 5.8 ± 1.2 to 5.2 ± 1.4 mm ($p < 0.05$). Moreover, the percentage of sites PD ≥7 mm reduced 25.7 ± 11.0% to 4.5 ± 3.8% ($p < 0.05$) and CAL ≥7 mm 39.8 ± 17.2% to 27.3 ± 22.1% ($p < 0.05$).

Conclusion: It can be concluded that non-surgical mechanical periodontal treatment and regular recall appointments of GAgP patients achieve significant clinical outcomes over 6 months.

P289

Isolated Gingival Recession Treatment with Laterally Positioned Flap Technique: Case Series

Ahmet Afşin Erbeyoğlu, Raif Alan, Gülşah Tatar, İsmail Marakoğlu, Tamer Ataoğlu
Department of Periodontology, Selcuk University, Konya, Turkey

Aim: Gingival recession is defined as the displacement of the soft tissue margin, apical to the cement-enamel junction, and its coverage is one of the most challenging procedures in periodontology. Periodontal plastic surgery techniques aim to reach the ideal result by root coverage and at the same time enlarging attached gingiva. There are many surgical techniques serving this purpose. In this case series, we applied laterally positioned flap technique with secondary healing of the donor area to treat five isolated gingival recession localized in different regions.

Method: Five female patients applied to our clinic with gingival bleeding and isolated gingival recession complaint in different regions. After clinical and radiographic examination and following initial periodontal treatment, laterally positioned flap technique was performed in order to cover gingival recession and regain attached gingiva. In all cases, full thickness pedicle flap technique used and positioned to the laterally recession area. The donor site left for secondary wound healing.

Result: At the end of 12–18 month healing period, appropriate attached gingiva that could prevent mucogingival stress and facilitate oral hygiene was achieved and it was observed that denuded root surfaces was partially covered.

Conclusion: In this case series, we observed that laterally positioned flap can be used for rehabilitation of mucogingival problems. And in our clinical observation, secondary healing time of the donor area was approximately 1 month.

P290

The Effects of Er, Cr:YSGG Laser on Implant Osseointegration

Abdullah Seçkin Ertuğrul, Yasin Tekin, Alihan Bozoğlan
Department of Periodontology, Faculty of Dentistry, Yuzuncu Yil University, Van, Turkey

Aim: Laser in periodontal treatment is basically non surgical, surgical, and is considered to be safe with its usage. The aim of the invention, is to compare the changes of the ISQ values between implants which have been implanted following the application of Er, Cr:YSGG laser into the implant cavities that has been formed with conventional methods during dental implant treatment (I-1) and which have been implanted without the application of Er, Cr:YSGG laser (I-2) into the implant cavities.

Methods: Ten subjects and 20 implant have been included in our study. An additional method was not applied to the first one of the cavities and an implant was inserted. Er, Cr:YSGG laser has been applied to implant cavity and then said implanted were inserted. After the completion of the osseointegration processes of the implants, the ISQ values of the implants belonging to the subjects participating to the study have been re-measured.

Results: When the difference between the ISQ values following operation and following the completion of the osseointegration process are taken, it has been determined that the average ISQ value variance was 17.5 in the I-2 group and 11,18 in the I-1 group. It has been found out that the ISQ variance values in I-2 group were statistically meaningfully higher in comparison to the I-1 group.

Conclusion: The bone tissue regeneration being effected due to thermal and mechanical trauma occurring during the opening of implant cavities could have gone back to its prior state with the application of Er,Cr:YSGG laser.

P291

External Resorption in an Upper Central Incisor with an Associated Endodontic-Periodontic Lesion: A Case Report

Murat İnanç Cengiz, Sibel Koçak
Faculty of Dentistry, Bülent Ecevit University

Introduction: Root resorption is the process of the removal of cementum and/or dentine through physiological or pathological activity of tooth resorbing cells, which may be called dentoclasts. There are two types of tooth resorption: internal and external resorption. Invasive external root resorption is entirely uncommon entities and the etiology is poorly understood. This case report shows the unique clinical and radiographic appearance of the presence of a large external inflammatory resorption due to endodontal-periodontal origin and its successful management.

Case: A 45-year-old patient was referred to our clinic with swelling and discolorization on his upper right central incisor. Radiographic examination shows irregular radiolucency over the coronal one-third and it extends subgingival area towards the external invasive resorption. The probing depth of the tooth was 7 mm in the centre of the buccal area after non-surgical treatment. As the defect was on the subgingival area, surgical intervention was planned. Incision was given and full thickness flap was reflected. A circular resorptive area was cleaned. During surgery root canal treatment and defect obturation with amalgam were done. Clinically and radiographically the tooth was asymptomatic without any side effect of amalgam filling, and no periodontal pocket was found after 6 months follow up.

Conclusion: In summary, this case report shows that large external resorptions could treated successfully with careful case selection.

P292

Immuno-Microbiological Characteristics of "Radent" Filler Material in Treatment of Chronic Apical Periodontitis

Irina I. Zadorina[1], Ludmila A. Mozgovaya[1], Liliya P. Bykova[2], Anatoliy P. Godovalov[3]

[1]Department of Therapeutic Dentistry, Acad. E.A. Wagner Perm State Medical Academy, Perm, Russia, [2]Department of Microbiology and Virology, Acad. E.A. Wagner Perm State Medical Academy, Perm, Russia, [3]Department of Immunology, Acad. E.A. Wagner Perm State Medical Academy, Perm, Russia

Aim: The purpose of the research is to study the composition of microflora, the number of leukocytes in tooth root canal under chronic apical periodontitis (CAP).

Material and methods: The analyses of microorganisms composition in teeth root canals (RC) was carried out with bacteriological method. Concentration of protein in RC contents was determined with biuret method. Temporary RC filling material "Radent" (Ca(OH)2 and ZnO) prepared in 1% solution of chlorhexidine (index group, 25 people) and krezodent (control group, 10 people) were used for treatment of CAP.

Results: Index group had 62% of cases with prevalence of staphylococci, 58% - of anaerobic microorganisms, mainly lactobacilli and peptococci, 50% - of streptococci. Aggravation of CAP was due to aggressive coccal flora and Neisseria or enterobacteria. "Radent" in clinical settings inhibits the development of streptococci, *Candida*, enterobacteria and anaerobic flora. Control had the growth of *Candida*, pyogenic streptococci, staphylococci and predominance of anaerobic flora. "Radent" significantly reduced the severity of leukocytosis in RC from 29133.3 ± 4008.2 till 13733.3 ± 2673, 4 per 1 μl ($p < 0.05$); krezodent does not have a similar effect (37600.0 ± 9431.9 per 1 μl; $p > 0.05$). The protein content is also significantly reduced in the index group when compared with same rate in the control (from 8.05 ± 0.89 till 2.92 ± 0.65 mg/ml, $p < 0.05$; control – till 5.72 ± 0.75 mg/ml, $p > 0.05$).

Conclusion: The research shows that the pathological process in the periodontium in CAP is mainly supported by coccal and anaerobic flora. "Radent" has a strong antibacterial effect, and by reducing the number of leukocytes and total protein an antiinflammatory.

P293

First Experience with the New Type of a Bioactive Glass in the Regenerative Therapy of Posterior Teeth in Chronic Periodontitis

Radovan Slezak, Vladimira Paulusova

Department of Dentistry, Faculty of Medicine in Hradec Kralove, Charles University in Prague, Czech Republic

Aim: A pilot, short-term study deals with author's first experience in regenerative surgical therapy of intraosseous periodontal defects done by an augmentation procedure using a new material prepared on the basis of so called bioactive glass.

Material and methods: The group of 10 individuals was treated regularly for chronic periodontitis. The therapy of persistant and recurrent periodontal intraosseous defects consisted of surgical regenerative procedure using bioactive glass material NovaBone for the augmentation of selected infrabony defects.

Clinical parameters were observed before and after the periodontal surgery. Values of the pocket depth, gingival recession, and loss of attachment were measured.

Results: The therapy led to significant improvement of clinical parameters in terms of the reduction of pocket depth and loss of attachment values.

P294

Evaluation of Gingival Crevicular Fluid (GCF) Levels of LL-37 and Serum Vitamin D3 Levels in Smoker and Nonsmoker Patients with Chronic Periodontitis

Elifcan Kıvrak[1], Gülay Tüter[1], Bülent Kurtiş[1], Erdim Sertoğlu[2]

[1]Department of Periodontology, Faculty of Dentistry, Gazi University, Ankara, Turkey, [2]Deparment of Biochemistry, Gülhane Military Medical Academy, Ankara, Turkey

Purpose: Cathelicidin LL-37, an antimicrobial peptide, is part of the host innate immune response in the oral cavity. The aim of this study was to evaluate; gingival crevicular fluid (GCF) levels of LL-37 and serum vitamin D3 levels and clinical parameters in smoker and non-smoker patients with chronic periodontitis (CP).

Material and methods: Plaque index (PI), gingival index (GI), probing depth (PD) and clincal attachment level (CAL) measurements, GCF and blood serum samples were collected from smoker (n:20) and non-smoker (n:20) patients with chronic periodontitis and periodontally healthy (n:20) control subjects. GCF levels of LL-37 were measured by Enzyme linked immunosorbent assay (ELISA) and serum levels of vitamin D3 were analysed by High-performance liquid chromatography (HPLC). The results were analysed as statistically.

Results: GCF levels of LL-37 have been found significantly higher in CP groups than control subjects but no significant difference was found between smoking and non-smoking CP groups ($p < 0.05$). There was a positive correlation between GCF LL-37 and vitamin D levels in smoker CP group ($p < 0.01$). All clinical parameters were found correlated with GCF LL-37 levels ($p < 0.01$). PI, GI, PD, CAL measurements were significantly higher in CP groups than controls ($p < 0.05$).

Conclusion: Vitamin D can acts as a potent stimulater of LL-37 in GCF. Elevated levels of GCF cathelicidin LL-37 in chronic periodontitis suggest that it may play a role in the host innate immune response during periodontal inflammation.

P295

Periodontal Involvement of Langerhans Cell Histiocytosis in a Young Man

Nezahat Arzu Kayar[1], Nilgün Özlem Alptekin[2], Mustafa Cihat Avunduk[3]

[1]Department of Periodontology, The Ministry Health of Turkey, Oral and Dental Health Center, Antalya/Turkey, [2]Department of Periodontology, Faculty of Dentistry, Selcuk University, Konya, Turkey, [3]Department of Pathology, Selcuk University School of Medicine, Meram, Konya, Turkey

Introduction: Langerhans cell histiocytosis (LCH) is a rare proliferative histiocytic disorder in which pathologic Langerhans cells accumulate in a variety of organs. The features of the disease are well described in children, but remain poorly defined in adults.
Case: We present a case of oral lesions and severe localized periodontitis associated with LCH in a 29 years old male patient who had been diagnosed with pulmonary LCH and applied systemic chemotherapy 7 years ago. Considering the patient's clinical history, the patient who did not experienced recurrence of the lesions during first 5 years. But 2 years ago we revealed a new oral lesion and severe localized bone loss in anterior mandible and posterior maxilla. Gingival biopsies were taken under local anesthesia and investigated by using immunohistochemically. The patient received 500 mg amoxicillin and 500 mg metronidazol three times daily plus non-surgical periodontal therapy. Immunohistochemical findings confirmed that the cells are phenotypically related to Langerhans cells. Two-year after periodontal therapy, treatment resulted in reduction of probing depth and gain in clinical attachment level.
Conclusion: Clinical 2 years follow-up suggests that initial phase periodontal therapy may be beneficial for the treatment for severe bone destruction in a young man with LCH.

P296

Effects of Alpha-Lipoic Acid and Vitamin C on 8-hydroxydeoxyguanosine, Glutathione and Malondialdehyde Levels After Experimental Periodontitis in Rats

Oğuz Köse[1], Adem Kara[2], Taner Arabacı[1], Cenk Fatih Çanakçı[1], Seçkin Özkanlar[3]
[1]Department of Periodontology, Faculty of Dentistry, Ataturk University, Erzurum, Turkey, [2]Department of Histology and Embryology, Faculty of Veterinary Medicine, Ataturk University, Erzurum, Turkey, [3]Department of Biochemistry, Faculty of Veterinary Medicine, Ataturk University, Erzurum, Turkey

Aim: The present study aimed to investigate effects of ALA and Vit-C substances on 8-hydroxydeoxyguanosine (8-OHdG), glutathione (GSH) and malondialdehyde (MDA) levels in experimental periodontitis in rats.
Methods: Thirty six Wistar albino male rats were randomly divided into four groups as follows: Control (C), experimental periodontitis induced by ligature group (PED), experimental periodontitis induced by ligature and treated with ALA (ALA) group, and experimental periodontitis induced by ligature and treated with ALA + Vit-C combination (ALA + Vit-C) group. Experimental periodontitis was stimulated by placing ligatures around the necks of teeth for 5 weeks. After ligature removal, PED group was given a single intra gastric dose of 1 ml saline, while ALA and ALA + Vit-C groups were treated with intra-gastric dose of 50 mg/kg of ALA and ALA + Vit-C for 15 days, respectively. Gingival tissues were obtained and 8-OHdG, GSH and MDA levels were determined in these tissue homogenates.
Results: The results showed statistically significant differences between the PED group and antioxidant treated groups in terms of 8-OHdG, MDA and GSH levels ($p < 0.05$). It was observed that combination of the Vit-C to the ALA treatment did not create important differences at the results compared to ALA group ($p > 0.05$). These treatments exhibited regulatory effects on the local oxidant-antioxidant balance.
Conclusion: This study evidenced that ALA and Vit-C reduced the oxidative damage in the rats' periodontal tissue by restoring to antioxidants. These vitamins may propose as new therapeutic agents in the treatment of periodontal diseases.

P297

The Effects of the Essential Oil Mouthwash on Human-Beta-Defensin-3 Level

Abdullah Seçkin Ertuğrul, Emre Gürkan Eroğlu, Hacer Şahin Aydınyurt, Ahu Dikilitaş
Department of Periodontology, Dentistry Faculty, Yuzuncu Yil University, Van, Turkey

Aim: Human beta-defensins (hBDs) are the peptides, have antimicrobial effects against for periodontal pathogens. The hBDs are found in oral mucosa, salivary glands and gingiva. Especially hBD-3 is an antimicrobial agent and can promote the proliferation of fibroblast. Chemical plaque control is the most commonly recommended means of oral hygiene after periodontal surgery. The essential oil antiseptic is a combination of the phenol-related essential oils, including thymol (0.060%), eucalyptol (0.091%), menthol (0.042%) and methyl-salicylate (0.064%) in a 26.9% hydroalcoholic vehicle. This study aimed review the effects of applied essential oil mouthwash (EOMW) after scaling root planning (SRP) on HBD-3 levels in gingival crevicular fluid.
Materials and methods: SRP + EOMW and SRP + sodium chloride are applied to 12 patients mouth have four quarter effected periodontitis. SRP + EOMW is applied one quarter of mouth of patients and the SRP + sodium chloride is applied the another quarter of mouth of the same patients. The level of hBD-3 examined before the treatment and after a month of the treatment by the Enzyme-Linked Immuno-Sorbent Assay.
Results: The research shown that after the treatment, the periodontal indexs are meanly decreased. However the decreased level of hBD-3 did not show a significant difference in term of SRP + EOMW between SRP + sodium chloride.
Conclusion: The decreased level of hBD-3 may be the reason of the killing effects of the EOMW on microorganism. EOMWs effects on periodontal diseases are needed to work harder to understand.

Theme: Dental Treatment & Restorative Dentistry: Prosthetics

P298

Do Other Ethnics Have the Same Complete Denture Biometric-Guides as Caucasians?

Ammar A. Mustafa, Kais R. Abdulmajeed
Faculty of Dentistry, International Islamic University, Malaysia

Objectives: To compare the applicability of biometric guides used in clinical and lab procedures of complete denture construction on different ethnic origins.
Methodology: Three hundred volunteers from three different ethnic origins (Malay, Chinese and Indians) with age range from 20

to 75 years-old were volunteered to participate in this study as test groups. The control group was consisted of 100 Caucasians volunteers with age range 21–66 years-old. Ethical committee approval was obtained from our University. In this comparative cross sectional descriptive and analytical study all patients were presented with natural incisors and canines. Measurements were performed to the width of the nostrils and the inner-canthus distance by digital caliper and compared to the width of the six upper anterior teeth and to both the width of the upper two centrals and the philtrum respectively. Alginate impression were made to all patients. Two lines were made from the centre of incisive papilla to the facial surfaces of the central incisors another line was made to the tip of the left and right canines. The distance from midpoint of incisive papilla to these three lines were measured on study casts. Statistical analyses were performed using SPSS 16 software.
Results: The comparative results showed highly significant relations among comparative variables. No significant differences found among groups ($p > 0.005$).
Conclusion: Biometric guides are applicable to most ethnic origins. Thus, they are important clues to be used significantly in both clinical and lab procedures of complete denture construction.

P299
Color Changes of Polyamid and Polymetylmethacrylate Denture Base Materials
Nurdan Polat Sagsoz, Nuran Yanıkoğlu, Hamza Ulu, Funda Bayındır
Prosthodontics Department, School of Dentistry, Ataturk University, Erzurum, Turkey

Purpose: Both conventional and flexible resins may be shown color alteration due to intrinsic and extrinsic factors. The aim of this study was evaluated the color changes of the polyamid and heat polymerized acrylic denture base materials in storage different staining solutions.
Material and methods: Two denture base materials was used in this study. The speciemens were stored in two staining solutions (tea, coffee), distilled water and denture cleaner. The color changes of speciemens were evaluated before and after 7 and 30 days. After desiccation, the color of speciemens was measured using a colorimeter. All data recording were taken by the same investigator to minimize inconstancy of technique. The data were analyzed statistically by repeated measures analysis of variance and Tukey honestly significant difference multiple comparison tests.
Results: It was found no statistically significant difference between solutions statistically ($p > 0.05$). Polyamid denture base resin displayed the greatest colour change when compared to Polymetyhl methacrylate denture base resin ($p < 0.001$). Polyamid material indicated the highest value (ΔE: 7.28) in coffee solution for 7 days.

P300
Shear Bond Strength of Veneering Ceramic to Zirconia Core After Different Surface Treatments
Ömer Kırmalı[1], Hakan Akın[2], Ali Kemal Özdemir[2]
[1]*Department of Prosthodontics, Faculty of Dentistry, Akdeniz University, Antalya, Turkey,* [2]*Department of Prosthodontics, Faculty of Dentistry, Cumhuriyet University, Sivas, Turkey*

Objective: The aim of this study was to evaluate the effect of different surface treatments; sandblasting, liner and different laser irradiations on shear bond strength (SBS) of pre-sintered zirconia to veneer ceramic.
Material and methods: Two hundred specimens with 7 mm diameter and 3 mm height, pre-sintered zirconia blocks were fabricated. Specimens were randomly divided into 10 groups ($n = 20$) according to surface treatments applied. Group C; untreated (Control), Group E; Er:YAG laser irradiated, Group N; Nd:YAG laser irradiated, GroupSB; sandblasted, Group L; liner applied, Group NL; Nd:YAG laser irradiated + liner applied, Group EL; Er:YAG laser irradiated + liner applied, Group SN; sandblasted + Nd:YAG laser irradiated, Group SE; sandblasting + Er:YAG laser irradiated, and Group SL; sandblasting + liner applied. Veneering porcelains were performed on zirconia blocks. Specimens before the experiment, 37°C are steeped in distilled water for 24 h. The thermal cycle tests were applied to the all specimens as 5000 cycle. Shear bond strength test was performed at a crosshead speed of 1 mm/min. The fractured specimens were examined under a stereomicroscope to evaluate the fracture pattern.
Results: Surface treatments significantly changing the topography of the Y-TZP ceramic according to SEM images. After different surface treatment, there was no difference in surface roughness of pre-sintered zirconia to compare after sintering, sintering enhanced the bond strength within the limitations of present study. The highest mean bond strength value was obtained in group SE and the lowest bond strength value was observed in NL group. Bond strength values of the other groups were similar to each other.

P301
Curing Efficiency of Resin Cement Under Monolithic Zirconia
Pınar Gültekin, Elif Pak Tunç, Volkan Turp, Değer Öngül, Burçin Karataşlı, Özgür Bultan
Department of Prosthodontics, Faculty of Dentistry, Istanbul University, Istanbul, Turkey

Purpose: Different translucency properties of zirconia materials may affect the light transmission through the material to activate resin cement curing under the restoration. The aim of this study was to evaluate the effect of zirconia material and thickness on curing efficieny of resin cements.
Materials and methods: Eight zirconia disc-shaped specimens (Everest ZS-Kavo and Prettau-Zirkonzahn) with 4 mm diameter and following thicknesses: 0.5, 1.0, 1.5, 2.5 mm were fabricated. Twelve dual-cure resin cement specimens with 4.0-mm diameter and 6.0-mm height were prepared in teflon molds covered with a slide and light activated through each zirconia disc group. Light

curing was performed for 20 s using a light emitting diode device with a power of 1200 mW/cm^2. Specimens were stored for 24 h in light-proof containers following light curing. Resin cement specimens were then embedded in acrylic, wet flattened with SiC and Vickers hardness measurements were taken using a microhardness tester with 50 g load for 15 s at three different depths for each specimen. Results were statistically analyzed with one-way ANOVA and Tukey HSD tests ($\alpha = 0.05$).

Results: A statistically significant increase in VHN (Vickers Hardness Number) value of the resin cement was detected with increasing translucency of the zirconia ($p < 0.05$). Increasing thickness caused significant decrease in curing efficiency ($p < 0.05$).

Conclusion: Curing efficiency of dual-cure resin cement is affected by the translucency and thickness of the zirconia materials tested.

P302

Effect of Low-Temperature Aging on Flexural Strength of Monolithic Zirconia

Deniz Şen, Pınar Gültekin, Nesrin Ceren
Department of Prosthodontics, Faculty of Dentistry, Istanbul University, Istanbul, Turkey

Purpose: The purpose of this in vitro study was to evaluate the effect of artificial aging on biaxial flexural strength and surface characteristics of different zirconia materials.

Materials and methods: Fourty-eight zirconia disc-shaped specimens with 15 mm diameter and 2 mm thickness were prepared as three groups consisting of 16 specimens each as follows: (Gr 1) Bilayered zirconia (1 mm)-feldspathic (1 mm) (ICE Zirkon, Zirkonzahn); (Gr 2) Monolithic zirconia (2 mm) (Prettau, Zirkonzahn); (Gr 3) Monolithic zirconia (2 mm) (Cercon ht, Degudent). Half of the specimens for each zirconia group were randomly selected and assigned to artificial aging to simulate low-temperature degradation. Biaxial flexural strength was measured with a universal testing machine using piston-on-three-ball technique at a crosshead speed of 1 mm/min. Data were analyzed with one-way ANOVA and Tukey HSD tests ($\alpha = 0.05$). SEM analysis of fractured specimens was also performed on a representative sample from each group.

Results: Low-temperature aging adversely affected the biaxial flexural strength of bilayered and single layer zirconia groups tested ($p < 0.05$). Monolithic zirconia groups exhibited higher strength values in comparison to bilayered zirconia group regardless of aging process whereas the difference between the mean flexural strength of tested groups was not statistically significant ($p > 0.05$). The mean strength values of zirconia groups were ordered as follows: Cercon ht > Prettau > ICE Zirkon.

Conclusion: Low temperature aging process decreased biaxial flexural strength of monolithic zirconia. The results of this study indicated that monolithic zirconia shows comparable flexural strength to bilayered zirconia.

P303

Fracture Resistance of Teeth Restored with One-Piece Milled Aesthetic Post-Core Systems

Zehra Çekirdek[1], Aygül Sevda Atalay[2], Begüm Akkayan Kesmezacar[1]
[1]*Department of Prosthodontics, Istanbul University, Istanbul, Turkey,* [2]*Department of Prosthodontics, Istanbul Aydin University, Istanbul, Turkey*

Purpose: Commercially available zirconia ceramic blocks and quartz fiber blocks specially produced by the manufacturer were used for the present study to compare the fracture resistance of teeth restored with one-piece milled post-core systems.

Materials and methods: Twenty extracted maxillary human canines were selected for this study. Teeth were decoronated at the cemento-enamel junction, endodonticallay treated and divided into two groups (n = 10). After standart post space preperations, post-core patterns were produced using autopolymerizing acrylic resin pattern and they were scanned. Scanned datas of each post-core models were transfered to the milling device and quartz fiber (RTD, St. Egreve, France) and zirconia ceramic (Vita In-Ceram YZ Disc, Vita Zahnfabrik, Bad Sackingen, Germany) post-core systems were manufactured. Following the cementation of the specimens they were compressively loaded in a universal testing machine until fracture. The results were analyzed by Student's *t*-test.

Results: Compressive load test results were found to be statistically higher for the one piece milled zirconia ceramic post-core systems compared to the one piece milled quartz fiber post-core systems. Fractures that would allow repair of the tooth were observed in quartz fiber post-core systems, whereas mostly unrestorable, catastrophic fractures were observed in zirconia ceramic post-core systems.

Conclusions: The choice of a post material with a close elastic modulus to dentin could be an effective alternative for the restoration of the severely damaged endodontically treated teeth. The fabrication of one-piece, computer aided milled quartz fiber blocks could serve as a beneficial option for contemporary prosthetic restorations.

P304

Effect of Surface Treatment of Copy Milled Zirconia Ceramic Restorations on Bonding to Resin Cement

Hanaa Mohammed Elshenawy[1], Mohammed Aly Rashad[1], Gehan Abd Elhade Elnagar[2]
[1]*National Research Center, Cairo, Egypt,* [2]*Faculty of Oral and Dental Medicine, Cairo University*

Statement of the problem: Successful long-term bonding to zirconia ceramic remains a challenge, requiring special surface treatment methods. The methods used to increase micromechanical retention to silica based ceramics do not always produce the required roughness and bond strength to zirconia ceramics.

Objective: The present study was an attempt to improve the bond strength of zirconia-based ceramic restorations (Ice-zirconia-zirkonzahn) to resin cement.

Materials and methods: Twenty one zirconia discs received three different surface treatments: group 1- sandblasting with 110 um aluminum oxide particles; group 2- silica coating (cojet system) and group 3- laser irradiation (CO_2 laser). The ceramic discs were cemented to natural teeth by resin cement (RelyX Unicem). Scanning electron microscope was also performed to evaluate the surface morphology changes. Shear bond strength was recorded using a universal testing machine at a cross-head speed of 0.5 mm/min and expressed in megapascals (MPa).

Results: All groups yielded statistically significantly different roughness mean values: group 1 (219.00 ± 14.8 μm); group 2 (187.26 10.72041 μm); group 3 (262.11 ± 31.675 μm) (ANOVA and Newman-Keuls test; $p < 0.05$).

Also, all groups yielded statistically significantly different shear bond strength mean values: group 1 (18.69 ± 2.47 MPa); group 2 (14.51 ± 1.7 MPa); group 3 (12.69 ± 2.439 MPa) (ANOVA and Newman-Keuls test; $p < 0.05$)

Conclusion: Increasing surface roughness of zirconia ceramics using laser irradiation had no significant effect on the shear Bond strength. Sandblasting remains the most suitable and the easier method for enhancing the bond strength between zirconia ceramics and resin cement.

P305

Prosthetic Rehabilitation of Hemi-Mandibular Defect: A Case Report

Ahmet Serkan Oruç, Caner Öztürk, Fehmi Gönüldaş
Department of Prosthodontics, Ankara University, Ankara, Turkey

Mandibular defects may result from congenital or developmental abnormalities, accidental trauma, or acquired disfigurements resulting from removal of tumors during mandibular surgery in the oral cavitiy.

There are several treatment options available for rehabilitation in cases of partial loss of mandible including removable partial dentures, fixed partial dentures, crown and bridges, teeth-implant supported prosthesis, partial dentures with precision attachments. The prosthesis should replace all missing oral structures including both hard and soft tissues also function and esthetic. The appropriate treatment for the mandibular defects demands a multidisciplinary approach. This clinical report describes the prosthetic rehabilitation of a fractured mandibula with hemi-mandibular defect caused by tumor surgery in a 60 years-old man. Prosthetic rehabilitation was obtained with a partial denture with extracoronal precision attachments.

P306

Complete Oral Rehabilitation with Overdenture Prosthesis of Four Young Sisters Suffering with Amelogenesis Imperfecta: A Rare Case

Nermin Demirkol[1], Fatih Sarı[1], Mehmet Bülbül[1], Mehmet Demirkol[2]
[1]Department of Prosthetic, Gaziantep University, Gaziantep, Turkey, [2]Department of Oral and Maxiilofacial Surgery, Gaziantep University, Gaziantep, Turkey

Background: Amelogenesis imperfecta is a hereditary disease affecting the quality and quantity of enamel. Patients suffer from dental sensitivity, physicological problems and compromised esthetics.

These anamolies such as congenital tooth loss, anterior openbite, calsification of pulp, dentin dysplasia, resorption of root and crown, hypersementosis in addition to irregular structure of enamel may be seen. There are four basic groups for amelogenesis imperfecta:

1 Hypoplastic type
2 Hypomaturation type
3 Hypocalcification type
4 Hypomaturation-hypoplastic type with taurodontism

Diagnosis: Clinical examination and genetic diagnosis are important. In these patients and their parents genetic identification has been still continuing.

Treatment: The conservative treatment choice is based on metal supported ceramic crowns but for this treatment, preparation design is usually destructive to tooth tissue.

This case report describes a noninvasive technique with overdenture prosthesis.

Patient and method: Clinical and radiological investigations were done and decreased vertical dimensions were observed. There were diastemas among teeth. Two sisters are twin and 11 years old, one of the others is 13 and the last one is 16. Firstly photografic and radiografic registrations were recorded. By removing of the undercuts without any invasive application to the teeth complete dentures were done according to the convensional procedures on the teeth. Vertical dimensions were improved. Esthetic and functional properties were gained to these sisters.

Conclusion: When the decreased vertical dimension is observed the prosthetic treatment is appropriate. In these patients complete dentures were done and not applied any invasive treatment. Results were satisfied fort the patients.

P307

Prosthetic Rehabilitation of an Edentulous Patient with Microstomia: A Clinical Report

Ayşegül Köroğlu, Onur Şahin, Doğu Ömür Dede
Department of Prosthodontics, Faculty of Dentistry, Bulent Ecevit University, Zonguldak, Turkey

Introduction: Microstomia is defined as an abnormally small oral orifice. Microstomia can ocur as a result of surgicial treatment of orofacial cancers, maxillofacial trauma, burns, temporomandibular joint (TMJ) dysfunction syndrome, reconstructive lip surgery, radiotherapy, scleroderma and genetic disorders. Prosthetic rehabilitation of microstomia patients presents difficulties at all stages, from the impression procedure to the fabrication and insertion of prosthesis. The aim of this case report is to describe the prosthetic rehabilitation of an edentulous patient with microstamia.

Case: A 64-year-old edentulous man with microstomia induced by oral malign neoplasm presented to the Department of Prosthodontics for maxillary and mandibular complete dentures. The preliminary maxillary and mandibular impressions were made with alginate impression material and stock metal trays which were

diminished with burs to make fit into the mouth. Custom impression trays were fabricated using thermoplastic polyurethane pressure moulding material at thickness of 3 mm. Subsequently a medium body silicone impression material was used to make the definitive impressions. Maxillary and mandibular denture bases were prepared using the same moulding material and artificial teeth arrangement, the jaw relationship and try-in stages were evaluated intraorally using that kind of bases. Maxillary and mandibular prosthesis were processed in one piece, using heat-polymerized polymethyl methacrylate resin. The irritations were identified and eliminated during recalls.

Conclusion: For patients with limited opening, clinical dental procedures may be difficult. This article discusses the clinical impressions, jaw relationship, try-in procedure and denture design, using flexible custom trays and denture bases, suitable for a patient with microstomia.

P308

An Investigation of the Bacteriological Activity of Denture Cleansing Products

Kazim Serhan Aksit[1], Yasar Nakipoglu[2], Gamze Mandali[1], Gulsen Gunel[2], Bulent Gurler[2], Aysegul Yurdakos[1]
[1]*Department of Prosthodontics, Private Provincial Administration of Istanbul, Oral and Dental Diseases Hospital, Istanbul, Turkey,* [2]*Department of Medical Microbiology, Faculty of Istanbul Medicine, Istanbul University, Istanbul, Turkey*

Objective: To reduce infections, selection of appropriate denture base material and effective denture cleaning or disinfecting preparations are very important. In our study, we aimed to investigate the antibacterial activity of cleansing and disinfectant preparations currently use in Turkey.

Materials and methods: In our study, the antibacterial activity of three alkalen peroxide type cleaning denture effervescent tablets (Fittydent, Corega tabs, Protefix) frequently used in our country and two disinfectant solutions (Curaprox BDC 105 (weekly use), Curaprox BDC 100 (daily use), were tested on four types of denture base material samples (Vertex, Rodex, Molloplast-B, Meliodent) contaminated with *Staphylococcus aureus* ATCC 6538, *Pseudomonas aeruginosa* NCTC 6749 and *Bacillus subtilis* var niger ATCC 9372 at the contact times advised by the manufacturers.

Results: All of the preparations were found to be 100% effective against *S. aureus* ATCC 6538. Fittydent for 30 min, Corega and Protefix tablets for 15 min of each, and Curaprox BDC 105 for 6 h which was used during the week had the same activity (100%) against *P. aeruginosa* NCTC 6749. Otherwise, Curaprox BDC 100 was found 93–100% effective against *P. aeruginosa* NCTC 6749 for 5 min contact time. Fittydent (97–98%), Corega tabs (91–99%), Protefix tabs (68–95%), Curaprox BDC 100 (72–99%) and Curaprox BDC 105 (99%) have different disinfection effect against *B. subtilis* var. niger ATCC 9372. The effect of denture base materials on the cleaning and disinfection were very variable according to the kinds of bacteria present in the test environment.

Conclusion: Daily cleaning or disinfection of the dentures are effective methods to prevent bacterial contamination.

P309

Clinical Marginal Gap and Internal Adaptation of CAD/CAM, Laser Sintering and Cast Metal-Porcelain Crowns

Ece Tamaç, Suna Toksavul, Muhittin Toman
Department of Prosthetic Dentistry, Ege University, Izmir, Turkey

Aim: The aim of this study was to compare clinical marginal gap and internal adaptation of metal-porcelain crowns that were fabricated three techniques including CAD/CAM (CC), laser sintering (LS) and casting (C).

Methods: This study was approved by Ethical Committee of Faculty of Medicine (11-6/2), Ege University. Twenty CC, 20 LS and 20 C metal-porcelain crowns were fabricated for 42 patients. Silicone replica was obtained to measure marginal gap (a) and internal adaptation that was evaluated at three region including axial wall (b), axio-occlusal angle (c) and occlusal surface (d). Measurements were performed using computerized light microscope at 20× magnification. Measurements were analysed with one-way ANOVA and Bonferroni test ($\alpha = 0.05$).

Results: Mean marginal gaps for groups CC, LS and C were 86.64, 96.23 and 75.92 μm, respectively. Mean measurements at region (b) for groups CC, LS, C were 117.5, 139.02 and 121.38 μm, respectively. There were no statistically significant differences for measurements at marginal gap ($p = 0.082$) and region (b) ($p = 0.114$) according to one-way ANOVA. Mean measurements at region (c) for groups CC, LS, C were 142.1, 188.12 and 140.63 μm, respectively, and at region (d) for groups CC, LS, C were 265.73, 290.39 and 201.09 μm, respectively. Mean values of group LS were significantly higher at region (c) and region (d) according to Bonferroni test ($p < 0.05$).

Conclusion: In this study, CAD/CAM, laser sintering and casting metal-porcelain crowns exhibited similar clinical marginal gap. Laser sintering crowns exhibited higher luting space at occlusal region.

P310

Satisfaction of Removable Partial Denture Wearers Depending on Denture Design

Kujtim Shala, Linda Dula, Enis Ahmedi, Zana Lila Krasniqi, Teuta Bicaj, Teuta Pustina Krasniqi
Department of Prosthetic Dentistry, University Dentistry Clinical Center of Kosova

Aim: Removable partial denture (RPDs) therapy is an acceptable form of treatment that provides an increased spectrum of restorative options: improving aesthetics, masticatory function, stabilizing dental relationships for partially dentate patients. The aim of this study was to evaluate patient's satisfaction with RPDs retention, chewing ability, aesthetics, while wearing RPD in 5-year worn period.

Material and methods: A total of 64 patients with RPDs, participated in this study. It was examined 92 RPDs, 76 RPDs with

clasp-retained and sixteenth were RPDs with attachments. There were 28 females and 36 males, aged between 34 and 79 years. The data's were collected from survey questionnaire, from RPDs wearers, fitted in University Dentistry Clinical Center, Prishtina, Kosova. Patients graded their satisfaction with their RPDs in total and then graded retention, chewing ability, aesthetics, while wearing dentures by using a scale 1–4. The level of RPDs acceptance was classified as "exellent," "good," "medium" and "bad." RPDs success was graded in three categories based on function and condition: complete success, partial success and failure.

Results: According to denture design of RPD's with Fisher exact test we confirmed statistically significant difference ($p = 0.008$) of patient's success of RPD's with or without attachment. Retention, chewing ability, aesthetics proved no statistically significant difference with χ^2 test of patient's satisfaction of RPD's with or without attachment.

Conclusion: Oral rehabilitation with RPDs was considered satisfactory after 5 years of use by most of patients (Cosme DC et al 2006). Patients are generally satisfied more with RPDs with attachment based on level of retention, chewing ability, aesthetics

P311

Dental Ethiology Triggering Pressure Dermographism: A Case report

Simge Taşar, Gökçe Meriç, Selim Günsoy,
Mutahhar Muhammed Ulusoy
Department of Prosthodontics, Faculty of Dentistry, Near East University, Lefkoşa, Turkish Republic of Northern Cyprus

Introduction: Prothesis used for rehabilitation of missing teeth and surronding oral tissues may cause complications like hypersensitivity, ulceration, pain etc. To the authors' knowledge, there's only one publication described the cases of dermographism developed after dental procedure. Pressure dermographism is a form of physical urticaria.

The present article described an unique case of pressure dermographism appeared just after prosthodontic rehabilitation.

Case: A 50-year-old female was treated with tooth retained overdenture in maxilla and implant retained overdenture in mandible. Chrom-cobalt framework and precision attachments with conventional methyl methacrylate denture base material was used for restoring the upper denture. Lower denture was made of chrome, cobalt and methylmethacrylate. She presented with erythema mucosal hyperplasia on the hard palate associated with burning sensation and bleeding following the dental treatment. Patient was referred to Dermatology Department before new prosthetic rehabilitation. No irritant reaction was observed after patch testing. However, red dermographic line of contact developed with small islands of edema. She was then tested for pressure urticaria with scratching. She was sensitive to touch and pressure, as well as scratching. The scratching lines were sustained for the 45 min of the consultation which proof the existance of chronic urticaria.

Conclusion: The purpose of the presentation was to draw attention to a possible complication of minimally invasive therapy outlining the complex role of the systemic etiologic factors. The key to successful prosthodontic treatment lies in a comprehensive treatment program that contains both finding out the ethiological factor and eliminating the factor before or during the treatment.

P312

Surface Roughness of Two Different Non- Precious Dental Alloy

Evşen Tamam[1], Fehmi Gönüldaş[2]
[1]*Department of Prosthodontics, Faculty of Dentistry, Gazi University, Ankara, Turkiye,* [2]*Department of Prosthodontics, Faculty of Dentistry, Ankara University, Ankara, Turkiye*

Objective: Surface properties of dental materials are of clinical importance since they may affect oral hygiene by reason of plaque accumulation. Especially in the case of all-cast or metal-to-acrylic veneer restorations, smoothness of metal surfaces become more important because large metal areas make contact with the oral tissues. The aim of study was to compare two different non-precious dental alloys investigating their surface roughnesses.

Methods: A Ni-Cr (Wirolloy®NB) and a Co-Cr (Wirobond®280) alloys suitable for all-cast restorations and crowns veneered with acrylic restorations were investigated. Disc shaped 10 samples were cast from each alloy. Finishing and polishing procedures were performed until obtaining clinically acceptable surfaces in accordance with the recommendations of manufacturer. Then samples were ultrasonically cleaned and dried at 60°C for 24 h. Surface roughness measurements were performed by profilometer (MAHR-PerthometerM1). Each measurement was repeated five times and mean arithmetic roughness values (Ra) obtained. Data for surface roughness were analyzed using ANOVA.

Results: Surface roughnesses of Co- Cr alloy samples (0.289 μm) were approximately three times greater than those of Ni- Cr alloy samples (0.096 μm). The differences in the means were also found statistically significant.

Conclusions: Overall Ra values ranged from 0.089 to 0.1026 μm for Ni- Cr alloy samples and from 0.27 to 0.3422 μm for Co- Cr alloy samples. The roughness of the Co- Cr samples tested indicates that there is a possibility for plaque accumulation, since the threshold value of 0.2 μm is considered that no further bacterial adherence can be expected below this value.

P313

Impact of Frenulum Height on Strains in Maxillary Denture Bases

Altug Çilingir, Onur Geçkili, Gökçen Ates, Hakan Bilhan
Department of Prosthodontics, Istanbul University, Istanbul, Turkey

Objective: The midline fracture of maxillary complete dentures is an often encountered complication. Assessment of the effect of frenulum height on midline strains of maxillary complete dentures.

Method and materials: A removable maxillary complete denture was fabricated and dublicated seven times. Four different labial frenulum heights were tested for stresses occurring on the palatal cameo surface. The strains were measured with strain gauges

placed on five different locations and the stresses were calculated. To mimic occlusal forces bilaterally 110 N of load was applied from the premolar and molar regio.
Results: A statistically significant association between the height of the labial frenulum and the calculated stresses and strains was shown ($p < 0.5$) predominantly on the anterior midline of the maxillary complete denture increases with a higher labial frenulum.
Conclusion: Within the limitations of this in vitro study, it can be concluded that the stress on the anterior midline of the maxillary complete denture increases with a higher labial frenulum. Surgical or mechanical precautions should be taken to prevent short-term failure of maxillary complete dentures due to stress concentration and low cycle fatigue tendency at the labial frenulum region.

P314

EDX Analysis in Evaluating the Conditioned Zirconia-Resin Cement Interface

Seda Şanlı[1], Mine Dündar Çömlekoğlu[2], Erhan Çömlekoğlu[2], Tijen Pamir[3], Brian W. Darvell[4], Mehmet Sonugelen[2]
[1]Bahçesaray Public Hospital, Van, Turkey, [2]Department of Prosthodontics, Ege University, İzmir, Turkey, [3]Department of Restorative Dentistry, Ege University, İzmir, Turkey, [4]Department of Bioclinical Sciences, Kuwait University, Safat, Kuwait

Objectives: To evaluate the effect of surface treatment on bonding of zirconia with resin cement by Energy-Dispersive X-ray (EDX) analysis.
Methods: Two hundred bar specimens (N = 200, luted assemblies = 100) ($2.0 \times 5.0 \times 25$ mm^3) were prepared for four-point (quarter-point) bending test (FPBT) from Y-TZP blocks (VITA In-Ceram YZ) and using two resin cements: Panavia F 2.0 (P); RelyX U-200 (R); and five surface treatments: control (C), airborne particle abrasion (Sb), zirconia primer (Z-Prime PLUS) (Z), glaze ceramic (Crystall Glaze spray) + hydrofluoric acid (GHF), fusion glass-ceramic (Crystall Connect (CC) (n = 10, each combination). After surface treatment, specimens were luted end-to-end, following each manufacturer's instructions. FPBTs were performed in a universal testing machine (Autograph, Shimadzu, cross-head speed: 0.5 mm/min). Fracture type: adhesive (a), cohesive (c) or mixed (m) was determined by light microscopy (LM) (Eclipse ME600 Light Microscope); surfaces were then examined under environmental scanning electron microscopy (ESEM), verified by EDX analysis (Quanta 250 FEG SEM). Statistical analysis was by Chi-Square test.
Results: EDX analysis results for R (42% a, 8% c, 50% m) were compatible with ESEM and LM findings; while for P the results (18% a, 16% k, 66% m) were partially compatible for C, Z, and GHF. Elemental distribution gave different findings than by ESEM and LM.
Conclusions: EDX analysis provided supplementary information about fractured surfaces that can not be observed by light or scanning electron microscopy and can be recommended as a complementary chemical analysis method for interfacial evaluation of fractured surfaces.

P315

Usege of Trisected Molar as Abutment Tooth for Fixed Bridge

Özlem Çölgeçen, Ahmet Keski
Department of Prosthodontics, Izmir Katip Celebi University, Izmir, Turkey

Introduction: Treatment of the furcation involved molars presents the dentist with a challenging dilemma.
Case: This study presents a case report and 4 years follow up of the restoration of a furcation involved maxillary molar after trisection treatment as an abutment tooth for fixed bridge. A 42 years old patient had missing tooth 15, grade III furcation defect involved tooth 16 and previously prepared tooth 14. The tooth 16 was terminal tooth of the right maxillary dental arc. Radiographic examination showed adequate bone support around each roots. It was decided to apply trisection treatment on tooth 16, in order to use of it to support fixed bridge. After trisection treatment was performed, trisected root parts were prepared parallel to each other and tooth 14 for obtaining one insertion path of the restoration. To make easily accessible areas to home care instruments by the patient, trisected parts covered separately with thin metal alloy in furcation area and the parts were combined at near to occlusal. With this modified fixed bridge, tooth 16 was both became cleanable three way access and used as an abutment for a metal-ceramic bridge. Thanks to this conservative approach, patient didn't have to use removable denture or have implants. After 4 years follow up, there was not any clinical or radiographic problem.
Conclusion: As a conclusion, furcation involved molars can be used as abutment for fixed bridge after trisection treatment and it can be reduce to need of removable dentures and implants.

P316

Adaptation of Titanium Copings Fabricated by Electron Beam Melting

Huda Al Shehri[1], Wahuydin Seyam[2], Khalid Al Wazzan[1], Abdulrahman Al Ahmary[2]
[1]Department of Prosthodontics, College of Dentistry, King Saud University, Riyadh, Saudi Arabia, [2]Department of Industrial Engineering, College of Engineering, King Saud University, Riyadh, Saudi Arabia

Aim: To compare marginal and internal fit of Ti-6Al-4V copings produced by casting, milling and electron beam melting (EBM).
Methods: On a master stainless steel model, 30 copings were fabricated for casting, milling and EBM; 10 for each of the three groups. Milling and EBM groups shared the same source of digital scanning (Nobel Procera). Copings fabricated by EBM were fabricated using ARCAM A2 machine in college of engineering at King Saud University. Marginal and internal gaps were measured on the master model by two techniques; volumetric measurements using Micro-CT and vertical marginal discrepancy (VMD) using a travelling microscope. Descriptive statistics and one-way ANOVA were carried out ($p = 0.05$).
Results: EBM copings showed the highest mean internal gap volume (76.54 mm^3) followed by cast and milled copings (10.29 and

9.31 mm^3 respectively) while cast copings had the highest mean marginal gap volume (1.46 mm^3) followed by EBM and milled copings (0.87 and 0.37 mm^3), respectively ($p < 0.05$). VMD values were 165.71, 95.1 and 65.31 μm for cast, EBM and milled copings, respectively.

Conclusion: EBM copings had an acceptable marginal gap but signfincantly the highest volumetric internal gaps compared to milled or cast copings. While Milled copings showed least volumetric and VMD gap measurements.

P317

A Clinical Comparison of Cordless and Conventional Displacement Systems Regarding Clinical Performance and Impression Quality

Özlem Acar[1], Selim Erkut[1], Tuncer Burak Ozcelik[2], Erdem Ozdemir[3], Mehtap Akcil[4]

[1]Department of Prosthodontics, Baskent University, Ankara, Turkey, [2]School of Dentistry and Faculty of Medicine, Baskent University, Adana, Turkey, [3]Private practice, [4]Faculty of Science and Letters, Baskent University, Ankara, Turkey

Aim: It is not clear whether newly introduced cordless displacement systems are better able to manage gingiva than conventional systems.

Purpose: To evaluate the gingival management ability of four different displacement methods with a standardized subgingival preparation finish line.

Material and methods: A subgingival preparation finish line of between 1 and 2 mm was ensured. Two hundred and fifty-two ($n = 63$) teeth were clinically assessed for ease of application, time-spent, bleeding, remnants, and dilatation. The complete reproduction of the preparation finish line and the bubble and void formations on polyether impressions were also evaluated. The data were statistically analyzed with the Chi-Square tests ($\alpha = 0.05$).

Results: Statistically significant differences were found for all criteria among the groups ($p < 0.05$). The nonimpregnated displacement cord group was the least effective group. The aluminum-chloride impregnated cord group and the displacement paste with cap group were found to be comparable in terms of remnants, dilatation, and impression quality. The retraction cap with paste group showed better results for ease of application, time-spent, and bleeding than the aluminum-chloride impregnated cord group Although the aluminum-chloride impregnated cord, displacement paste, and cap application was found effective in terms of dilatation, bleeding, and impression quality, it was time consuming and difficult.

Conclusion: Except for the nonimpregnated cord group, all of the groups were comparable and clinically useful, with perfect or acceptable impression qualities. When a 1–2 mm-deep subgingival preparation finish line is formed, the displacement paste and cap application may be the first choice, giving the benefits of hemostasis, time saving, and ease of application.

P318

Effects of Immediate Provisional Restorations on Hard and Soft Tissues

Imene Guesmi[1], Dalenda Hadyaoui[1], Zohra Nouira[1], Amina Taher Khiari[1], Nabil Miled[2], Mounir Cherif[1]

[1]Department of Prosthetic Dentistry, Dentistry University, Monastir, Tunisia, [2]Department of Dentistry, Benba Hospital, Monastir, Tunisia

Aim: Our aim is to study the effects of immediate temporary prostheses, performed directly in the oral cavity, on the periodontal tissues.

Material: Examination instruments, periodontal probe, dental floss, crown remover, and periapical radiography.

Methods:

1 Periodontal and radiographic examination.

2 Examination of temporary prostheses (shape, thickness, surface…).

Results:

• Para-gingival limits caused an augmentation of gingival inflammation and bleeding index.

• 4 weeks after temporary prostheses placement, an increase of the gingival inflammation was noted. After 2–3 months, a remarkable decrease of bleeding index was noticed. More than 3 months later, bone resorption, gingival inflammation and increase of the bleeding index were recorded.

• The non-compliance with the temporary prostheses can cause an increase of the bleeding index and bone resorption…

Conclusion: Provisional prostheses have several roles starting from preparation of abutment teeth to cementation of the final fixed denture. But, its incorrect shape can result in complications affecting the periodontium. Some complications can appear early in the first 4th weeks, others can be noted after few months.

Temporary prostheses fabricated chairside can be biologically submitted only if they respect the recommendations related to its technical achievement, global shape, polished surfaces…

This study confirmed that the immediate provisional restoration could be discussed because of the harmful effects of methyl polymetacrylate. Those effects are aggravated when temporary crown needs to be placed in the oral cavity for a long period. This leads us to be in favor of indirect provisional prostheses, whenever possible, in order to avoid any further complications.

P319

An Alternative Prosthetic Treatment Option for Posterior Edentulous Mandible: A Case Report

Nazire Esra Bağdatlı[1], Ahmet Ersan Ersoy[1], Şivge Kurgan[2]

[1]Department of Prosthetic Dentistry, Ankara University, Ankara, Turkey, [2]Department of Periodontology, Ankara University, Ankara, Turkey

Introduction: Distal extension removable partial dentures (RPDs) are complex treatments because of the teeth and mucosa support. In order to avoid vertical, horizontal and torsional forces, load distribution for both tissues should be appropriate. Thus, the use of distal implants to support and retain RPDs has been reported in the literature to minimize dislodgement, improve esthetics and

mastication, resulting in patient satisfaction in a cost-effective manner.

Case: This case report presents a 51 year-old man who lost whole mandibuler posterior teeth except left first premolar tooth. Based on the clinical and radiological examination, excessive bone resorption observed in mandibular posterior region, particularly in the right posterior with a long interocclusal distance. It was decided to perform implant-supported fixed dentures by placing three implants both left and right mandibuler posterior side. But; during the healing period, mesial implant on the right side was failed.

Because of patient's implant loss, complications of implant-natural tooth connection and long interocclusal distance that causes excess material thickness of the metal and porcelain implant-supported removable prostheses, that allow retention by locator attachments to be connected to the implant, were performed on the rest two implants.

Conclusion: Implant supported RPDs can be an alternative for partially edentulous patients when an implant supported fixed prosthesis cannot be applied because of biomechanical, anatomical or economic reasons.

P320

Regulation the Pathways in Implant Retained Cranio Maxillofacial Prosthesis in Different Cases: Case Report

Mustafa Kocacıklı, Betül Kökdoğan
Department of Prosthodontics, Gazi University, Ankara, Turkey

Introduction: Implant retained CMF prosthesis can be made for the absence of the facial organs caused by trauma, congenitally and tumors. These prosthesis have some diffuculties on their pathways. These pathways have to be reduced on choosen retention systems.

Case: In our cases we show some redesignings on the choosen retention system due to specialities of the cases.

P321

Age-Related Changes of Enamel, Dentin and Pulp Tissues of Premolars as Measured by Microscopy: Implications for Restorations

Saadet Atsü, Ali Can Bulut
Department of Prosthodontics, Faculty of Dentistry, Kırıkkale University, Kirikkale

Goal: Enamel, dentin and pulp tissues of premolars as well as their correlation with age is a significant factor in planning tooth reduction for restorations. This study examined variations in tooth enamel, dentin, pulp thickness and its correlation with age. These variations determine the tooth substrate available for restorations.

Method: Thirty-two human maxillary central incisors extracted from patients in the age range of 11–70 years were used to evaluate the thickness of tooth layers. The following tooth areas were measured by using stereo microscopy: facial and palatal enamel thickness at 1, 3, 5 and 7 mm above the cemento-enamel junction (CEJ), occlusal enamel thickness on buccal, palatinal cups and central fossa, dentin thickness and pulp champfer thickness at 1 mm above CEJ, pulp-occlusal enamel and dentin distance. The relationship between thickness and age was evaluated with regression analysis ($\alpha = 0.05$).

Results: Significant differences ($p < 0.01$) were observed in the relationships between the enamel thickness on palatal cusp, pulp-occlusal enamel and dentin distance and age. These thicknesses decreased with age. The mean values of the facial enamel and palatal enamel thickness at 1, 3, 5 and 7 mm above the CEJ were 0.32 ± 0.09, 0.77 ± 0.25, 1.4 ± 0.21 and 1.52 ± 0.26 mm, and 0.41 ± 0.12, 1.01 ± 0.2, 1.54 ± 0.27 and 1.37 ± 0.37 mm, respectively.

Conclusions: Pulp–occlusal enamel and dentin distance, and enamel thickness on palatal cusp decrease with age. Also the age-related decrease in pulp–occlusal enamel and dentin distance must be considered in tooth reduction.

P322

In-Vitro Assessment of Surface Characteristics and Bacterial Adhesion of Hypoallergenic Prosthesis Base Materials

Sema Murat[1], Serhat Durmaz[2], Ayhan Gürbüz[3]
[1]Department of Prosthodontics, İstanbul Aydin University, İstanbul, Turkey, [2]Department of Microbiology, Gülhane Millitary Medical Academy, Ankara, Turkey, [3]Department of Prosthodontics, Ankara University, Ankara, Turkey

Aim: In this in-vitro study, initial adhesion of oral streptococcus (*S. mutans* and *S. sanguis*) on commonly used conventional resin materials that are polymerized with heat (QC 20) or microwave (Acron MC) and three different hypoallergenic denture base materials (Puran HC, Alldent Sinomer and Polyan) was assessed.

Methods: Effects of material surface roughness on microbial adhesion were evaluated. Streptococcal adhesion was conducted on samples covered with saliva and without saliva. Considering these parameters, differences between initial bacterial adhesion of base materials were assessed by counting of bacteria in images which were taken with fluorescent microscopy of samples stained with acridine orange. Mann–Whitney U Analysis was used for pairwise comparisons and Kruskal-Wallis Variance Analysis was used to compare more than two independent groups. Correlation between variables was assessed with ANOVA Variance Analysis. Significance level was set at $\alpha = 0.05$.

Results: Statistically significant differences were also found among materials for surface roughness ($p < 0.05$). Among rough group materials, highest mean surface roughness value (Ra) was found for Alldent Sinomer whereas lowest Ra was found for QC 20, a control group material. There was a strong positive correlation between roughness and the number of adherent bacteria of two groups (*S. sanguis* $r = 0.882$ and S. *mutans* $r = 0.851$) It was found that pellicle decreased bacterial adhesion for all material samples ($p < 0.05$).

Conclusion: In general, hypoallergenic base materials; Puran HC, Alldent Sinomer, Polyan and Acron MC showed higher tendency to microbial adhesion compared to conventional acrylic QC 20.

P323

Adhesive Bridge Applications with Fibre Reinforced Composites (Report of Three Cases)

Işıl Karaokutan[1], Seçkin Karaokutan[2]
[1]*Department of Prosthodonty, Selcuk University, Konya, Turkey,* [2]*Department of Dentistry, Medicana Hospital, Konya, Turkey*

Introduction: As an alternative to the traditional restorations in anterior single tooth deficiency, fibre reinforced adhesive bridges which are more preventive, timesaving and economical method have been produced.
Case: His article reports the restoration and long-term follow up of three cases of single tooth deficiency with Ribbond (Seattle, WA, USA) -a poliethylene fibre composite- and pontics which are made of natural tooth and composite resins to the adjacent teeth.

P324

Effect of Shading of Zirconium on Bond Strength to Porcelain

İlkin Tuncel[1], Erdal Eroğlu[2]
[1]*Department of Prosthodontics, Faculty of Dentistry, Bezmialem Vakif University İstanbul, Turkey,* [2]*Department of Prosthodontics, Faculty of Dentistry, Süleyman Demirel University, Eastern Campus, Isparta, Turkey*

Aim: The most common failure seen on restorations with zirconia core is total or layered delamination of the veneer porcelain. In this study, the shear bond strengths (SBS) between veneering porcelains and zirconium oxide core materials which were shaded by different liquids in two time periods were evaluated.
Material and methods: Zirconia discs (ICE Zirkon, Zirkonzahn) (15 × 12 × 1.6 mm) were divided into 11 groups of 12 discs each. Groups were shaded in the Vita Classic scale: A3, B1, C4, D2 or D4. Each group was treated with the recommended shading time for 3 s or prolonged shading for 60 s, except for the control group. Samples were veneered with translucent porcelain 3 mm in thickness and 3.5 mm in diameter (CZR, Noritake Co) and subjected to shear force in a universal testing machine with a crosshead speed of 1 mm/min. Repeated-measures ANOVA was used to analyze the data (time periods, zirconia core color). The Tukey HSD test and paired 2-tailed tests were performed for multiple comparisons ($\alpha = 0.05$).
Results: The SBS between zirconia core discs and veneering porcelain were affected by time periods and zirconia core color ($p < 0.05$). Among the investigated 11 groups, C4 (3 s) had the highest bond strength with a value of 36.4 MPa while A3 (3 s) showed the lowest bond strength with 29.47 MPa.
Conclusion: Shading procedures can affect the bond strength between zirconia core material and veneer porcelain. However, results also show that bond strengths of all investigated groups are clinically acceptable.

P325

Two Unsplinted Mandibular Implant Overdentures: A 3-Year Longitudinal Prospective Study

Norsiah Yunus[1], Roslan Saub[2], Nosizana Mohd Salleh[1], Fauzza Siti Ahmad[1], Marisa Kiong[1], Renette Siok Lynn Gan[1]
[1]*Department of Prosthetic Dentistry, Faculty of Dentistry, University of Malaya, Kuala Lumpur, Malaysia,* [2]*Department of Community Dentistry, Faculty of Dentistry, University of Malaya, Kuala Lumpur, Malaysia*

Aim: Rehabilitation with two splinted or unsplinted implants for overdenture is well established, with the former design considered less technically demanding
Aim: This study evaluated the masticatory performance, Oral Health-Related Quality of Life (OHRQoL) and denture satisfaction 3 years after conventional complete dentures (CCD) were converted to implant overdentures (IOD) retained by two telescopic or Locator abutments.
Materials and methods: This study was approved by Ethical Committee, University Malaya, Malaysia. Implants were inserted in the interforaminal region and connected to the abutments after 4–6 weeks healing period. Of the 32 patients who received IODs, 21 patients (six male, 15 female; mean age 61.95 years, range 48–79 years) were evaluated at 3 year. Objective masticatory performance with CCDs and IODs was recorded using mixing ability test (two-coloured paraffin wax cube) to obtain Mixing Ability Index (MAI). Questionaires were used to assess OHRQoL using Shortened Oral Health Impact Profile-14, Malaysian version (S-OHIP-14[M]) and Denture Satisfaction Questionnaires. Statistical analyses were made using repeated measure ANOVA, t-test and Wilcoxon Signed Rank test at $p = 0.05$.
Results: Mean MAI values showed significant difference between the three intervals, the highest shown at 3 year. Total OHIP and individual domains (functional limitation, physical pain and physical disability) median scores showed significant improvement before and after and remained stable at 3 years after implants. Similarly median score for satisfaction with mandibular prostheses (stability, chewing, and comfort) showed significant difference.
Conclusions: Two unsplinted IOD improved masticatory performance, OHRQoL and satisfaction compared to CCD 3 years after implant.

P326

A Device for a Patient with Habitual Cheek Biting: A Case Report

Hasan Önder Gümüş[1], Mehmet Dinçel[1], Haydar Albayrak[1], Hasan Hüseyin Kocaağaoğlu[1], Osman Etöz[2]
[1]*Department of Prosthodontics, Erciyes University, Kayseri, Turkey,* [2]*Department of Oral and Maxillofacial Surgery, Erciyes University, Kayseri, Turkey*

Introduction: Habitual cheek biting, a form of self-injurious behavior (SIB) is the interposition of cheek mucosa during contact of opposing teeth and can be considered a treatment challenge in the dental office. Oral structures can play various roles in the process of this type self-injury.
Case: This case report describes the procedure for making an intraoral removable device to reduce the incidence of cheek biting and to improve patient oral function. This report also discusses

the design of a prosthesis that protects oral tissues while considering the patient's ability to cooperate with treatment.

P327

Multidisciplinary Treatment of an Adult Patient with High Esthetic Demand

Gözde Çelik[1], Simge Kanar[1], İlhan Ramoğlu[2], Aslıhan Üşümez[1]
[1]*Department of Prosthodontics, Bezmialem Vakif University, Istanbul, Turkey,* [2]*Department of Orthodontics, Bezmialem Vakif University, Istanbul, Turkey*

Introduction: Aesthetic expectations of the treatment of adult patients are increasing in these days. However, these patients often present with serious oral problems, such as over-crowding, ageneses, edentulous spaces from old extractions, periodontal problems, etc. In the face of all these problems we need interdisciplinary strategies that will help us carry out the complex and imaginative treatments that these cases require.
Case: A 40 year old male patient had elongated incisors with cross-bite and edentulous spaces. The incisors were corrected with orthodontic treatment and edentulous spaces were treated with implant-supported fixed partial dentures. In this case report, an interdisciplinary treatment plan will be described which includes all disciplines of dentistry.
Conclusion: Interdisciplinary approach in dental treatments provides full treatment of adult patients and perfect aesthetic.

P328

Occlusal Precision of Cerec CAD/CAM Generated Lithium Disilicate Crowns

Seçil Karakoca Nemli[1], Stefan Wolfart[2], Cemal Aydın[1], Sven Reich[2]
[1]*Gazi University, Ankara, Turkey,* [2]*RWTH Aachen University, Aachen, Germany*

Purpose: The purpose of this study was to evaluate the precision of occlusal contacts of the Cerec CAD/CAM generated crowns fabricated using the bite registration (BR) and buccal image (BI) methods for determination of the maximum intecuspal position. The null hypothesis was that BR and BI methods would not differ in terms of precision of occlusal contacts.
Materials and methods: Twelve casts representing clinical situations were mounted in semi-adjustable articulators to serve as simulation models. The left lower first molars were prepared to receive lithium disilicate crowns. The Cerec inLab method was applied on the models. Two crowns were produced for each preparation using BR and BI methods for static occlusion determination. The crowns were milled using the parameters of 40 μm luting space and 250 μm occlusal offset. Virtually designed occlusal contacts (DES) and contacts on the crowns that corresponded to DES (CORR) were analyzed. The mean quotients (DES/CORR) for BR and BI crowns were calculated. The Wilcoxon signed rank test at $p = 0.05$ was applied to determine statistical significance.
Results: All 24 crowns had no premature contacts and did not need any occlusal adjustments. The mean quotients (DES/CORR) for BR and BI crowns were 2.3 (±1.35) and 1.69 (±0.77), respectively. The Wilcoxon signed rank test revealed no significant difference. Lithium disilicate crowns fabricated using Cerec inLab method with predefined milling parameters had no premature contacts and required no occlusal adjustments. Satisfactory occlusal contacts could be obtained for BR and BI crowns with no significant difference.

P329

Prosthetic Rehabilitation of Two Patients after Maxillectomy

Nermin Demirkol[1], Fatih Sarı[1], Mehmet Demirkol[2], Özge Parlar[1]
[1]*Department of Prosthodontic, Gaziantep University, Gaziantep, Turkey,* [2]*Department of Maxillofacial Surgery, Gaziantep University, Gaziantep, Turkey*

Introduction: Head and neck carcinomas are the most frequent causes for surgical resection of the maxilla and it ultimately affects the quality of life of the patient. These patients require prosthetic rehabilitation of the defect, to improve speech, deglutition, esthetics, and mastication. The obturator prosthesis fulfills most of these requirements. The maxillofacial prosthodontic rehabilitation provides restoration of missing teeth and, surrounding tissue restoration, esthetic appearance, preservation of remaining teeth, and physiological support to provide the potential for acceptable speech and swallowing.
Case: The firts case is a female person and 61 years old. She had a defect in the middle of maxilla and two operation for the closing of defect area. In our clinic we planned an upper and lower complete denture with maxillary obturator. Obturator prosthesis was obtained with unistage according to conventional procedure and then was supported with permanent soft liner. The second case is a male person and 67 years old. He had a hemimaxillectomy operation and also upper jaw had no teeth. In the lower jaw the patient had naturel dentition. The obturator prothesis was done for upper jaw.
Results: The quality of life after rehabilitation with obturator prosthesis was decreased. Especially speech and swallowing function were important for the first patient and this function was provided succesfully. For the second patient nutrition was the most important function and it was provided.
Conclusion: Obturator prosthesis is a highly positive and noninvasive approach to improve the quality of life of patients with maxillectomy defects.

Theme: General Dentistry and Oral Health

P330

Human Dental Pulp Stem Cells Isolation and Osteogenic Differentiation

Souzy Farid Shinaishin[1], Nadia Lashin Soliman[2], Effat Ahmed Abbass[2], Reham Magdy Ameen[1], Riham Mohamed Aly[2]
[1]*Department of Oral Biology, Ain Shams University, Cairo, Egypt,* [2]*Department of Basic Dental Science, National Research Center, Cairo, Egypt*

Aim: The aim of this study was to isolate stem cells from human exfoliated deciduous teeth (SHED) and dental pulp stem cells (DPSCs) and to assess their osteogenic capability.

Methods: In the present study, SHED and DPSCs were isolated by their ability to adhere to plastic plates. After isolation osteogenic media was supplied comprising L-ascorbic acid, dexamethasone and β-glycerophosphate. The evaluation of their osteogenic differentiation was performed using alizarin red stain. RT- PCR was done to analyze the mRNA level of osteoblastic differentiation marker genes; Osteocalcin and Bone Sialoprotien II over several days.
Results: Stem cells were successfully isolated from both tissues. Colorimetric changes in response to Alizarin red stain indicating calcium crystals deposition and successful osteogenic differentiation of SHEDs and DPSCs was seen in obvious intensity. As for the RT-PCR performed; Bone Sialoprotien II and Osteocalcin genes were detected in the SHEDs plates on day 12 but absent in the DPSCs plates. Both genes were also detected on day 22 even in control plates. SHED showed an earlier onset of mineralization and higher differentiation capability in comparison to DPSCs.
Conclusions: This study demonstrated that stem cells can be isolated from the pulp of deciduous and permanent teeth, and illustrated the differences in the growth and differentiation characteristics between SHED and DPSCs. Consequently, SHED may represent a suitable, accessible and potential alternative source for regenerative medicine and therapeutic applications.

P331

Frequency of Brushing Between Dental Students and Non Medical Students

Muhammad Hassan Memon[1], Muhammad Umer Memon[2], Faizan Qaiser[2], Ayesha Memon[2]
[1]*Department of Dentistry, Liaquat University of Medical and Health Sciences, Jamshoro, Pakistan,* [2]*Department of Medicine, Liaquat University of Medical and Health Sciences, Jamshoro, Pakistan*

Objectives: Brushing frequency between dental and non-medical student.
Introduction and aims: Professional recommendations for individual oral hygiene mostly include tooth brushing at least twice daily for 2–3 min with gentle force. This study evaluated whether habitual tooth brushing of dental students and non- medical students actually meets these standard.
Materials and methods: This study was conducted at the Dental college of Liaquat Univeristy Of Medical And Health Sciences Jamshoro Pakistan and Sindh University Jamshoro during the academic year march 2013. Total 462 students (231 dental student, 231 non-medical students) participated in this study. Participation was voluntary, and all the participants were queried anonymously. A specifically designed questionnaires consist of a questions how many times you brush a day? Followed by four stems from which student could select one answer. The questionnaires were collected in person immediately after completion.
Results: Out of 462 students 231 (99 male, 132 female average age 20–25) were dental students and 231 students (111 male, 120 female average age 20–25 years) were non-medical students. Among 231 dental students 70.12% (162) responded to brush twice a day, 15.58% (36) brush once a day, 10.38% (24) brush three times a day, 3.89% (9) brush after every meal. Among non-medical students 80% (185) brush once a day, 13% (40) two times a day, 1.29% (3) brush three times a day, 1.29% (3) brush after every meal.
Conclusion: The study shows that brushing habit among majority of medical students meet the recommended standard. While majority of non-medical students need to improve their brushing habits to maintain oral hygiene.

P332

Oral Findings and Dental Treatment of a Sturge-Weber Syndrome: A Three Year Follow-Up

Cigdem Sarikir[1], Ilkay Peker[1], Zuhre Akarslan[1], Guven Kayaoglu[2]
[1]*Department of Dentomaxillofacial Radiology, Gazi University Faculty of Dentistry, Ankara, Turkiye,* [2]*Department of Endodontics, Gazi University Faculty of Dentistry, Ankara, Turkiye*

Aim: Sturge-Weber syndrome is a rare, nonhereditary developmental condition that is characterized by a hamartomatous vascular proliferation involving the tissues of the brain and face. This report presents oral findings and dental treatment in a 3 year follow-up period of a case of Sturge-Weber syndrome.
Case: A 22-year-old female patient attended to our clinic at with a complaint of caries, pain, halitosis and gingival bleeding during tooth brushing. Medical history revealed Sturge-Weber syndrome and glaucoma. In extra-oral examination, port wine stain and hemi hypertrophy on the left side of the face, ear, neck and upper lip which followed the edge of the midline was seen. In intra-oral examination, stain was evidenced at the hard and soft palate, the alveolar ridge, gingiva and buccal mucosa on the affected side, caries was observed in first and second left maxillary premolar teeth and gingivitis was present. Endodontic and gingival treatments were performed under local bleeding precautions and antibiotic prophylaxis. During periodic follow-up, the premolar teeth healed up successfully, but caries developed on right maxillary second and mandibular first molar teeth and gingivitis re-occurred. Restorative and periodontal managements of the patient were performed.
Conclusion: The intraoral angiomatosis are presented in 40% of cases and results in an important periodontal alteration, increasing the risk of bleeding during dental procedures. Successful results from conservative, endodontic and periodontal treatment could be achieved form these patients under local bleeding precautions.

P333

A Comparative Study of Oral Health Attitudes and Habits of Preclinical and Clinical Dental Students in Ankara, Turkey

Senem Ünver[1], Nuran Özyemişçi Cebeci[2], Seçil Karakoca Nemli[1]
[1]*Department of Prostodontics, Gazi University, Ankara, Turkey,* [2]*Polatlı Health Services Vocational School of Health Services, Hacettepe University, Ankara, Turkey*

Objective: The aim of this study is to compare oral health attitudes and habits between preclinical and clinical dental students.

Materials and methods: A questionnaire was filled by 528 dental (366 preclinical and 162 clinical) students. Data was statistically analyzed by Pearson's Chi-Square tests.
Results: The source of oral hygiene education was significantly different between groups ($p < 0.01$), most preclinical students got from their families (45%), and clinical students from faculty (37%). Forty-nine percent and 58% of the preclinical and clinical students changed their toothbrushes quarterly, respectively ($p > 0.05$). Almost all of the students (96% of both group) used manual toothbrush. Most of preclinical (65%) and clinical (68%) students brushed their teeth twice a day ($p > 0.05$). The responses varied to the question on factors determining toothpaste choice. Ingredient (36% and 43% for preclinical and clinical, respectively) and price (15% and 20% for preclinical and clinical, respectively) of the toothpaste were the most frequent reasons which were significantly different between groups ($p < 0.05$). The frequency of the use interdental brush or dental floss was 32% for preclinical and 49% for clinical students ($p < 0.01$). The use of mouth rinse was found 16% and 19% for preclinical and clinical students, respectively ($p > 0.05$). Fifty-seven percentage of the clinical students underwent to professional dental care once or twice a year, while 45% of the preclinical students are not aware about dental care requirements ($p < 0.01$).
Conclusion: Oral health attitudes and habits of dental students improved with increasing level of education.

P334
Management of Erythema Multiforme
Putra Dermawan
Department of Oral Medicine, Mahasaraswati Unversity, Denpasar, Bali, Indonesia

Introduction: Erythema multiforme (EM) is an acute, often recurrent, hypersensitifity reaction affecting mucocutaneous tissues, seen especially in males, and characterized by serosanguinous exudates on the lips, mouth ulceration and sametime target-like on skin. The etiologi of EM until now is unknown. Many studies report the etiologi of EM caused of multifactors like allergic reaction of medication, foods, microorganism reaction, systemic, and others.
Case: This case report is 43 years old female which has lesion in oral mucosa, lips and cheek and diagnosed as Erythema Multiforme Minor, caused of Herpes infection.
Conclusion: Significant result shown after 3 weeks medication with acyclovir, the lesion was cured and complaints of pain in some parts was redused.

P335
Dental Injury Incidence and Prevalence of Mouthguard in Japanese Ice Hockey Players
Akihiro Mitsuyama, Toshiyuki Takahashi, Mai Tanabe, Toshiaki Ueno
Department of Sports Medicine, and Dentistry, Graduate School of Medical and Dental Sciences, Tokyo Medical and Dental University, Tokyo, Japan

Introduction: Maxillofacial and dental injuries are often occurred in ice hockey (IH) because of hard contacts between players and/or equipments. In fact, use of protective gear such as facemask and mouthguard (MG) is mandatory or recommended in International Ice Hockey Federation rule. The aim of the present study was to assess the actual status of the dental injury and the prevalence of MG in Japanese IH players.
Methods: Questionnaire survey was conducted to 49 male players (16–38 years) of two IH clubs in Japan. Questions consisted of medical injuries, dental injury and MG usage. The study was approved by the Ethical Committee for Human Research of TMDU.
Results: Forty-one players (83.7%) suffered from medical injuries during match and/or practice. Injury to lower extremity was most frequent (61.2%). The incidence of dental injury was 28.6%, and 17 (lacerations of oral or labial mucosa) was most frequently reported. Main cause was collision with the ice or the wall of skating rink (61.2%). The MG prevalence was 100%, and the all were custom-made type. Nevertheless, 72.2% of players did not wear their MG at the time of accident.
Discussion: This investigation elucidated that dental injuries among IH players in Japan were considerably high despite of the high MG prevalence. This is because they did not use their MG actively both during match and during exercise. Therefore, dental health care professionals should educate on the benefits of MG and instruct IH players to wear it constantly for ensuring maximum level of safety.

P336
Human Salivary α-Amylase during Cold Pressor Test
Shunichi Oka[1], Honami Nakanishi[1], Osamu Shimizu[2], Naoto Suzuki[3], Yoshiyuki Oi[1]
[1]*Department of Anesthesiology, Nihon University School of Dentistry, Tokyo, Japan,* [2]*Department of Oral and Maxillofacial Surgery, Nihon University School of Dentistry, Tokyo, Japan,* [3]*Department of Biochemistry, Nihon University School of Dentistry, Tokyo, Japan*

Aim of purpose: Dental treatments accompany stress. Salivary measurement of cortisol and more recently alpha-amylase (sAA) are used as biomarkers of stress. Alpha-amylase may be a useful indicator for activity of the sympathetic nervous system (SNS). However, questions remain to be ansewerd before sAA can be accepted as an index of SNS activity. In this study, we evaluated the effects of cold pressor test on stress hormone and SNS.
Materials and methods: The subjects were 12 healthy volunteers aged 24–33 years. The Nihon University School of Dentistry approved the project and each subject gave signed, informed consent. We used cold pressor test as a psychological stressor by immersing subjects up to the waist in the cold water (3–4°C) for 1 min.

Samples of saliva for both cortisol and sAA were collected using salivette collection devices for 1 min before, during cold pressor test, and 3, 5, 10, 20, 30, 60 min after completetion of the cold pressor test. For the assessment of autonomic changes, heart

rate variability (HRV) measures were obtained continuously during the whole experiment.
Results: The cold pressor test resulted in a significant increase in sAA at 3, 5, and 10 min after cold pressor test. Furthermore, this test resulted in a significant increase in cortisol at 10, 20 and 30 min. There was a positive relationship between sAA and sympathetic tone.
Conclusions: Both cortisol and sAA would be promising candidates for a reliable, noninvasive marker of psychological stress. Our results conclude that sAA would be an indicator of sympathetic activity.

P337
Receiver Operator Characteristics Curve: Novel Technique of Assessment of Sequence of Eruption
Srikant Natarajan[1,2], D. S. Sriranjani[1,2]
[1]*Department of Oral Pathology and Microbiology, Manipal College of Dental Sciences, Mangalore, India,* [2]*Manipal University, Mangalore, India*

Introduction: The preliminary method of estimation of age is the sequence of tooth eruption. The accuracy of this technique depends on the available literature of sequence of eruption which varies according to the race/ethnicity/gender etc. Estimation of sequence of eruption requires a meticulous longitudinal study following up a child till all the teeth have erupted.
Aim: To predict and compare the eruption sequence of the permanent dentition as derived by two methods of estimation (ROC and Probit analysis) in children of Dakshina Kannada Region.
Methodology: In this cross sectional study, number of teeth present in dental records of 1000 children of known age and gender (age range 6–14 years) were recorded. The SPSS software was used to do the statistical analysis. The highest sensitivity and specificity of presence of each tooth at a given age was considered as the most likely time of eruption of that tooth (ROC method). This was then compared with the eruption sequence obtained by the Probit analysis (proposed by Kusri).
Results and discussion: The results showed that the permanent central incisor erupts earlier or along with the permanent first molar in this geographic region. The study documents the use of ROC curve to predict the age of eruption of the permanent teeth as a reliable technique correlating with the established Kusri's Probit analysis. ROC curve analysis predicted the eruption closer to the normal sequence than the Probit analysis.

P338
Uncommon Entities in Dentistry: A Series of Case Report
Christos Kostantinidis
Private Practice, Athens, Greece

Aim: The General Dentist is constantly challenged to face complex clinical cases, identify causative factors and to either treat or refer them, depending if the case meets or exceeds his or hers caliber. The aim of the presentation is to show rare cases that can be met during everyday clinical practice.
Materials and methods: Cases collected from General Dentists' offices are selected with the criterion of being rare (<4% in the literature). They are presented with documentation: Among them, a supernumerary primary tooth, cases of supermumerary one sided maxillary wisdom tooth, bilateral supermumerary maxillary wisdom teeth, cases of external and internal tooth resorption, a chin implant with a similar radiological appearance to a tumor, a hyperplasia of the soft tissue due to a filler and a case of odontoma in the sinus.
Results: Each clinical case underwent differential diagnosis and treated accordingly-if needed.
Conclusions: The General Dentist must posses an elevated clinical and scientific awareness in order to excellence in both patient expectations and clinical management of each case.

P339
Bisphosphonate-Associated Osteonecrosis of the Jaws and Its Management
Aylin Sipahi Çalış, Candan Efeoğlu, Bahar Sezer, Hüseyin Koca, Turgay Seçkin
Department of Oral and Maxillofacial Surgery, Ege University, İzmir, Turkey

Aim or purpose: Bisphosphonates are commonly prescribed for the treatment of postmenopausal and corticosteroid induced osteoporosis, Paget's disease, hypercalcemia associated with malignancy and osteolysis, associated with metastatic bone disease. Bisphosphonate-associated osteonecrosis of jaw (BONJ) may result in serious oral complications, such as osteomyelitis and chronic exposure of necrotic bone. Dentists must be familiar with this disorder and pay special attention to all patients on bisphosphonate therapy due to their defective osteoclast function and reduced osseous tissue vascularity, leading to impaired wound healing.
Materials and methods: This was a retrospective review of BONJ. Data analyzed included age, sex, smoking status, underlying disease, medical and dental history, bisphosphonates (BP) type. Local and systemic risk factors, clinical and radiographic findings, treatment strategies and the result of treatment of our patients who are diagnosed to have BONJ are documented and evaluated.
Results: The most common clinical osteonecrosis presentations included infection and necrotic bone in the mandible. Associated events included dental extractions, infection, and trauma. Despite surgical intervention, antibiotic therapy, hyperbaric oxygen therapy, and topical use of chemotherapeutic mouth rinses, some of the lesions did not respond well to therapy. Patients with persistent infection were re-operated or palliative treatment was started.
Conclusion: The conclusions of this study validated dental extractions and use of dentures as risk factors for BONJ development. Before initiation of a bisphosphonate, patients should have a comprehensive dental examination. Patients with a challenging dental situation should have dental care attended to before initiation of these drugs.

P340

GIC's Cytotoxicity on SHED Correlates with Fluoride, Strontium and Aluminium

Tatjana Kanjevac[1], Marija Milovanovic[2], Vladislav Volarevic[2], Nebojsa Arsenijevic[2], Aleksandra Lukic[3]
[1]*Department for Preventive and Pediatric Dentistry, Faculty of Medical Sciences, University of Kragujevac, Kragujevac, Serbia,* [2]*Center for Molecular Medicine and Stem Cell Research, Faculty of Medical Sciences, University of Kragujevac, Kragujevac, Serbia,* [3]*Department of Endodontics, Faculty of Medical Sciences, University of Kragujevac, Kragujevac, Serbia*

Aim: To test seven commonly used GICs for their toxic effects on SHED and its correlation with fluoride, strontium and aluminium content in eluates.
Methodology: Elution samples of GICs were prepared in sterile tissue culture medium and the medium was tested for toxicity by an assay MTT test. Chromosome abnormalities induced by GICs eluates were tested by cytogenetic analysis. Concentrations of Fluoride, Aluminium and Strontium ions in the eluates were assayed by high performance liquid chromatography. One-way ANOVA and Student's t test were used to analyse the cytotoxicity, bivariate correlation and partial correlation were used for correlation between concentration of single ion and cytotoxicity and correlation between combined ions and cytotoxicty.
Results: Fuji II, Fuji VIII, Fuji IX, Fuji plus and Viterbond had significantly higher cytotoxic effect on SHEDs then Composite. Only SHEDs that have been treated with Fuji I, Fuji IX, Fuji plus and Composite recovered potential for proliferation, but no chromosome aberrations were found after treatment with GICs. Cytotoxic effects of GICs on SHEDs were in strong correlation with coupled concentrations of released fluoride, aluminium and strontium. Fuji I had lowest activity toward SHEDs, but did not interrupted mitosis and did not induced chromosome aberration.
Conclusions: The results of this study indicate the potential harmful effects of GICs on SHEDs, the cells which could be isolated from stored pulp and could be used in cell based therapy in singenic host. Cytotoxic effect of GICs is in correlation with released fluoride, aluminium and strontium.

P341

Electronic Protocol for Focal Oral Diagnostics

Raya Georgieva Grozdanova Uzunova[1], Todor Tsonkov Uzunov[1], Angelina Ilieva Kisselova Yaneva[1], Boyan Apostolov[2]
[1]*Faculty of Dental Medicine, Medical University, Sofia, Bulgaria,* [2]*IT-specialist, Sofia, Bulgaria*

Aim: Oral diagnostics as an interdisciplinary problem requires teamwork of different medical specialists. Each of them must have all medical records of the patient and must be facilitated in the communication with other team members. In today's society of electronic communications in which computers are playing key role, the creation of an electronic record of oral diagnostics would meet the needs of the experts' team.
Materials and methods: An investigation of the scientific literature has been carried out in order to create a protocol for testing and diagnostics, which to serve as the basis of the user (graphical) interface of the computer program.

For the creation of the computer program a programming language of high level Visual C++ has been used. The drawing of the special elements has been performed using interface OpenGL. To work with application data (database) standard SQL, as a form of a standard database – Microsoft Access has been used.
Results: As a result of the conducted research with a specialist programmer in our team we have developed software product "Electronic Focal Diagnostics v.1". The computer program is an electronic protocol for integrated oral diagnostics and has the features of a consultation module, assisting the dentist during the process of focal diagnostics.
Conclusions: The creation of the electronic medical record of the patient, which is easily portable and can be transmitted electronically between physicians is a step forward in modern oral diagnosis and would save valuable time for diagnosis and treatment.

P342

Cytotoxicity of Silorane and Methacrylate Based Dental Composites on Human Gingival Fibroblasts

Prashanthi S. Madhyastha
Department of Dental Material, Manipal College of Dental Science, Mangalore, India

Introduction: Methacrylate based dental composite is been widely used as filling (restorative) material in dentistry. Polymerization shrinkage and marginal integrity of restorations are the inevitable problems with methacrylate based composite. A silorane based composite (Filtek P 90), comprising of ring-opening monomer, have been introduced claiming low polymerization shrinkage. Filtek P90 comprises of silorane resin, filler, initiator system, stabilizer and pigments. The biocompatibility of Filtek P 90 was tested using individual constituents of silorane rather than Filtek P 90 as a whole. In the present study we evaluated the cytotoxic effect of Silorane (Filtek P90) in comparison with methacrylate based (Z 100) composite on human gingival fibroblasts (HGF) on their viability and proliferation rate.
Methods: Fresh healthy biopsy specimens of human gingival tissue of patients were obtained with necessary consent form. For HGF, cells were cultured in Dulbecco's modified Eagle medium and grown to sub confluent monolayers. After attaining confluence cells were treated with different doses of the Filtek P90 or Z 100 for different time point. HGF cells were observed for their proliferation, viability by MTT assay.
Results: The results of the cytotoxicity assay showed that the percentage of viable cells was very good in the first 24 h and decreased in the next 48 h period in all groups. The proliferation rate was never below 70% in all the groups, at any given concentration.
Conclusions: This study concludes that both the test material was not cytotoxic and are regarded safe when tested for the HGF in an in vitro study.

P343

Temporomandibular Disorders, Headaches and Depression: Romanian Student Cohort Study

Valentin Radoi[1], Rafael Benoliel[2], Mihaela Raescu[3], Marian Vladimir Constantinescu[1]
[1]*University of Medicine and Pharmacy "Carol Davila", Bucharest, Romania,* [2]*Hebrew University-Hadassah, Jerusalem, Israel,* [3]*Universitatea "Titu Maiorescu", Bucharest, Romania*

Aim: Evaluating the prevalence of headaches and temporomandibular disorders (TMDs), their relationship with lifestyle choices and demographic factors, as well as the relationship between TMDs, headaches and depression.
Materials and methods: The sample consisted of 132 Romanian medical and dental students (43.1% male; mean age 27.80 years, SD = 8.32). They completed, in 2011, an ethically approved and previously validated questionnaire which included sections regarding demographic features, lifestyle, a Zung depression assessment and questions about the presence and nature of headaches and TMDs. Pearson chi-squares and Mann–Whitney U tests were used for data analysis.
Results: 14 patients (10.60%) presented TMDs, out of which 6 (42.9%) had seen a dentist for their pain and 6 (42.9%) presented depression and only previous trauma to the head and/or neck represented a significant predictor [OR = 13.490 (95% CI: 1.066–170.733), p = 0.045].

82 patients (62.12%) presented headaches with a mean age of debut of 21.27 years (SD = 1.108, range 8–40), 34 patients (25.75%) suffering headaches at least once per month, 19 patients having debilitating headaches (22.60%), 19 patients (23.17%) presenting depression, with smoking and loss of consciousness being the only significant predictors [OR = 4.152 (95% CI: 1.166–14.787), p = 0.028; OR = 6.548 (95% CI: 1.243–34.505), p = 0.027] and drug usage almost reaching statistical significance [OR = 11.213 (0.889–141.531), p = 0.062].

No significant correlations were found between sexes for both TMDs and headaches (p = 0.671; p = 0.875), as well as between TMD and headaches (p = 0.645).
Conclusion: TMD patients should be assessed for harmful lifestyle factors, previous trauma and depression and referred to a suitable care provider.

P344

Evaluation of Dental Students' Reasons for Choosing Dentistry and Post-Graduation Career Plans

Pınar Kursoğlu[1], Elifnaz Özen[2], Yiğit Fıratlı[2], Aslıhan Akgün[2], Tunahan Erözer[2], Begüm Bank[2], Simge Şenalp[3]
[1]*Department of Prosthodontics, Faculty of Dentistry, Yeditepe University, Istanbul, Turkey,* [2]*Faculty of Dentistry, Yeditepe University, Istanbul, Turkey,* [3]*Department of Prosthodontics, Faculty of Dentistry, Yeditepe University, Istanbul, Turkey*

Objectives: The aim of this research was to analyse the reasons for choosing dentistry and the future career plans of the dental students.
Methods: This research was conducted on the students of Yeditepe University Faculty of Dentistry. Questionnaires about the reasons for choosing dentistry were distributed to 282 students. The response rate was 90%. Also, information about career expectations was gathered. Statistical analyses were performed using chi-square, Mann–Whitney U and Kruskal-Wallis tests. The significance level was set as $p < 0.05$.
Results: Dentistry was among the first 3 choices in the matriculation exam (73.1%). The will of being self-employed, thinking that dentistry has high professional reputation and the low possibility of unemployment were among three main reasons for choosing dentistry. Having previous practice in dentistry-related jobs was the least important factor for this result. Taking own dental practitioners as role models, making people's appearance better and reasonable working hours were the predominant reasons that motivated females to become a dentist ($p < 0.05$). 62.1% of the students planned to receive postgraduate education. Meanwhile, 73.1% of the students planned to working Istanbul. However, only30% of the students were actually from Istanbul.
Conclusion: Reasons for choosing dentistry included perceived ease of employment, being self-employed and high professional reputation. Previous dentists' approach had more influence on female students to choose dentistry compared to male students. The major reasons for female students' in selecting the dental profession were to make people's appearance better and regular working hours. Students generally considered to specialize in a specific branch of dentistry and preferred working in the city where they got educated rather than the city where they were born.

P345

The Effect of Boron on Alveolar Bone Loss in Osteoporotic Rats

Hülya Toker[1], Hakan Özdemir[1], Hatice Balcı Yüce[2], Fahrettin Göze[3], Hüseyin Aydın[4]
[1]*Department of Periodontology, Faculty of Dentistry, Cumhuriyet University, Sivas, Turkey,* [2]*Department of Periodontology, Faculty of Dentistry, Gaziosmanpaşa University, Tokat, Turkey,* [3]*Department of Pathology, Faculty of Medicine, Cumhuriyet University, Sivas, Turkey,* [4]*Department of Biochemistry, Faculty of Medicine, Cumhuriyet University, Sivas, Turkey*

Aim: The aim of this study is to investigate the effects of systemically administered boric acid on alveolar bone loss and mandibular bone density in experimental periodontitis model in osteoporotic rats.
Methods: Thirty-six male wistar rats separated to five study groups: Non-ligated control (C, n = 6) group; Periodontitis (P, n = 6) group; Osteoporosis (O, n = 8) group; Osteoporosis+Periodontitis (O+P, n = 8) group and Osteoporosis+Periodontitis with 50 mg/kg/day boric acid (BA50, n = 8) group for 15 days. Osteoporosis was created by intraperitoneal injection of 80 mg/kg retinoic acid for 15 days. 4/0 silk ligatures were placed around mandibular right first molar teeth to induce experimental periodontitis. After induction of osteoporosis and periodontitis, rats were sacrificed on 15 days. Alveolar bone loss was evaluated with a stereomicroscope by measuring the distance from cement-enamel junction to alveolar crest. At the

end of study serum calcium and magnesium levels were examined. Density measurements were performed on radiographs of right mandibular first molar teeth. RANKL and TRAP staining were performed on histological slides.

Results: Alveolar bone loss was significantly higher in the O+P group than other groups ($p < 0.05$). Boric acid decreased bone loss ($p < 0.05$). TRAP+ osteoclast numbers were highest in periodontitis group and lowest in control group. The differences in TRAP+ osteoclast numbers among control, P, O+P and BA50 groups were significant ($p < 0.05$). There were no significant differences in RANKL expression and mandibular bone density among groups ($p > 0.05$).

Conclusion: Within the limitations of this study, we conclude that boric acid may decrease alveolar bone loss in osteoporotic rat model of periodontitis.

P346

Oral Health and Menopause: Questionnaire Study on Quality of Life

Naomi Yoshida[1], Kumiko Sugimoto[2], Satoe Suzuki[3], Hideki Kudo[3]

[1]Department of Dental Hygiene, Faculty of Health Sciences, Chiba Prefectural University of Health Sciences, Chiba, Japan, [2]Basic Oral Health Science, Faculty of Dentistry, School of Oral Health Care Sciences, Tokyo Medical and Dental University, Tokyo, Japan, [3]Department of Clinical Laboratory Medicine, Faculty of Health Science Technology, Bunkyogakuinn University, Tokyo, Japan

Purpose: The purpose of this study was to investigate how the condition of oral health in menopause stage associates with mental and physical statuses, because women in menopause is regarded to have more problems of oral health.

Materials and methods: One hundred and eleven female dental hygienists aged 40–59 years participated in this questionnaire study and were asked to answer the questionnaire including menopausal index, General Oral Health Assessment Index (GOHAI), socio-demographic factors, self-rating questionnaire for depression (SRQ-D) and Mos Short-Form 36-Item Health Survey (SF-36). The participant with hysterectomy, thyroid disease, hyperpiesia, diabetes or depression was excluded from the analysis. Depending on their menstrual status, 97 participants were divided into pre-menopausal, menopausal and post-menopausal groups. This study was approved by the Review Board of the universities. Analysis of variance was used for parametric comparisons among three groups, and Pearson's correlation coefficients were examined for analysis of association between oral health status and menopausal status.

Results: Except that menopausal group showed significantly higher score on SRQ-D than pre-menopausal group, no significant differences were found in any other indices between three groups. Statistically significant negative correlation was observed between GOHAI score and each score of menopausal index and SRQ-D, and statistically significant positive correlation was observed between GOHAI score and sub-category score of SF-36 such as role-physical, role-emotional and social functioning.

Conclusion: This study suggested that oral health problem in and peri-menopause stages may relate to menopause symptoms as well as psychological condition and role-physical, role-emotional and social functioning assessed by SF-36.

P347

Does Salivary Antioxidant Capacity Reflect that of Blood Serum?

Hiroko Imura[1], Naomi Yoshida[2], Yoko Yamazaki[1], Masahiko Shimada[1], Kumiko Sugimoto[3]

[1]Department of Orofacial Pain Management, Medical and Dental Sciences Graduate School, Tokyo Medical and Dental University, Tokyo, Japan, [2]Department of Dental Hygiene, Faculty of Health Sciences, Chiba Prefectural University of Health Sciences, Chiba, Japan, [3]Basic Oral Health Science, Faculty of Dentistry, School of Oral Health Care Sciences, Tokyo Medical and Dental University, Tokyo, Japan

Aim: As it is generally recognized that oxidative stress is involved in aging and a number of diseases and reduction capacity of oxidative stress is important for disease prevention and control of aging, we measured the antioxidant capacity of saliva and seek the possibility of assumption of serum antioxidant capacity from salivary level.

Materials and methods: Unstimulated saliva and blood were collected from healthy young (19–33 years old) and midlife (40–54 years old) adult volunteers. The amount of saliva was measured immediately after collection. After centrifugation at 3000 rpm for 10 min, the supernatant of saliva and blood was collected and the antioxidant capacities of supernatant was measured by using test kit for potential anti oxidant (PAO, JaICA, Japan) which evaluates reductive activity for Cu2 + as an antioxidant capacity.

Results: A significant and high correlation was observed between antioxidant capacities of saliva and serum, showing that the mean value of the saliva was about one-third of the serum. There were no statistically significant differences in antioxidant capacities of saliva and serum between young and midlife subjects with no difference in salivary secretion rate.

Conclusions: From the above results, it is suggested that the antioxidant capacity of serum can be generally assumed from saliva value and the antioxidant capacity does not differ between the young and midlife adults. Furthermore, the measurement of salivary antioxidant capacity may be utilized for evaluating systemic antioxidant capacity and health status.

P348

Evaluation of Anaerobic Bacteria in Periodontitis by E Test Method

Badea Florin Ciprian[1], Nuca Cristina[2], Doina Paula Balaban[3], Moldoveanu Lucia[4], Sachir Erdogan[5], Badea Victoria[6]

[1]Faculty of Dental Medicine, Carol Davila, Bucharest, Romania, [2]Department of Preventive Dentistry, Faculty of Dental Medicine, Ovidius University Constanta, Constanta, Romania, [3]Department of Biochemistry, Faculty of Dental Medicine, Ovidius University

Constanta, Constanta, Romania, [4]Department of Prosthetics, Faculty of Dental Medicine, Ovidius University Constanta, Constanta, Romania, [5]Faculty of Dental Medicine, Ovidius University Constanta, Constanta, Romania, [6]Department of Microbiology, Faculty of Dental Medicine, Ovidius University Constanta, Constanta, Romania

Aim: The purpose of this study was to evaluate antibiotic susceptibility of anaerobic bacteria species in periodontitis patients using E test method.
Matherial and methods: The study group included 42 patients (27 female; 15 males) selected after clinic periodontal status, which was realized in the oro-dental office- Department of Preventive Medicine and made by measuring: probing pocket depth (PD), bleeding probing (BP), index plaque (PI). The periodontal pus was collected with sterile paper point; bacteria biochemical identification was made by using API Rapid ID 32 A (bioMerieux); antibiotics susceptibility was determinate by the E test method (AB Biodisk), according NCCLS recomandation and by using: Ampicillin, Amoxicillin, Amoxicillin/Clavulanate, Metronidazole, Tetracycline, Doxicycline. Statistical analyses were performed using t test and Pearson correlation coefficient. Ethical permission was approved before the starting of the study. The period of time studied taken into account in this interpretation: 1 January-1 march 2013.
Results: Were isolated an total of 116 anaerobic bacteria strains: Prevotella intermedia 73.2% (85), Porphyromonas gingivalis 23.2% (27), Bacteroides forsythia 3.6% (4); the global percentage of susceptibility were as follows: Metronidazole-100% Amoxicillin/Clavulanate-93%, Ampicillin-71%, Amoxicillin-75%, Doxicycline 90%, Tetrcycline-56%. Each clinical periodontal markers: PD, BP, PI, were positively associated with the presence of anaerobic bacteria ($p < 0.001$).
Conclusions: Metronidazole has been highly effective against all identified anaerobes species and we can considered that this is still the election drug for treatment in periodontitis. Anaerobic bacteria species with low susceptibility to antibiotics, such as Tetracycline, imposes knowing the antibiotics susceptibility level of anaerobic bacteria species before periodontitis treatment.

Theme: Implantology: Implantology

P349
CBCT from Clinical Assesment to Surgical Guide
Marian Vladimir Constantinescu[1], Michael Gross[2], Grigore Lazarescu[2], Adrian Mihail Nistor[2]
[1]Department of Prosthetic Dentistry, Carol Davila University, Carol Davila, Bucharest, Romania, [2]Private Activity

The aim of this study: To demonstrate CBCT role in multiple implant treatment planning. Various X –ray data are compulsory in order to have predictable optimal fixture-bone and anatomical structures position. The limited nature of two – dimensional radiographs on the widths and thickness of the maxillary bone must be extended to 3D imaging.
Materials and methods: In this study 32 patients were diagnosed using CBCT for each jaw, 1.0 mm thick slice. Pre-op radiological stents have been placed on both mandible and maxilla and digital 3D image has been created by superposing different scans of jaws and stent. Prosthetic preview and digital wax-up were used in order to accurately predict exact position for each implant. Final step has been the virtual design of the surgical guide.
Results: Surgical guide has been realized using high technology Direct Metal Laser Sintering (DMLS), based on the project designed previously.
Conclusions: Computer -assisted implant surgery (CAIS) is becoming a routine investigation. In this study were used all technical options offered by new technology.

P350
In Vitro Research on the Influence of Ultrasonic Vibration in Human Osteoblats
Jose Ricardo Mariano, Elizabeth Ferreira Martinez
C.P.O. São Leopoldo Mandic, Campinas, Brazil

Aim: In 2011 Jeremy Mao, DDS (Columbia University–NYC-USA), presented a new device designed to use the force of ultrasonic vibration in order to accelerate the movement of teeth.
Materials and methods: The device makes use of pulse forces aiming to fasten the movement of teeth through accelerated bone remodeling. This technique has been applied to other parts of the human body, such as repairing bone fracture and density in long bones. The premise is very simple: instead of using constant pressure, the device exerts very soft pressure and vibrations on the teeth for 20 min/day. Users can do many of the tasks of their daily routine during the activated mode and the device is easily recharged in an incase set.
Results: The mechanism of osteogenesis mechanically stimulated is not fully understood. According to Gusmão *et al.* (2012), in response to a mechanical stimulus, there is the synthesis of PGE-2 culminating in the influx of calcium to the intracellular space. This cytokine pro-inflammatory responds to 50–90% of the induction mechanism of osteogenesis, being the most important prostaglandin in the mechanotransductor system, being also related to the bone neoformation and reabsorption. This association had been related mainly to the role of calcium, once its intracellular concentration – in the presence of mechanical stimulus – determines the synthesis of PGE-2 (Cherian *et al.*, 2005; Genetos *et al.*, 2005; Li *et al.*, 2005; Xu *et al.*, 2007).
Conclusion: This research aims to assess the in vitro influence of the ultrasonic vibration force in cultures of osteoblastic human cells.

P351
Three-Dimensional Finite Element Analysis of Taper-Cylindrical Screw Implant in the Posterior Maxilla Subjacent to Sinus
Eryi Lu[1], Chendi Xu[2], Xiaoye Yuan[2]
[1]Ninth People's Hospital, Shanghai, China, [2]College of Stomatology, Shanghai, China

Purpose: This study was to investigate the biomechanical properties of taper-cylindrical screw implants in comparison with cylindrical

implants in the posterior maxilla subjacent to sinus by using three-dimensional finite-element analysis.
Materials and methods: The CT image data of a maxillary bone (type IV)with a missing first molar was reconstructed. The crestal height were 4 and 7 mm without sinus bone graft, 4 and 7 mm with sinus bone graft, 10 without sinus bone graft or 13 mm without sinus bone graft. Two threaded CAD implant models of in cylindrical and taper-cylindrical shapes were created. Oblique, axial and horizontal loadings with different forces were applied respectively. With software ANSYS10.0, stresses in the peri-implant bone and displacement of the top of the implant was evaluated.
Results: Taper-cylindrical implant induced less stresses in cortical bone and reduced the displacement of the top of the implant at all bone levels. At 4-mm bone level, stresses and displacement produced by taper-cylindrical implants decreased under both axial and horizontal load with sinus bone graft conducted but increased under oblique load. At 7-mm bone level, stresses and displacement generated by taper-cylindrical implants reduced under all three kinds of loads when sinus bone grafted was operated.
Conclusion: In the aspect of biomechanical behavior, Taper-cylindrical implant is more ideal than cylindrical implants in the posterior maxilla subjacent to sinus. Sinus floor augmentation is recommended when the residual bone height is no more than 7 mm.

P352
Placement Gingival Level Implant on Posterior Mandibular
Pande Nyoman Puspaningyun
Department of Prosthodontic, Mahasaraswati University, Denpasar, Bali, Indonesia

Case: Patient 58 years old have problems chewing on the bottom right and left side. Over 5 years wear a removable metal frame denture, and feeling uncomfortable because having to remove and reinstall each time. Patient was asked for placement implant on the bottom right and left side. Placement of two pieces of gingival level implants performed on the right bottom and one pieces of gingival level implant on the left bottom. After 3 months placement of healing screw, and 2 weeks later placement of abutment and followed with impression.
Conclusion: Two weeks later placement of PFM crowns and after 3 years, the patient feels better for mastication.

P353
Allografts and Autografts Volume Changes after Vertical Augmentation
Julio Leonardo Oliveira Lima[1], Daniel Isaac Sendyk[1], Wilson Roberto Sendyk[2], Maria Da Graça Naclério Homem[1], Maria Cristina Zindel Deboni[1]
[1]*Oral Surgery Department, School of Dentistry University of São Paulo, São Paulo, Brazil,* [2]*Oral Implantology, School of Dentistry University of Santo Amaro, Sao Paulo, Brazil*

Aim: The aim of the present study was to investigate changes in the volume of an irradiated, demineralized, freeze-dried bone allograft (DFDBA) and to compare it to a fresh-frozen, mineralized bone allograft, autogenous bone graft (AT), and blood clot (C).
Materials and methods: Nine rabbits were used, with one as the primary bone graft donor and eight that were subjected to a model of guided bone regeneration (GBR), whereby 32 titanium cylinders with a volume of 98.12 mm^3 were fixed to the calvaria and randomly filled with DFDBA, FF, AT, or C. The animals were sacrificed 13 weeks later, and the content of the cylinders was subjected to clinical assessment to quantify the resulting tissue volume.
Results: All of the grafts adhered to the recipient bed. The DFDBA exhibited the largest average resulting volume (73.73 ± 18.28 mm^3); however, it was not significantly different from the FF (71.54 ± 16.40 mm^3). The average resulting volume of the AT was 45.42 ± 22.46 mm^3, and it was significantly different from the DFDBA and FF. In this model of GBR, the grafts maintained the volume more effectively than the C (11.64 ± 4.85 mm^3).
Conclusion: The use of bone allografts, particularly DFDBA, represents an alternative to autogenous bone for the correction of volume defects of the alveolar ridge because it is safer and easy to store, and it has been proven to be more effective for maintaining the graft volume in this model of GBR for vertical tissue augmentation.

P354
Clinical Image Quality Assessment in Panoramic Radiography
Meltem Mayil, Gaye Sezgin, Filiz Namdar Pekiner
Department of Oral Diagnosis and Radiology, Faculty of Dentistry, Marmara University, İstanbul, Turkey

Aim: This study was performed to assess the quality of panoramic radiographs obtained and to identify those errors directly responsible for diagnostically inadequate images.
Materials and methods: This retrospective study consisted of 150 panoramic radiographs obtained from the Department of Oral Diagnosis and Radiology. All projections were made with the same radiographic equipment (Morita Veraviewopcs model 550 (Kyoto-Japan), with the maximum KVP of 80, mA = 12, monitor 17 inch TFT LCD, 100–240 VAC 60/50 Hz, Global Opportunities). The images were exported and saved in Joint Photographic Experts Group (JPEG) file and no adjustment of contrast, brightness and magnification was performed. Two oral and maxillofacial radiology specialist evaluated those images using the Clinical Image Quality Evaluation Chart and classified the overall image quality of the panoramic radiographs and evaluated the causes of imaging errors.
Results: The mean of the scores was 79.69 ± 14.87. In the classification of the overall image quality, 28 images were deemed "optimal for obtaining diagnostic information", 80 were "adequate for diagnosis," 37 were "poor but diagnosable," and five were "unrecognizable and too poor for diagnosis". The results of the analysis of the causes of the errors in all the images are as follows: 103 errors in the positioning, 15 in the processing, four from the radiographic unit, and none of them is due to anatomic abnormality.
Conclusion: The positioning errors found on panoramic radiographs were relatively common in our study. The quality of

panoramic radiographs could be improved by careful attention to patient positioning.

P355

Photogrammetric Analysis of Multiple Implant Abutment Impressions under Different Conditions

Funda Bayındır, Melike Pınar Yıldırım, Nuran Yanıkoğlu
Department of Prosthodontics, Atatürk University, Erzurum, Turkey

Purpose: This investigation evaluated and compared the dimensional accuracy of a vinyl polysiloxane (PVS), a hydrophilic polysiloxane and a polyether (PE) impression materials when used under dry, moist and wet conditions.
Materials and methods: An acrylic master model with six implants (Tidal Spiral Dental Implant Systems, Huntsville, AL, USA) placed bilaterally in place of the maxillar right and left canine, second premolar and second molar was constructed. A total of 108 impressions were made of from this acrylic model. The materials used in this study were a hydrophilic polysiloxane impression material (Zetaflow, Lot No. 129666, Zhermack, Italy), a hydrophilic vinyl polysiloxane impression material (Elite P&P, Lot No. 130025, Zhermack, Italy) and a polyether impression material (Impregum Penta Soft Quick, 3M ESPE, Germany). Twelve impression of each material were made under each of the three conditions; dry, moist and wet. Two reference distances were evaluated on each study model. Distances evaluated by a graphics editing program (Adobe Photoshop CS4, Adobe Systems Inc., San Jose, CA, USA) One-way analysis of variance and Student t-test were used to compare mean dimensional changes.
Results: There was a significant difference on the dimensional accuracy of all tested materials ($p < 0.001$). The percentage of dimensional changes under dry, moist and wet conditions respectively were at VPS samples 0.549%, 1.182% and 1.647%, at polysiloxane samples 0.967%, 1.682% and 2.660% and at PE samples 0.444%, 0.704% and 1.945%. With in the limitation of this study, the least dimensional change was determined with the polyether impression material.

P356

Rehabilitation of a Patient with Partial Mandibular Resection and Reconstruction

Tuğrul Sarı[1], Ahmet Mihmanlı[2], Artur İsmatullaev[1], Aslıhan Üşümez[1]
[1]*Department of Prosthodontics, Bezmialem Vakıf University, Istanbul, Turkey,* [2]*Department of Oral and Maxillofacial Surgery, Bezmialem Vakıf University, Istanbul, Turkey*

Introduction: Partial or total resection of mandibula or maxilla is a surgical procedure which is quite difficult to rehabilitate and restore.
Case: A 57 years old female patient was applied to our clinic with a partially resected and reconstructed mandibula with free flap iliac bone and soft tissue graft due to oral squamous cell carcinoma. There were missing and periodontally compromised teeth because of gingival recession and root resorption at the maxillary dentition as well. Moreover the vertical dimension of occlusion and intermaxillary distance were restricted after the surgery. The aim of the treatment was to restore the function, esthetics and phonetics. For this purpose, maxillary metal ceramic fixed partial dentures and a four implant supported mandibular total denture were fabricated and placed. The patient was regularly recalled during postoperative period.
Conclusion: Clinical examinations of 6 months post-treatment revealed no evidence of disorders associated with the restored teeth or their supporting structures. The wide application range and the benefits of modern implant dentistry make the rehabilitation of such difficult cases possible.

P357

Influence of Thread Number and Length on the Push-Out Strengths of Zirconia Implants: A Pilot Study

Ferhan Egilmez[1], Gulfem Ergun[1], Isil Cekic Nagas[1], Pekka K. Vallittu[2], Lippo V.J. Lassila[2]
[1]*Department of Prosthodontics, Faculty of Dentistry, Gazi University, Ankara, Turkey,* [2]*Institute of Dentistry, University of Turku, Turku, Finland*

Aim: Macroscopic and microscopic designs of zirconia implants are crucial in the success of osseointegration and their longevity since they have been shown to be capable of withstanding oral forces over an extended period of time. The aim of this study was to investigate the influence of various macroscopic designs of zirconia implants including thread number and thread length on their push-out strength, and screw displacement before failure.
Materials and methods: Six types of zirconia implants ($n = 60$) with square shaped threads in 0.2 mm thickness were designed and tested mechanically. Six groups (A-E) were formed ($n = 10$). In group A, zirconia implants had four threads with 1 mm length, in group B, four threads in 0.5 mm length, in group C, six threads with 1 mm length, in group D, six threads with 0.5 mm length, in group E, eight threads with 1 mm length and in group F, eight threads with 0.5 mm length. All implants were embedded in dental plaster and subjected to push-out test. Failure modes were assessed quantitatively and morphologically. The data were statistically analyzed with a three-way analysis of variance (ANOVA) ($p < 0.05$).
Results: Statistical differences in failure modes were investigated by chi-square tests at a significance level of $p < 0.05$. Push-out forces were significantly increased when the thread number decreased ($p < 0.05$). Moreover, shorter thread lengths generated lower push-out force values. These zirconia implants also had larger relative displacements. Maximum push out resistance was attained in group A.
Conclusion: Macroscopic design of zirconia implants can substantially affect the mechanical properties.

P358

3D Course of Inferior Alveolar Canal Defined by Cone Beam Computed Tomography

Betül Taş, Nurgül Kömerik
Süleyman Demirel University, Faculty of Dentistry, Department of Oral & Maxillofacial Surgery, Isparta, Turkey

Aim: The aim of this study was to define the course of inferior alveolar nerve within the mandible to delineate safety zones for dentolaveolar surgery.
Materials and methods: Cone beam computed tomography images of 100 patients obtained using Planmeca Promax 3D MID were analyzed. The diameter of inferior alveolar canal as well as bone thickness on the buccal, lingual and inferior aspects of the canal at premolar, molar and retromolar regions were measured. The localization of the mental foramen was determined.
Results: Inferior alveolar canal in its course makes a curve having highest level in the retromolar region (mean of 11.2 mm), lowest in the molar region (8.3 mm) and ascending again in the premolar region (10.3 mm). It also crosses the body of mandible from lingual to buccal. In the molar region, the bone thickness buccal to the canal is 5.3 mm as opposed to 3.4 mm in the lingual side. In premolar region, 3.1 mm bone in buccal side and 5.7 mm in lingual side was measured. The mean diameter of the canal was found to be 1.95 (±0.6) mm. The mental foramen was most commonly localized between the roots of premolars (47 cases), forming an anterior loop in 14 cases.
Conclusion: Before surgery performed to the mandible, the course of inferior alveolar canal should be born in mind through which it makes a curve in the infero-superior direction, crosses the body of mandible from lingual to buccal and possibly forms a loop before leaving the mental foramen.

P359

A Dental Volumetric Tomography Study on the Visualization of the Mental Foramen's Anterior Loop in Dentate Patients

Arzu Demir, Elif Sarıoğlu, Filiz Namdar Pekiner
Department of Oral Diagnosis and Radiology, Faculty of Dentistry, Marmara Univercity, Istanbul Turkey

Aim: The aim of this retrospective study is to determine the distribution of anterior loop in dentate patients by examining their dental volumetric tomography (DVT) images.
Materials and methods: Fifty patient's (25 female, 25 male), aged between 20 and 39 and without tooth loss, DVT images were evaluated for both right and left side of mandibula. If the mental branch leaves the inferior alveoler nerve posterior to the openning of the mental foramen, it is described as type1. If the mental branch leaves the inferior alveoler nerve perpendicular to the opening of the mental foramen, it is described as type2. If the mental branch leaves the inferior alveoler nerve anterior to the mental foramen, it is described as type3. It is assumed that there is no loop in type1 and type2. Type3 indicates the presence of anterior loop.
Results: The distribution of type3 and type2 is smilar with each other however type1 is not commonly found. The percentange of each type on right or left side is found 2% for type1, 46% for type2 and 52% for type3. Besides the percentage of type2 on both side at the same patient is found 34% and type3 on both side at the same patient is found 42% with higher rates than other combinations.
Conclusion: Dental volumetric tomography (DVT) can be used safely to observe the track of mental nerve from the inferior alveoler nerve to the mental foramen for various surgical operations involving the mental foramen area.

P360

Temperature Changes During Simulated Implant Surface Decontamination with Er: YAG Laser

İlker Keskiner[1], Mahmut Sumer[2], Ahmet Aydoğdu[1], Soner Cankaya[3]
[1]Department of Periodontology, Faculty of Dentistry, Ondokuz Mayis University, Samsun, Turkey, [2]Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, Ondokuz Mayis University, Samsun, Turkey, [3]Department of Biostatistics, Faculty of Medicine, Ordu University, Ordu, Turkey

Aim: The aim of this in vitro study was to investigate the temperature changes at the implant-bone interface and implant surface during simulated implant surface decontamination with Er:YAG laser.
Materials and methods: Implants were inserted to bone blocks cut from freshly resected bovine femurs. Simulating buccal periimplant bone defects were created to each blocks. Temperature changes were monitored by 3 thermocouples placed at implant-bone interface in proximal (T1), palatal/lingual site (T2) and implant surface at the apical area (T3). Bone blocks were placed into water bath in order to simulate intraoral conditions. The implants were irradiated for 60 s using pulsed Er:YAG laser (λ = 2.940 nm) (pulse energy, 150 mJ; pulse duration, 300 μs; frequency, 15 Hz) with regard to no cooling, cooling with water or air and cooling with air+water.
Results: In mean, the critical threshold of 47°C was exceeded after 31.50 ± 14.71 s at T1, 37.4 ± 11.01 s at T2, 42.33 ± 8.73 at T3 in no cooling group. Other groups did not exceed critical threshold in any time period. At equal energy fluence, Er:YAG laser with no cooling induced significantly higher temperature increase than other cooling methods in all measurement points.
Conclusion: Decontamination of implant surface by means of Er: YAG laser with no cooling excessively heat the periimplant bone within the energy range investigated. Cooling with air and/or water would minimize the risk of temperature induced bone necrosis as a result of lasing implant surface.

Theme: Implantology: Oral Medicine

P361

Lateral Lingual Vascular Canals in the Mandible: A CBCT Study

Iuliana Babiuc, Daniela Babiuc
Department of Removable Prosthodontics, Faculty of Dentistry, University of Medicine and Pharmacy "Carol Davila", Bucharest, Romania

Purpose: To investigate the presence of the lingual foramina and their bony canals in the premolar region of the mandible by means of cone beam computed tomography.
Materials and method: Fifty-four subjects underwent CBCT examination of the mandible for implant therapy. The axial cross sections through the anterior mandible were carefully examined in order to detect the lingual vascular canals. Their presence, position and trajectory were established.
Results: Lingual canals in the premolar region of the mandible were observed in 32 subjects (59.25%). These vascular canals typically had an anterior trajectory, perforating the lingual cortical plate, and ended in the mandibular incisive canal. In all, 22 (40.74%) patients presented these canals on the right side and 22 (40.74%) on the left side. Twelve patients (22.22%) presented the lateral vascular canals bilaterally. The most common position of the canals was the second premolar (45.45%), followed by the first premolar (38.63%) and the canine (13.63%). In one case this canal was depicted in the lateral incisor region.
Conclusion: CBCT examination can reveal the presence, position and morphology of the lingual vascular canals in the premolar region of the mandible. These canals have an arteriolar content, which may lead to an intense bleeding during the osteotomy for implant placement. Clinicians should be aware of these anatomical structures and their possible implications in implant dentistry.

Theme: Implantology: Oral Pathology

P362

Pyogenic Granuloma – Hyperplastic Lesion of the Gingiva: Review of 10 Cases

Alper Kaya[1], Beyza Kaya[1], Faysal Uğurlu[2]
[1]*Department of Oral and Maxillofacial Surgery, Dentistry Faculty, Dicle University, Diyarbakir, Turkey,* [2]*Department of Oral and Maxillofacial Surgery, Dentistry Faculty, Marmara University, Istanbul, Turkey*

Introduction: Pyogenic granuloma (PG) or granuloma pyogenicum is a reactive hyperplasia of connective tissue in response to local irritants. The etiology of the lesion is not known, though it was originally believed to be a botryomycotic infection. It is theorized that pyogenic granuloma possibly originates as a response of tissues to minor trauma and/or chronic irritation, thus opening a pathway for invasion of nonspecific microorganisms, although microorganisms are seldom demonstrated within the lesion. It predominantly occurs in the second decade of life in young females, possibly because of the vascular effects of female hormones. Clinicaly, oral PG is a smooth or lobulated exophytic lesion manifesting as small, red erythematous papules on a pedunculated or sometimes sessile base, which is usually hemorrhagic. The surface ranges from pink tored to purple, depending on the age of the lesion. Histologically, the surface epithelium may be intact, or may show foci of ulcerations or even exhibiting hyperkeratosis. PG in general, does not occur when excised along with the base and its causative factors. Although excisional surgery is the treatment protocols such as the use of Nd:YAG laser, flash lamp pulsed dye laser, cryosurgery, intralesional injection of ethanol or corticosteroid and sodium tetradecyl sulfate sclerotherapy have been proposed.
Case: This paper reports 10 cases on patients that visited the Oral and Maxillofacial Surgery Department of the Dental Faculty in the Dicle University.
Conclusion: We report the location, size, course and treatment of each lesion, comparing the results obtained to those reported in the literature.

Theme: Implantology: Oral Surgery

P363

Changes in Plasma Catecholamine Concentrations and Circulatory Dynamics in Response to Administration of 2% Lidocaine to Which Different Amounts of Adrenaline Had Been Added

Kimito Sano[1], Akira Yamaguchi[2], Masutaka Mizutani[2], Jun Ueda[2], Toru Akasiba[2]
[1]*Department of Dental Anesthesiology, The Nippon Dental University School of Life Dentistry, Niigata, Japan,* [2]*Department of Oral and Maxillofacial Surgery, The Nippon Dental University School of Life Dentistry, Niigata, Japan*

Purpose: We investigated the effect of local anesthetics on plasma catecholamine concentrations and circulatory dynamics and attempted to find a method that would minimize their effects.
Materials and methods: We divided 40 healthy male volunteers into five groups: an adrenaline-free group (group I), 10 μg adrenaline group (group II), 20 μg adrenaline group (group III), 40 μg adrenaline group (group IV), and 50 μg adrenaline group (group V), and used a 30G needle to inject 4.0 ml of 2% lidocaine containing the different amounts of adrenaline in each of the above groups into the gingivobuccal fold of the upper first premolar over a 2-min period, after which we collected serial blood samples and made serial measurements of circulatory dynamics. The study was approved by the ethical committee at Nippon Dental University.
Results: No significant increase in plasma adrenaline concentration was observed in Group I, whereas in groups II, III, IV, and V the concentration rose, peaked 5 min later, and then gradually declined.

The percentage increases in the plasma adrenaline concentration in groups II, III, and IV were positively correlated with the doses of adrenaline administered, whereas a marked increase above the estimated value was observed in group V.

P364

Digital Imaging Evaluation of Bone Defects Healing: Animal Study

Manuela Pescaru[1], Marius Bud[2], Floarea Fildan[1]
[1]*Department of Radiology, Faculty of Dental Medicine, "Iuliu Hatieganu" University, Cluj-Napoca, Romania,* [2]*Department of Endodontics, Faculty of Dental Medicine, "Iuliu Hatieganu" University, Cluj-Napoca, Romania*

Aim: The aim of this research was to evaluate the accuracy and the reliability of assessing bone defects regeneration using 2D digital radiography and CBCT.
Materials and methods: The animals, Wistar rats, were divided in two groups (n = 23), with similar distribution regarding age, gender and weight. For both groups we induced right and left parietal bone defects of 5 mm diameter each. Bone defects created on the right side were with no material added, while the left parietal bone created defects were coated with osteoconductive, osteoinductive, osteogenetics and alloplastic material. The study was approved by the Ethics Committee of the University. The imaging was done after 2 and 4 months after surgery, using 2D and 3D methods CCD and CBCT. Bone healing and histological evaluation were assessed by a scoring system by five observers evaluating all digital images and the corresponding histological sections.
Results: The resorption of the biomaterial and the formation of new bone trabeculae were observed in both CCD and CBCT images. All images showed that the bone regeneration process was improved by using alloplasthic material. CBCT system allows measurements of bone thickness at an good accuracy and assessement of small defects regeneration.
Conclusion: CBCT is a reliable, noninvasive and promising technique for assessment of small bone defect healing.

P365

Analysis of Relationships between Maxillary First Molar and Maxillary Sinus

Mehmet Oğuz Borahan, Filiz Pekiner, Asım Dumlu
Department of Oral Diagnosis and Radiology, Marmara University, Istanbul, Turkey

Objectives: To assess the relationships between the maxillary first molar and the maxillary sinus floor in a group of patients.
Methods: One hundred and fifty patients were recruited for this study. The distances between the examined roots (mesio-buccal, disto-buccal and palatal) as well as furcations, and the sinus floor, were evaluated using cone beam computed tomography, and grouped as follows: class 0: distance = 0 mm; class 1: 0 mm < distance < 2 mm; class 2: 2 mm ≤ distance < 4 mm; class 3: 4 mm ≤ distance < 6 mm; class 4: 6 mm ≤ distance.
Results: The mean distance of the distoplatinal root to sinus floor was 1369 mm; mesioplatinal root to sinus floor 2014 mm and the palatinal root to sinus floor 1553 mm. The prevalence of class 0 was the highest for the palatal root (60%), mesiobuccal (54%), and disto-buccal (54%) roots was the same.
Conclusions: The results suggest that the palatal root of the maxillary first molar had the closest relationship with the sinus floor. The clinician should be aware of the anatomical and morphological details of this root, especially when taking surgical decisions.

P366

Chronic Osteomyelitis of the Mandible in Children and Adolescence: 21 Cases Report

Yanping Zhao, Xuchen Ma
Department of Oral Radiology, Peking University School and Hospital of Stomatology, Beijing, China

Purpose: To study the clinical and radiographic features of chronic osteomyelitis of the mandible in children and adolescence.
Materials and methods: Twenty-one patients with chronic osteomyelitis of the mandible were included in this study. All of them were younger than 17 years old with the mean age at onset was 10.1 years old. Panoramic radiographs and CT scan were performed and surgical treatments were undertaken. Clinical and radiographic data were analyzed.
Results: The age at onset of symptoms was at two incidence peaks, 6~8 years old and 12~14 years old. Eighteen cases were unilateral and three cases were bilateral. Six patients had impacted molar (second or third molar) with no signs of dental caries or periapical lesions. No causative teeth were found in nine patients. Bony changes on CT images were classified into four patterns.①mixed pattern (10 cases): periosteal new bone formation with destruction of medular and/or cortical bone.②proliferative pattern (five cases): periosteal new bone formation with intact or small defect of cortical bone. ③sclerotic pattern (three cases): sclerotic change spread extensively in the mandible. ④sequestrum pattern: (three cases): sequestration with periosteal new bone formation. Operation findings revealed inflammatory lesions including abscess formation, foci of pus, or inflammatory granulation tissue in seven patients. All of them were mixed pattern on radiographs.
Conclusion: The findings of our investigation showed that most of the chronic osteomyelitis of the mandible in children and adolescence demonstrated periosteal new bone formation without sequestration and fistula. Impacted second molars may be the insidious causative teeth in some patients.

P367

Somatosensory Evoked Potential to Assess Neurosensory Disturbance Following Removal of Third Molar

Amr Adel Abdelaty, Gamal Mohamed Moutamed
Oral and Maxillofacial Surgery Department, Faculty of Dentistry, British University in Egypt, El-Sherouk City, Egypt

Objective: The purpose of this study was to evaluate hypoesthesia of the lower lip using trigeminal somatosensory evoked potential (TSEP) following surgical removal of impacted third molar.
Materials and methods: This prospective study involved 350 patients who underwent surgical removal of impacted third molars. Preoperative TSEP for all patients were recorded. A total of 27 (7.7%) patients showed neurosensory disturbance of IAN immediately postoperatively. Those 27 patients were considered as the study group. Another 27 patients out of the 350 patients with

no altered sensation were included in this study as a control group. IAN paresthesia at 1, 6, 12, 18 and 24 months postoperatively were recorded using TSEP.
Results: All patients in the study group showed complete loss of sensation in the lower lip ipsilateral to surgical side immediately postoperatively. A total of 17 (62.9%) patients had full recovery when reviewed at 12 months postoperatively. At 18 months postoperatively a total of 23 (85.1%) patients experienced full recovery of the chin and lower lip sensation. However, no more patients showed signs of recovery at 24 months postoperatively. TSEP measurements for those patients suffered from neurosensory disturbance showed sine waves. None of the patients in the control group reported loss of sensation in the lower lip ipsilateral to the surgical side immediately postoperatively and throughout the study period.
Conclusions: TSEP is a valuable method to assess neurosensory disturbance of IAN and it might play a role as an objective way to evaluate nerve function in oral and maxillofacial region.

P368

Implant Treatment in Patient with Chronic Alcoholism – A Case Report

Banu Gürkan Köseoğlu, Neşe Kahraman, Çağrı Akçay
Department of Oral&Maxillofacial Surgery, Faculty of Dentistry, Istanbul University, Istanbul, Turkey

Background and aim: Dental implants are increasingly being used to replace missing teeth. The dental literature contains numerous observations on the significance of systemic disorders as contraindications to implant treatment. There are aspects that may be associated with alcoholism, which might need to be considered before implants are placed. These may include the fact that alcoholism is often associated with tobacco smoking, may cause a bleeding problem or osteoporosis, and may affect: bone mass, immunity, nutrition. The purpose of this article is to show the correlation between chronic alcoholism and dental implant failure.
Case: A 56 year-old female patient with missing teeth referred to İstanbul University, Department of Oral Surgery for dental implant treatment. There were no problems during surgery and primer stabilization was adequate. After 3 years, patient had the complaint of mobility, pain and it was recognized that the patient is a chronic alcoholic and heavy smoker. Peri-implant marginal bone loss was evaluated by digital panoramic radiography. Chronic periodontitis, hyperemia and 5–6 mm bone loss around the implant region was seen. Implant failure was occured.
Result: Multivariate analysis showed that peri-implant marginal bone loss was significantly related to a daily consumption of alcohol, and increased plaque levels and gingival inflammation. Daily alcohol consumption may have a negative influence on predictable long-term implant treatment outcomes, producing peri-implant bone loss and compromising restorative treatment with implant-supported prostheses. Thus, although there is no evidence that alcoholism is a contraindication to implants, such patients may not be a good risk group.

P369

Laser Assisted Depigmentation Treatment with ER.CR: YSGG Laser – A Case Report

Banu Gürkan Köseoğlu, Neşe Kahraman, Çağrı Akçay
Department of Oral&Maxillofacial Surgery, Faculty of Dentistry, Istanbul University, Istanbul, Turkey

Background and aim: Gingival melanin depigmentation procedures are commonly associated with recurrence of pigmentation, which starts with migration of melanocytes from the adjacent free gingiva. Although clinical melanin pigmentation does not present a medical problem, demand for cosmetic therapy is commonly made by fair-skinned people. Currently, lasers have major advantages such as the production of local homeostasis, reduced postoperative pain and oedema, bacterial elimination, the possibility of contact-free incision and the avoidance of the need for sutures. The Er, Cr:YSGG laser is a high-powered laser which works in a localized way, removing tissues only at the laser light focus. The aim of this article is to capture the success of laser in depigmentation treatment without local anesthesia.
Case report: A 37 year-old female patient with the complaint of pigmented gingiva referred to Istanbul University, Department of Oral Surgery. Intraoral examination revealed deeply pigmented gingiva on both maxilla and mandible. Routine oral hygiene procedures were carried out and oral hygiene instructions were given. Er.Cr:YSGG laser was planned to use. Local anesthesia was not needed. No pain or bleeding complications were observed during and after the procedure.
Result: Laser beam produces bloodless field for surgery, causes minimum damage to the periosteum and underlying bone, and the treated gingiva and mucosa do not need any dressing. But this approach needs expensive and sophisticated equipment, Repigmentation was minimal and patient compliance was much better in laser treatment than other techniques.

P370

Assessment of Buccal Cortical Bone Osteotomy for Benign Mandibular Lesions

Toru Akashiba[1], Masutaka Mizutani[1], Jun Ueda[1], Kimito Sano[2], Akira Yamaguchi[1]
[1]Oral & Maxillofacial Surgery, Niigata Hospital, The Nippon Dental University, Niigata, Japan, [2]Department of Dental Anesthesiology, School of life Dentistry at Niigata, The Nippon Dental University, Niigata, Japan

Objective: Adaptation of the decortication and bone replacement (DBR) technique was reevaluated by long-term prognosis of three patients with deep benign mandibular lesions.
Cases: Case 1: A 39-year-old man with radicular cyst in left mandibular first and third molars who underwent cystectomy with DBR under general anesthesia. His postoperative-9-year course was favorable. Case 2: A 60-year-old man with impacted tooth and dentigerous cyst in left mandibular third molar who underwent tooth extraction and cystectomy with DBR under general anesthesia. His postoperative-7-year course was favorable without

numbness. Case 3: A 53-year-old woman with benign tumor in the left mandibular bone. Owing to the history of tumorectomy for jaw tumor in the same region 13 years before, the case was considered as its relapse. Tumorectomy was performed with DBR under general anesthesia. Pathologic diagnosis was ossifying fibroma and her postoperative-8-year course was favorable without relapse.

Results: Although all three postoperative courses within 7–9 years were favorable without numbness or relapse, partial lack of continuity was observed in the outer cortical bone although width and height of the bone were well maintained.

Conclusion: While DBR provides many advantages including direct-vision lesion removal and less damage on the lower alveolus neurohemal bundles, the long-term prognosis showed partial lack of continuity in the outer cortical bone. Thus, DBR could further improve prognosis of patients, including application to implant treatment if tight osteosynthesis and bone graft to the dead space are performed.

P371

The Effect of Tube Drainage Vs. Conventional Suturing on Postoperative Discomfort after Third Molar Surgery

Banu Özveri Koyuncu, Mert Zeytinoğlu, Ayhan Tetik, Murat Gomel

Department of Oral and Maxillofacial Surgery, Ege University, İzmir, Turkey

Aim: The aim of this prospective randomized study was to compare the effects of tube drainage on maximal mouth opening, facial swelling, and pain after third molar surgery.

Study design: Fourty patients requiring extraction of bilaterally impacted mandibular third molars were selected. Each patient had two operations. In the first operation, a drainage tube was inserted into the buccal fold after the suture procedure and left there for 2 days. In the second operation, conventional suturing technique was used on the contralateral side.

The patients were evaluated by the same person for maximal mouth opening, facial swelling, and pain in the immediate preoperative time point and on the second, fifth, and seventh days after surgery.

Results: There was a statistically significant difference in mouth opening, facial swelling and pain on second day in drain group.

Conclusion: The use of a drain had the advantage of less postoperative pain, swelling and trismus following third molar surgery.

P372

Surgical Correction of Vestibule of the Mouth in the Complex Treatment of Patients

Zinoviy Ozhogan, Natalia Mahlynets

Department of Prosthetic Dentistry, Ivano-Frankivsk National Medical University, Ivano-Frankivsk, Ukraine

Purpose: Improvement of the effectiveness of diagnosis and complex treatment of patients with generalized periodontitis I-II stages and shallow vestibule of the mouth used modifications of tunnel vestibuloplasty.

Materials and methods: There were examined 120 patients with generalized periodontitis I-II stages and shallow vestibule of the mouth. Established clinical and laboratory features, morphological, reographical indicators of mucous membrane of vestibule of the mouth and periodontal tissue and ultrasound properties of bone tissue.

Results: We have detected that shallow vestibule of mouth aggravates the course of generalized periodontitis. Developed and justified modifications method of tunnel vestibuloplasty, supplemented with quercetin in postoperative period. The positive effects of the proposed treatment regimens on clinical characteristics: maintaining normal depth of vestibule of the mouth, significant improvement indices of oral hygiene and periodontal tissues, restoring morpho-functional state of the mucous membrane of the gums.

Conclusions: Using the proposed method of complex treatment of generalized periodontitis in patients with shallow vestibule of the mouth proved significant improvement in periodontal tissues.

P373

Multiple Bilateral Supernumerary Mandibular Premolars in a Non-Syndromic Patient: 6 Years Follow Up

Mustafa Cenk Durmuşlar[1], Ahmet Ferhat Mısır[1], Akif Türel[2]

[1]*Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, Bülent Ecevit University, Kozlu\Zonguldak, Turkey,* [2]*Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, Ondokuz Mayıs University, Samsun, Turkey*

Aim: Supernumerary teeth may be defined as any teeth or tooth substance in excess of the usual configuration of 20 deciduous and 32 permanent teeth. The most common supernumarary teeth listed in order of frequency, are the maxillary midline supernumeraries (mesiodens), maxillary fourth molars, maxillary paramolars, mandibular premolars, maxillary lateral incisors, mandibular fourth molars and maxillary premolars. The aim of this study is to present an unusual case of a non-syndrome female patient with bilateral multiple mandibular supernumerary teeth which occured 6 years follow up.

Case: Twenty years old female patient presented to our clinic complaining of pain in her permanent teeth. A panoramic survey of the teeth showed an unerupted teeth were located on the left and right mandibular arch. Following local anesthesia a sulcular incision was performed and supernumerary tooth were extracted.

Conclusion: There were no resorption in sixth year radiography. Presently, the patient is followed up through periodic examinations.

P374

Case Report: Sinus Lifting and Implant Therapy Procedure

Didem Özkal Eminoğlu[1], Cenk Fatih Çanakçı[1], Alparslan Dilsiz[1], Timur Eminoğlu[2]

[1]*Department of Periodontology, Atatürk University, Erzurum, Turkey,* [2]*Denterzurum Dental Clinic, Erzurum, Turkey*

Introduction: Missing teeth may result in a functional and cosmetic deficit and have traditionally been replaced with dentures or

bridges. Dental implants offer an alternative, they are inserted into the jawbones and support dental prostheses. Dental implants rely on the maintenance of a direct stuructual and functional connection between living bone and the implant surface, this is termed osseointegration.

Edentulous, or partly edentulous, patients with an insufficient bone height for dental implants in the lateral part of the maxilla can be treated with bone grafting in the maxillary sinus. This inlay augmentation procedure is known as "sinus lifting". To obtain of good quality autogenous bone grafts are referred to as the golden standard.

Case: A 53-year-old male patient presented to the periodontal department clinic. Sixteen, 17 and 18 numbered teeth were missing and inadequate bone height is found in the rigth maxiller posterior area. Patient hasn't stated any systemic disease and history of smoking.

After initial and non-surgical treatment, computed tomography was taken. The sinus elevation procedure was performed. Postsurgical medications were prescribed. The graft site healed uneventfully, and there were no clinical signs of inflammation after surgery. Implants has placed 6 months after surgery. Orthopantomograph was taken 6 months postoperatively. The healing period progressed without any complications, and all implants were integrated and were loaded after the healing period.

Conclusion: It is important to note that grafting materials used in sinus lift procedures are still under investigation and still uncertain as to what quality and quantity of bone would ensure clinical success.

P375

3D Manufacturing of Surgical Fibular Bone Flap Guide for Reconstruction of a Mandibular Cancer Surgery

Hasan Suat Gokce[1], Osman A. Bengi[1], Mustafa Nisanci[2], Aykan Andac[2], Selcuk Isik[2]

[1]Medical Design and Manufacturing Center, Gulhane Military Medical Academy, Ankara, Turkey, [2]Department of Plastic and Reconstructive Surgery, Gulhane Military Medical Academy, Ankara, Turkey

Introduction: In recent years, the combination of the evolution in imaging, the development in computer technology and the use of precise modeling machines in medical sciences had let us to construct the 3D models of the human body parts and medical devices.

Case: Computerize Tomography (CT) images of 20 years old patient with osteosarcoma on the left mandibular posterior region was referred to our center for the manufacturing 3D plastic model (ABS plastic, ZCorp). The resection of the cancer tissue and simultaneous the fibular bone graft for the resection region surgery was planned. The track of the incisions on both the mandibular resection region and the fibular bone section which would be used as the graft were planned on computer environment. Then, two incision and one connector guides with their fixing sets were designed with the help of computer software (MIMICS, TRIMATIC). The guides (stainless-steel) and fixing sets (TiAlVa) were manufactured by Selective Laser Melting technique on laser sintering machine (M2 Concept Laser). Double surgical team performed the resection and reconstructing surgery simultaneously with the help of the designed guides.

Conclusion: The use of the newly developed technologies in design and the manufacturing 3D models and medical devices would be helpful for the surgeons to comprehend their cases, in preplanning the complicated surgical procedures, avoid many malpractices, minimize the risks of surgery and should provide many other benefits like reducing the surgery interval.

Theme: Preventive Dentistry: Caries

P376

Role of Chewing Gum in Caries Preventing Among Children

Rumiya Abbasova, Farida Gulieva

Department of Pediatric Dentistry, Azerbaijan Medical University, Baku, Azerbaijan

Aim: It is known that stimulation of salivation is an effective method of preventing general dental diseases. Along with the widespread proliferation of soft, shredded food the phenomenon of "chewing laziness" has appeared. It leads to development of anomalies and reduces the intensity of self-purification processes of the oral cavity.

Based on this statement, we drawn attention on such a stimulant of saliva secretion and intensification of self-purification processes of the oral cavity as "Dirol Effect with carbamide" chewing gum which, according to our research, is the basic tool for prevention of dental diseases of school age children.

Materials and methods: Our research of 347 school children (8–15 years) showed that regular use of one cushion of medical-preventive chewing gum "Dirol Effect with carbamide" three times a day after meals for 25 min had a remarkable anti-caries effect, had significantly positive effect on functional status of the regional vessels in school children with clinically healthy periodontium.

Results: The pupils with periodontal disease needed more dose-sparing regimen of medical-preventive chewing gum "Dirol Effect with carbamide" such as one cushion three times a day for 10–15 min after meals, depending on the severity of the disease.

Conclusions: The use medical-preventive chewing gum should be controlled by dentist and recommended for "chewing laziness", sialoschesis, poor self-purification, and for improving the remineralization processes of hard tissues of the teeth.

P377

Results of Supervised Toothbrushing with the Remineralizing Toothpaste in Dental Caries Prevention

Leous Lidia[1], Zhardetsky Alexandr[2], Kupets Tatjana[1], Matelo Svetlana[1]

[1]Belorussian State Medical University, Minsk, Belarus, [2]Minsk Public Health Committee, Minsk, Belarus

Aim: Aim of this study was to evaluate an efficacy of supervised tooth brushing with a remineralizing toothpaste in reduction of dental caries.

Materials and methods: In a study group (SG) 260 7-yrs-old school children were assigned to brush teeth with fluoride-free remineralizing toothpaste, containing active components Ca, P, Mg, xylitol, during two school-years under supervision of school teachers after ethical approval and parents' consent. In "control" group (CG) 225 school children of the same age received the standard oral hygiene instruction and were brushing teeth at homes using fluoridated toothpastes available in shops. DMFT were recorded at baseline, 12 and 24 months single blind examinations.
Results: In the SG av. baseline DMFT was 0.46 ± 0.91 SD, increasing to 0.81 ± 1.15 after 12 and to 1.12 ± 1.34 after 24 months. In CG-baseline DMFT was 0.4 ± 0.82, increasing to 0.93 ± 1.22, 1.46 ± 1.36 after 12–24 months accordingly. The difference of 2-year increments between SG and CG groups was 0.4 DMFT (37.7%). Comparision of averages of DMFT at the end of study between SG and CG have shown the reduction of caries in SG by 23.3% ($p < 0.05$).
Conclusion: The 2-year supervised toothbrushing program in schools with the use of the remineralizing toothpaste was effective in reduction of dental caries of permanent teeth in primary school children.

P378

Investigation of Mouth-Dental and Physical Health of Some University Students

Hulya Erdem Asan
Faculty of Dentistry, Trakya University, Edirne

Purpose: The goal of this study is to obtain some information about oral and physical health of some university students.
Method: One hundred and seventeen University students (62 girls, 55 boys) who applied to Dental Clinics were examined and given a questionnaire of 40 questions. The questionnaire asked for BMI, DMF-s, DMF-t and CPITN indexes. We used the SPSS Program for statistical analysis.
Results: The average student age is 23.9 ± 2.4 and BMI is 21.8 ± 2.4. The DMF-s, DMF-t and CPITN indexes are (10.8 ± 2.4), (2.4 ± 2.4) and (2.4 ± 2.4), respectively. It was determined that 95.7% of the students have dental brushing habits, where 81.2% of those brush their teeth 1–2 times a day, and 65% of those have gum bleeding during brushing.

74% of students doesn't receive periodontal therapy, 58.9% of doesn't receive dental therapy, 76.9% of have dental problems. It was determined that 58.1% of the students don't smoke and 50.4% of them don't have systemic diseases. There is significant positive correlation between the DMF-s index and the age of the students ($p = 0.030$). As student age increases, DMF-s index values also increase. There is a significant positive relationship between the DMF-s and the CPITN indexes ($p = 0.004$). When the DMF-s index increases, so does the CPITN index. Student BMI didn't effect the DMF-s, DMF-t and CPITN indexes ($p > 0.05$). Students have dental caries and periodontal diseases. I recommend conducting health and orientation seminars about routine control.

P379

Effect of the Fluoride Varnishes Comparing to CPP-ACP Complex on Human Enamel Demineralization/Remineralization

Vesna Ambarkova[1], Kristina Gorseta[2], Domagoj Glavina[2], Mira Jankulovska[1], Ilija Skrinjaric[2]
[1]Department of Pediatric and Preventive Dentistry, Faculty of Dentistry, University Sv.Cyril & Methodius, Skopje, R.Macedonia, [2]2Department of Paediatric and Preventive Dentistry, School of Dental Medicine, University of Zagreb, Zagreb, Croatia

Aim: This in vitro study was conducted to investigate the effect of fluoride varnishes comparing to CPP-ACP complex on the inhibition of enamel demineralization.
Materials and methods: Enamel blocks were ground flat, allocated into five groups and subjected to a daily cycling regime. Three groups were treated within the period of 10 min with fluoride varnishes: Fluoridin N5, Bifluorid 12 and Fluor Protector, one was treated only with GC Tooth Mousse (Recaldent CPP-ACP 10.0%) and one control group. Fluoride varnishes were coated once a week before the demineralization period. All specimens were stored in artificial saliva between and after cycles. The surface microhardness (SMH) of the specimens was determined at baseline and after 12 days using HMV-2000 (Shimadzu, Japan). The percentage of SMH change (%SMC) was calculated before and after cycling regime. Data were analysed by t-test for individual comparisons ($p < 0.05$).
Results: Statistical analysis by t-test showed significant difference between SMH before and after fluoride treatment in all groups. All groups treated with fluoride varnishes and GC Tooth Mousse showed increase in SMH. The highest values of increase in SMH were observed for the Fluoridin N5. There was no significant statistical difference between the%SMH of the enamel between groups.
Conclusion: The results obtained in the present study showed that high fluoride varnishes and Tooth Mousse effectively inhibit demineralization under experimental conditions.

P380

Effects of Titratable Acidity and Organic Acids on Enamel Erosion

Eun Jeong Kim, Kwang Hak Bae, Dai Il Paik, Bo Hyoung Jin
Department of Preventive and Social Dentistry, Seoul National University, Seoul, South Korea

Purpose: The aim of the present study was to determine the erosive potential difference among four naturally acidic fruit nectars (mandarin, orange, lemon, grapefruit) within the same range of titratable acidity and its components of the organic acids.
Methods: Diluted fruit nectars (mandarin 1:1.1, orange 1:1.7, lemon 1:15, grapefruit 1:20) with the same range of titratable acidity (7.9 ml) were used. Bovine specimens were randomly allocated to each group and exposed in 50 ml of test solutions for 1 h. Before and after procedure, enamel erosion was measured by microhardness test and CLSM ($p < 0.05$). The separation of organic acids was carried out using a high performance liquid

chromatography to analysis composition of each test solution. Data were statistically analyzed by one-way analysis of variance.
Results: Enamel erosion occurred with all test groups and showed similar decrease in VHN (no statistically differences were founded in the enamel surface hardness after erosion). The surface roughness changes similarly in orange, lemon, grapefruit groups and little difference in mandarin group. The citric and malic was the major organic acid in all test fruit; in lemon and orange group, malic acid showed the highest concentration among four kinds of fruit, in mandarin group had the lowest malic acid.
Conclusions: All the tested groups with same titratable acidity resulted in no significant enamel erosion; even it had different pH value. Citric and malic acid is major organic acid, especially malic acid. It remains that the titratable acidity and malic acid could be major factors on dental erosion.

Theme: Preventive Dentistry: Epidemiology

P381
The Epidemiological Investigation of Dental Caries among the 5 Years Old Children in Shanghai Suburban District
Yueling Li, Qin Du, Xiaoyan Mao
Jiading District Dental Hospital, Shanghai China

Purpose: To investigate the oral health status and its influential factors among the 5 years old in Shanghai suburban,and to provide first hand data for prevention of caries.
Methods: According to the Third National Oral Health Investigation criteria, the oral status of 1135 elementary school students in 8 the elementary school were examined. SPSS14.0 software package was used for statistical analysis.
Results: The prevalence of dental caries and caries means of 1135 subjects were 58.5% and 2.4 respectively, The prevalence of dental caries and caries means in rural area was significantly higher than that in city area, ($X^2 = 14.98$ $p < 0.05$); There was no significant difference of caries prevalence between male and female ($X^2 = 1.52$ $p > 0.05$).
Conclusion: Oral health status of the children in Shanghai suburban should be paid more attention, and more effective measures should be taken to the incidence of dental caries for the elementary school students of countryside by remind of government departments, and bring down distinction between the city area and rural area.

P382
Dental Caries Experience and Treatment Needs among 12 Years Old in Albania
Dorjan Hysi[1], Etleva Droboniku[1], Celjana Toti[1], Elizana Petrela[2]
[1]*Faculty of Dental Medicine, University of Medical Science, Tirana, Albania,* [2]*Faculty of Public Health, University of Medical Science, Tirana, Albania*

Aim: The Aim of this study was to measure the dental caries experience and treatment needs among the age group of 12 years olds in Albania.
Methods: The study was a cross sectional survey conducted in 2011. We used the DMFT and SiC indices to measure the dental caries experience and the ratio of D/DMFT representing the prevalence of untreated caries. Ethical approval was received from the Ministry of Health. Permission was acquired from the school authorities and parents. We used cluster sampling technique. Schools and classes were selected randomly. The 1928 participants were from 16 regions, public schools both in towns and suburbs and represented different social economic level based on the Institute of Statistics of Albania data. Calibration was done for the examiners, from each region. We followed the WHO criteria. Clinical Examination and a dental exam form were completed for each participant.
Results: For the age group of 12 years old the mean DMFT = 3.72 (SD ± 2.66), the mean D = 2.02 (SD ± 2.06), SiC = 6.72 (SD ± 1.92) and the prevalence of caries free was 13%. The prevalence whithout active carie (D = 0) was 29.6% and the prevalence of untreted caries was D/DMFT = 0.56 (SD ± 0.36).
Conclusions: Dental caries experience and untreated dental caries was high compared with the EU countries data. There is a need for a national preventive program and also to improve dental care access for this age group.
Acknowledgements: Ministry of Health of Albania.

P383
Permanent Molars Eruption in Mexican Rural and Urban Population
Laura Patricia Sáenz[1], Leonor Sánchez[1], Jorge Alanís[2], Judith Arjona[2], María Eugenia Rodríguez[3], Heriberto Vera[4]
[1]*Metropolitan Autonomous University-Xochimilco, Mexico, Mexico,* [2]*Autonomous University of the State of Mexico, Mexico, Mexico,* [3]*National Mouth Health Program of the National Center of Epidemiologic Watch and Diseases Control, Mexico, Mexico,* [4]*Ex-Subdirectory of National Mouth Health Program of the National Center of Epidemiologic Watch and Diseases Control, Mexico, Mexico*

Purpose: To describe the eruption level of the first permanent molars of 6 and 7 years old schoolchildren in rural and urban population.
Materials and methods: Prospective and descriptive research. Six and 7 years old schoolchildren (whose parents or guardians signed the consentment form) of Southeast Mexico were studied. Non-probabilistic sampling. The clinical test was conducted outside the classrooms, with number 5 dental mirrors. The eruption was registered from the emergence of any part of the clinical crown, specifying the eruption level: 1/3, 2/3, or full eruption. This was performed by three inter-intra calibrated examiners (Kappa 0.89, $p < 0.001$). Chi-square with 95% reliability was used to analyse the gender and population (rural and urban) differences.
Results: Two hundred and eighty-nine schoolchildren were studied (48% boys and 52% girls), 97 six years old and 192 seven years old. There were no significative differences in these variables in the geographic area. 6.66 ± 0.47 was the average age. Sixteen percentage and 7% molars have not erupted with 6 and 7 years old respectively, with significative difference in lower molars

($p = 0.002$). 7.6% of the erupted molars had 1/3 of eruption, 49.6% had 2/3, and 32.6% full eruption. All first molars presented significative difference regarding age ($p < 0.05$). The eruption of the left lower molar first just presented significative difference in the population type ($p = 0.032$).
Conclusions: Not all permanent molars had erupted at the age of seven. Generally, girls showed a stronger tendency in advanced presence of first molars than boys.

P384
After-Hours Outpatient Visits to the Nippon Dental University Niigata Hospital
Jun Ueda[1], Akira Yamaguchi[1], Masutaka Mizutani[1], Kimito Sano[2], Toru Akashiba[1]
[1]Oral & Maxillofacial Surgery, Niigata Hospital, The Nippon Dental University, Niigata, Japan, [2]Department of Dental Anesthesiology, School of Life Dentistry at Niigata, The Nippon Dental University, Niigata, Japan

Objective: In the Nippon Dental University Niigata Hospital, an oral surgeon provides 24-h, 365-day emergency treatment on holidays/after hours while working on duty. The author summarized the findings from a clinical assessment of after-hours outpatient visits to the department of oral surgery for dental/oral surgical diseases.
Objective: The after-hours emergency patients who visited the department from January 2006 to December 2010 were assessed. Hours of visits, disease names, contents of the procedures were investigated.
Results: In the period, 2881 patients with dental/oral surgical diseases visited the department after hours. Their disease names at the time of visit included many dental diseases like toothache as well as injuries. Hours with the largest patient count were 10:00–12:00 on holidays and 20:00–22:00 at night, suggesting effect of visits of the patients with difficulty in making regular-hours visits. Visits for injuries were 705 cases (24.5%), in which 486 (68.9%) were for laceration followed by tooth dislocation, tooth fracture, and jaw fracture in order of decreasing case counts. Regarding the contents of the procedures, 1408 cases (48.9%) were prescription/irrigation only followed by wound treatment (suture), reduction/fixation (tooth dislocation/jaw dislocation, etc.), and administration of anti-inflammatory/antimicrobial drugs in order of decreasing procedures.
Conclusion: Many of the after-hours visits were highly emergency cases including injuries or severe infections, confirming contribution of the emergency treatment provided by the oral surgeon to the local medical services.

P385
Role of Gene Variations of Toll like Receptors 2, 3 and 4 on Genetic Susceptibility to Periapical Pathosis
Ülkü Özan[1], Zeynep Ocak[2], Fatih Özan[3], Elif Aybala Oktay[4], Halil Şahman[5], İhsan Yıkılgan[6], Hasan Oruçoğlu[1]
[1]Department of Endodontics, Faculty of Dentistry, Abant Izzet Baysal University, Bolu, Turkey, [2]Department of Biology and Genetics, Faculty of Medicine, Abant İzzet Baysal University, Bolu, Turkey, [3]Department of Maxillofacial Surgery, Faculty of Dentistry, Abant İzzet Baysal University, Bolu, Turkey, [4]Department of Dental Sciences, Gülhane Military Medical Academy, Ankara, Turkey, [5]Department of Oral and Maxillofacial Radiology, Faculty of Dentistry, Abant İzzet Baysal University, Bolu, Turkey, [6]Department of Restorative Dentistry and Endodontics, Faculty of Dentistry, Gazi University, Ankara, Turkey

Aim: We aimed to investigate role of gene variations of TLR 2, 3, and 4 on genetic susceptibility to periapical pathosis.
Materials and methods: One hundred patients include this study and divided into two groups as follows; the patient group consists of 50 patients have periapical pathosis, and control group consists of 50 healthy patient that have no periapical pathosis. The primer sequences and restriction enzymes used for PCR-RFLP methods detecting the each single nucleotide polymorphism (SNP).
Results: The results obtained by genotypical analysis of healthy control group and patient group were investigated to disclose whether there is any association between periapical lesions and gene variations. There are no significant statistical differences between patient and control groups according to TLR 2 and 4 gene sequence. On the contrary CT allele detected 67.5% for TLR 3 in patient group.
Conclusion: According to these results it can be suggested that patients with CT allele could be susceptibility to periapical pathosis.

Theme: Preventive Dentistry: Orthodontics

P386
Middle Meningeal Artery as an Independent Module in Craniofacial Growth
Isabel Ferros Santos, Publio Jimenez, Urbano Santana Mora, Arturo Martinez Insua
School of Dentistry, Faculty of Medicine and Odontology, Santiago de Compostela University, Santiago de Compostela, Spain

Aim: It is assumed that the development and growth of the endocraneal structures leads to the final configuration of the calvarian and basicranial bones. The plasticity in the development of the different modules is strongly influenced by environmental factors. Orientation and shape of the meningeal vessels are partially influenced by the cranial base and vault. This study deals with the integration/modularity in the craniofacial development of the middle meningeal artery (MMA). A geometric morphometric study was carried on in skulls with anterior-posterior cultural deformation (AP) compared with an undeformed sample (U).

Materials and methods: Twenty-eight skulls with AP intentional deformation, coming from the Ancon Middle Horizon burials were compared with a group of 34 coetaneous apparently undeformed skulls (U) coming from the Rimak valley. Digital cephalometric and geometric morphometric study was carried on lateral radiographs. Digitations of landmarks were made employing tpsDig2 2.16 (J. Rohlf version) and posterior analysis with MorphoJ (Klingenberg) C. P. 2011 version 1.05 a*. Statistical analysis was carried out with the same package (canonical variate analysis and RV coefficient of modularity).
Results: Shape differences between AP/U were obtained for vault-MMA (CVA $p < 0.0001$) and for cranial base-MMA (CVA $p < 0.0001$). Modularity in AP group was for vault-MMA RV-0.589 and for cranial base-MMA RV-0.597. Modularity in U group was for vault-MMA RV-0.461 and for cranial base-MMA RV-0.557.
Conclusion: Intentional cranial deformation significantly changes the shape of vault, base and MMA. Integration and modularity patterns between these three structures are not affected by deformation.

P387

Skeletal Open Bite Treatment with Zygomatic Anchorage: A Case Report

Defne Yanık, Evren Öztaş, Sönmez Fıratlı
Department of Orthodontics, Istanbul University, Istanbul, Turkey

Aim: To evaluate the dentoskeletal effects of en masse impaction of posterior segments in an adult skeletal open bite patient by using posterior intrusion appliance and bilateral zygomatic anchorage.
Subject and methods: Seventeen-year-old female patient with increased skeletal vertical dimensions and an anterior open bite was treated with posterior intrusion appliance and bilateral zygomatic anchorage miniplates. An intrusion force of 450 g was applied per side with the aid of closed NiTi coil springs. After removing the intrusion appliance fixed orthodontic appliances were applied to correct crowding of the upper and lower arches.
Results: At the end of intrusion, correction of the anterior open bite was achieved. The molars were impacted 3 mm in 7 months and this impaction was maintained throughout the treatment. The mandibular plane showed a counterclockwise autorotation of 5o while anterior lower facial height was decreased 10 mm and overbite was increased 4 mm. At the end of treatment a Class I canine and molar relationship was obtained. Total treatment time was 30 months.
Conclusion: This case report demonstrates that bilateral zygomatic anchorage can be used effectively for intrusion of the upper posterior segments in skeletal open bite treatment and anchorage maintenance.

P388

Prevalence of Posterior Crossbite in Turkish Population

Emine Kaygısız[1], Kahraman Güngör[2], Lale Taner[1]
[1]*Department of Orthodontics, Faculty of Dentistry, Gazi University, Ankara, Turkey,* [2]*Department of Oral and Dento-Maxillofacial Radiology, Faculty of Dentistry, Gazi University, Ankara, Turkey*

Aim: The aim of this epidemiologic study was to evaluate the prevalence and distribution of posterior crossbite in Turkish population.
Methods: One thousand one hundred and ten patients (561 girls, 549 boys) aged 4.6–23 years, who admitted to Oral Diagnose and Radiology Department of our faculty in 1 year, were randomly examined and bilateral, unilateral posterior crossbite on the right and left sides were evaluated by orthodontists. The examined patients reflect the Turkish population since Ankara is a city where individuals from every province of Turkey come to receive health care.

The comparison of absolute frequencies of posterior crossbite types by dentition stages was evaluated by Chi-square, Fischer exact tests. p values equal to or <0.05 were considered significant.
Conclusions:

- The highest number of patients without posterior crossbite was in early mixed dentition.
- Bilateral and unilateral crossbite on the left and right sides had the highest frequency in permanent dentition.
- While the frequency of unilateral crossbite on the left side in primary and late mixed dentition did not differ significantly, the frequency of the crossbite on the right side increased significantly from primary dentition to late mixed dentition.
- Treatment of posterior crossbite should be started as soon as observed.

P389

Orthodontic Treatment of a Maxillary Impacted Canine with Autotransplantation

Sevin Erol Üretürk, Evren Öztaş
Department of Orthodontics, Istanbul University, Istanbul, Turkey

Objective: Impaction of upper canines is a frequently encountered clinical problem. Routine treatment option is to uncover and bond the impacted tooth and to use orthodontic forced eruption. This case report describes the autotransplantation approach to palatally impacted maxillary canine.
Subject and methods: Twenty-four years old female patient with Class I malocclusion with a main problem of left upper canine impaction was treated with fixed appliances. After necessary space creation surgery was performed under local anaesthesia. New alveolus was prepared as completely as possible to a slightly wider socket. The canine was then carefully luxated and by making a circumferent incision around the crown, a collar of marginal tissue was secured to the tooth. The fixation was earlier often rigid with a splint and lasted for a period of 10 weeks. Late endodontic

treatment was performed Then the autotransplanted canine was bonded and orthodontically levelled and aligned.
Results: The canine was successfully autotransplanted, orthodontically treated and showed good occlusion without external root resorption and normal periodontal conditions with pocket depths below 3 mm.
Discussion and conclusion: In this case the success of autotransplantation was high with no signs of resorption, hipermobility and periodontal problems. Autotransplantation of impacted and grossly malpositioned maxillary canines might be indicated in selected cases and could be successful in the long term.

P390

Impacted Anterior Teeth Due To Odontomas: A Case Report of Two Cases

Göksu Trakyalı[1], Burcu Karaduman[2], Şerife Özalp[3], Bahadır Dindar[4], İlter Uzel[1], Vakur Olgaç[5]
[1]Department of Orthodontics, Istanbul Aydin University, Istanbul, Turkey, [2]Department of Periodontoloji, Istanbul Aydin University, Istanbul, Turkey, [3]Department of Pedodontics, Bezmialem University, Istanbul, Turkey, [4]Department of Oral and Maxillofacial Surgery, Istanbul Aydin University, Istanbul, Turkey, [5]Department of Tumor Pathology, Institute of Oncology, Istanbul University, Istanbul, Turkey

Introduction: Odontomas have been extensively reported in the dental literature, which may lead to interference with eruption of their associated teeth.
Case: This case report describes the diagnosis and treatment of two cases with two different kinds of odontomas. In both cases a surgical removal and orthodontic treatment were performed to bring the effected teeth into the arch. In the first case presented, the odontoma blocked the eruption pathway of the right central incisor. Histological investigation of the odontoma revealed that it was a complex odontoma. In the second case the odontoma blocked the eruption pathway of the left central incisor leading to retention of the deciduous left central incisor. Histological investigation of the odontoma revealed that it was a compound odontoma.
Conclusion: It is emphasized that a detailed radiographic examination of all patients that present clinical evidence of missing teeth, delayed permanent tooth eruption or tooth displacement due to a previous dental trauma should be performed. Multidisciplinary consultation may enable the clinician to find the accurate diagnosis and appropriate treatment plan based on the clinical and radiographic appearance.

P391

Management of White Spot Lession after Orthodontic Treatment: A Case Report

Gökhan Serhat Duran, Serkan Görgülü, Sıla Mermut Gökçe
Department of Orthodontics, Center of Dental Sciences, Gulhane Medical Academy, Ankara, Turkey

Introduction: This case report evaluates effectiveness of resin infiltration technique (Icon, DMG) in management of white spot lesions.
Case: A 14 year-old female referred to our clinic for correction of the white spot lesions on her anterior teeth which is spotted after finishing of orthodontic treatment. After resin infiltration technique with Icon (DMG, Hamburg, Germany) performed on the maxillary anterior teeth, white spot lesions size were recorded smaller but the lesions did not disappear.
Conclusion: Resin infiltration can be considered as effective treatment for treating white spot lesions after orthodontic treatment. With caries infiltration, white spot lesions can be treated without invasive restoration, but further investigations needed.

P392

Comparison of Linear and Angular Measurements Using 2D Conventional Methods and 3D CBCT Images Using Different Rendering Software

Umay Kelahmet[1], Seçil Aksoy[2], Kaan Orhan[2]
[1]Department of Orthodontics, Faculty of Dentistry, Near East University, TRNC, Nicosia, Cyprus, [2]Department of Dentomaxillofacial Radiology, Faculty of Dentistry, Near East University, TRNC, Nicosia, Cyprus

Purpose: The aim of this study was to compare the linear and angular measurements which was conducted on 2D lateral cephalometric images and three-dimensional cone-beam computed tomography-generated cephalograms derived from various 3D volumetric rendering software.
Materials and methods: Pre-treatment cephalometric digital radiographs of 15 patients and their corresponding CBCT images were randomly selected. The digital cephalometric radiographs were traced using Vista Dent OC. Invivo anatomage®, Maxilim®, Romexis® software were used to generate cephalograms from the CBCT (Newtom 3G, QR, Verona, Italy). In total, 16 cephalometric landmarks were identified and 17 widely used (10 linear, seven angular) measurements were performed by an independent observers. Mann–Whitney and Kruskall–Wallis H tests were also used to compare the four methods ($p < 0.05$). Intra-class correlation coefficients (ICCs) were used to examine the intra-observer reliability.
Results: The results demonstrated no statistically significant difference between intra-observer analyses except for Condylion-Gnathion (Co-Gn) for CBCT generated cephalograms using various programs ($p < 0.05$). No statistical significance was found for Vista Dent OC measurements ($p < 0.05$). However, significant difference was found between Vista OC and Romexis® measurements ($p > 0.05$).
Conclusions: Measurements from in vivo CBCT generated cephalograms from 3D rendering software found to be similar on conventional images. 3D cephalometric norms should be defined for each population in order to evaluate patients with this modality and software.

P393

Evaluation of the Effectiveness of Casein Phosphopeptide (Tooth Mousse) On the Oral Hygiene in Orthodontic Patients

Didem Aktan[1], Ülkü Başer[2], Süheyla Kaya[2], Hülya Kılıçoğlu[1]
[1]*Department of Orthodontics, Istanbul University, Istanbul, Turkey,* [2]*Department of Periodontology, Istanbul University, Istanbul, Turkey*

Introduction: Casein phosphopeptide (CPP) plays a role in stabilizing and localizing amorphous calcium phosphate (ACP) on the tooth surface. CPP can rebuild subsurface areas of enamel defects, however little is known about the effects of CPP in orthodontic patients on periodontal disease.
Aim: The aim of this randomized controlled clinical trial is to evaluate the effects of Tooth Mousse's (CPP-ACP) on periodontal parameters, inflamation parameters and the saliva and GCF levels of IL-1 β, osteoprotogerin and RANKL in patients undergoing orthodontic treatment.
Method: The study population consisted of fourty patients aged between 13 and 17 years with fixed appliances and ethics approvalhas been granted. First scaling was performed and oral hygiene introduction were given. After 1 month unstimulated saliva and GCF samples were collected from the incisors and canine teeth. Plaque Index, Gingival Index, Bleeding on Probing, Probing Depth, Bonded Bracket Index, DKK were carried out. Patients were randomly assigned to test group or the control group. Tooth Mousse were given only to the test group. One month after the examination, at the second visit all clinical indices were repeated.
Results: At the first visit GCF level of IL-1 β and PD scores, at the second visit PD were significantly higher in the test group. There is statistically significant difference in GCF Osteoprotogerin, BOP, BBI, GI scores between first and second visit in the test group, and saliva RANKL scores in the control group ($p = 0.05$).
Conclussion: In this observational study, CCP-ACP was associated with periodontal clinical parameters in patients undergoing orthodontic treatment. The results of this analysis should be confirmed in other observational studies.

P394

Study of the Efficiency of Remineralizing Gel by Scanning Electron Microscopy

Suetenkov Ye. Dmitry[1], Gritsenko A. Elena[1],
Zaharevich M. Andrey[2], Aleksandrov I. Anton[1]
[1]*Saratov State Medical University named after V.I.Razumovsky, Saratov, Russia,* [2]*Saratov State University named after N.G.Chernyshevsky, Saratov, Russia*

Aim: Evaluation of the efficiency of the remineralizing gel in dynamics, against the background of forthcoming phase of orthodontic treatment.
Materials and methods: We used a remineralizing agent that is customly used in homes, that consists of a combination of calcium glycerophosphate, xylitol and magnesium chloride. The study was performed on the patient's teeth with crowding of the teeth. Twelve premolars with etched and intact sectors of the enamel were removed before using the gel, after a week of application, 2 and 3 weeks after the remineralizing therapy. The basic method is analyzing the morphology and elemental composition of the enamel SEM with energy dispersive microanalysis. We expanded the research areas to 50, 100 and 500 nm.
Results: After the second week, we observed a surface roughness decreasing, a shrinkage of microscopic spaces, an accumulation of the mineral component and the restoration of the surface layer of enamel prisms.

Positive changes were detected in the mineral composition of hard tissues. According to the study, the value of the Ca/P ratio was 3.4 for etched sectors of enamel; 2.3 for intact sectors. After 4 weeks of remineralizing therapy the value of the ratio of molar concentrations of Ca and P (Ca/P) was 1.7, which is optimum for dental hard tissues composition.
Conclusion: The effect of remineralizing gel observed for 4 weeks. The accumulation of macronutrients enamel can contribute to the reduction of the risk of caries in orthodontic patients with performing professional oral hygiene and local application of fluoride.

P395

The Relationship between Tooth Brushing Habits and Residing of the Patients Seeking Orthodontic Treatment in Van, Turkey

Fatih Kazancı, Özer Alkan
Department of Orthodontics, Yüzüncü Yıl University, Van, Turkey

Aim: Tooth brushing habit and periodical dentist control constitute the foundation of oral and dental health. Most of the patients seeking orthodontic treatment have not enough oral hygiene at the first appeal to orthodontics clinics. The aim of this study was to evaluate the oral hygiene status of the patients seeking orthodontic treatment and to emphasize the importance of preventive dentistry services in Van, Turkey.
Subjects and methods: The study involved 215 patients seeking orthodontic treatment. Age, sex, residing, and tooth brushing habits were recorded at the first visit to orthodontics clinic. The distribution of tooth brushing habits of the patients was checked by using Chi-Square test.
Results: The average age of the patients was 12.99 ± 0.76 years old. Of the patients seeking orthodontic treatment, 142 (66%) were from the city center and 73 (34%) were from the towns or rural areas. The frequency of tooth brushing were three times a day for 43 patients (20%), twice a day for 48 patients (22.3%), once a day for 41 patients (19.1%), once-twice or three times a week for 41 patients (19.1%), once or twice a month for six patients (2.8%) and never tooth brushing for 36 (16.7%) patients. There were statistically significant differences between the distribution of tooth brushing habits of urban and rural children.
Conclusion: It is concluded that tooth brushing habits of children aged among 12–14 years were inadequate especially children living in the rural areas of Van, Turkey. Children are needed to be informed of dental health more excessively.

P396

Rapid Maxillary Expansion with Fan Type Hyrax Appliance in Treatment of Maxillary Anterior Skeletal Deficiency: A Case Report

Pınar Altuğ, İsmail Korhan Gider, Sıla Mermut Gökçe, Serkan Görgülü
Department of Orthodontics, Gulhane Military Medicine Academy, Ankara, Turkey

Aim: Rapid expansion is widely used for the treatment of maxillary transversal deficiency. The aim of this study was to assess the effects of fan type rapid maxillary expansion on maxillary dental arch.
Case: A 14 years old female patient suffering from maxillary transversal discrepancy was referred to the Gulhane Military Medical Academy, Department of Orthodontics. Intraoral examination revealed that a disharmony between maxillary and mandibular apical bone sizes cause of maxillary anterior skeletal deficiency. Lateral and anteroposterior cephalometric radiograms were obtained with Kodak 8000 Panoramic Digital System. Lateral cephalometric analysis revealed that bimaxiller prognathy with normal vertical cranial growth. The patient has also protrusive maxillary incisors and normally positioned mandibular incisors.

In the treatment procedure, it was preferred to use Fan Type Hyrax Appliance for premaxillary expansion. Fan Type Hyrax Appliance has been prepared individually in the laboratory and it was splinted on the maxillary teeth. The appliance was activated one-quarter turn twice a day (approximately 0.5 mm expansion per day). After 15 days, it was succeeded to expand the maxilla through sutura palatina media efficiently. After 3 months consolidation period, the fixed orthodontic treatment has begun. After 18 months, class I molar and normal overbite, overjet relationships were achieved.
Conclusion: The use of fan-type expansion can be preferred if the transversal discrepancy is related to the premaxillar region. Otherwise, hyrax expansion can also be preferred.

P397

Designing a New Better Orthodontic TAD System

Dmitry Yevgenievich Suetenkov[1], Orest Zinovievich Topolnitsky[2], Elena Andreevna Gritsenko[1], Andrey Dmitrievich Baltaev[1]
[1]Department of Orthodontics and Pedodontics, Saratov State Medical University, Saratov, Russia, [2]Department of Pediatric Surgical Dentistry and Maxillofacial Surgery, MSUMD, Moscow, Russia

Purpose: To develop a new orthodontic TAD system.
Materials and methods: The designed palatal device provides orthodontic traction and allows you to change its direction in the transversal (oral) and distal direction. The design is fixed on dismountable titanium mini-implants with a square internal interface for a screwdriver. The middle part of the construction allows the use of 2 or 3 mini-implants. Cantilevers used for the application of ligatures or elastic ties can be bent in the plane of the hard palate.

The CAD-system SolidWorks was used in the development of the device. This involved mathematical modeling of the conditions of the upper jaw with implants placed and a fixed platform.

A study of the stress-strain state of the bone-implant fixation was performed to compare the various quantity of mini-implants. Orthodontic forces were applied at 45 and 90 degrees to the plane of the cantilever with a strength of 50–150 g.
Results: When fixing into two implants their heads deformed by 0.097 mm, which is several times greater than fixation with three bearing points (0.035 mm).
Conclusion: The device stability when fixed on three mini-implants is increased by up to 25–30% under external loads. Use of the designed structure provides a solution to fairly complicated clinical cases which require anchorage and the en masse retraction of the upper jaw forward.

Theme: Preventive Dentistry: Periodontology

P398

Effect of Chronic Periodontitis Oxidant and Antioxidant Status in Patients with Familial Mediterranean Fever

Vildan Bostancı[1], Hülya Toker[1], Soner Şenel[2], Hakan Özdemir[1], Hüseyin Aydın[3]
[1]Department of Periodontology, Faculty of Dentistry, Cumhuriyet University, Sivas, Turkey, [2]Department of Rheumatology, Faculty of Medicine, Erciyes University, Kayseri, Turkey, [3]Department of Biochemistry, Faculty of Medicine, Cumhuriyet University, Sivas, Turkey

Aim: Familial Mediterranean fever (FMF) is a self-limiting autosomal recessive disorder characterized by recurrent attacks of fever and inflammation in the peritoneum. The aim of this study was to investigate the impact of periodontal status on oxidant-antioxidant status in chronic periodontitis patients with FMF and response to nonsurgical periodontal therapy.
Methods: Data were obtained from 13 FMF patients with generalized chronic periodontitis (FMF-CP), (five female, eight male; mean age 35.08 ± 10.93) from 15 systemically healthy with generalized chronic periodontitis (CP) (nine female, six male; mean age 38.80 ± 4.87) and from 15 systemically and periodontal healthy controls (HC) (eight female, seven male mean; age 37.33 ± 5.67). Total oxidant status (TOS) total antioxidant status (TAS) and oxidative stress index (OSI) were recorded in gingival crevicular fluid (GCF) and serum. Probing depth, clinical attachment level, gingival and plaque indices were also measured. The GCF and clinical parameters were recorded at baseline and 6 weeks after periodontal treatment.
Results: The baseline GCF-TOS and OSI levels were significantly higher in CP group compared with FMF-CP group ($p < 0.05$). After periodontal treatment, the GCF-TOS level was significantly reduced in FMF-CP group ($p < 0.05$). GCF-TAS level in FMF-CP group was significantly higher than the HC group at baseline ($p < 0.05$). Serum-TAS levels in the FMF-CP group was significantly higher than those of the CP and HC groups at baseline ($p < 0.05$).

Conclusion: The results of study showed that patients with FMF-CP using colchicine reduced oxidative stress and increased antioxidant status compared to CP and healthy controls.

P399

Effect of Mouthrinse on Incidence of Preterm Low Birthweight Babies

Tara Bai Taiyeb Ali[1], Khamiza Zainol Abidin[2], Afifah Othman[1], Nurul Amira Abdul Rahim[1]

[1]Faculty of Dentistry, University of Malaya, Kuala Lumpur, Malaysia, [2]Dental Division Ipoh, Ministry of Health, Perak, Malaysia

Mean plaque index (PI) has been shown to be associated as a risk factor of preterm low birth weight (PTLBW) babies.

Aim: To determine if plaque reduction by adjunctive use of an essential oil mouthrinse in pregnant women after scaling will reduce the incidence of PTLBW babies.

Methods: A randomized controlled clinical trial was undertaken (Ethics Approval from Ministry of Health and Faculty of Dentistry, University of Malaya, Malaysia was obtained). Pregnant women (103), at about 8 weeks gestation attending ante-natal clinics were interviewed and examined for their periodontal status and were then alternately put into test and control groups. For both groups, periodontal therapy consisting of oral hygiene education and scaling was provided. A mouthrinse, Listerine® to be used twice a day until delivery, was given to expectant mothers of the test group. Control subjects did not receive any mouthrinse. A second periodontal examination was performed between 28 and 30 gestational weeks for both groups. Pregnancy outcome data (gestational age at delivery, birth weight of the delivered baby and delivery complications) were collected after the delivery.

Results: Excluding dropouts, 44 tests and 43 controls were included in the final analysis. There was lower incidence of PTLBW in the rinse group (16.7%) as compared to controls (22.0%) although this was not statistically significant ($p < 0.05$). The Odds Ratio was 0.71 (CI: 0.24, 2.13) favouring the rinse group.

Conclusions: An essential oil mouthrinse adjunct therapy for pregnant mothers reduced the incidence of PTLBW, although not significantly in this group of subjects.

P400

Effect of Non-Surgical Periodontal Therapy on IL-8 Level in Gingival Crevicular Fluid in Overweight and Obese Subjects with Chronic Periodontits

Amany Mohie Eldeen Elsayed

Department of Surgery and Oral Medicine, National Research Center, Cairo, Egypt

Overweight and obesity have been suggested to be associated with periodontitis reported in different studies and narrative summaries. The aim of the present study to assess the association of overweight and obesity with chronic periodontitis and its role on periodontal clinical parameters and determine the interleukin-8(IL-8) level before and after non-surgical periodontal therapy.

Subjects and methods: This study included 14 obese subjects (body mass index ≥ 30 kg/m^2 and 12 overweight subjects (body mass index ≥ 25 kg/m^2) were enrolled in this study. The age of the study participants was from 35 to 48 years. Subjects in both groups had generalized chronic periodontitis. The periodontal parameters measured before and 3 months after non-surgical periodontal therapy were: visible plaque index, bleeding gingival index, probing depth. In addition, gingival crevicular fluid (GCF) sample was collected from both groups to detect interleukin-8(IL-8) level using filter paper strip. The level of IL-8 was determined using ELIZA Kits.

Results: There was a statistical significant improvement after periodontal therapy: decreased visible plaque index, beeding gingival inde (p-value0.871), bleeding on probing (p-value 0.871), probing depth (p-value 0.784) with significant at ($p \leq 0.05$) in both groups. Circulatory iL-8 showed lower mean%reduction (0.02%) in obese than overweight subjects after non surgical periodontal treatment.

Conclusion: An improved response to non-surgical periodontal therapy is observed in both obese and overweight patients, with lower il-8 level in obesity than overweight. Though obesity doesnot seem to play a negative role in the improvement of the periodontal clinical response, although it could be useful to include evaluation of BMI in oral health examination.

P401

Nitric Oxide as a Potential Inflammatory Marker in Gingivitis and Chronic Periodontitis: Analysis of Gingival Crevicular Fluid

Ali Orkun Topcu[1], Kemal Burak Sahbazoglu[1], Alev Akalin[1], Nermin Yamalik[1], Kamer Kilinc[2], Erdem Karabulut[3], Tolga Fikret Tözüm[1]

[1]Department of Periodontology, Faculty of Dentistry, Hacettepe University, Ankara, Turkey, [2]Department of Biochemistry, Faculty of Medicine, Hacettepe University, Ankara, Turkey, [3]Department of Biostatistics, Faculty of Medicine, Hacettepe University, Ankara, Turkey

Introduction: Nitric Oxide (NO) is a diatomic free radical involved in platelet aggregation, immune regulation, vascular relaxation and inflammatory response. This feature may make it important for periodontal disease etiopathogenesis. Thus, the aim of the present study is to comparatively analyze the gingival crevicular fluid (GCF) nitrite and nitrate levels to assess the potential relationship between this biochemical parameter and periodontal disease around natural teeth.

Materials and methods: Probing depth, clinical attachment level, bleeding on probing, gingival index and plaque index were assessed, GCF samples were obtained from gingivitis, chronic periodontitis and periodontally healthy subjects, including 480 GCF samples.

Results: Total GCF nitrite levels were higher in gingivitis and periodontitis groups than control group. GCF nitrite level did not differ significantly between gingivitis and periodontitis groups. The difference in GCF nitrate level did not reach to a significant level among three study groups. The gradual decrease in nitrate/nitrite

ratio was detected with the presence of inflammation. No significant correlations were detected between the periodontal parameters and nitrite/nitrate levels in this biological fluids.
Conclusions: Within the limits of the present study it can be suggested that GCF has a diagnostic potential for nitrate/nitrate level. Nitrite is a better periodontal disease marker than nitrate and may be used as an early detection marker of periodontal inflammation.

P402
Management of Gingival Hyperpigmentation with 980 nm Diode Laser Irradiation
Hanaa Mohammed Elshenawy[1], Mohammed Ahmed Quriba[2]
[1]*National Research Centre,* [2]*National Institute of Laser Enhanced Science*

Melanin pigmentation is the result of melanin granules produced by melanocytes in the basal layer of epithelium. Various methods have been used for depigmentation, including gingivectomy, free gingival autograft, electro surgery, cryosurgery, chemical agents such as 90% phenol and 95% alcohol, CO2 laser, Nd:YAG laser, Er:YAG and diode laser.
Aim of this study: To evaluate the role of diode laser irradiation in the treatment of gingival hyperpigmentation.
Patients and methods: Fifteen patients males and females suffering from gingival hyper pigmentation in the anterior segment of the oral cavity with age range from 15 to 45, and free from any systemic diseases were included in this study. The surgical laser procedures were done under local anesthesia with the laser tip in contact with the pigmented tissue in a continuous mode until the desired depth was removed.

There was a dramatic change in the amount of gingival pigmentation immediately after the operation and during the subsequent post operative visits.

Digital examination was done to detect the improvement in depigmentation using a digital camera "Nikon cool pix L810", and the RGB (red, green and blue) value was standardised by using" Adobe Photoshop CS5 version". Diode laser was used with a wavelength of 980 nm, beam diameter of 320 μm and power of 3 Watts. The total irradiation time was 20 min.
Conclusion: Diode laser 980 nm is shown to be safe and effective treatment modality that provides an optimal esthetics with minimal patients' discomfort in cases of gingival hyper pigmentation.

P403
The Effect of Povidone Iodine on Human Beta Defensin-1 Level
Hacer Sahin Aydınyurt, Ahu Dikilitas, Ahmet Cemil Talmac, Abdullah Seckin Ertugrul
Deparment of Periodontology, Faculty of Dentistry, Van Yuzuncu Yil University, Van, Turkey

Aim: Human beta defensins (hBDs) have a strong antibacterial action against various microorganisms, especially periodontal pathogens. The aim of this study was to evaluate the effect of povidone iodine as an adjunct to mechanical periodontal therapy on human beta defensin-1 (hBD-1) levels in gingival crevicular fluid.
Materials and methods: In this study 12 chronic periodontitis patients were treated by full-mouth scaling and root planing using 0.9% sodium chloride (group 1) or 7.5% povidone iodine (group 2) for subgingival irrigation during scaling and root planing. The mean age of participants was 37.09. At baseline and 1 month after the treatment, probing depth, clinical attachment level, gingival index, and plaque index were recorded. The levels of hBD-1 in gingival crevicular fluid were measured at baseline and 1 month after the treatment using Enzyme-linked immunosorbent assays.
Results: After treatments all clinic parameters were improved, there are no difference between group 1 and group 2. Both of the group 1 and group 2 hBD-1 levels in gingival crevicular fluid were reduced after the treatment ($p < 0.05$). Group 2 hBD-1 levels in gingival crevicular fluid had higher reduction.
Conclusions: Human beta defensin-1 plays a significant role in the protection of periodontal tissues against microorganism. After povidone iodine irrigation hBD-1 level reduction is higher than sodium chloride. It may be because of povidon iodine antimicrobial effects.

P404
Early Tooth Loss Due To Smoking in Local Population
Hasan Mehdi Zaidi[1], Hamza Syed M[2], Faizan Syed M[1], Zainab Haji[1]
[1]*Department of Oral Surgery, Fatima Jinnah Dental College, Karachi, Pakistan,* [2]*Department of Restorative Dentistry, DIEKIOHS, Karachi, Pakistan*

Aim: To investigate the early tooth loss due to smoking in local population in Karachi.
Methods: All patients who had detailed extraction record and demographic data collected prospectively during previous 3 years (2010–2012), at two different centers [Center I – Karachi Medical and Dental College Hospital and Center II – Fatima Jinnah Dental College Karachi] were selected. A sample of 2878 cases were matched with 2392 controls for age and gender.
Results: After adjustment for significant confounding variables the estimated probability of ever having teeth extracted in adults who have a history of smoking was high [1.54 (1.31–1.80)]. Highest prevalence of smoking history was recorded in subjects having age in between 30 and 45 years (Males 25.7%, Females 3.8%).
Discussion: The probability of tooth loss is significantly reduced in adults if smoking habits are controlled. Oral hygiene measures and education have a beneficial effect on oral health and prevention of tooth loss in adult population.

P405

The Effect of Chlorhexidine-Digluconate Irrigation on Human Beta Defensin-2 Level

Nazlı Zeynep Alpaslan, Hacer Sahin Aydinyurt, Ahu Dikilitas, Abdullah Seckin Ertugrul
Department of Periodontology, Faculty of Dentistry, Yuzuncu Yil University, Van, Turkey

Aim: Antimicrobial peptides are found in the innate immune system that protects multicellular organisms from a diverse spectrum of microorganisms. In humans, human beta-defensins (hBDs) are small and cationic antimicrobial peptides that can kill a wide variety of gram-positive and gram-negative bacteria. hBD-2 is an antimicrobial peptide induced in various epithelia upon extracellular as well as intracellular bacterial challenge. Chlorhexidine-digluconate at physiologic pH, produces a cationic molecule which binds to negatively-charged bacterial cell membranes causing an alteration of the osmotic equilibrium within the cell. The aim of this study was to evaluate the effect of chlorhexidine-digluconate irrigation on hBD-2 levels in deep periodontal pockets after root planing.
Materials and methods: Twelve patients with chronic periodontitis participated in this study and were treated with scaling and root planing. After root planing at the same visit, pockets in one split-mouth were irrigated with sodium-chloride and the pockets in the another split-mouth were irrigated with chlorhexidine-digluconate solution. Clinical parameters were recorded at baseline and after 1 month of the treatment. hBD-2 levels in pockets were determined by Enzyme-Linked Immuno-Sorbent Assay.
Results: The clinical periodontal parameters were decreased after mechanical treatments ($p > 0.05$). The reduction of hBD-2 levels in pockets which irrigated with chlorhexidine-digluconate was statistically significant than in pockets which irrigated with sodium-chloride.
Conclusion: After mechanical treatment, hBD-2 levels in gingival crevicular fluid were decreased. The reason of this reduction could be the effection of clorhexidine irrigation on microorganisms in periodontal pockets. Understanding the effect of chlorhexidine-gluconat needed to work harder.

P406

Relationship between Glycemic Control and the Level of Periodontitis

Sinem Yıldız Çiftlikli, Yaprak Kırbaş, Bahar Kuru, Başak Doğan
Department of Periodontology, Marmara University, Istanbul, Turkey

Aim: To evaluate the relationship between HbA1c levels and the severity of periodontal disease in type 2 diabetes mellitus (T2DM) patients.
Materials and methods: A total of 135 T2DM patients over the age of 35 were included in the study. The patients were divided into two groups according to their HbA1c levels. HbA1c < 7% was regarded as "well" whereas ≥7% as "poor" glycemic control. A full mouth periodontal examination including plaque index (PI), gingival index (GI), probing depth (PD), bleeding on probing (BOP), clinical attachment level (CAL) was performed. The study design was approved by the Institute of Health Sciences, Marmara University (30112010-03).
Results: Periodontitis with various severity was detected among the examined population (moderate to severe) and 62 of whom were diagnosed as well- and 73 as poorly-controlled. The number of patients with poorly-controlled T2DM who had severe periodontitis was significantly higher than with well-controlled ones ($p < 0.05$). The mean PI, BOP, CAL and the percentage of the sites and the teeth with PD > 7 mm or CAL > 6 mm were significantly higher in the poorly-controlled than the well-controlled T2DM patients ($p < 0.05$).
Conclusions: This study within its limits reveals that poor glycemic control is associated with increasing severity of periodontitis in T2DM patients.

P407

The Effect of Testosterone on Gingival Health in Young Puberty Boys

Vera Radojkova Nikolovska, Mirjana Popovska, Bruno Nikolovski, Biljana Dzipunova, Vera Stojanovska, Olga Kokoceva
Faculty of Dentistry, Skopje, Macedonia

Introduction: It is generally accepted that bacterial plaque plays a huge role in starting gingival inflammation and sex hormones are among the main promoters of this inflammation during puberty.
Aim: to determine the extent of gingival health among teens through examination of indices of oral hygiene and gingival status; to determine serum and salivary testosterone levels in boys at puberty age with and without signs of gingival inflammation and to determine the influence of testosterone on gingival health, followed by indices of gingival status.
Material and method: The study included 30 boys between the ages of 11–14 years with diagnosed gingival inflammation and an equal number of boys with no signs of gingivitis as a control group. Gingival health was evaluated through clinical examination of gingival indices. Serum and salivary concentrations of testosterone were evaluated with Testosterone RIA-DSL method.
Results: The results indicate the expressive signs of gingival inflammation. Determination of serum and salivary concentrations of testosterone, find out strong positive correlation between them in both mediums. Also, the same strong correlation was found comparing serum and salivary levels of testosterone with the indices of gingival status, indicating a positive correlation with all index values, especially emphasizing the influence of testosterone on gingival inflammation, plaque and calculus indices ($r = 0.49–0.91$).
Conclusion: Recent findings certainly are another direct confirmation of involvement of sex hormones in the development of gingival alterations among boys during the pubertal maturation.

Theme: Preventive Dentistry: Public Health

P408

Tailoring of Paediatric Dental Leaflets – Views of Indian Immigrant Mothers in South Western Sydney

Sameer Bhole[1], Roneel Kartik Maharaj[2], Seemagni Naidu[2], Amit Arora[2]

[1]*Sydney and South Western Sydney Local Health Districts, Sydney Dental Hospital, Sydney, NSW, Australia,* [2]*Faculty of Dentistry, University of Sydney, Sydney, NSW, Australia*

Background: In Australia a wealth of dental education materials are available for carers of young children. However, limited research has been conducted into the cultural sensitivity of these materials.

Objective: The purpose of this investigation was to ascertain views of Hindi-speaking carers living in South Western Sydney on tailoring of dental leaflets.

Methods: Two bi-lingual researchers conducted in-depth face to face interviews with Hindi-speaking carers (n = 19) regarding the efficacy of commonly available health education materials produced by NSW Ministry of Health. During the interview, carers were also given a simplified version of the leaflet in English and a culturally adapted and translated leaflet for comparison. The interviews were recorded and transcribed verbatim. The data was then analysed and categorised using thematic coding.

Results: The vast majority of carers interviewed demonstrated a certain degree of difficulty in reading and understanding health education messages written in Hindi. A consensus was reached that the translations were accurate, however; they found reading and writing in Hindi more difficult than oral communication. It was also indicated by the carers that they preferred to receive health messages in simple English with cultural specificity or via the use of pictures.

Conclusions: Producers of dental health education literature should research their potential user groups more carefully and ascertain the need for translated or simplified oral health education material.

Acknowledgements: NHMRC (Project Grant 1033213), Sydney and South Western Sydney LHDs and NSW Ministry of Health.

P409

Oral Health Knowledge, Attitude and Practice of HIV Professionals

Helen Carey[1], Louise Houtzager[2], Priyadi Prihaswan[3], Azizul Haque Mahee[4], Angela Langton[5], Jae Condon[6], Douglas Knox[3], Robert Ball[7]

[1]*Periodontics, Sydney Dental Hospital, Sydney, NSW, Australia,* [2]*Nutrition Development Division, The Albion Centre, Sydney, NSW, Australia,* [3]*HIV/AIDS and Related Programs Unit, South Eastern Sydney Local Health District, Sydney, NSW, Australia,* [4]*HIV/AIDS and Related Programs Unit, Sydney Local Health District, Sydney, NSW, Australia,* [5]*Community HIV, Sydney Local Helath District, Sydney, NSW, Australia,* [6]*AIDS Council of New South Wales, Sydney, NSW, Australia,* [7]*HIV/AIDS and Related Programs Unit, South Western Sydney Local Health District, Sydney, NSW, Australia*

Aim: The purpose of this study was to establish current oral health knowledge, attitude and practice of non-dental clinicians caring for people living with HIV (PLHIV) to improve oral health promotion and referrals to dentists.

Methods: This multi-centre study invited non-dental health care professionals working with PLHIV to complete an anonymous 18-item online survey (Survey Monkey). Descriptive statistics were completed with the Statistical Package for Social Sciences. Ethics approval was granted by the Human Research Ethics Committee South Eastern Sydney Local Health District.

Results: Forty-five of the 64 (70.3%) non-dental clinicians (doctors, nurses, social workers and dietitians) discussed oral health with their patients. Pain and discomfort were the most common problems discussed (88.9%) followed by oral hygiene (64.4%), with diet related issues the least discussed (58%). Lack of confidence/knowledge; time and resources were the most common reasons for not discussing oral health with patients. Printed resources (including screening and referral tools) were wanted by 77% of clinicians to improve delivery of health outcomes for PLHIV.

Conclusion: This study identified current oral health knowledge, attitude and practice of non-dental clinicians caring for PLHIV. This information will guide the development of resources targeting the promotion of oral health within a non-dental health check and increase the confidence to advise on modifiable risk factors as well as promoting the increased use of an existing screening tool for oral health referral.

P410

Chemotherapy and Care of Patients in Odontology

Sid Ahmed Serradj, Farah Chahrazad Belmabrouk, Nesrine Ghenim, Ali Souabi

Service of Odontology, Department of Dental Medicine, Oran, Algeria

Introduction: In the treatment of malignant tumors, chemotherapy with its powerful cytostatic substances, whether alone, in combination with radiotherapy and/or tumor ablation, is a daily hospital practice for several years.

Any time, it must be acknowledged that the antiproliferative effects of these substances are characterized by a deficient selectivity for only malignant cells, and in many cases, especially if treatment is prolonged or for high doses, undesirable effects on healthy structures are inevitable. These complications are not saving the oral cavity and require specific care.

Conclusion: The dental surgeon has a role not only in the detection of the oral neoplasia; but also in the prevention and the treatment of the associated complications, that this chemotherapy is intended for localized cancers or situated at distance.

The work going to be presented consists, through clinical cases, to optimize the care of cancer patients (in collaboration with oncologists) before, during or after cure of chemotherapy.

• Before chemotherapy: we are going to objectify how to focus our treatment plan to maximize hygiene and oral health. This step is very essential especially when an intensive chemotherapy is planned.

• During the cure of chemotherapy: it is preferable to avoid any surgery. However, in case of emergency, the treatment will be discussed with the oncologist, and in all cases it will be as conservative as possible.
• After chemotherapy: we describe how to solve some persisted problems. Infection prevention and maintaining hygiene are the keys of treatment.

P411

A Regional Perspective on Medical Geology and the Fluorosis Problem in Turkey

Ümit Demirel[1], Tuncay Delibaşı[2], Gamze Aren[3]
[1]Dental Clinic, Leprosy Hospital, Istanbul, Turkey, [2]Department of Endocrinology, Diskapi Yildirim Beyazit Training and Research Hospital, Ankara, Turkey, [3]Department of Pediatric Dentistry, Istanbul University, Istanbul, Turkey

Introduction: Medical geology is the science of exploring the relation between natural geological factors and health. It focuses on comprehending the influence of ordinary environmental factors on the geographical distribution of health problems. It is a broad and complex subject. Hence, it requires interdisciplinary contributions from various scientific fields.
Materials and methods: Today, 53 different minerals are produced in the Turkish mining industry. There are numerous examples of these natural resources causing health problems or presenting health risks in different regions in Turkey.

The fluoride element is known to cause a variety of health problems including dental, skeletal, and non-skeletal fluorosis. Water is one of the sources of fluoride. In 2011, The U.S. Department of Health and Human Services (HHS) and Environmental Protection Agency (EPA) proposed the recommendation of 0.7 mg of fluoride per liter of water after years. This amount replaces the current recommended range of 0.7–1.2 mg.
Results: According to the United Nations Development Program (UNDP) and the World Health Organization (WHO), fluorosis is still an endemic public health problem in Turkey, as in other 24 nations. In a recent review, 13 main regions have been identified with fluorosis problem. Research on the issue still continues, as newer studies are published. Nevertheless, there is a lack of coordination among these efforts.
Conclusion: Future studies in Turkey should be well–designed and organized, in order to capture the presence and the severity of the fluorosis issue in the regions under risk.

P412

Occupational Safety and Health in the Dental Therapy Practice

Eleftherios Ntokos[1], Panagiota Dokou[2], Eleni Dadiotou Ntokou[2]
[1]Tzaneio General Hospital of Piraeus, Piraeus, Greece, [2]Private Practice

Aim: The various risks faced by dental therapists and employees in the dental therapy practice have not yet been studied sufficiently in order to ensure safe conditions.

The diagnostic and therapeutic methods applied in dentistry pose diverse hazards that need to be managed for the benefit of the community. The rapid advances in medical technology make the need of implementing safety guidelines in the dental therapy practice imperative.
Materials and methods: The purpose of this study was to examine all preventive measures being applied in the dental therapy practice in order to minimize the risk of exposure to various health hazards such as

1 musculoskeletal disorders
2 risks from the effects of ionizing radiation on tissues and organs
3 management of health care waste such as mercury waste and finally,
4 exposure of dental therapists and employees to various infections as well as infection control in the dental therapy practice

Finally, a clear reference is made to the latest views regarding sterilization and disinfection (methods, disinfectants, sterilants-materials).
Results: All kinds of precautions should be taken in order to ensure the occupational safety and health protection of dental therapists and employees in the dental therapy practice.
Conclusions: Dental therapists and employees are entitled to safe working conditions and should regularly be informed by the responsible state body. Therefore, every effort must be made to isolate or eliminate health hazards in the dental therapy practice.

P413

Oral Hygiene Education in Children with Sensory Hearing Deprivation

Vasily Alyamovskiy, Natalia Tarasova, Vladislav Galonskiy, Anatoly Duzh, Olesia Eleseeva
Department of Dentistry, Krasnoyarsk State Medical University, Krasnoyarsk, Russia

Aim: The priority of modern dentistry is development effective prevention programs. Personification of hygienic education of children with sensory hearing deprivation will provide assimilation of knowledge, create manual skills hygienic oral care system and their implementation in everyday life.

To improve the effectiveness of prevention of dental diseases in children with sensory hearing deprivation, through the development and implementation of corrective methods of hygiene training and education.
Materials and methods: Hygienic education program is designed in such a way that takes into account the development of the cognitive areas in a child with hearing impairment, the prevalence of visual sensations and perceptions. The basis of hygienic education were "Lessons of health" (with sign language), plays, pantomimes, board games.
Results: Designed dental hygiene education improved index of oral hygiene in children with sensorineural hearing loss from 2.8 in 6 months by 3.0%, in 12 months by 14.5%, in 18 months by 47.9% in comparison with the original version of 1.3. Deaf children's oral health index at the beginning of learning is defined as "poor" (2.7) in 18 months decreased to 1.5, which corresponds to

the "satisfactory" level of oral hygiene. PMA index before hygienic training in children with sensorineural hearing loss was 36.6%, in children with deafness 35.4%, improvement of periodontal tissue occurred after 3 months by an average of 3.8%.
Conclusion: The result of hygienic education programs for children with sensory deprivation hearing is not only to improve dental health, but also the development of the emotional sphere of the individual, stimulation of cognitive processes.

P414
Oral Health Care Practices of Preschool Children and Their Parents, in the Area of Athens, Greece
Dimitris Dimitriadis, Iraklis Foskolos, Miltiadis Tseris, Rigas Konstantinidis
Stomatological Society of Greece, Greece

Aim: The aim of the study was to investigate parents' practices towards oral health care of their children and to create a baseline database for future evaluation of an oral health education program.
Methods-population: The "Oral Health Care through the Family" preventive program, was implemented in nursery schools of two municipalities, in Athens, Greece, from October 2011 to March 2012. The program was part of the Phase Two Live Learn Laugh project and it was a partnership between the Stomatological Society of Greece and AIM-Unilever. The partners distributed information leaflets and Dental Pass Cards to parents of 2–5 year old children and discussed prevalent oral health issues in seminars with parents and nursery staff. Prior to the seminars, a questionnaire was completed by the parents, consisting of 14 closed questions about dental visits, teeth brushing and use of fluoride toothpaste of children.
Results: A total 386 persons completed the questionnaire and 296 (76.7%) of them were women. Thirty-four percentage of the participants reported that their child have never visited the dentist and 72.8% stated that their child brushes its teeth, once a day or less. 44.3% didn't know if daily brushing with fluoride toothpaste is harmful/helpful for the teeth and 29.3% didn't know if they are using a fluoride containing toothpaste.
Conclusion: The findings underline the need for continuation of the preventive program, which should be focused in raising awareness towards children's daily tooth brushing, twice a day, with fluoride toothpaste, and regular visits to the dental clinic.

P415
Socio-Demographic Factors and Dental Caries in an Adult Bosnian Population
Jelena Krunic[1], Nikola Stojanovic[1], Smiljka Cicmil[2], Stevanka Djordjevic[3]
[1]*Department of Restorative Dentistry and Endodontics, Faculty of Medicine, University of East Sarajevo, Foca, Bosnia and Herzegovina,* [2]*Department of Periodontology and Oral Medicine, Faculty of Medicine, University of East Sarajevo, Foca, Bosna and Herzegovina,* [3]*Department of Preventive Dentistry, Faculty of Medicine, University of East Sarajevo, Foca, Bosnia and Herzegovina*

Aim: This study aimed to determine socio-demographic factors associated with dental caries in a population of Bosnian adults.
Materials and methods: A random sample of 205 (109 women) 35–44 year olds from Eastern region of Republic of Srpska, Bosnia and Herzegovina, was surveyed during 2010. Data on socio-demographic factors (age, gender, place of residence, education, personal and family income, marital status, size of household, employment status) were collected using questionnaire. Dental caries was assessed using DMFT-index and its components. Univariate and multivariate regression analyses were applied to investigate the effect of socio-demographic factors on the dental caries (the level of significance set at 5%).
Results: The mean of the DMFT was 20.3, being dominated by missing (47.3%) and filled teeth (40.1%). In multivariate analysis being female and having a higher educational attainment was related to fewer decay ($p < 0.05$) and missing teeth ($p < 0.05$), respectively. Both gender and education level was also associated with mean number of filled teeth ($p < 0.05$, $p < 0.01$, respectively).
Conclusions: Gender and education were shown to influence dental health in a population of adults in Bosnia and Herzegovina, and should be considered in assessing risk, and in planning the appropriate preventive measures.

P416
Improving Oral Health Care of People with Sickle Cell Disease
Andrea Soares Quirino Da Silva Fonseca[1], Mirella Giongo[1], Marcia Pereira Alves Dos Santos[2], Vanessa Maria Souza E. Silva[1], Marlene Do Carmo Cezini[1]
[1]*School of Dentistry, University Federal of Rio de Janeiro, Rio de Janeiro, Brazil,* [2]*Ministry of Health of Brazil, Brazil*

Aim: This work aims to showcase and disseminate a tool used to empower such health care professional skills of basic care teams entered in family health strategy, through the promotion of practices of self-care by bearers of Sickle Cell Disease (SCD).
Methods: A health care professional team specializing in hemoglobinophaties diseases drafted a manual that contained among other information, guidelines for health education on self-care on dental health in SCD for children, adolescents, pregnant women, adults and seniors. In the period from 2008 to 2010, this manual was used as a tool for empowerment throughout the national territory health care team members involved directly or indirectly in primary care to the health of people with SCD.
Results: There was training for more than 500 health professional teams from the most varied areas of expertise. Dental caries, periodontal disease, and smoking, alcohol and use of piercings are known to be potentially capable of aggravating the SCD and therefore should be subjects for the health education of bearers of SCD by multiprofessional health care team.
Conclusion: The use of the manual as material for health education and training tool has been effective since such multi-professional skills teams were empowered to provide care to persons

with SCD which contributes to longevity and quality of life of bearers of SCD. Health professionals, especially, the professional members of the dental health teams have a decisive role in this process, given the importance of preventive measures in terms of caries and periodontal diseases.

P417

Oral Health-Related Quality of Life in Disabled Children

Spinei Aurelia

Department of Pediatric Dentistry, State Medical and Pharmaceutical University "Nicolae Testemitanu", Chisinau, Republic of Moldova

Objectives: The aim of this paper is to assess the impact of oral cavity diseases on the quality of life in children with neuromotor disabilities (NMD) in Moldova.

Materials and methods: Clinical examination was performed on 228 children of 12–13 years old with different types of NMD, placed in specialized residential institutions for children with neuromotor and mental disabilities. The control group consisted of 243 relatively healthy 12–13 year-olds, placed in boarding schools for orphans children. The study was conducted in compliance with ethical requirements, obtaining the written consent of children's parents or legal guardians. The DMFT index and oral hygiene status (OHI-S index) have been estimated, as well as the prevalence and severity of the impact of oral health on the quality of children's life (Child-OIDP index).

Results: The prevalence of the impact of oral cavity diseases on children's daily activities has enhanced severity in children with NMD and it reached 69.30%. Oral cavity diseases affected food consumption, hygiene of oral cavity, emotional stability and appearance functions. The main causes of these effects are: untreated dental caries and its complications, toothache, extraction of permanent teeth.

Conclusions: The severity of impact of dental diseases on quality of life in children with NMD depends on the severity of the neurological disorders, associated disabilities, type of child's nutrition, dental status, quality of dental care and the implementation of preventive measures. The results of this study will be used to select the methods and remedies to prevent dental diseases in children with NMD.

P418

Dental Caries Severity and Body Mass Index in Kinder Garden Children, Bali-Indonesia

Yudha Rahina

Dental Public Health Department Faculty of Dentistry, Mahasaraswati University, Denpasar Bali, Indonesia

Introduction: Oral disease is first rank of ten diseases that suffered Indonesian community. There are 72.1% people had caries experienced. Toothache is the main reason for work and school absenteeism, with an average of 3.86 day/year. Although not fatal, dental caries infection can impact on the growth and development of preschool children and reduce human quality of life.

Objective: To determine the correlation between dental caries severity with Body Mass Index (BMI).

Method: Cross sectional study was conducted on 150 children, aged 4–6 years, consist of 80 boys and 70 girls, in Kinder Garden, Denpasar-Bali, 2013 January. The severity of dental caries was measured by UI Dental Caries Index that was divided into eight levels and Body Mass Index measurement was done also. Data were analyzed with Independent t- test and Pearson correlation.

Results: Caries prevalence is 73.3%, the average of dmf-t: 4.33 with 37.3% children with pulp caries infections. The average of children height 111.25 cm, weight 19.49 kg, BMI 15.74 kg/m^2. There are significant differences of BMI between children with pulp caries infections and without pulp caries infections ($p < 0.05$), but there are no significant correlation between dental caries severity and BMI ($p > 0.05$).

Conclusion: Children with pulp caries infections have a lower body mass index than those without pulp caries infections, but severity of dental caries is no correlation with BMI.

Friday, August 30, 2013

FREE COMMUNICATIONS SESSIONS 33–46

Free Communication Session 33 | B332 | 30.08.2013 | 09:00–11:00

Theme: Dental Treatment & Restorative Dentistry: Materials

FC199

Enamel Remineralization by Toothpastes (SEM, EDX and 3D-stereomicrographic Study)

Elizabeta S. Gjorgievska[1], John W. Nicholson[2], Ian J. Slipper[3], Marija M. Stevanovic[1], Sonja M. Apostolska[4], Mira A. Jankulovska[1], Meri V. Pavlevska[1], Aleksandar Gj Dimkov[1]
[1]Department of Paediatric and Preventive Dentistry, Faculty of Dental Medicine, University "Ss. Cyril and Methodius", Skopje, Republic of Macedonia, [2]St Mary's University College, Twickenham, London, UK, [3]School of Science, University of Greenwich, Chatham, Kent, UK, [4]Department of Conservative Dentistry, Faculty of Dental Medicine, University "Ss. Cyril and Methodius", Skopje, Republic of Macedonia

Aim: The purpose of the study was to examine the remineralizing potential of different toothpaste formulations when applied to demineralized enamel.
Materials and methods: The study was performed on extracted permanent molars, with the roots cut at the level of cemento-enamel junction. The coronal segments were submitted to five demineralization/remineralization cycles: demineralization was carried out by an artificial caries gel (pH = 4.5) and remineralization by rubbing with toothpastes containing bioactive glass, hydroxyapatite or strontium acetate and fluoride. Afterwards, the teeth were cut in half along the longitudinal axis. The first half was imaged uncoated with FEG-SEM and 3D anaglyphs were created. The second half was cast in resin, cured, the surface of the blocks was ground flat, polished, carbon coated and analysed with a FEG-SEM (BEI). Qualitative EDX analysis was performed by collecting X-ray line-scans along the line that goes from the resin into the enamel. Semi-quantitative EDX point analysis was performed on the enamel surface to determine the elemental levels (%) of sodium, magnesium, aluminium, phosphorus and calcium. The statistical analysis was performed by one-way ANOVA ($p < 0.05$) and post-hoc Tukey's HSD test.
Results: The results proved that the hydroxyapatite and bioactive glass-containing toothpastes were highly efficient in promoting enamel remineralization by formation of deposits and a protective layer on the surface of the demineralized enamel, whereas the toothpaste containing strontium acetate and fluoride had little, if any remineralization potential.
Conclusions: In conclusion, the treatment of demineralized teeth with toothpastes containing hydroxyapatite or bioactive glass resulted in repair of the damaged enamel tissue.

FC200

Evaluation and Comparision of the Shear Bond Strength of Three Different Metal-Ceramic Repair Systems

Gülsüm Sayın, Özgür İnan
Department of Prosthodontics, Selcuk University, Konya, Turkey

Purpose: This study evaluated the shear bond strength of three different repair systems for metal-ceramic restorations applied on metal and porcelain.
Materials and methods: Substrates to which porcelain repair materials would be applied were prepared in a 10-mm diameter and 4 mm thickness. Thirty cylindrical specimens (9 × 3 mm) were fabricated in a nickel-chromium alloy (Kera-N) and thirty in feldspathic porcelain (Ceramco). Metal (M) and porcelain (P) specimens were embedded in a polyvinyl chloride (PVC) mold and three different composite resins applied to the central region of the specimens.One of the following metal-ceramic repair systems (n = 10): Clearfil Ceramic Repair System/Clearfil AP-X (Kuraray), Ceramic Repair System/Tetric Ceram (Ivoclar Vivadent), Ceramic Repair System/Amolegen Plus (Ultradent). The specimens were stored in distilled water for 24 h at 37°C, thermal cycled (1000 cycles at 5°C to 55°C), and stored at 37°C for 8 days. Shear bond tests between the metal or ceramic specimens and repair systems were performed in a mechanical testing machine with a crosshead speed of 0.5 mm/min.
Results: Mean shear bond strength values (MPa) were submitted to one-way ANOVA and Tukey HSD significant difference tests ($\alpha = 0.05$).
Conclusions: The bond strength for the metal substrate was significantly higher using the Kuraray Ceramic Repair System (32,8810) and was significantly lower using Ultradent Ceramic Repair Kit(8,7710). For porcelain Kuraray Ceramic Repair System (43,3010) showed the highest shear bond strength values, and Ivoclar Vivadent Ceramic Repair system showed the lowest values (33,9610).

FC201

Evaluation of Bond Strength of Two Self-Etching Agents After Different Laser Etching

Abdül Semih Özsevik[1], Emine Şirin Karaarslan[1], Samet Tosun[1], Derya Gürsel Sürmelioglu[1], Ertan Ertaş[2], Aslıhan Üşümez[3]
[1]Department of Restorative Dentistry, Gaziantep University, Gaziantep, Turkey, [2]Department of Restorative Dentistry, Ondokuz Mayis University, Samsun, Turkey, [3]Department of Prosthodontics, Bezmialem University, Istanbul, Turkey

Aim: The aim of this study was to compare the microtensile bond strengths (μTBS) of two different self-etching adhesives on sound dentin following Er:YAG laser etching two different with pulse modes.

Materials and methods: Thirty extracted human third molars were used and the enamel surfaces were removed to expose a flat occlusal dentin surface. All the dentine surfaces were ground with 600-grit silicon carbide paper under running water. The teeth were randomly divided to two groups according to the etching procedures; I: No etching (control), II: Er:YAG laser etching by with MSP mode (100 μs), III: Er:YAG laser etching by with QSP mode. Then, each group was divided into two subgroups according to bonding agents (Single Bond Universal and Clearfil S3). The teeth were restored with nanohybrid composite resin (Filtek Z550). Five 1 mm^2 stick-shaped microtensile specimens from each tooth was prepared with a slow-speed diamond saw sectioning machine fitted with a diamond-rim blade (n = 25 specimens). All samples were submitted to micro-tensile bond test. Statistical analysis was performed with analysis of variance followed by Tukey HSD tests.
Results: There were statistically significant differences between Er:YAG laser-etched and control groups ($p < 0.05$). Irrespective of the laser pulse modes one-step self-etch adhesives showed the highest μTBS to dentin in all etch groups ($p < 0.05$).
Conclusion: In this study the results obtained demonstrated that the μTBS of laser-etching increased the tensile bond strength of one-step self-etch adhesives. The additional application of Er:YAG laser etching while using a one-step bonding systems can be recommended to increase the tensile bond strength.

FC202

Evaluation of Premature Contacts and Occlusal Balance of Complete Dentures

Duygu Kürklü, Funda Bayındır, Nuran Yanıkoğlu
Atatürk University Faculty of Dentistry Prosthodontics

Purpose: The aim of study is to evaluate premature contacts and occlusal forces for each tooth in complete dentures before occlusal adjustment.
Material and methods: The study population comprised 30 subjects (aged 50–75). The measurements were performed using the T- Scan® III (Tekscan Inc., South Boston, MA, USA). The occlusion was analyzed in before and after frames which from the T-scan "Force Movies" are Centric Relation (CR) bite recordings. And before and after frames showed premature loadings and the balance of occlusal forces with T- Scan's red "Center of Force" (COF) icon pinpoints. Several practices closures were made until a repeatable pattern of contacts was seen on the video monitor and sensor was calibrated. Each subject was asked to bite on the sensor in a position of maximum intercuspation thus obtaining the location of each tooth contact. Premature contacts and percentage distribution of forces per tooth were obtained before and after occlusal adjustment.
Results: The worst occlusal balance was recorded in a patient (F/74) by occlusal force values at right 5.9% and left 94.1% before occlusal adjustment. After occlusal adjustment, all patients' percentage of occlusal balance values were adjusted at average of 48.8%, left 51.1%. The percentage distribution of forces per tooth results showed that premature contacts has been observed at posterior teeth either right or left side of occlusion. Occlusal adjustment is requested for all complete dentures to prevent patients from muscular pain and/or temporomandibular disorders for further terms.

FC203

Microshear Bond Strength of Preheated Silorane-Based Composite Resin to Dentin

Muhammed Çayabatmaz[1], Sezer Demirbuğa[1], Yahya Orçun Zorba[1], Faruk İzzet Uçar[2]
[1]*Department of Restorative Dentistry, Erciyes University, Kayseri, Turkey,* [2]*Department of Orthodontics, Erciyes University, Kayseri, Turkey*

Objective: To investigate the effect of preheating on microshear bond strength of silorane-based composite resin to human dentin.
Materials and methods: One hundred freshly exracted third molar teeth were randomly divided into three groups; 1. composite resins were heated to 60 °C using a heater, 2. in a refrigerator composite resins were cooled to 4 °C 3. no pre-heating or pre-cooling was performed and served as control. Each group was then randomly subdivided into four groups according to adhesives used; a. two-step total etch, b. one-step self etch, c. two-step self etch and d. a silorane adhesive system (SAS). Resin composite cylinders were formed (0.9 mm diameter × 0.7 mm length) using a siloran-based and a methacrylate-based composite resin. Microshear bond strength of each specimen was tested using a universal testing device. Statistical analysis was performed using twoway ANOVA and Chi-square tests.
Results: While the preheated groups exhibited statistically higher bond strength values than control groups ($p < 0.001$), pre-cooling groups exhibited the lowest bond strength. The bond strength of SE bond was higher than the other adhesive systems ($p < 0.001$). SAS had the highest microshear bond strength. There was no statistically significant difference in microshear bond strength between All-Bond SE and Solobond M ($p > 0.05$).
Conclusion: Within the limitations of the present study, preheating procedure increased the microshear bond strength of silorane-based composites as well as methacrilate-based composite resins to dentin.

FC204

Radiopacity of Flowable Composite Resins

Rabia Banu Ermis[1], Derya Yıldırım[2], Gul Yıldız[1], Ozlem Gormez[2]
[1]*Department of Restorative Dentistry, Faculty of Dentistry, Suleyman Demirel University, Isparta, Turkey,* [2]*Department of Dentomaxillofacial Radiology, Faculty of Dentistry, Suleyman Demirel University, Isparta, Turkey*

Aim: The radiopacity of flowable composite resins (FCRs) is an important clinical property because one of the common uses of FCR is as a liner in class I and II restorations. The aim of this study, therefore, was to evaluate the radiopacity of light-curing FCRs and to compare them with the radiopacity of enamel and dentine.

Materials and methods: Seven light-curing FCRs with a filler content by weight between 41% and 71% were investigated. Fifteen specimens of the materials with thicknesses of 2 mm were prepared and radiographed alongside an aluminum stepwedge, human enamel and dentin. Three standart occlusal radiographs for each material were taken, with exposure time of 0.32 s and focus-film distance of 40 cm. Films were processed in an automatic device, and digitized using a desktop scanner. Gray-scale values of the materials, stepwedge, enamel and dentine were measured using Image J software. The data were analysed using ANOVA and Duncan multiple range tests.
Results: The decreasing values of radiopacity of the studied materials were: G-aenial Flo (38.38 ± 1.47), Filtek Ultimate (31.88 ± 1.45), Flowline (31.41 ± 1.60), Estelite Flow Quick (31.30 ± 1.99), Leaddent Flow (31.20 ± 1.32), Supraflow (28.13 ± 0.95), and Bright Light Flow (26.61 ± 1.45). All materials, except Bright Light Flow, demonstrated significantly greater radiopacity values than 2 mm of the aluminum scale and dentin ($p < 0.05$). The radiopacity of only one material, G-aenial Flo, was found to be significantly higher from enamel ($p < 0.05$).
Conclusions: All materials had radiopacity values above 2 mm of aluminium recommended by ISO 4049.

FC205

SEM Investigation of the Enamel Surface after Laser Assisted Tooth Bleaching

Marija Stevanovikj, Elizabeta Georgievska, Meri Pavlevska, Mira Jankulovska, Sonja Elencevska
Faculty of dentistry University of St. Cyril and Methody, skopje, Macedonia

White and well aligned teeth are one of the most common demands in the dental offices. Some types of lasers can be used during the bleaching procedure.
Aim: To investigate changes of the enamel surface after bleaching with Nd:Er:YAG laser and the potential of commercial paste consisting bioactive glass for remineralization of the enamel.
Material-method: 12 extracted human teeth were divided in two groups:

I group: 6 teeth treated with bleaching gel (16% carbamide peroxide), irradiated with Nd:Er:YAG laser. Laser parameters: pulsating mode, 60 Hz frequency and 8W energy. Paste with bioactive glass was applied at the end of each treatment. Teeth were prepared with the standard procedure for SEM investigation. Each tooth was analysed with SEM.

II group: 6 teeth treated with bleaching gel (16% carbamide peroxide) and paste with bioactive glass was applied at the end of each treatment. Teeth were prepared with the standard procedure for SEM investigation. Each tooth was analysed with SEM.
Results: Application of 16% carbamide peroxide caused demineralisation of the enamel. Acceleration of the bleaching process with NdYAG laser caused deeper damage and demineralization of the enamel. Application of paste with bioactive glass on the enamel surface caused forming of protective layer of deposits of bioactive glass on the tooth surface in both groups.
Conclusion: Acceleration of the bleaching process with the Nd:Er:YAG laser could cause severe damage of the enamel. Remineralising pastes should be used after bleaching in order to repair the damage to the mineral tissue caused by bleaching procedures.

FC206

The Effect of Photo-Activated Disinfection (PAD) on Microshear Bond Strength of Adhesives

Sezer Demirbuğa, Yahya Orçun Zorba
Department of Restorative Dentistry, Erciyes University, Kayseri, Turkey

Objective: The aim of this study was to evaluate the effect of a new disinfection method, FotoSan on microshear bond strength of adhesives in dentin.
Materials and methods: In this study 84 freshly extracted third molars were used. Removing the cusps, flat dentin surfaces were obtained. After achieving standard smear surfaces using carbid papers, the teeth were divided four main groups; 1: 2% Chlorhexidine, 2: 5% NaOCl, 3: PAD and 4: Control. Each group was subdivided accordind to adhesive systems used; a- Two-step self etch adhesive, Clearfil SE Bond, b- One-step self etch adhesive, Adper Easy One, c- Two-step total etch adhesive, Adper Single Bond 2. After disinfection and adhesive prosedures a Microhybrid composite resin, Clearfil APX was used to make composite cylinders using 0.75 mm of diameter tygon tubes. The microshear bond strength of samples were measured in a universal testing machine after 24 h. The failing surface of samles were evaluated under steriomicroscope and SEM. Statistical analysis was evaluated using Kruskal-wallis, Mann-Whitney U and Chi-square tests.
Results: There was no statistically significant difference between Chlorhexidine, NaOCl and control; PAD showed statistically significant lower microshear bond strength than others ($p < 0.005$). Among the adhesives, there were also significant differences ($p < 0.001$). While Clearfil SE Bond showed high values, Adper Easy One and Adper Single Bond followed this, respectively.
Conclusion: PAD reduced the microshear bond strength of adhesives in dentin. Clearfil SE Bond showed high microshear bond strength among the adhesives.

FC207

Development of a New Aproach to the Periodontal Regeneration

João Requicha[1], Isabel Leonor[2], Fernando Muñoz[3], Tiago Moura[4], Jorge Azevedo[5], Pedro Carvalho[1], Maria Anjos[6], Rui Reis[2], Manuela Gomes[2], Carlos Viegas[1]
[1]3B's Research Group - Biomaterials, Biodegradables and Biomimetics, University of Minho, Guimarães, Portugal. Department of Veterinary Sciences, University of Trás-os-Montes e Alto Douro, Vila Real, Portugal. ICVS/3B's - PT Government Associate Laboratory, Braga/Guimarães, Portugal, [2]3B's Research Group - Biomaterials, Biodegradables and Biomimetics, University of Minho, Guimarães, Portugal. ICVS/3B's - PT Government Associate Laboratory, Braga/Guimarães, Portugal, [3]Faculty of Veterinary, University of Santiago de Compostela, Lugo, Spain,

[4]*Department of Veterinary Sciences, University of Trás-os-Montes e Alto Douro, Vila Real, Portugal,* [5]*Centre for Studies in Animal and Veterinary Sciences, University of Trás-os-Montes e Alto Douro, Vila Real, Portugal,* [6]*Department of Veterinary Sciences, University of Trás-os-Montes e Alto Douro, Vila Real, Portugal. Centre for Studies in Animal and Veterinary Sciences, University of Trás-os-Montes e Alto Douro, Vila Real, Portugal*

Aim or purpose: Periodontitis is highly prevalent in humans. As the current therapies are often inefficient, even bone grafts or growth/differentiation factors, Tissue Engineering (TE) could an alternative. Thus, a tissue-engineered double layer scaffold (DLS) based on starch+poly-caprolactone (SPCL) enriched with adipose stem cells (ASCs) was developed for periodontal regeneration.
Materials and methods: A SPCL membrane which aims at acting as GTR barrier, and a wet-spun fibre mesh without and with osteoconductive silanol groups were combined to obtain the DLS. DLS was characterized by Fourier Transmission Infra-red (FTIR), scanning electron microscopy (SEM), mechanical and degradation tests.

Canine ASCs were seeded/cultured onto the scaffolds and then characterized by MTS, DNA quantification, SEM, PCR and ALP quantification. The same cells were subcutaneously transplanted in mice and assessed the host response.

Ultimately, DLS were implanted in a mandibular rodent defect and compared to collagen commercial membranes. After 8 weeks, new bone formation was quantified by the Donath technique.
Results: Functionalization with silanol groups was confirmed by FTIR. DLS exhibited adequate tensile strength and degradability and provided a good support for canine ASCs adhesion and proliferation. SPCL-DLS-Si revealed higher expression of osteoblast genes. These cells also did not induce any immunogenic reaction in the host.

Histomorphometry revealed that SPCL-DLS-Si induced higher bone formation compared to collagen.
Conclusion: SPCL-DLS-Si bioactive matrix with the canine ASCs revealed good potential to be used in periodontal and bone TE strategies, and could also be proposed in non-autologous canine preclinical studies before human clinical applications.

FC208

The Effect of Three Different Blood Stoppers on Microshear Bond Strength of Self Etch Adhesives

Yahya Orçun Zorba[1], Sezer Demirbuğa[1], Mustafa Aydınbelge[2], Muhammed Çayabatmaz[1]
[1]*Department of Restorative Dentistry, Erciyes University, Kayseri, Turkey,* [2]*Department of Pedodontics, Erciyes University, Kayseri, Turkey*

Objective: To evaluate the effect of the blood stoppers on microshear bond strength (μSBS) of self etch adhesives in dentin.
Materials and methods: Fifty extracted human third molars were used. Removing the cusps, flat dentin surfaces were obtained. The teeth were divided five main groups: 1. a plant based blood stopper (PBS); 2. an aluminium chloride containing hemostatic agent (AlCl3); 3.20% Ferric Sulfate (FS); 4. blood contamination (BC); 5. control. Then each group was subdivided into two groups according to adhesive systems used; a- Two-step self etch adhesive, b- One-step self etch adhesive. After contamination and adhesive prosedures a microhybrid composite resin was used to make composite cylinders using 0.75 mm of diameter tygon tubes. The microshear bond strength of samples were measured in a universal testing machine after 24 h. The failing surface of samples were evaluated under steriomicroscope and SEM. Statistical analysis was evaluated using Kruskal-wallis, Mann-Whitney U and Chi-square tests.
Results: There was statistically significant difference between ABS and other hemostatic agents both in one-step and two step self etch adhesive groups ($p < 0.05$). ABS contamination reduced bond strength of self-etching adhesives. Although AlCl3, FS, and BC reduced the mean μSBS, it was not statistically significant ($p > 0.05$). Interestingly, BC showed highest μSBS in all groups. Two-step self etch had higher μSBS than one-step self etch ($p < 0.05$).
Conclusion: ABS contamination reduced the bond strength of self-etching adhesives. When the blood stoppers are used to stop the bleeding, the prefering of two-step self etch is more suitable.

Free Communication Session 34 | B342 | 30.08.2013 | 09:00–11:00

Theme: Dental Treatment & Restorative Dentistry: Prosthetics

FC209

Do Different Veneering Techniques Affect Mechanical Performance of Zirconia Framework?

Burcu Kanat[1], Erhan Çömlekoğlu[1], Mine Dündar Çömlekoğlu[1], Bilge Hakan Şen[2], Mutlu Özcan[3], Mehmet Ali Güngör[1]
[1]*Department of Prosthodontics, Ege University, School of Dentistry, Izmir, Turkey,* [2]*Department of Endodontics, Ege University, School of Dentistry, Izmir, Turkey,* [3]*Dental Materials Unit, Center for Dental and Oral Medicine, Clinic for Fixed and Removable Prosthodontics and Dental Materials Science, University of Zurich, Zurich, Switzerland*

Aim: To investigate the a)fracture resistance(FR), b)shear bond strength(SBS), c)flexural strength(FS), d)finite element analysis (FEA) of zirconia veneered with different methods.
Materials and methods: Zirconia frameworks (In-Ceram YZ,VITA Zahnfabrik) prepared (InLab,Sirona) as crowns, bars and discs ($N = 90$, $n = 10$) and veneered with one of the veneering methods: a) Layering (L)(VM9), b) Pressing (P)(PM9) and c) Multilayering (M)(Mark II). For crown specimens ($N = 30$) stainless steel dies (1 mm chamfer) were scanned (InEos). Multilayering was designed for M and reduced design (1 mm) was performed for L and P for veneer support. For bar ($1.5 \times 5 \times 25$ mm) and disc specimens (2.5×2.5 mm), zirconia blocks were sectioned. Layering and pressing procedures were fulfilled for L and P. The milled superstructures were connected with frameworks by adhesive resin cement (PanaviaF2.0,Kuraray) for M and photo-polimerized. Crowns were cemented (RelyX luting cement, 3MESPE). All specimens were stored in 37°C, 100% moisture for 24 h. Mechanical tests were performed (0.5 mm/min). Data were statistically analyzed (ANOVA,Tukey's, $\alpha = 0.05$). Fractured specimens were examined with SEM and FEA(Simufact.forming v11.0) was performed.

Results: Mean FR values (N±SD) were significantly different between L(6102 ± 1519), P(4117 ± 1083) and M(1900 ± 254) ($p = 0.00$). The mean SBS (MPa) of M(24 ± 4) was the lowest ($p < 0.002$) and no differences were found between L(35 ± 6) and P(32 ± 6) ($p > 0.05$). Mean FS values (MPa) of M(496 ± 96), P (538 ± 72) and L(496 ± 36) were not significant ($p > 0.05$). SEM revealed only adhesive failures for M while cohesive failures within ceramic and zirconia were seen for P and L after FR. FEA verified these findings.
Conclusion: Layering or pressing veneering techniques may reduce ceramic chippings, however multilayering technique might be ineffective to prevent chipping.

FC210

Effect of Different Mucosa Thickness on Stress Distrubition of Two Types Implant-Supported Overdenture Designs

Özgün Yusuf Özyılmaz, Filiz Aykent
Deparment of Prosthodontic, Selcuk University, Konya, Turkey

Objective: The aim of this study was to evaluate the effect of different mucosa thickness on the stress distrubition of two stud attachment systems for two implant-retained mandibular overdenture designs using photoelastic analysis.
Materials and methods: Six photoelastic models of an edentulous mandibular were fabricated with solitary two implants (4.0 × 11 mm) which were placed in the canine regions. The attachment systems studied were solitary ball and locator attachments. Both ball and locator groups were include three different models which had different residuel ridge height so that provided different mucosa thickness (1–1 mm, 1–2 mm, 1–4 mm). Static vertical force of 135 N was applied unilaterally (each in turn right and left side) to the central fossa of the first molars. Models were positioned in the field of circular polariscope to observe the distribution of isochromatic fringes around the implants and interimplant areas under loading. The photoelastic effects were monitored and recorded photographically.
Results: Ball attachment groups were observed higher stress values than locator groups under loading compared with different mucosa thickness each others. Both of attachment system produced the lowest stress values which had 1–1 mm mucosa thickness. The highest stres values were observed which was loaded-side implant for all groups.
Conclusion: This in vitro study suggested that the use of locator attachment could be advantageous for implant-retained overdenture with regard to optimizing stress and provide more uniform stress distribution. The thickness of mucosa influence to stress values on implants.

FC211

Effect of Insertion and Removal of Tooth Supported Overdentures on Retention Strength and Fatigue Resistance of two Commercially Available Attachment Systems

Sagar Jagdish Abichandani
Department of Prosthodontics, SDM College of Dental Sciences, Dharwad, Karnataka, India

Purpose: The main problem with semi-precision attachment retained prosthesis is that they need frequent servicing in terms of replacing the female component.
Aim: The aim of the study was to test the retention strength and fatigue resistance of Rhein OT cap and Ceka sagix attachment systems fabricated on the models.
Materials and methods: Rhein OT cap (micro) and Ceka sagix attachments were procured. Acrylic resin mandibular models fabricated with teeth embedded at overdenture positions. Bar framework with attachments were cast and cemented on the model. Denture fabricated on this model was subjected to universal testing machine (UTM Instron 5900 series) for retention and fatigue test. The retention strength was measured at various cycles namely 1440, 2880, 4320 and 5760 cycles to check for the loss of retention and development of fatigue on the basis of average number of removals and placements per day for 1,2,3 and 4 years respectively. The values were recorded and a graphical analysis was carried out.
Results: TWO-way ANOVA was used as part of the statistical analysis to compare the retention strength and fatigue resistance of both the attachment systems used.
Conclusion: Sagix and Rhein attachment systems showed adequate retention values upto the first 2–3 years (2880–4320 cycles). Fatigue test simulating 4 years of denture insertion and removal did cause subsequent reduction in the retention values but no component fracture of attachment systems.

FC212

Effect of Laser on the Bond Strenght between Zirconium-Oxide Ceramic and Dental Porcelain

Seda Keban, Halis Özsürmeli, Coşkun Yıldız, Burçin Vanlıoğlu, Yasemin Kulak Özkan
Department of Prosthodontics, Marmara University, Istanbul, Turkey

Purpose: Zirconia is a widely used strengthening core material for all ceramic systems which has advantages such as esthetics, biocompatibility and colour stability but bonding mechanism between zirconia and veneering ceramic is still unknown. The aim of this study is to evaluate the effect of Er-YAG laser on shear bond strenght (SBS) between zirconia framework and porcelain.
Materials and methods: Thirty samples with three different zirconia systems (Lava, ZirkonZahn, IPS e-max Zir-CAD) (7 mm diameter 3 mm thickness) were allocated in six subgroups according to the surface treatment procedures(conventional, laser); Lava with no surface treatment(st) (LC); Lava laser (LL), Zirkonzahn with no st (ZC); Zirkonzahn laser (ZL); IPS e-max Zir-CAD with no st (IC), IPS e-max Zir-CAD laser (IL). Er:YAG laser (2940 nm, 150 mj) was used for surface treatment. All zirconia specimens were processed with IPS e-max Ceram. SBS of specimens were tested using a universal testing machine at a crosshead speed of 1 mm/min.
Results: IC showed the highest SBS whereas ZL showed the lowest (18,965 MPa) value but the difference was not significant between subgroups ($p = 0.125$). The difference was statistically significant when the results were evaluated according the zirconium system

($p = 0.047$). I groups exhibited statistically higher values than Z ($p = 0.043$). The difference between I and L were not significant.
Conclusion: As a result, type of zirconia did have an effect on bond strength between zirconia core and veneer ceramic despite of laser treatment.

FC213
Effect of the Dental Arches Morphology on the Masticatory Muscles Activities
Teresa Sierpinska[1], Piotr Jacunski[1], Joanna Kuc[2], Maria Golebiewska[2], Aneta Wieczorek[3]
[1]*Department of Dental Technique, Medical University of Bialystok, Bialystok, Poland,* [2]*Department of Prosthetic Dentistry, Medical University of Bialystok, Bialystok, Poland,* [3]*Department of Prosthetic Dentistry, Collegium Medicum of Jagiellonian University, Kraków, Poland*

Aim: The aim of this study was to assess the relationship between the morphology of dental arches and masticatory muscles activities in the group of healthy volunteers with full natural dentition
Materials and methods: Two-hundred healthy, fully dentate volunteers, Angle I class (F = 113, M = 87); 18–21 years of age were studied. To assess the masticatory system clinical examination was performed. Alginate impressions of both arches were taken and subsequently plaster models were prepared. They were morphologically analyzed. EMG of masseters, temporales, sternocleidomastoides and digastricies was performed to assess their activities in central occlusion and lateral movements.
Results: The width of maxillary arch was 27.0–44.0 mm (mean 33.4 ± 2.4) measured between teeth 13–23, and 36.2–57.3 mm (mean 47.2 ± 3.3) measured between teeth 16–26; the width of mandibular arch was 17.6–32.5 mm (mean 25.7 ± 1.8) measured between teeth 33–43, and 31.1–50.0 mm (mean 42.32 ± 2.8) measured between teeth 36–46; the length of maxillary arch: mean 121.0 ± 6.0, the length of mandibular arch: mean 112.9 ± 5.7; overbite: mean 3.1 ± 1.3, overjet: mean 2.3 ± 1.0. Significant correlations were found between the length of maxillary arch and temporalis muscles activity in central occlusion ($r = -0.225$; $p = 0.025$), and the length of mandibular arch and temporalis muscles activity in central occlusion ($r = -0.238$; $p = 0.028$).
Conclusion: The morphology of dental arches has only limited influence on masticatory muscles activities.

FC214
Effect-of-Silane Applied to Glass-Ceramics at Different Temperatures on Surface Structure and Bonding Strength
Tevfik Yavuz, Oğuz Eraslan
Department of Prosthodontics, Selcuk University, Konya, Turkey

Aim: The aim of this study was to evaluate the effect of different surface treatments on surface structure and shear bond strength of different ceramics.
Methods: 312-glass ceramic specimens were used totally including 96 specimens for shear bond strength and 8 specimens for AFM for each ceramic systems. For shear bond strength, ceramic specimens embedded to clear acrylic resin were firstly divided into two groups according to be used resin cements and later divided into four groups according to surface treatments:G1(hydrofluoric-acid+silane), G2(silane under/in the circumstances), G3(silane alone then dried with warm air(60°C), G4(silane alone then dried with warm air(100°C). After the surface treatments, VariolinkVeneer N and Clearfil Esthetic light cured resin cements were manipulated onto ceramic discs in all groups with compatible mold. The final stage, surface treated glass ceramic specimens were observed with SEM and AFM.
Results: Bond strength values of G1 group were statistically higher than the other groups in IPS-Empress e.max and Finesse All-ceramic systems and bond strength values of silane dried with 100°C-warm air and G1 group were statistically higher than silane dried under/in the circumstances and 60°C warm air in Vita-In-ceram Zirkonia. While there were no significant differences in bond strength between silane dried with warm air (Group 3–4), bond strength values of silane dried with warm air (Grup 3 ve 4) are statistically higher than silane dried under/in the circumstances and lower than HF+silane group in IPS-Empess e.max and Finesse-All-ceramic specimens.

AFM and SEM images showed changes in three different glass ceramic specimens surface topography after surface treatments.

FC215
Laser-Assisted Treatment of TMD
Julia Emil Kamenoff[1], Julia Emil Kamenoff[2]
[1]*Medical University, Sofia,* [2]*Faculty of Dental Medicine, Sofia*

Summary: Introduction Recent years have dictum: "laser + TENS + Magnet = success", but there remain many unresolved issues.

The aim of this work is to explore the possibilities for laser-assisted treatment of TMJ disorders.
Materials and methods: Objects of study: 600 patients (300 women and 300 men) mean age of 47 years. Patients are selected on the main clinical sign TMJ pain. Methods of laser therapy: PBM – Laser Acupuncture, FIFBM, Biosynergetics approach and Complex Therapeutic Program (CTP). Laser devices - Combined Low-energy diode laser system and High power diode laser system $-\lambda = 980$ nm.
Evaluation of results: A specific diagnostic approach under the Signal Detection Theory is applied.
Results and discussion: The results of the theoretical and practical studies on the effect of laser irradiation in the case of TMJ disorders show high therapeutic efficacy of combined laser therapy. Randomised clinical observations confirm that TENS is a door for red acupuncture and low intensity red laser radiation is a gateway for infrared laser light.
Conclusions: Laser - assisted treatment of TMJ disorders has a high therapeutic efficacy and can find wide application in daily dental practice. The author offers its own original method for the treatment of acute and chronic disturbances in the TMJ - a Complex Therapeutic Program.

FC216

Prevalence of Temporomandibular Joint Disorders among the Dental Students

Zeliha Şanıvar, Zeynep Aktaş, Seda Keban, Halis Özsürmeli, Coşkun Yıldız, Yasemin Kulak Özkan
Department of Prosthodontics, Marmara University, Istanbul, Turkey

Aim: The aim of the study was to evaluate the prevalence and severity of temporomandibular disorders (TMD) among to students who were in Marmara University Faculty of Dentistry class 1 and 2.
Materials and methods: Information about the symptomps of TMD and the possible risk factors were collected using standardized Research Diagnostic Criteria for TMD (RDC/TMD) Axis I and II. In this study 140 Students were examined (60 male and 80 female) with an age range from 18–23 years. The prevalence and severity of TMD was determined using RCD/TMD scoring and assesment.
Results: The results of the present investigation showed that pain in cheeks (masseter religons) was the most prevalent symptom whereas locking of the temporomandibular joint (TMJ) was the least prevalent. Nearly two-third of the examinated samples (66.4%, 93/140) had no symptomps of the TMD whereas 33.6% (47/140) had at least one symptomp. İt was interesting that bruxism was common habit among the students.
Conclusion: A low prevalence TMD was found in this student populations, but the bruxism was common which help the signify the role of stress and/or progression of TMD.

FC217

Micro CT Evaluation of Air Bubbles in Luting Cements after Cementation

Meral Arslan Malkoç[1], Müjde Sevimay[2], İlkan Tatar[3], Hakan Hamdi Çelik[3]
[1]*Department of Prosthodontic Dentistry, Faculty of Dentistry, İnönü University, Malatya, Turkey,* [2]*Department of Prosthodontic Dentistry, Faculty of Dentistry, Selcuk University, Konya, Turkey,* [3]*Department of Anatomy, Medical School, Hacettepe University, Ankara, Turkey*

Aim: To evaluate air-bubble volume and localization in cements under fixed dental prosthesis using micro computed tomography (CT).
Material-Method: Seventy seven sound molars were circumferentially prepared in order to receive all-ceramic crowns. IPS e.max ceramic copings were fabricated according to the manufacturer's instructions. Eight different resin based (Variolink II, Rely X ARC, Clearfil Esthetic, Bis Cem, Rely X U 100, Panavia EX, Super Bond C&B, and Multilink Automix) cements, one resin modified glass ionomer (Ketac Cem Plus), one glass ionomer (Ketac Cem), and one polycarboxylate (Durelon) dental-luting cement was used. Each specimen was scanned with a Micro CT (SkyScan). Statistical analyses were performed using the Kruskal–Wallis 1-way ANOVA and Bonferroni's adjusted Mann-Whitney U tests.
Results: Multilink Automix and Ketac Cem Plus contained at least air bubbles ($p < 0.001$). Variolink II demonstrated no significant difference in the amount of air bubbles compared to Multilink Automix and Ketac Cem Plus ($p > 0.05$). However, the volume and surface area of the air bubbles found in the other tested luting cements was significantly greater than that of Multilink Automix, KetacCem Plus, and Variolink II ($p < 0.001$), all of which demonstrated no significant differences ($p > 0.05$).
Conclusion: The liquid and powder forms prepared by manually mixing cements were found to cause more air bubbles. The paste form of the resin based luting agents has the potential to decrease the formation of air bubbles under the complete ceramic crown.

Theme: Dental Treatment & Restorative Dentistry: Materials

FC218

A Comparison of Accuracy of Four Different Impression Materials

Ayşe Gözde Türk[1], Mübin Ulusoy[1], Şükrü Mert Yüce[1], Sena Ünal[1], Tolga Bıçakcı[2]
[1]*Department of Prosthodontics, Ege University, İzmir, Turkey,* [2]*Private Practice, İzmir, Turkey*

Aim: The purpose of this study was to compare the marginal accuracy of metal casts processed with four different impression materials.
Methods: An extracted premolar tooth was prepared with a 1 mm circumferential chamfer finishing line. Stone casts of this master model were produced by four different impression materials: Speedex (Coltane/Whaledent, Switzerland), Zhermack Elite HD (Badia Polesine, Rovigo, Italy), Affinis Precious (Coltane/Whaledent)and Pentamix (3M ESPE, Seefeld, Germany). For every impression group, 20 metal copings (Remanium CS, Dentaurum, Germany) were produced. A light body silicone impression material (Zhermack Elite HD fast set) was used for the replicas of the tooth-metal coping space. Overall 12 measurements per replica were made under a light microscope (X40) by Leica QWin image analysis software, in order to assess the vertical marginal gap. After normality (Kolmogorov-Smirnov) and homogeneity (Levene) tests, marginal accuracy measurement mean values were submitted to one way analysis of variance (ANOVA) and in case of significant, further statistical analyses were performed by Tukey multiple comparisons test (alpha = 0.05).
Results: The mean vertical marginal gaps were found 118.1 μm in Speedex, 117.43 μm in Zhermack, 88.7 μm in Affinis and 157.07 μm in Pentamix groups. The Affinis group had the smallest ($p = 0.00$) and the Pentamix group had the highest marginal gap value ($p = 0.00$) between the test groups. Speedex and Zhermack groups did not differ significantly ($p = 0.83$).
Conclusion: Affinis impression material seemed to have more accuracy than the other elastomeric impression materials whereas, Pentamix was found to be less accurate.

Free Communication Session 35 | B343 | 30.08.2013 | 09:00–11:00

Theme: Dental Treatment & Restorative Dentistry: Endodontics

FC219

Long Term Follow up for Replanted Tooth (remained extraorally from 7 days) with Success Case Report

Abdlmonem Mabrok Aljibani

Cairo Dental School Bds 1972 Egypt, Britol Dental School Msc 1980 Uk, Prage Dental School Phd 1990 Chekoslovakia, Dean Of High Medical Institute 1990 1995 Tripoli libya, Head Of Conservative Dep In Tripoli Dental School 1991 1995 Tripoli libya, Private Dental Clinic 1990 2013 Tripoli libya

Introduction: Replantation is not a new procedure, Based in research, dentistry guide line the extra oral time not to exceed 60 min, (Andreasen 1981, Urban et al. 1986).To data no case report can be found for a tooth, remained 7 days extra orally in dray storage

Methods & Treatment: A young lady age 32 years came with avulsed tooth no 11 since 7 days extraorally. Tooth washed with chloro hexadine gluoconate 20%, instrumentation &obturation using glass inomer cement& honey sidr covered the tooth before replantation.Fixation using composite with adjacent teeth and course of augmentin 375 mg tds, analgesic sos, mouth wash for 5 days.

Results: Follow up for the case 3 & 6 years, showed clinical and radiographic success since no apical or cervical resorption shown.

Discussion: Knight etal 1964 reported that, treated pulp in dogs showed better tissue acceptance while untreated not, Andreasen1981 in the contrary, reported that, inflammation of root resorption increases with increased extra oral time.

Conclusion: Multiple factor responsible for the success or failure of Replantation depends on material of obturation, honey during Replantation, fixation, with this case& care from the Pt.

FC220

Platelet Rich Fibrin: A Newer Approach for Regenerative Endodontics

Neelam Mittal

Faculty of Dental Sciences, Institute of Medical Sciences, Banaras Hindu University, Varanasi, India

Aim: To evaluate the role of Second Generation Platelet Concentrate (PRF) as a scaffold in inducing apexogenesis in necrotic immature permanent teeth

Materials and methods: Necrotic immature permanent anterior teeth were selected and randomly divided into three groups. Under rubber dam isolation, access cavity was prepared. Minimal filing and copious irrigation with 2.5% sodium hypochlorite solution was done. Triple antibiotic paste was placed in dried root canals for further disinfection and the access cavity was sealed with temporary restorative material for four weeks. At recall appointment, the root canal was irrigated and blood clot, PRP, and PRF were used as scaffolds and placed in dried root canals in different patients. Access cavity was then sealed with adhesive restorative material. Patient were recalled for evaluation after 6 and 18 months of placement of scaffold

Result: PRF showed significantly better results in terms of periapical healing, root lengthening, and dentinal thickening when compared to PRP and blood clot in inducing apexogenesis in immature teeth.

Conclusion: Revascularization is a biologically based, more effective and conservative approach over apexification for necrotic immature permanent teeth. Platelet rich fibrin is a storehouse of growth factors which are released in a slow and continuous fashion thus improving their usefulness in the regenerative procedure, however its use in human clinical studies in the field of regenerative endodontics has been very limited. In this study, Platelet rich fibrin, as a scaffold, shows higher potential for regeneration, as compared to platelet rich plasma and blood clot.

FC221

Self-Adjusting File Separation during Clinical Use: An International Survey

Michael Solomonov[1], Joe Ben Itzhak[1], Anda Kfir[2], OscarVon Stetten[3], Elena Lipatova[4], Eleftherios Terry R. Farmakis[5]

[1]Department of Endodontics, Sheba Hospital, Tel Hashomer, Israel, [2]Department of Endodontology, School of Dental Medicine, Tel Aviv University, Tel Aviv, Israel, [3]Private practice, Stuttgart, Germany, [4]Private practice, Ekaterinburg, Russia, [5]Department of Endodontics, Dental School, University of Athens, Athens, Greece

Aim: Unexpected file separation is a major limitation of nickel-titanium rotary files. The self-adjusting file (SAF) has been claimed to be highly resistant to file separation, based on laboratory studies. The aim of this survey was to establish the frequency of SAF file separation during clinical use and to study the retrieval or bypass methods that have been used by operators in such cases.

Materials and methods: A questionnaire was sent to SAF users to make the following inquiries: (a)How many SAF files had they used so far? (b)How many cases of SAF file separations had they encountered? (c)How many of the separated files were retrievable? (d)How many of the non-retrievable separated files could be bypassed? Only responses from operators who had used 50 SAFs or more were included in the present study.

Results: The questionnaires received from 15 SAF users fit the inclusion criteria. These operators had used between 50 and 550 SAFs each. A total of 2517 SAFs had been used by these operators, and 15 cases of file separation had occurred (0.6%). Twelve of these separated files (80%) could be retrieved using Hedström files. In the three cases in which the separated file could not be retrieved, the separated file segment was successfully bypassed. The treatment was completed, and the canal was obturated through the separated SAF.

Conclusions: The incidence of SAF file separation in clinical use was very low, and in all such cases, the separated file was either retrievable or could be bypassed.

FC222

Management of Pulpless Teeth with Immature Apices – A Clinical & Radiographic Study

Surendra Kumar Mishra[1], Rajendra Kumar Tewari[1], Ashok Kumar[1], Rajat Pratap Singh[2]
[1]*Department of Conservative Dentistry & Endodontics, Dr Z A Dental College, AMU, Aligarh, UP, India,* [2]*The Gentle Dental Home*

Aim: Aim of Study:To clinically and radiographically evaluate the periapical healing/maturogenesis in endodontically treated teeth with immature apices by calcium hydroxide, mta & revascularisation procedure.

Methodology: Twenty-two cases of nonvital teeth with immature roots were selected. After working length determination canals were prepared with hand instruments, irrigated with 3% sodium hypochlorite & dried. In 10 cases apexification was done with mta, 10 cases were completed using calcium hydroxide and in two cases maturogenesis was attempted by revascularization.

Results: All teeth were evaluated after 1 week, 3 months & 6 months interval. After 1 week all teeth were asymptomatic and sinus was completely healed. After 3 months 100% of mta cases showed good calcific barrier formation & osteogenic repair while 80% of calcium hydroxide cases showed peri-apical repair after 6 months to a period of more than a year and 50% of revascularization cases showed root development after one year.

Discussion: Management of nonvital teeth with immature apices has always been a challenge. Earlier such cases were managed with multiple appointments using calcium hydroxide, hoping for creation of calcific barrier against which permanent filling could be placed. But in this way treatment may take more than a year. Currently mta has proved to be a better solution for apexification & successful periapical healing as an alternative in a relatively short period of time with favorable histological response. The recent concept of revascularization is a new hope for apexogenesis but only few cases have shown promising results so further research is needed in this regard.

FC223

The Role of Apical Surgery in Guided Tissue Regeneration

Ayse Nazli Ozgun, Ioana Pop, Cathy Bryant
King's College Hospital, London, UK

Aim: This case series aims to demonstrate the benefit of using guided bone regeneration in the management of non-healing apical pathology following conventional endodontic treatment. In cases where the periosteum overlying the bony defect is not intact, a Bio-Gide® membrane was used to prevent soft tissue ingress.

Methods: Apical surgery with the use of guided bone regeneration was performed on patients using a standardised microsurgical approach.

A three sided buccal mucoperiosteal flap was used and approximately 3 mm of the root end was resected at 90 degrees using a surgical handpiece. The defect was debrided and the root surface inspected for cracks, isthmuses, deltas and accessory canals using an operating microscope. An ultrasonic retro tip was used to prepare a 3–4 mm root end cavity which was then sealed using a mineral trioxide aggregate material. A suitably shaped membrane was then prepared and placed between the bony defect and the overlying soft tissue flap which was repositioned with 5/0 vicryl rapide vertical mattress sutures. Patients were reviewed post-operatively to assess healing.

Results: The patients were asymptomatic and displayed good healing on review at one week, three/six months and up to 2 years post-operatively.

Conclusion: The use of an evidence based microsurgical approach combined with guided bone regeneration may promote bony healing within an apical defect.

As well as maintaining optimal alveolar bone level, this will be advantageous even in the event of a subsequent restorative failure necessitating the removal of the tooth and its replacement with an implant retained restoration.

FC224

Tooth Discoloration Induced by Different Dental Materials

Tringa Kelmendi, Veton Hoxha, Nexhmije Ajeti
Department of Dental Pathology and Endodontics, University of Prishtina, Prishtina, Kosova

Aim: The aim of this study was to evaluate the discoloration of tooth caused by different dental materials.

Materials and methods: The 45 mature extracted teeth were separated into eight experimental groups (1 group = 10 teeth) and a control group consisted of five teeth. Five teeth of each experimental group were filled over CEJ and five other teeth bellow CEJ. As a materials were used: group 1: Endomethason (Septodont-France), group 2: AH+(Topseal® Integral set, A0900, Dentsply - Maille), group 3: Canason (Vocco, Germany) and group 4: Apexit (Ivoclar, Vivadent). Group control teeth were filled with saliva. After the canals were obturated they were closed with temporary filling (I-Pro-Europe). Than tooth were placed on tube-test Ependorfit. The teeth color was measured with a spectrophotometer Vita Easyshade® (Germany), prior to the endodontic treatment (baseline) after 24 weeks and 1 year. The CIE l*a*b* system was used.

Results: With T-test have not gained significant difference in yellowness between groups and control groups in any of the weeks ($p > 0.05$) with the exception of group 5 with the control group after one year ($p < 0.03$).

Regarding the degree of lightness after a year have gained significant difference between group 1, 2, 5, 6, 8 and control group ($p < 0, 01$).

Conclusions: All sealers caused a degree of tooth discoloration which increased with time. It was concluded that Endomethasone may cause discoloration of teeth, over and below the CEJ.

FC225

WaveOne NiTi Single File Reciprocating System for Root Canal Preparation

Mohammad Shamsul Alam
Bangabandhu Sheik Mujib Medical University

Introduction: The new Wave One NiTi file system is a single use, single file system designed to shape the root canal completely from start to finish. The WaveOne system is an exciting new concept in the preparation of the root canal. In most of the cases the technique only requires one hand file followed by one single WaveOne file to completely shape the canal. There are three files in the WaveOne single file reciprocating system, available in small, primary and large in sizes. The instruments are designed to work with a reverse cutting action. The specially designed NiTi files work in a similar but reversed 'balanced force' action using a pre-programmed motor to move the files in a back and forth 'reciprocal action'. The files are manufactured with M-Wire technology improving strength and resistance to cyclic fatigue by up to nearly four times compared to other brands of rotary NiTi files. WaveOne files only shape the canal, extremely quickly in many instances, but they do not clean the root canal properly. It is the duty of clinicians and manufacturers to emphasize the role and importance of irrigation as a major determinant of endodontic success.
Conclusions: Once it is fully appreciated that shaping and cleaning the root-canal system are irrevocably intertwined, then endodontics will be easier for all and available to all, and WaveOne will truly become the root-canal preparation instrument of the future.

FC226

Fracture Resistance of Flared Canals Obturated with New Obturation Materials

Aziza Eldarrat[1], Salma Abdo[2]
[1]Sharjah University, [2]Al Tawam Hospital, Sharjah, UAE

Aims of the Study: To investigate fracture resistance of root canals obturated with new Nano-Hydroxyapitite (NanoHA) sealer and different obturation materials.
Methodology: Canals of 120 roots of mandibular premolars were over prepared. Then, the roots were randomly divided into eight groups, each group 15 roots. Groups 1 and 2 were used as controls. Root canals of groups 3, 4 and 5 were obturated with Gutta-Percha/NanoHA, Gutta-Percha/NanoHA plus composite and Gutta-Percha/NanoHA plus MTA, respectively. Root canals of groups 6, 7 and 8 were obturated with Resilon/Epiphany, Resilon/Epiphany plus composite and Resilon/Epiphany plus MTA, respectively. Fracture resistance of each group was measured using the Instron machine, after measurements, the fractured root samples were examined by Micro CT Scan and SEM.
Results: Comparing the mean values of fracture resistance for the experimental groups using ANOVA test, showed a significant difference ($p < 0.001$) among the groups. Mean value of the fracture resistance was the highest for Gutta-Percha/NanoHA plus MTA (1.5 ± 26 KN) and Resilon/Epiphany plus MTA (1.4 ± 20 KN). Statistically, the difference was found insignificant between the two groups ($p > 0.05$). Micro CT Scan and SEM showed that fracture pattern for MTA groups was a vertical line fracture, whereas for composite groups was several cracks over the entire root surface.
Conculsion: The result indicates that the use of MTA reinforces flared root canals. Fracture resistance of both Gutta-Percha/NanoHA plus MTA and Resilon/Epiphany plus MTA was similar. Nano–Hydroxyapatite sealer is economical and may be used as an alternative sealer with Gutta-Percha or Resilon plus MTA.

FC227

Evaluation of the Duration of Continuous Ultrasonic Irrigation in the Removal of Dentinal Debris in the Apical Third: An Experimental Study

İbrahim Ethem Yaylalı
Department of Endodontics, Gulhane Medical Academy, Ankara, Turkey

Aim: The purpose of the study was to evaluate the durations of continuous ultrasonic irrigation in the removal of dentinal debris from simulated apical holes.
Material-method: Thirty-two teeth with single root and canal were used. The teeth were randomly allocated into three groups ($n = 3$). The teeth were prepared to size 45/.04. After decoronation at the cementoenemal junction, three standardized holes were prepared at the apical third on the one side of the root. The holes were filled with dentinal debris and assembled again. The roots were irrigated using 2.5% sodium hypocholorite 30 s irrigation in Group 1 ($n = 11$), 60 s in Group 2 ($n = 11$), 90 s in Group 3 ($n = 10$) by using continuous ultrasonic irrigation. The samples were examined under 20× stereo microscope in that the amount of residiual debris in the holes by using four-grade scoring. Since the data were ordinal, nonparametric Kruskal-Wallis analysis of variance and Dunn test as post-hoc analysis were used.
Results: There was significant difference between the groups ($p = 0.035$). Debris removal was significantly better in Group 2 and Group 3 ($p < 0.001$). There were no difference between Group 2 and Group 3 ($p = 0.071$). The percents of complete removal of the debris were 26% in Group 1, 85% in Group 2 and 86% in Group 3.
Conclusion: Under the conditions of the study, duration of irrigation should not less than 60 s. By considering the effect of sodium hypocholorite on dentin hardness, the duration of irrigation might adjust to remove more debris from the root canal system.

Theme: General Dentistry and Oral Health

FC228

Effect of Insulin Growth Factor-1 and Bone Morphogenetic Protein 2on the Osteogenic Capability of Isolated Dental Pulp Stem Cells

Effat Ahmed Abbass[1], Mohamed Salah El Din Ayoub[2], Alice Abd Elaleem[3]
[1]Department of Basic Dental Science, National Research Center, Cairo, Egypt, [2]Department of Oral Pathology, Ain Shams University, Cairo, Egypt, [3]Department of Molecular Genetics, National Research Center, Cairo, Egypt

Aim: The aim of this study was to assess the effect of Insulin Growth Factor-1 and BMP2 on the osteogenic capability of isolated human dental pulp stem cells.
Methods: A population of clonogenic cells "stem cells" was isolated from the pulp tissue of adult third molar. These isolated cells were propagated in culture dishes and then characterized as being

the correct population of multipotent cells retaining the ability of differentiation into a variety of different cell types. Pulp stem cell characterization was done through studying specific morphological appearance. Osteogenic differentiation was performed when reached 70% confluency by culturing at two different experimental conditions. In all conditions, cells were cultured in αMEM containing FBS, penicillin-streptomycin and glutamax. Differently, the first group was supplemented with L-ascorbic acid 2-phosphate, β-glycerol phosphate and dexamethasone; in the second group, BMP-2 and IGF-1 were added. Assessment of osteogenic differentiation of hDPSC was done by Alizarin red staining at days 12 and 23 and immunocytochemical assay for osteocalcin.
Results: The first and second experimental conditions were shown to induce osteogenic differentiation; however the second condition indicated much less potential. As for the imunocytochemical assay result, it has been shown that both the first and second groups expressed osteocalcin. However, degree of expression in the first group is much exceeding the expression in the second group.
Conclusion: BMP2 and IGF-1 although can induce osteogenic differentiation of stem cells however, it is not as potent as routine chemicals used to induce the osteogenic differentiation.

Free Communication Session 36 | B360 | 30.08.2013 | 09:00–11:00

Theme: Implantology: Implantology

FC229
Do we Explain "the Dental Implant" Correcty to Our Patiens?
Emir Yüzbaşıoğlu[1], Halenur Bilir[1], Şükran Tüfekçioğlu[2], Umut Çakan[1], Hanefi Kurt[1], Çağrı Delilbaşı[2]
[1]Department of Prosthodontics, School of Dentistry, İstanbul Medipol University, İstanbul, Turkey, [2]Department of Oral & Maxillofacial Surgery, School of Dentistry, İstanbul Medipol University, İstanbul, Turkey

Objective: To determine patients' awareness, acceptance, knowledge, attitudes and percieved treatment need towards dental implants.
Methods: Patients' awareness, acceptance, knowledge, attitudes and perceived treatment need towards dental implants as an option in replacing missing teeth were evaluated through a standardized 42-item, closed-ended questionnaire. The study group consisted of adult patients aged 18–85 years, who were referred to outpatient clinic İstanbul Medipol University School of Dentistry for dental treatment. The questions about age, gender, education level, job, monthly income and oral hygiene status were asked to determine socio-demographic characteristics. Additional questions about level and source of information about dental implants, acceptance and perceived treatment need of dental implants as a treatment option were asked for variation factors. Patients' variable factors towards dental implants were analyzed with descriptive statistics.
Results: The majority of patients stated that level of information about dental implants is intermediate level and need more information. The patients' friends, their relatives and TV programs were main source of information about dental implants. The majority of patients stated that implants could be rejected by the body an allergic reaction for reason of failures of dental implants. The major refugal reason of dental implant theraphy were cost and lack of perceived necessity.
Conclusions: Attitudes of patients should be taken into consideration to improve patient compliance with and acceptance of this treatment modality. The awareness and acceptance of dental implants in the population might be increased by providing further and accurate information and promoting oral health in general.

FC230
The Effect of Shape Optimization of Platform Switching of a Dental Implant on Static, Dynamic and Fatigue Behavior by 3-D Finite Element Method
Emir Yüzbaşıoğlu[1], Oğuz Kayabaşı[2]
[1]Department of Prosthodontics, School of Dentistry, İstanbul Medipol University, İstanbul, Turkey, [2]Department of Mechanical Engineering, Faculty of Engineering, Gebze Institute of Techology, Kocaeli, Turkey

Objective: The aim of this study is to select optimum design of implant-abutment connection of platform switched implants which reduce stress at the bone-implant interface by using macro design and implant-abutment connection of dental implant during the life time of a patient and to prevent failure of the implant into the bone by using optimization algorithm.
Methods: In this study, an efficient, effective and automated design strategy is proposed to select optimum design of platform switched dental implant. In this strategy, finite element analysis, Approximate model and a numerical optimization algorithm are integrated to create an automated design tool. Using this approach, shape design of the dental implant is formulated in the form of an optimization problem that can be solved easily by a conventional numerical optimization algorithm.
Results: Although stress values at bone-implant interface has decrease by increased platform switched ratio of implant, stress values the fatigue life of abutment body is infused dramatically. Optimum abutment geometry found after 50 optimization iterations. To reduce the computational cost, optimization process was limited with 50 iterations. More iteration may provide a better design. The optimum shape minimizes the stress values at bone-implant interface and maximizes the fatigue life of the abutment
Conclusion: The design of dental implant and abutment assembly are a complex process that requires close co-operation between engineering and dentistry. Solution of the optimization problem leads to the optimum design. These findings can form a base for further research such as the optimum design of dental implant.

FC231
Evaluation the Accuracy of Two Implant Impression Techniques with Malposed Implants
Zeynep İrkeç[1], Ufuk Hasanreisoğlu[1], Hakan Terzioğlu[1], Kenan Köse[2]
[1]Department of Prosthodontics, Faculty of Dentistry, Ankara University, Turkey, [2]Department of Biostatistics, Faculty of Medicine, Ankara University, Turkey

Aim: To compare the accuracy of direct and indirect impression techniques made with angulated implants or implants placed in close proximity.
Materials and methods: Two epoxy resin definitive casts were fabricated for each impression technique with four appropriate implant analogs arranged in a linear pattern. One of the casts incorporated parallel implants positioned in a standard distance. The other was obtained by changing either the angulation of implants or the distance between them (1st implant was angulated 15o medially, 2nd, 3rd and 4th implants were parallel to each other; 3, 2, and 1 mm distance between implants). Five impressions with closed or open custom trays were made from each epoxy resin definitive cast using polyether impression material. Following the transfer of analog positions, impressions were poured with type IV dental stone. Technically proper abutments were screwed and tightened to implant analogs in both epoxy resin and stone casts. Distortions in x, y coordinates and z axis were calculated using Coordinate Measuring Machine and Profile Projector respectively. Data were analyzed by one-way ANOVA and Mann Whitney U tests ($p < 0.05$).
Results: No significant differences were found between the direct and indirect techniques when implants were placed parallel to each other and in a standard distance. In case of malposed implants, direct technique displayed less distortion compared to the indirect technique in horizontal (x) and vertical (z) planes ($p < 0.05$).
Conclusion: Direct impression technique using polyether impression material exhibited a more accurate implant transfer when angulated implants and implants in close proximity were concerned.

FC232

Five-Year Clinical Evaluation Using Two Different Attachment Systems for Two-Implant Supported Mandibular Overdentures

Sadullah Üçtaşlı[1], Seçil Nigar Karadeniz[2]
[1]*Department of Prosthodontics,Ankara University, Faculty of Dentistry, Ankara, Turkey,* [2]*Department of Maxillofacial Surgery, Ankara University, Faculty of Dentistry, Ankara, Turkey*

Aim: The aim of this study was to compare two different types of attachment systems for two-implant supported mandibular overdentures opposed to complete dentures, focusing on costs, maintenance requirements and complications from baseline to the end of 5-year follow-up period.
Methods: Sixty mandibular and maxillary edentulous patients received two screw type Straumann standard tissue level, sandblasted large-grit acid-etched surface implants in the mandibular canine region. The implants were inserted under local anesthesia in one-stage non-submerged procedure according to protocol (Weingart and ten Bruggenkate 2000) by experienced surgeon. Two different types of attachment systems/retentive anchor were used as Group 1 ($n = 30$): ball attachment/gold matrix; Group2 ($n = 30$): locator atatchment/plastic matrix. The prosthetic procedure was performed by experienced prosthodontist. Occlusion was assessed both on the articulator and intraorally to secure balanced occlusion in centric relation without anterior tooth contact (Vercruyssen et al 2010). Prosthetic maintanence and complications (related to implant components, structure of the prosthesis and adjustments of prosthesis, including soft tissue problems) were assessed from baseline to 5-year. Prosthodontic success was evaluated with the aid of six-field table analysis proposed by Payne et al 2001 as success, survival, deceased, retreatment such as repair or replace. Statistical analysis were expressed as mean values, standard deviations and percentages using Pearson Chi-squared test and Fisher's exact test.
Results: Depending types of attachment systems on costs, there were statistically significant difference between ball and locator systems ($p < 0.05$) however did not show statistically significance both maintenance requirements and complications ($p > 0.05$). Attachment systems selection can be choosen by clinicians knowledge& experience.

FC233

Immediate loading of implants in edentulous mandibles with Locator® or Dolder®-bar: first results from a prospective randomized clinical study

Constantin Eiffler, Lydia Eberhard, Nikolaos Nikitas Giannakopoulos, Peter Rammelsberg, Stefanie Schwarz
Department of Prosthodontics, University of Heidelberg, Heidelberg, Germany

Objective: To evaluate survival and the incidence of complications for pairs of implants placed in the front of edentulous mandibles and immediately loaded with either bar or Locator® attachments.
Materials and methods: Forty-six patients (mean age 69.4 years; 73.9% male) with edentulous mandibles each received two immediately loaded implants in the interforaminal area of the symphysis. Immediately after implant placement, Dolder®-bar or Locator® attachments, allocated randomly, were attached, and both clips and a framework were incorporated in the denture by the dental technician. Within 72 h the implants were loaded.
Results: During a mean observation period of six months (maximum 24 months, SD 0.43) eight implants in five patients were lost. Survival was 93.5% in the Locator® group (group 1) and 89.1% in the bar group (group 2). Estimated cumulative survival after one year of function was 93.4% in group 1 and 87.1% in group 2. During the observation period 12 prosthetic complications required aftercare. No superstructure was lost or had to be remade because of prosthetic reasons, but 5 dentures had to be removed or reworked after implant failure. Survival of the original dentures was, therefore, 95.7% in group 1 and 93.5% in group 2.
Conclusion: Within the limitations of this study, immediate loading of two implants in the edentulous mandible supporting Locator® attachments might be a good treatment option for elderly patients. Further prospective, randomized clinical trials reaching the sample size necessary for a higher level of beta are needed to confirm this initial trend.

FC234

Strength Evaluation of Three Implant-Abutment Connection Under Compressive Loading

Azam Sadat Mostafavi[1], Saied Nokar[2], Habib Hajmiraga[2]
[1]*Department of prosthodontics, Zahedan University, Zahedan, Iran,* [2]*Department of prosthodontics, Tehran University, Tehran, Iran*

Purpose: Biomechanical problems associated with dental implants have caused problems for both dentists and patients, in addition they are time-consuming and need extra cost. Screw loosening and fracture is one of these problems which we still face with it in clinical practice. The aim of this study is to better understanding of implant – abutment connection behavior in three different types of abutments in Implantium dental implant system under compressive loading.
Materials and methods: 18 implants (6 for each type of abutment) were divided in three groups (group 1: Dual abutment, group 2: Combi abutment, group 3: Direct Casting abutment). Abutments were tightened by Digital torque gauge and reverse torque values were recorded before loading. Then, a compressive load was applied to each sample, 30° off axes at the rate of 1 mm/min until the failure of sample was evident.
Results: reverse torque values were highest in group 2, followed by group 3 and both were significantly higher than group 1. ($P < 0.05$) the failure load difference between group 1 and 2 was not significant but both were significantly lower than group 3. ($P < 0.05$) in radiographic evaluation, all the samples showed deflection in the base of the abutment.
Conclusions: The more surface area in implant – abutment connection causes more adaptation between adjacent surfaces and maybe increases the cold weld probability. Separated screw in 2-piece abutment did not reduce the bending resistance in implant-abutment connection. Failure load values showed that all samples had enough strength to resist forces in the mouth.

FC235

Sinus Floor Elevation Using a Sintered, Natural Bone Mineral. A Histomorphometrical Case Report Study

Daniel Rothamel, Tim Fienitz, Matthias Kreppel, Arndt Happe, Joachim Zoeller
Department of Oral and Maxillofacial Plastic Surgery, University of Cologne, Cologne, Germany

Background: Implantological rehabilitation of the posterior maxilla often requires cranialization of the sinus floor to allow for long-term stability and permit the placement of sufficiently long implants. Well known as sinus floor elevation or sinus lift, this operation is one of the most common therapies for vertical deficits of the upper jaw.
Aim: The aim of the present study was the histological, histomorphometrical and clinical evaluation of a sintered xenogeneic bone substitute material (BEGO OSS, Bego Implant Systems, Bremen) for the indications one-stage and two-stage sinus floor elevation.
Methods: Twelve patients were included in the study, undergoing 15 simultaneous or staged sinuslift operations. Data were evaluated clinically and, for two-stage approaches, histologically and histomorphometrically after trephine harvesting during implant bed preparation.
Results: Healing was uneventful in all cases. All patients showed good hard tissue regeneration of the lateral window of the sinus. Neither resorption nor dislocation of the granular bone substitute material was observed. Radiologically, good volume stability of the graft was observed. Histologically, bone substitute particles displayed complete osseous integration in newly formed bone matrix. The proportion of newly formed bone within the graft was 25.8–49.6%, whereas the proportion of remaining bone substitute material varied from 28.6–38.5%.
Conclusion: It was concluded that BEGO OSS acts as an osteoconductive material to support hard tissue regeneration after sinus floor elevation. Showing excellent volume stability, it is integrated into newly formed bone matrix within a six-month healing period.

FC236

Labio-Lingual Dimensions Changes after Horizontal Bone Augmentation with Xenografts

Enis Fikret Ahmedi[1], Walther Wegscheider[2], Martin Lorenzoni[2], Jehona Ahmedi[5], Avni Robaj[3], Fisnik Kurshumliu[4], Kujtim Shala[1], Teuta Bicaj[1], Teuta Pustina[1], Linda Dula[1]
[1]Department of Prosthetic Dentistry, Dental School, University of Prishtina, Prishtina, Kosova, [2]Department of Prosthetic Rehabilitation, Periodontology and Implantology, Medical University of Graz, Graz, Austria, [3]Department of Surgery, Faculty of Agriculture and Veterinary, University of Prishtina, Prishtina, Kosova, [4]Department of Pathology, Faculty of Medicine, University of Prishtina, Prishtina, Kosova, [5]Department of Oral Surgery, Dental School, University of Prishtina, Prishtina, Kosova

Aim: Horizontal dimension of Mandible are subject of change due to toot extraction, injuries and several pathologies of crestal jaw bone. Reconstruction of horizontal defects can be managed by using several surgical procedures and implanting different materials. Aim of this preclinical study was to evaluate labio-lingual dimensional changes after horizontal bone augmentation of mandible using derivate bovine bone matrix (dbbm) with and without procine collagen membrane.
Methods: As an animal model have been used two mongrel dogs. After tooth extraction of 4th premolars and iatrogenic horizontal defect creation, with dimensions $2 \times 2 \times 1.5$ cm, on both sides, and healing phase of 3 months, horizontal bone augmentation with dbbm proceeded. Pouch technique was used to access the defect site. On the middle portion of the flap, width of 5 mm of periosteum was striped vertically. Using split mouth design, right side was covered with procine membrane and the left side left without. Impressions with Polyether impression material were taken in two different stages: 3 months after defect creation and 3 months after bone augmentation procedures. Values of labio-lingual dimensions based on same referent points on both stages were measured.
Results: There was dimensional improvement between stages (after bone augmentation) but with no statistical significance between right and the left side within the same stage and sample.

FC237

Intra-Oral Halitosis Patients with Dental Implants

Anna Voronina
Dentistry Department of the Faculty of Internship and Postgraduate Education M. Gorky Donetsk National Medical University, Donetsk, Ukraine

Aim: Goal of research is to study morbidity of intra-oral halitosis of patients with dental implants.

Materials and methods: The Dental Clinic of Donetsk National Medical University carried out examination of 59 patients aged 55–65 with fixed dentures: 27 patients had implant-supported fixed dentures made of dental alloys (1 group), 22 patients – made of titanium BT1-00 (2 group).

Hygiene assessment of mouth cavity was conducted using the hygiene index OHI-S (1964). Halitosis was diagnosed by gas-liquid chromatography on volatile sulfur compounds concentration in expired air.

Results: Patients with implant-supported fixed dentures made of dental alloys have an oral hygiene deterioration - hygiene index range amounted to 1.45 ± 0.14. In the group of patients with implant-supported fixed dentures made of titanium hygiene index range amounted to 1.03 ± 0.11. A correlation relationship between oral hygiene rate and halitosis degree has been traced. Sulfur compounds were detected in the first group at 166.0 ± 24.2 ppb; in the second group – 142.0 ± 21.4 ppb.

Conclusions: Patients with implant-supported fixed dentures made of dental alloys have unsatisfactory mouth cavity hygiene and a high concentration of volatile sulfur compounds. Patients with implant-supported fixed dentures made of titanium have normal hygiene index and halitosis rate.

FC238

Difficult Cases and their Clinical Solution

Drwalid Khalid Odeh
Private practice

Introduction: In some clinical cases in our daily practice we might face bone deficiency to replace missing teeth with dental implants instead of doing second surgery and bone augmentation.we can be more conservative depending on orthodontic means such as extrusion of hopeless teeth in other cases we can use mini implants to adjust complicated orthodontic cases and surgical cases such as skeletal openbite or interocclusal space deficiency. This lecture for Implantologist, Orthodontist& General practitioner. In this lecture I will talk about clinical cases to show the interrelation between ortho &implant solving clinical cases with no surgery.

Cases: 1st will cover extrusion of hopeless anterior centrals to correct bone level before replacing them with dental implant instead of bone augmentation.

2nd to gain more interocclussal space by intrusion of opposite posterior teeth.

3rd case to correct skeletal openbite by using mini implant instead of orthognathic surgery.

4th case using mini implant to align tilted teeth to provide space for implant or bridge.

Free Communication Session 37 | B332 | 30.08.2013 | 11:30–12:30

Theme: Dental Treatment & Restorative Dentistry: Esthetics

FC239

Smile Analysis and Treatment Options for Gummy Smile Patients

Ahmed Korayem Abdelrahman
American Academy of Cosmetic Dentistry (AACD)

Introduction: Gummy smile is a very annoying cosmetic problem for many patients specially those who do not imagine that It is a solvable problem. accurat smile analysis is the key for a choosing the proper treatment option. in this presentation Smile Analysis will be explained for gummy smile by presentation of actual clinical cases before and after and during procedures.

Objectives: To evaluate the periodontal surgery and veneers combination technique in treating gummy smile.

Materials and methods: Smile analysis for two different gummy smile patients was applied based on smile design conecpts in the literature then they were planned to be treated using periodontal surgery crown lengthening and veneers combination, one case of a porcelain veneers (E-max, Ivoclarvivadent) and composite veneers (Artiste, Pentron) after periodontal surgery were applied documentation and evaluation for both cases based on pre and post operative x rays and pre and post operative photographs by SLR camera.

Results: After evaluation of the results it was found that periodontal surgery was successful to treat gummy smile giving the most esthetic results followed by porcelain (E-max) veneers

Conclusion: The combination of perisodontal surgery crown lengthening and veneers (porcelain or composite) has proven a good success to treat gummy smile cases.

FC240

Smile Design: Old Problem New Solutions

Mostaque H. Sattar, Mohammad Nasirul Islam
Depatment of Dentistry, Dhaka Dental College, University of Dhaka, Dhaka, Bangladesh

Introduction: Smile Designing Cosmetic dentistry is a modern art and science behind smiles. Dark and Discolored teeth, can be treated with teeth whitening by chemically activated or light activated whitening gel or even with laser, unhappy smiles, Caries, gap and fractured teeth can be managed with Direct or indirect composites and veneers, Gummy smiles can be corrected by laser. Co2 and other laser lonely can change the color of Unpleasant gum within few days, Implant and resin reinforced indirect composite can be a better options then bridge works for a missing tooth. Orthodontic can cure crowded, protrusive unhappy face. Crown can be delayed or even unnecessary if we can filled the cavity with fiber optic screw post reinforced composite after root canal treatment even in molar tooth. Some clinical cases will be presented to establish the above mentioned procedures. The patient loves new smile and teeth and feels they fit his/her personality and idea of perfection. After above mentioned procedure, we are able to correct all of the patient's concerns and achieve a great cosmetic result depending

on the socioeconomic conditions of South East Asia. The procedure was smooth and predictable by following the proper protocol.

Conclusion: In this modern era of Dentistry, we now have the responsibility to not only diagnose and treat, but to offer solutions for cosmetic problem in a minimal invasive way. As a profession we must remember, we treat not only teeth, but also the confidence of a person to which they belong.

FC241

Wireless Orthodontics and Flapless Dental Implants

Ahmed A. Moneim[1], Dircilene C. Souza[2]
[1]*AEGD Program, University of California at San Francisco, California, USA,* [2]*Los Gatos Dental Center, Los Gatos, California, USA*

Introduction: Wireless orthodontics used to prepare implant receptor sites, and flapless dental implants used as a minimally invasive implant surgery, are presented together as a versatile way to reduce treatment length while enhancing clinical outcome. The first clinical approach consists of a series of clear plastic removable appliances digitally fabricated that move the patient's teeth in small increments from their original state to a final treated state. The implant space preparation with wireless orthodontics may be attractive to implant patients who would not like to have metallic braces and wires in their mouth. However, creating sufficient interradicular space for implant placement in areas where convergent roots are present and bodily movements of teeth are needed can be challenging. Clinical tips on how to overcome those problems and use wireless orthodontics successfully will be addressed. The second clinical approach is a surgical technique for implant placement that purposely avoids elevation, advancement and closure of a flap over the implant. The rationale for the flapless approach is mainly to preserve circulation to the site while minimizing the surgical procedure. Flapless dental implant also allows for good quality soft tissue to remain surrounding the emerging implant structure for optimal function and aesthetics. The step-by-step on how to use the flapless technique will be addressed.

Conclusions: In summary, combining those two techniques can be a predictable treatment for patients who seek high aesthetics during treatment planning and placement of dental implants.

Theme: General Dentistry and Oral Health

FC242

Yoga for Dental Laboratory Technicians

Meenakshi Verma[1], Vaishali Vadgaonkar[2], Aniket Gandhi[2], Rahul Rao[1], Rajiv Verma[7], Deepak Langade[5], Rahul Hegde[3], Varsha Rathod[6], Rajesh Kopikkar[4], Parag Gangurde[2], Manthan Patel[2], Nikhil Mahajan[2]
[1]*Department of Conservative Dentistry and Endodontics, Bharati Vidyapeeth Deemed University Dental College and Hospital, Navi Mumbai, India,* [2]*Department of Orthodontics and Dentofacial Orthopaedics, Bharati Vidyapeeth Deemed University Dental College and Hospital, Navi Mumbai, India,* [3]*Department of Pedodontics and Preventive Dentistry, Bharati Vidyapeeth Deemed University Dental College and Hospital, Navi Mumbai, India,* [4]*Department of Periodontology, Bharati Vidyapeeth Deemed University Dental College and Hospital, Sangli, India,* [5]*Department of Pharmacology, Bharati Vidyapeeth Deemed University Dental College and Hospital, Navi Mumbai, India,* [6]*Department of Periodontology, Bharati Vidyapeeth Deemed University Dental College and Hospital, Navi Mumbai, India,* [7]*Private Practice and Dental Lab Technician, Mumbai, India*

Advancement of technology in the scientific field of dentistry has been tremendous and the dental laboratory too has witnessed it. However technology comes with its own set of problems. Dental technicians all over the world are facing health issues, hence a study was undertaken.

Aim: To determine the problems faced by the dental laboratory technicians and lay down a specific yoga sadhana (yogic practices) for them.

Method and materials: Interviews were conducted of 25 dental laboratory technicians on a one to one basis. The information was recorded in a systematic manner as per an extensive form that contained personal or general information, medical ailments, postural ailments, stress and general fitness.

Conclusion: An insight into the problems of dental laboratory technicians was gained, and basic statistical analysis was performed. Problems faced by technicians were due to many reasons including wrong working postures, exposure to an environment full of suspended air pollutants like, aluminum oxide powder particles, acrylic, ceramic and metallic dust, wax and chemical fumes, long working hours, erratic timings and environment, stress due to work pressures and maintaining delivery schedules, etc.

An analysis into the problems and the convincing evidence of the healing potential of Yogic Practices made it evident that Yoga could solve many of the issues especially stress which can be tackled in a very holistic manner. Keeping this in mind specific yoga sadhana (yogic practices) was proposed.

Theme: Dental Treatment & Restorative Dentistry: Materials

FC243

Cytotoxicity of Hemostatic Agents on the Human Gingival Fibroblast

Muhammet Yalçın[1], Çağatay Barutcigil[2], İbrahim Umar[1], Buket Bozkurt[3], Sema S. Hakkı[4]
[1]*Department of Restorative Dentistry, Faculty of Dentistry, İnönü University, Malatya, Turkey,* [2]*Department of Restorative Dentistry, Faculty of Dentistry, Akdeniz University, Antalya, Turkey,* [3]*Research Center, Faculty of Dentistry, Selcuk University, Konya, Turkey,* [4]*Department of Periodontology, Faculty of Dentistry, Selcuk University, Konya, Turkey*

Aim: The aim of this study was to evaluate cytotoxic effect of hemostatic agents on human gingival fibroblast cells by using real-time cell analysis method.

Materials and methods: Two hemostatic solutions, Hemoban (Sultan Healthcare, Hackensack, NJ, USA) and Hemasatic Solutions (W.P Dental, Hamburg, Germany) that includes mainly aluminum chloride were used with different concentration. Gingival fibroblasts

were isolated from gingival connective tissue during crown lengthening surgery of systemically healthy subjects. Gingival fibroblasts were maintained with Dulbecco's modified eagle medium containing 10% fetal bovine serum. A real-time cell analyzer (RT-CES, xCELLigence; Roche Applied Science, Mannheim, Germany, and ACEA Biosciences, San Diego, Calif) was used to evaluate cell survival. After seeding 200 ml of the cell suspensions into the wells (10,000 cells/well) of the E-plate 96, gingival fibroblasts were treated with hemostatic solutions (1/2, 1/4 and 1/8 dilutions) and monitored every 15 min for 72 h. For the proliferation experiments, the statistical analyses used were 1-way analysis of variance (ANOVA) and Tukey HSD multiple comparisons tests.
Results: According to statistically analysis, when evaluated at 48 and 72 h, there were significant differences between the cell indexes of the control and all hemostatic agents groups ($p < 0.001$). Agent reduced cell index value significantly when compared to untreated control group.
Conclusion: The results indicate that using of Hemoban or Hemostatic Solutions as astringent solutions have a significant cytotoxic effect on gingival fibroblast cells.

Free Communication Session 38 | B342 | 30.08.2013 | 11:30–12:30

Theme: Dental Treatment & Restorative Dentistry: Prosthetics

FC244
Two-Body Wear of Five Provisional Crown Materials
Hanefi Kurt[1], Kurt Jürgen Erdelt[2], Altuğ Çilingir[3], Hakan Bilhan[3], Tonguç Sülün[3], Necat Tuncer[3], Wolfgang Gernet[2], Florian Beuer[2]
[1]Department of Prosthodontics, School of Dentistry, Istanbul Medipol University, Istanbul, Turkey, [2]Ludwig-Maximilians-Universität München, Poliklinik für Zahnärztliche Prothetik, Munich, Germany, [3]Department of Prosthodontics, Faculty of Dentistry, İstanbul University, Istanbul, Turkey

Purpose: This study investigated the resistance to wear of five different types of provisional crown material using a two-body wear simulation under wet conditions.
Materials and methods: Nine specimens of each provisional crown material (Dentalon Plus, Luxatemp, Protemp 3, and Protemp 4), with dimensions of 16 mm diameter and 3 mm thickness, were tested under wet conditions. The wear test was performed in a Chewing Simulator CS-4 ($n = 9$; test load: 50 N; number of cycles: 10,000, 20,000, 30,000; water for wet conditions) with steel balls used as antagonists. Wear was determined by 3D laser scanning and a surface analysis program. To detect statistically significant differences between groups, wear data after 10,000, 20,000, and 30,000 cycles were compared by analysis of variance (ANOVA), with the Student-Newman-Keuls post hoc test. The level of significance was set at 5%.
Results: One-way ANOVA detected significant differences between the provisional crown materials tested ($p < 0.05$). In addition, for all materials tested, except Dentalon Plus, significant differences in wear with increasing numbers of cycles were observed ($p < 0.05$).
Conclusion: Susceptibility to wear differs significantly between different provisional crown materials.

FC245
Vestibular Deepening with the Aid of the Diode Laser: Clinical Experiences
Nermin Demirkol[1], Fatih Sarı[1], Mehmet Demirkol[2]
[1]Department of Prosthodontic, Gaziantep University, Gaziantep, Turkey, [2]Department of Oral and Maxiilofacial Surgery, Gaziantep University, Gaziantep, Turkey

Background: Vestibuloplasty is a surgical procedure for deepening of vestibular sulcus by changing the soft tissue. A various of factors such as age, physical conditions, the height of basal and alveolar bone, undesirable contours, nearness to anatomic structure (arteias, nervs), thickness of mucosa and muscles must be evaluated.Various deepening techniques have been employed.there are three techniques for vestibuluplasty:submucosal vestibuloplasty, seconder epitelization vestibuloplasty, vestibuloplasty with graft.Vestibuloplasty is a method for decreasing patient pleasure when complete dentures lose their stabilization.
Method and materials: Four patients with complain of lack of retantion for their complete dentures applied to Prosthodontic Department, Gaziantep University Faculty of Dentistry.Patients evaluated and open submucosal vestibuloplasty procedure was planned. The procedure were explained to the patients clearly and constents were obtained.The diode laser was used to deepening submucosal areas without local anaesthesia.This laser beam was set at 3 W continous mode with 300 mm diameter fiber-optic filament. Fiber-optic filament applied perpendiculary to the vestibular sulcus. Finally mucosa cleaned with saline and gauze pack.Immediately after the treatment prosthesis were supported with visco-gel and 1 week after conventional procedure for complete denture was applied.
Results: A deepth vestibular sulcus for maxilla or mandibula was achieved in all patients by this kind of diode laser.
Conclusion: Vestibular deepening is sometimes necessity for complete dentures and may be achieved by using different therapeutic approaches. To resolve this condition, the use of an 810 nm Diode laser has been suggested as an alternative to conventional procedures because of providing sterile conditions, less operating time, fast healing proces and less bleeding.

FC246
Visual and Instrumental Agreement in Dental Shade Selection
Buket Evren, Burçin Vanlıoğlu, Erhan Tuğcu, Mevlüt Yazıcı, Yasemin Kulak Özkan
Department of Prosthodontics, Marmara University, Istanbul, Turkey

Aim: The aim of this study was to test the the hypothesis that the agreement between observer visual dental shade matches and instrumental shade identification is higher using the Vita 3DMaster shade guide than the Vita classical shade guide
Methods: Two research assistants (D1–D2) and two assistant proffessors in the Department of Prosthodontics (P1–P2) performed dental shade selection in the maxillary central incisors of 30 subjects. All observers used both shade guides. The shade tabs and natural teeth were identified using an intra-oral spectrophotometer (Vita Easyshade) to determine the instrumental agreement with the

visual shade selection. The percent visual–instrumental shade agreement (PVIA) was analyzed statistically considering observer population and shade guide set.
Results: The spectrophotometer evaluation of the Vita3DMaster shade guide revealed more acccurate results than the Vita Classical shade guide. An intra-examiner agreement was observed. Results indicated that D1and D2 demonstrated the highest PVIA for Vita Classical, P1 and P2 demonstrated the highest PVIA for both shade guides. PVIA was higher for P1 and P2. A significantly higher visual–instrumental shade agreement was demonstrated by the clinically experienced dentists, regardless of shade guides.

FC247
Microleakage of Inlay Ceramic Systems Luted with Resin Cements
Bülent Cumhur Uludağ, Elif Saran
Departmant of Prosthodontics, Ankara University, Ankara, Turkey

Purpose: The aim of this study was to evaluate the microleakage of CEREC 3, IPS e.max Press, and Turkom-Cera inlays cemented with three self-adhesive resin cements.
Method and materials: Ninety standardized Class III MOD cavities were prepared in intact human mandibular third molars. Ceramic inlays were fabricated according to the manufacturer's directions and were cemented using three self-adhesive resin cements (RelyX Unicem, Smartcem2, and Speedcem). The specimens were stored in distilled water at 37°C for 24 h and subjected to thermocycling in water for 1000 times between 5 and 55°C with a dwell time of 30 s. Subsequently, the specimens were subjected to 100,000 cycles of mechanical loading of 50 N at 1.6 Hz in 37°C water. The specimens were immersed in 0.5% basic fuchsine for 24 h and were sectioned using low-speed diamond blade. The percentage of dye leakage at the tooth/restoration interface were measured and compared by Kruskal-Wallis tests with Bonferonni correction and Mann-Whitney U tests at a confidence level set at $p < 0.05$.
Results: Microleakage at the RelyXUnicem interface was lower than Smartcem2 and Speedcem resin cements ($p < 0.05$). Microleakage of Turkom-Cera system was higher than CEREC 3 and IPS e.max Press ceramic inlays ($p < 0.05$).
Conclusions: Within the limitations of this study, RelyX Unicem showed lower microleakage values in both enamel and dentin margins. Turkom-Cera ceramic inlays showed higher microleakage values in both enamel and dentin margins.

FC248
Needs and Demands for Prosthetic Treatment of Missing Teeth among Jordanian Population
Gadeer E. Mukatash
Nimri Consultant in prosthodontics, Amman, Jordan

Objectives: To evaluate level of knowledge, awareness and attitude about teeth-replacement options among a group of medical and paramedical subjects and to compare them with the general population.
Methods: Self administered questionnaires were distributed to two groups of subjects. Questions focused on the willingness to replace the missing teeth, the preferable methods of choice for replacement and the reasons for these choices. The first group (G-I-) was from the medical and paramedical staff work in a military hospital at Jordan Royal medical services, the dental staff was excluded from the study. The other group (G-II-) was from general population attended the dental department in the same hospital with comparable level of education. A total of 612 questionnaires were distributed, of which 533 questionnaires were returned (response rate 87.09%).
Results: G-I- have more awareness than G-II- to the probable causes for tooth/ teeth replacement and limitation of the preferable method for replacement ($p < 0.05$). More than 80% of the participants believe that replacement of anterior teeth is more important than posterior teeth. Implants and fixed partial denture respectively was more preferable than removable prosthesis although clinically was not indicated in cases ($p < 0.05$). There was no clinical benefit from replacement of missing teeth in 33.4% while only 6% believe of this.
Conclusions: The prosthetic needs between medical and paramedical staff to is better than between general populations. The demands for dental replacement by patients were significantly different when compared with the actual needs.

Free Communication Session 39 | B343 | 30.08.2013 | 11:30–12:30

Theme: General Dentistry and Oral Health

FC249
A retrospective Study of Oral Lichen Planus in Adult Population in Greece
Aikaterini Dimitriou, Flora Zervou Valvi
Dental Department of "Asklepieion Voulas" General Hospital, Athens, Greece

Aim: This retrospective study was undertaken to investigate epidemiological and clinical data of oral lichen planus (OLP) in patients presented at the Stomatological Clinic of the Dental Department of a General Hospital in Greece.
Materials and methods: Data were obtained from the evaluation of 600 randomly selected medical records. Forty-two (42) cases with undoubtful diagnosis of OLP set either by clinical or by clinical and histologic criteria after a biopsy (14 cases) were analyzed.
Results:
Analysis showed that: 1. The occurrence of OLP in this selected sample was 7% with a female predilection (males/females = 2/3) and a mean age of presentation at 57.8 years. 81.4% of them were above 50 years of age.

2. Erosive type alone or combined with white lesions (reticular, papular or plaque) was the commonest form (24 cases) while reticular type alone was the second most common (13 cases). Buccal mucosa was the site of predilection (20 cases). Local corticosteroids and systemic steroids were used for the treatment and a 4.9 mean number of visits/per patient were required.

3. One case with erosive type of OLP underwent malignant transformation (squamous cell carcinoma).

Conclusions: 1. OLP is a relatively common mucosal disease among adult patients presented at our Clinic.

2. OLP had a female and older age predilection. Lesions had periods of exacerbation and quiescence.

3. Erosive type that causes pain and discomfort was the commonest in our sample. This type needs more frequent follow up examinations as this may develop malignant transformation.

FC250

Clinical Assessment and Characteristics of a Group of Turkish Patients with Oral Mucosal Diseases

Asuman Akgün[1], Şebnem Yalçınkaya[2], Şükran Atamer Şimşek[1]
[1]*Department of Pharmacology, Basic Medical Sciences, Faculty of Dentistry, Marmara University, Istanbul, Turkey,* [2]*Department of Dentomaxillofacial Radiology, Faculty of Dentistry, Marmara University, Istanbul, Turkey*

Objective: The purpose of this study was to assess the clinical and behavioral characteristics of a group of patients with oral mucosal diseases(PwOMD).

Study design: Sixty-four patients (43 female and 21 male, between 11 and 80 years of age) referring to an Oral Medicine Clinic were analyzed regarding their behavioral characteristics and clinical diagnoses during a 3-month period just after the initial diagnosis of OMDs. Data were collected by conducting face-to-face interviews guided by predetermined twenty-six-item-questionnaire which were analyzed statistically.

Results: The most common OMDs were recorded as benign hyperplasias(17.2%), apht/ulcer(15.6%) and lichen planus(15.6%). Females were more affected than males ($p = 0.037$). 90.6% PwOMD were aware of their OMDs. Smoking (34.4%) was the most common habit in the studied population with OMDs. The duration of smoking was 10.76 ± 14.80 years in males and 5.40 ± 10.11 years in females. 18.8% of the patients were drinking alcohol. Females were more frequently denture wearers than males ($p = 0.01$). 53.1% of PwOMD had systemic diseases and of this group 28.1% had more than one systemic disease and only 54.7% of this group stated that they were having their medication regularly. Hypertension was the most frequent systemic disease (15.6%), followed by gastrointestinal diseases (14.1%).

Conclusion: Based on the findings of this studied population, oral mucosal diseases seem to be ignored by the patients. Analysis of the data underlined the fact that there has been a lack of interest towards OMDs, behavioral risk factors for oral precancerous lesions and their general health.

FC251

Lupus Patient – The Dentist has a Very Important Role to Play

Shegufta Mohammad
Update Dental College, Dhaka, Bangladesh

Aim: Systemic Lupus Erythematosus is a chronic inflammatory multisystem disease of unknown etiology. It is an autoimmune disease where body's immune system mistakenly attacks its own tissues, causing multi-organ inflammation and diverse clinical manifestations with domination of peripheral symmetric polyarthritis of small and large joints. Approximately 95% of lupus patients suffer from some form of oral involvement. Lupus patients suffer from the following mouth symptoms: dry mouth, cracked lips, bleeding gums, sore jaws, gingivitis (gum disease), cracked tongue, oral lesions, lichen planus, ulcers (tongue, mouth, gums and cheeks), and candidias thrush infections (yeast infections). Those patients also suffering from TMJ or oral scleroderma can have tightening of the mouth and jaw which can result in more abscesses and cavities. Patients with Sjogren's Syndrome usually have severe dry mouth which results in massive decay, dental infections, thrush (yeast infections), and gum disease. Lupus is considered as high-risk category of disease by The American National Guideline Clearinghouse and American Academy of Dermatology so they recommend that patients with this kind of condition require antibiotic premedication before dental treatment.

Conclusions: So the responsibility of a dental surgeon in unquestionable for the benefit of the lupus patients.

FC252

The Effect of Supersaturated Calcium-Phosphate Oral Rinse on Oral Yeasts Infection

Marinka Mravak Stipetic[1], Ivana Jurcic Culina[2], Johnatan Belsey[3]
[1]*Marinka Mravak-Stipetic, Professor, School of Dental medicine, University of Zagreb, Zagreb, Croatia,* [2]*Ivana Jurcic Culina, DMD, Resident, University Dental Clinic, University Clinical Hospital Zagreb, Zagreb, Croatia,* [3]*Johnatan Belsey, MD, JB Medical Ltd, The Old Brickworks, Chapel Lane, Little Cornard, Sudbury, UK*

Aim: The aim was to investigate the effect of supersaturated calcium - phosphate oral rinse (Caphosol®) on oral yeasts in 120 patients with dry mouth.

Method and materials: In all patients (aged 67–89) unstimulated (QnS) and stimulated whole saliva (QsS) was measured. Swabs were taken from oral mucosa for yeast culture. Patients with positive yeast culture were randomly assigned into four treatment groups (study group-A and control groups- B, C, D): Group A was treated with Caphosol®, Group B with a combination of Caphosol® and miconazole oral gel, Group C with a solution of sodium bicarbonate, and Group D with only miconazole oral gel. Treatment was carried out for 2 weeks. Control yeast culture and salivary volume (QnS and QsS) were determined in each subject at baseline (0 day), after 7 and 14 days. Between-group analysis was carried by using ANOVA, followed by Tukey HSD testing for pairwise comparisons.

Results: All patients had positive yeast culture and 87.50% had hyposalivation. The increase in salivary volume was greatest in group A and significantly different compared to group C ($p < 0.01$) for period 0–14 days. Significant decrease in fungal infection was detected in groups A, B and D compared to group C for time period between 0–7 days and the 0–14 days. Between groups A, B and D no statistically significant differences were found.

Conclusion: Supersaturated calcium-phosphate oral rinse (Caphosol®) increases the amount of saliva and significantly reduces oral

fungal infection. In comparison with miconazole alone or in combination no significant differences were found.

FC253

Oral Health and Oral Hygiene Practices among Institutionalized Orphans, Yemen

Sadeq Ali Al Maweri, Walid Al Soneidar, Esam Halboub
Departemnt of Oral Medicine, Sanaa University, Sanaa, Yemen

Aim: The aim of this study was to assess the prevalence of oral mucosal lesions, dental caries and oral hygiene practices among institutionalized orphan children in one of the orphanages in Sana'a, Yemen.
Methods: This cross-sectional study involved 202 institutionalized orphan children aged 6–15 years. Clinical examination included assessment of dental status using DMF/dmf index, and assessment of oral mucosal lesions using standard international diagnostic criteria and WHO codes. Demographic data and oral hygiene practices were obtained through interviewing each child using special questionnaire form.
Results: The results showed that (41.1%) of the study subjects had one or more oral soft tissue lesions. Nine types of oral mucosal lesions were reported; the most common lesions were: fissured tongue (24.3%), Herpes labials (7.9%), Fistulas (4%), geographic tongue (2.5%), and traumatic ulcers (2.5%). The results showed that 15.3% of the study subjects were caries free. Overall, dmfs, dmft, DMFS, DMFT were 4.23, 2.28, 2.73, and 2.06 respectively. The highest dmfs / dmft were found among the 9–11 years age group, while the highest DMFS/DMFT were scored by the 12–15 years age group. Unfortunately, high proportion of the subjects (44.1%) reported that they never clean their teeth, while (27.7%) reported to clean regularly and (28.2%) irregularly.
Conclusion: The findings of this study demonstrate that the institutionalized children in this orphanage have a high prevalence of oral lesions, a low prevalence of dental caries, and poor oral hygiene practices.

Free Communication Session 40 | B360 | 30.08.2013 | 11:30–12:30

Theme: Implantology: Oral Surgery

FC254

Platelet Rich Fibrin Membrane over Immediate Implants

Walaa Kadry Hafez, Hazem Shawky, Sameh Seif, Maha Mohamed Hakam
Department of Oral and Maxillofacial Surgery, Faculty of Oral and Dental Medicine, Cairo University, Cairo, Egypt

Aim of the study: To evaluate platelet rich fibrin (PRF) as a membrane for coverage of immediate implants in the maxillary anterior region.
Patients and methods: Twelve implants were inserted in eight adult patients indicated for extraction &immediate implant insertion in one or more of the upper anterior teeth. A venous blood sample of 10 cc. was obtained for each single implant. After implant placement, the peri-implant defect was filled with autogenous bone (collected from the chin)-PRF mix then a PRF membrane was used to cover the implant site. The implant site was followed up clinically & radiographically immediately, 3, and 6 months post-operatively to evaluate soft tissue healing & crestal bone stability.
Results: PRF provided good soft tissue coverage over the immediate implants. Within the 6 months follow up period, the marginal bone was stable in 83% of cases. The technique was easy to perform with good esthetic results.
Conclusion: PRF could serve as a resorbable membrane for guided tissue regeneration.

FC255

Rare Case of Multifocal Papilloma Virus Epithelial Hyperplasia

Elitsa Georgieva Deliverska[1], Latchezar Stefanov Petkov[1], Maria Stoyanova Dencheva[2], Angelina Kisselova[2]
[1]Department of oral and maxillofacial surgery, Faculty of dental medicine, Medical university, Sofia, [2]Department of imaging and oral diagnostics, Faculty of dental medicine, Medical university Sofia

Introduction: Multifocal papilloma virus epithelial hyperplasia (MPVEH) is a rare disease of the oral mucosa associated with the human papilloma viruses (HPV) 13 and 32. It occurs at any age, but children have the highest incidence.
Purpose: To present a case of oral multifocal papilloma virus epithelial hyperplasia with palatal tumour and multiple metachronic primary cancers.
Method and materials: The medical history shows a 60 years female patient with complaints of asymptomatic mass on the palatal mucosa, with a 2 years' development. The patient has been treated surgically for previous thyroid cancer, endometrial cancer and cancer of the mammary gland. An incisional biopsy has been performed in her left buccal mucosa 10 years ago and histopathological examination confirmed the diagnosis of MPVEN.

The palatal tumour was removed surgically by electroexcision and the histological result was pleomorphic adenoma of a small palatal salivary gland.
Conclusion: Papillomatosis is considered as a benign neoplasm with an unpredictable course and with a low probability of malignancy.We report of an unusual case of MPVEH persistent for more than 30 years without regression and with significant impact on a patient's quality of life.

FC256

Removal of Fibromatosis Lesions Using Diode Laser (810 nm) Two Cases Report

Bilge Yüksel Köroğlu[1], Işıl Keçik Büyükhatipoğlu[1], Fatih Sarı[1], Aslihan Usumez[2]
[1]Department of Prosthodontics, Faculty of Dentistry, Gaziantep University, Gaziantep, Turkey, [2]Department of Prosthodontics, Faculty of Dentistry, Bezmialem Vakif University, Gaziantep, Turkey

Aim: Removal of fibroma in the oral mucosa with the use of diode laser has become a common procedure for dentists and maxillofacial surgeons for preprosthetic surgery. The effectiveness of diode laser has been proven to work as well as the treatment of intraoral pigmentation, vascular lesions of soft tissues, lingual and labial frenectomy, upper and lower epulis and gingival hyperplasia. The removal of asymptomatic fibromatosis lesions at two cases will be described and evaluated the healing of these sites after irradiation with the use of diode laser (810 nm).
Cases: In these two clinical cases, fibromatosis lesions were treated by 810 nm diode laser (Fotona, Ljubljana, Slovenia) in contact with 300 μm fiber, in continuous wave mode and were followed up their healing process during 1, 3 and 10 days. The use of diode laser reduced the operating time without using sutures and intraoperative bleeding, restricted the swelling and fastened healing without scarring. The patients had less post operative pain on the surgical sites when compared with conventional treatment.
Conclusions: The diode lasers (810 nm) are beneficial in fibroma removal treatments by reducing the bleeding and surgical time. It restricts the swelling and fastens the healing process.

FC257
Sinus Floor Augmentation using Polyethylen Glycol Hydrogel or Collagen Membrane
Laurent Ohayon
Private Practice, Saint Maur des Fossés, France

Background: Maxillary sinus floor augmentation is used to increase under sinus crestal bone height in case of important sinus pneumatization in order to allow implant insertion. The lateral Caldwell-Luc technique is used when the residual under sinus bone height is less than 5 mm. Collagen barrier membranes are most commonly used to protect the bone substitute inside the sinus bone window from connective tissue ingrowth. A new polyethylen glycol hydrogel (PEG) membrane is proposed to allow guided bone regeneration (GBR).
Aim: The aim of this presentation is to compare PEG and collagen membranes utilization protocol in case of lateral sinus floor augmentation and to analyse the histological, histomorphometric and tomodensitometric behavior of the sinus graft using the same bone substitute.
Method and materials: Presentation of several lateral bone window sinus floor augmentation clinical cases using PEG hydrogel and collagen membranes.

Description of the different protocols used for theses two membranes.

Analysis of the histological, histomorphometric and tomodensitometric results using Biphasic Calcium Phosphate (BCP) graft covered by these two membranes.
Results: Six months after sinus floor augmentation surgery, histomorphometric evaluation showed 28.4% of newly formed bone and 21, 7% of remaining bone substitute using the PEG hydrogel membrane. These results correspond to the published average rate when collagen membranes were used.
Conclusion: PEG is a new barrier membrane presenting GBR properties, with specific handling due to its gel-like consistency.

FC258
The Imperatives of 3-Dimensional Implant Position in Defected Esthetic Zones
Kadhim Abul Ameer Al Himdani
French Center for Dental Implant, Sharjah, United Arab Emirates

Objectives: The objective of this study is to show our clinical experience where we obtained very satisfying esthetic results for different critical situations of bone deficiency in esthetic zones without going through sophisticated procedures of ridge management like bone augmentation, ridge splitting, and distraction osteogenesis.
Method and materials: Our clinical study comprised 98 implants placed on 60 patients in sites with bone deficiency in the anterior maxilla and mandible. Selection of proper implant macro-geometric design and size, appropriate surgical approach and procedure, manual atraumatic bone appreciation osteotomy preparation, proper implant orientation and subcrestal position, adapted prosthetic restoration specially with integrated abutment crowns are factors we considered to avoid pre-operative ridge management and bone augmentation procedures, with 3 years follow-up. Cases with sites without bone deficiency were excluded. Xenografts were used simultaneously in a few cases to give hard and soft tissue support, yet implants osseointergration was independent from the grafting material.
Results: When following our proposed criteria of implant therapy in sites with bone deficiency, survival rate of 95.9% and a success rate of 100% were reported.
Conclusion: Satisfying esthetic results in sites with bone deficiency can be obtained without pre-operative ridge management procedures. We highlight the significance of implant design, orientation and subcrestal position, surgical approach and procedure, and finally adequate prosthetic restoration and fixation; all these elements clinically proved their efficiency to overcome going through long, complicated, risky, and painful procedures. Thus achieving Minimal Invasive Implantology and shifting the conventional "Restoration-Driven Implant Placement" concept towards "Bone-Driven Implant Placement".

Free Communication Session 41 | B342 | 30.08.2013 | 14:00–15:00

Theme: General Dentistry and Oral Health

FC259
Community–Oriented Primary Oral Health Care in Nigeria: The Abeokuta Initiative
Sherifat Omolola Quadri[1], Kafayat Abdulazeez[2]
[1]*Preventive Dentistry Department, Access Oral Health Care Services Inc., Abeokuta, Nigeria,* [2]*Research and Development Department, Access Oral Health Care Services Inc., Abeokuta, Nigeria*

Aim: The aim of this research and programme was to promote sustainable development, by fostering equitable distribution of accessible basic oral health care at affordable costs and community encouragement of self-care and to develop a replicable and

sustainable model of community-level grassroots intervention, and to actively engage development workers, policy makers and other stakeholders in a broad scale replication of the innovative dental models.

Materials and methods: At baseline, 150 resident were systematically sampled and asked to complete a 60 min interview (participant rate 52%, mean age 62+78.2% female, 83.1% male, 54.3% with incomes). Subjects were offered a free oral examination, education and prevention services, transportation to dental appointments, and comprehensive dental care on a sliding fee basic. Our initiative adopted participatory styles of development, to implement its oral health programmes, building the capacity of local communities to access their own oral health priorities, identify solutions to them, implement these solutions and monitor the impact on pre-defined health and development outcomes.

Result: After 18 months, 101 participants or 52.3% of the original sample were re-interviewed (11.0% moved, 8.9% died, 6.8% refused, 3.4% were too ill to participate.) Dental services use increased with 68.3% of respondents reporting a dental visit in the past one and the half years as compared to only 24.6% at baseline.

Conclusion: The programme had a significant impact on peoples' oral health, it gave an increased use of their available preventive and curative services with improvements in perceived oral health and better dental related knowledge and attitudes.

FC260

Continuous Development of an Oral Health Score for Clinical Audit

Michael Clive Busby[1], Roger Matthews[1], Elizabeth Chapple[2], Trevor Burke[3]

[1]Denplan Ltd, [2]OHI Ltd, [3]University of Birmingham

Aim: To report on the continued development of an oral health status score designed to support general dental practitioners in monitoring oral health outcomes with their patients.

Methods: An oral health score module (OHS) was developed as part of a comprehensive on-line patient assessment tool. The other two modules in the assessment measured future disease risk and indicative capitation fee grading. The OHS was developed over 20 years of research and experience from the Oral Health Index (Burke and Wilson 1995). The online tool was piloted by 25 volunteer dentists who provided qualitative and quantitative feedback. Anonymised data from the inputs and scores generated were collected centrally and analysed for 680 recall patients.

Results: The validity of the OHS was perceived to be sound by this pilot group. The assessment data submitted confirmed an average age for the patients examined as 53 years and their average OHS to be 79.5 where a score of 100 equates to perfect oral health. A breakdown of the scores into the eight components of the OHS provided evidence of cross validation with the Adult Dental Health Survey (2009).

Conclusion: There is evidence that scoring oral health status in this manner is valid. It therefore presents valuable opportunities to audit patient outcomes progressively, either for individuals, or for groups of patients. Audit is facilitated considerably by this move from, essentially a paper based system, to an on-line tool with central data collection.

Theme: Preventive Dentistry: Epidemiology

FC261

Trends in Caries Status of Schoolchildren in Malaysia

Noor Aliyah Ismail, Khairiyah Abdul Muttalib, Natifah Che Salleh

Oral Health Division, Ministry of Health, Malaysia

Aim: The National Oral Health Survey of Schoolchildren in Malaysia was conducted in 2007 (NOHSS 2007) a decade after the first national baseline survey in 1997 (NOHSS 1997) to assess trends in caries status among 6-, 12- and 16-year-old schoolchildren, as part of the objectives of the survey.

Materials and methods: A cross-sectional survey involving a two-stage systematic probability sampling proportionate to population by location in each state, with schools under the Ministry of Education forming the sampling frame. A total of 6,937 6-year-old children, 11,292 12-year-old children and 8,478 16-year-old children were examined. The weighted sample of children examined represented more than 98% of the estimated enrolment of schoolchildren in these age groups in 2007. Findings were compared with NOHSS 1997. Ethical approval was obtained from the Medical Research Ethics Committee, Ministry of Health Malaysia.

Results: Comparing NOHSS 1997, caries prevalence decreased in all three age groups; 6-year-olds: 80.9–74.5%, 12-year-olds: 60.9–41.5% and 16-year-olds: 75.5–59.6%. The mean dft of 6-year-olds decreased from 4.1(1997) to 3.6 (2007) while the DMFT of 12-year-olds and 16-year-olds decreased from 1.9 to 1.1 and 3.3 to 2.1 respectively.

Conclusions: There has been a decline in caries prevalence and severity among all age groups, with a slower decline in 6-year-olds compared to 12- and 16-year-olds. Extensive coverage of schoolchildren under the School Incremental Dental Care Programme and the use of various fluoride modalities contribute to the decline. Towards sustaining these trends, Malaysia has a National Oral Health Plan 2011–2020.

Theme: General Dentistry and Oral Health

FC262

Betel Nut Chewing Associated With Severe Periodontitis – Case Report

Dhirendra Kumar Giri[1], Pratibha P. Kundapur[2]

[1]Department of Periodontics, B.P.Koirala Institute of Health Sciences, Dharan, Nepal, [2]Department of Periodontolgy, Manipal College of Dental Sciences, Manipal, India

Introduction: Betel quid chewing has been in practice among people in many Asian countries since ages. It is the most widely used psychoactive substance and an important environmental risk factor for development of oral premalignant lesions and cancer. Arecoline, the major alkaloid of areca nut, has been known to cause cytotoxicity and genotoxicity in mammalian cells in vivo and in vitro and even contributes to carcinogenicity. It also increases the risk and severity of periodontal disease.

Case: This paper presents a case of betel nut chewing associated with severe periodontitis in a 32 year old male patient.

FC263

deo2u: An Innovation in Dental Education Online

Mahyunah Masud[1], Mohamed Ibrahim Abu Hassan[1], Shahida Mohd Said[2]
[1]*Universiti Teknologi Mara,* [2]*Universiti Kebangsaan Malaysia, Shah Alam Selangor, Malaysia*

Aim: Dental education has always been traditionally structured that students learn what teachers chose to teach them face to face. However, the increase in the number of dental institutions created constraints for the traditional mode of teaching. Students also have packed schedule resulting in a stressful learning environment. Available online applications have great potential to complement this mode of teaching but they are found to be not ccomprehensive, lacking in outcome-based-assessment and feedback. Thus, application has not been successful in getting lecturers and students to interact and the institution failed to benefit from the technology. The aim of this study was to develop a dental education online package and to assess the application
Materials and methods: www.deo2u.edu.my as a supplement to complement the current teaching. A learning management system i-learn available in the university was modified, developed and hosted at www.deo2u.edu.my.
Results: One hundred and Eighty year 1–5 dental students logged on to the website and later on assessed the website through self-administered questionnaires using Website Motivational Analysis Checklist Professional. www.deo2u.edu.my was analyzed according to its four general characteristics: engaging, meaningful, organized and enjoyable. Between 90–97% students felt that the application was meaningful, organized and easy to use with 83–88% were convinced it was attractive, interesting and fun to explore. Pleasing background was reported by 78% of the students.
Conclusions: www.deo2u.edu.my is an innovation in dental education online that can provide comprehensive teaching modalities made available whenever and wherever to overcome the constraints of time and limited academic resources.

Free Communication Session 42 | B343 | 30.08.2013 | 14:00–15:00

Theme: General Dentistry and Oral Health

FC264

Mandibular and Lumbar Bone Mineral Density with QCT in Egyptian Females

Dina Mohamed El Beshlawy[1], Moshera Mohamed Dahaba[2], Hala Ahmad Raafat[3], Mohamed Abd El Fattah[4]
[1]*Dina El Beshlawy, lecturer, Oral Radiology department, Cairo university, Egypt,* [2]*Moshera Dahaba, Professor, Oral Radiology department, Cairo university, Egypt,* [3]*Hala Raafat, Associate professor, Rheumatology department, Cairo university, Egypt,* [4]*Mohamed Abd El Fattah, Associate professor, Radiodiagnosis department, Cairo university, Egypt*

Osteoporosis is a skeletal disease characterized by low bone mass that was previously thought to affect the jaw bones. Aim of the study: This study was aiming to evaluate the relationship between mandibular and lumbar vertebral bone mineral densities in osteoporotic patients using quantitative computerized tomography.
Methods: In the current study, twenty females aged between 40 and 70 years were selected and screened by DXA scan of spine, femur and forearm. According to the resultant T-scores, they were categorized into normal group (five patients), osteopenic group (seven patients) and osteoporotic group (eight patients).The patients were further subjected to QCT examinations of both spine and mandible.
Results: On comparing the three groups concerning the mandibular BMD measurements by QCT, no statistically significant difference was found between the normal, osteopenic and osteoporotic groups regarding the buccal cortex, the lingual cortex or the trabecular bone.
Conclusion: Systemic osteoporosis is not necessarily associated with mandibular osteoporosis; consequently the disease is not an absolute contraindication for dental implants placement.

Theme: Implantology: Oral Surgery

FC265

The Phenomenon of Ectopic Eruption of the Teeth Clinical Point of View

Khaled Mohamed Mansour
Alexandria Dental Research Center, Alexandria Dental Directorate, Ministry of Health, Alexandria, Egypt

Aim: An ectopic tooth can be found in sites outside of the oral cavity, and can be a supernumerary, deciduous or permanent tooth. The maxillary sinus and palate are the most frequently affected sites, while the mandibular condyle, coronoid process, orbits, and facial skin are affected much more rarely. Intranasal dental eruptions are another of the more unusual ectopic teeth, which present in the nasal cavity and are quite rare. The etiology of ectopic eruption is still unclear and many theories have been suggested including trauma, infection, cyst, tumor, crowding, and developmental abnormalities. In many cases, however, the etiology cannot be identified. Ectopic eruption of teeth and may cause a variety of symptoms and complications. Clinical examination and radiographic imaging are extremely helpful in making the diagnosis. After complete evaluation, removal of the ectopic tooth is appropriate in order to prevent further complications.
Conclusions: The etiologic, clinical, radiographic aspects and treatment for these teeth will be discussed in this lecture.

FC266

The Titanium Meshes Effectiveness in Reconstructing Three-Dimensional Alveolar Defects

Giuseppe Lizio[1], Noemi Mazzone[2], Giuseppe Corinaldesi[1], Claudio Marchetti[1]
[1]*Department of Biomedical and Neuromotor Science, Oral and Maxillofacial Surgery Division, University of Bologna, Bologna, Italy,* [2]*School in Maxillofacial Surgery, University of Rome "La Sapienza", Rome, Italy*

Aim: This study evaluated the effectiveness of titanium mesh used with particulate autogenous and anorganic bovine bone (ABB) grafting in the reconstruction of three-dimensional (3D) alveolar ridge defects for implant-borne prosthetic rehabilitation.
Materials and methods: This retrospective study included 24 patients (mean age: 50.5 years) with varied morphological defects, treated with 34 titanium meshes and particulate bone (70:30 mixture of autogenous bone and ABB) and rehabilitated at least 8–9 months thereafter with the placement of 88 implants. Data were collected from the post-surgical period before implant placement, and the implant survival, success and prosthetic outcomes were assessed after a mean follow-up of 20 (6–48) months of prosthetic loading.
Results: Four of 34 meshes in three patients had to be removed before implant placement (11.76% total failure); 20 of 34 meshes were exposed due to soft tissue dehiscence (58.82% of complications): four (11.77%) prematurely (within 4–6 weeks) and 16 (47.05%) delayed (after 4–6 weeks), with no compromise in implant placement or prosthetic plan. None of the 88 implants was lost during follow-up (100% implant survival) and 15 implants demonstrated increased bone loss, yielding a cumulative implant success rate of 82.9%.
Conclusions: Bone grafting with titanium mesh and autogenous and ABB allows predictable implant-borne rehabilitation in morphologically varied three-dimensional defects. The high level of dehiscence that occurred 2 months post-operatively did not compromise subsequent implant-borne prosthetic rehabilitation.

FC267

Treatment of Peri-implant Mucosal Hyperplasia Using Er:YAG (2940 nm) Laser

Zekai Yaman[1], Pınar Cebe[1], Mümin Güneş[2], Berkay Tolga Süer[3]
[1]*American Hospital Dental Department, Istanbul,* [2]*MedAmerican Policlinic Dental Department, Istanbul,* [3]*GMMA, Haydarpasa Teaching Hospital, Istanbul*

Aim: The aim of this study was to evaluate the clinical efficiency of using an Er:YAG laser in the treatment of patients with peri-implant mucosal hyperplasia.
Materials and methods: 32 cases of peri-implant hyperplasia in nineteen patients (mean age 49 ± 10 years; 12 male, 7 female) were included in the study. Treatment was with an Er:YAG (2940 nm) laser unit that was set to either; 80–120 mJ, 10–15 Hz, and 1000 μs pulse duration without water for soft tissue ablation, or 60–120 mJ, 10 Hz, and 300 μs pulse duration with water for debridement and detoxification of the exposed abutment-implant surfaces. All patients' surgical charts, follow-up charts, clinical photographs and radiological findings were evaluated retrospectively.
Results: Hyperplasia was mostly associated with an inadequate amount of keratinized mucosa (≤2 mm; 71.9%) around the neck of the implants. Of the patients that were included in the study; three (15.8%) reported moderate pain (≤6 out of 10 in VAS scale), 16 (84.2%) reported mild or no pain (≤3 out of 10 in VAS scale) following surgery. Upon probing, bleeding scores were markedly reduced and pseudo-pocket formations had been eliminated with the formation of healthy, fixed gingiva.
Conclusions: These results suggest that the use of a Er:YAG laser is an effective method for the ablation of peri-implant mucosal hyperplasia with the avoidance of any thermal side effects to the adjacent soft tissues and implants.

FC268

Unusual Case of Facial Asymmetry

Reem Hanna[1], Christoph Huppa[2]
[1]*Department of Oral Surgery, King's College Hospital, King's College London Dental Institute, London, UK,* [2]*Department of Oral and Maxillofacial Surgery, King's College Hospital, London, UK*

Aim: Fibrous dysplasia is a non-neoplastic lesion of unknown origin with one-fourth involving head and neck. Fibrous dysplasia is an idiopathic disease, which causes progressive expansion and deformity of bones. In 10% of monostotic fibrous dysplasia and 50–100% of polyostotic fibrous dysplasia, there is involvement of the facial and cranial bones.
Case: A case of monostotic fibrous dysplasia in a 19 years old female who presented to the Oral Surgery Department at King's College Hospital in Feb. 2010 with swelling of left side of the face, which was noticed by the patient 18 months ago. The aim of presenting this case is to report this unusual left facial asymmetry, describing its clinical presentation, radiological features (standard radiographs and CBCT), histopathological appearance and its multidisplinary management approach. The patient had a biopsy of the lesion in region of the upper left first and second molar regions to confirm diagnosis. 3D CBCT imaging was obtained to assess the extension of the bony lesion. Neurological and ophthalmological assessments were carried out. The management of this case was approached by multidisplinary team who has taken in account the extension of the bony lesion and the patient's choice and wish (sometimes surgery is not the treatment of choice patient's prespective).
Conclusions: To conclude, fibrous dysplasia is a benign lesion, which rarely affects the head and neck region. Moreover, the involvement of the paranasal sinuses is rare. Therefore, multidisplinary approach to the management of this lesion is crucial to achieve a good outcome and quality of life

Free Communication Session 43 | B360 | 30.08.2013 | 14:00–15:00

Theme: General Dentistry and Oral Health

FC269

An Assessment of Prescription Writing Skill in Undergraduate Dental Students

Ashfaq Akram[1], Nabishah B. Mohamad[2], Dalia Abdullah[2], Noor Hashim[1], Subahan M. Meerah[2]
[1]*Faculty of Dentistry, Allianze University College of Medical Sciences, Penang, Malaysia,* [2]*Department of Medical Education, Universiti Kebangsaan Malaysia (UKM), Malaysia*

Aim: To assess the prescription writing skill in undergraduate dental students.

Methods: A descriptive study of 'two-group post-test experiment' taking 37 undergraduate dental students was conducted. Group A (n = 18) received a lecture on how to write a complete prescription while group B (n = 19) served as control group. Three dental scenarios about a child, pregnant woman and adult man were given to write mock prescriptions [(Group A (n = 54) and Group B (n = 57)]. Twelve components in each hand written prescription were assessed by using WHO guidelines.
Results: The improvements (less omission errors) in eight out of twelve elements in prescriptions of Group A were found. The significant improved elements were the symbol 'Rx' (39.8%) (p = 0.001), prescriber's signature (75.3%) (p = 0.001), date with prescriber's signature (54.6%) (p = 0.001) and prescriber's registration (30.5%) (p = 0.001). In addition, provision of elements such as 'date of issue' (13.9%), 'legibility of medicine' (7%), 'instruction for refill' (12%) and 'direction to use' (0.3%) were improved also in Group A.
Conclusion: The fifty percent prescribing skill of Group A improved due to intervening of a lecture. A specific teaching module on prescription writing is suggested to make dental graduates competent in prescription writing for the sake of well being of dental patients.

FC270

Capacity of Kenyan Health Facilities for Decentralized Dental Training

Marjorie Kaswii Muasya[1], Tom Mboya Dienya[2], Evelyn Gaceri Wagaiyu[3], Mara Child[4], Raphael K. Mburu[5], Ruth W. Nduati[6], Kefa Ogonyo Bosire[7], Walter Otieno Mwanda[8], M'mimunya Machoki[5], James N. Kiarie[5]
[1]*Department of Paediatric dentistry & Orthodontics, University of Nairobi, Nairobi, Kenya,* [2]*Department of Conservative and Prosthetic dentistry, University of Nairobi, Nairobi, Kenya,* [3]*Department of Periodontology, Community and Preventive dentistry, University of Nairobi, Nairobi, Kenya,* [4]*Department of Global Health, University of Washington,* [5]*Department of Obstetrics and Gynaecology, University of Nairobi, Nairobi, Kenya,* [6]*Department of Paediatrics and child health, University of Nairobi, Nairobi, Kenya,* [7]*Department of Pharmacology and Pharmacognosy, University of Nairobi, Nairobi, Kenya,* [8]*Department of Haematology and Blood transfusion, University of Nairobi, Nairobi, Kenya*

Aim: To determine the capacity of 6 non-tertiary Kenyan hospitals as sites for decentralised dental education.
Materials and methods: A questionnaire was developed to assess the capacity of a decentralised site prior to students undertaking a clinical rotation within it. Using this, a baseline assessment of six dental departments in six health facilities that had been enrolled by the partnership for innovative medical education in Kenya (PRIME-K) as sites for training of medical students was conducted. The facilities were assessed for manpower, patient load, diversity of oral health services, basic dental equipment, continuing dental education and research using the questionnaire and key informant interviews with the heads of the dental department.
Results: All the facilities assessed had general dentists while only one hospital had two dental specialists rendering oral health care to 20–50 patients per day. Five out of the six facilities had capacity for students to gain learning experiences in greater than 60% of the clinical disciplines studied during the 3rd and 4th year of the undergraduate curriculum. All the facilities had challenges of lack of specialists, broken down dental equipment and inadequate materials. Dentists in one facility had a continuing professional development (CPD) program in oral health while those in other facilities participated in CPD programs targeting all health workers. None of the facilities had ongoing research in oral health although in one facility a proposal was being developed.
Conclusion: Five health facilities had variable capacity as sites for decentralized dental education despite major resource constraints.

FC271

Internationally Trained Dental Programs in the United States of America

Ival G. Mcdermott, Rosa Chaviano Moran
New Jersey Dental School, University of Medicine and Dentistry of New Jersey

Aim: Health professionals educated outside of North America comprise an invaluable resource of expertise and manpower for many health care modalities in the United States. But in almost every jurisdiction in the USA, dentistry is controlled by a State Licensure Board, which requires a DDS or DMD degree from an accredited North American dental school in order to issue a license to practice dentistry. Dentists educated in other countries have been readily accepted in US specialty residencies and postdoctoral programs, but had no path toward full licensure to practice dentistry other than to complete 4 years of undergraduate dental school.

In response to growing issues of diversity in population and access to dental care, more than thirty US and Canadian dental schools have now begun to offer advanced standing programs which award the DMD or DDS degree to international dental graduates in an abbreviated time period. Not surprisingly, these programs have become so popular and widespread that the American Dental Education Association has created a centralized online clearinghouse for international program information and application.
Conclusion: This presentation will examine American dental schools' international programs and their status today. It will focus specifically on the very successful UMDNJ New Jersey Dental School Internationally Trained Doctor of Dental Medicine Program and its requirements, curriculum, and experience to date.

FC272

Is evidence based practice implemented by todays' European students?

Elpida Samara[1], Dimitrios Tatsis[1], Richard Oliver[2]
[1]*School of Dentistry, Aristotle University of Thessaloniki, Thessaloniki, Greece,* [2]*Hon. Consultant in Orthodontics, School of Postgraduate Medical and Dental Education Cardiff University, Cardiff, UK*

Aim: The aim of this study is to explore the students' perspective of evidence based practice and the implementation of it in the clinical practice.
Materials and methods: An anonymous questionnaire was placed online for 55 days. A statement of informed consent was included. Students from member countries of the European Dental Students' Association were invited to respond. It included basic demographic questions, the length and year of study as well as questions about their experience and their opinion about the academic books, online scientific articles, and conferences on clinical practice, hours spent for studying at home and at the university library, possible factors affecting the treatment plan and the methods they implement when planning treatments.
Results: Four hundred twenty students replied from twenty one European countries. Thirty percent of them were fourth year students. Responses from students of different European countries didn't vary and showed that students tend to stick to the knowledge provided by their teachers' whether it is contemporaneous or not. Seventy nine percent of the students answered that they use Medline for acquiring useful knowledge for clinical work less than once per week which is low compared to the total number of articles published every day.
Conclusions: Evidence-based clinical dentistry for students nowadays appears to be what is taught from their teachers at the university. Thus the teachers' role becomes crucial in order to provide knowledge that is updated and develop students' critical thinking towards new techniques, materials and scientific knowledge on a daily basis.

FC273
Research in Evidence-Based Dentistry for the General Practice
Francesco Chiappelli[1], Olivia Cajulis[2]
[1]*University of California at Los Angeles – Dentistry,* [2]*Dental Group of Sherman Oaks*

Purpose: This study compares assessing the quality of the evidence vs. appraising the quality of the revisions of clinical guidelines in evidence-based clinical decisions.
Methods: The reliability and the validity of the Risk of Bias tool proposed by AHRQ and commonly used in evidence-based dentistry are examined. The instrument rates the quality of the evidence along 6 domains in a dichotomous format. Inter-rater reliability (Pearson r) and coefficient of agreement (Cohen kappa) are obtained. Content validity is analyzed, and criterion validity is established against the AGREE II, a tool to appraise revised clinical practice guidelines along 27 items scored in Likert 1-7 format.
Results: Standardized readers ensure over 80% explained shared variance. Validity of the Risk of Bias instrument can only be established by examining each domain individually because of the complexity of its meta-construct. Content validity is improved by the addition of 6–10 items each domain. Reliability measures require modification of the scoring criteria to a semi-continuous scale. Criterion validity emphasize the value of the Risk of Bias instrument, and its need for further psychometric improvement.
Conclusion: The effectiveness of evidence-based dentistry as a new model for the general dentistry practice must be established. For this, the methodology for obtaining the best available evidence must be streamlined and verified. Our data are compelling in showing that the Risk of Bias tool must be further validated before it can yield evidence-based revisions of clinical practice guidelines that can be used in the practice of every-day general dentistry.

Free Communication Session 44 | B343 | 30.08.2013 | 15:30–16:30

Theme: General Dentistry and Oral Health

FC274
Patients preference according to doctors gender and age
Jeta Kelmendi[1], Nora Berisha[1], Merita Berisha[2], Resmije Ademi[1]
[1]*Department of Dentistry, University of Prishtina Faculty of Medicine,* [2]*National Institute of Public Health of Kosova, Department of Social Medicine, University of Prishtina, Medical Faculty*

Background: Female doctors appear to communicate differently with their patients than male doctors, it is unclear how communication style affects patient satisfaction. Some studies have shown that female doctors spend more time with their patients than male doctors, but other studies have contradicted these results. The aim of this study was to explore and describe patients preferences about the gender and the age of doctors before and after the treatment, also their satisfaction for their treatment.
Material and methods: One hundred and thirty-nine patients participated voluntary in this research, in University Dentistry Clinical Center of Kosovo. The patients were asked to complete a questionnaire prepared especially for this research, before entering the intervention rooms and after they had their intervention.
Results: From the total number of patients 56.8% were female. The reason they came for a check-up was pain in 54.7%. From the whole sample 67.7% had their intervention in the department of oral surgery wile the other percentage had their intervention in the department of dental pathology and endodontics. Before extraction in oral surgery the most preferred gender was male with 58.1%, the extraction was performed in 52.7% from female doctors and after the intervention 51.4% preferred female doctors.
Conclusion: From our result we can conclude that the most percentage of patients visit their doctors when they are in pain. Also the patients who had extractions changed their preference according to the gender. Also to work with patients to eliminate the stigma in believing that only in male doctors can perform extraction.

FC275
Reducing the Colonization of Bacteria in Dental Unit Waterlines and Wastewaters
Resmiye Ebru Tirali[1], Ömer Engin Bulut[2], Gülcin Akca[3]
[1]*Department of Paediatric Dentistry, Baskent University, Ankara, Turkey,* [2]*Department of Oral and Maxillofacial Surgery, Baskent University, Ankara, Turkey,* [3]*Department of Oral Microbiology, Gazi University, Ankara, Turkey*

Aims: The purpose of this study was to investigate the effect of an automatic adjusting of hydrogen peroxıde Colloıdal-Ag dose system to reduce colonization and growth of heterotrophic bacteria in dental unit waterlines and wastewaters.
Methods: Thirty dental units were included to the study; 20 units were selected for first (automatic administration) and second treatment group (manuel administration) and 10 units served as controls (Group 3). Water samples were collected every week during the 10 weeks. For Group 1 and 3 the samples were collected both from DUWLs and waste waters. For group 2 only DUWLs samples were collected. They were inoculated onto various specific agar media and incubated at 28–37°C for 2–7 days. After counting the colonies of microorganisms, they were identified and the mean numbers were determined as cfu/ml. Electron microscopic analysis was also perfomed for detection of biofilm formation.
Results: There was no significant difference between the treatment groups's DUWLs and had counts of less than 200 CFU/ml. A statistically significant differences in median total viable counts reduction was found between the treatment and control groups's DUWLs for all weeks ($p < 0.01$). But there was no significant difference between Group 1 and control group's waste waters.
Conclusions: The system of automatic adjusting dose of Hydrogen peroxide colloidal-Ag has been found to be effective as manuel aplication of the material for improving the dental unit waterlines1–4. However, none of these systems has not proved enough antibacterial effect for dental unit wastewaters.

FC276

Smoking among Dental Students in Tunisia

Fethi Maatouk, Hichem Ghedira, Ahlem Baaziz
Department of Pediatric Dentistry, School of Dentistry, Monastir University, Tunisia

The World Health Organization stated in 2008 that Tobacco is one of the most preventable causes of disability and death in the world. Facing this situation, the role of health professionals in preventing smoking is very important. However, many studies reported that the prevalence of smoking among them is the same as that of the general population.
Aim: The aim of the present study was to estimate the prevalence of smoking and to assess the behaviour, knowledge and attitudes among dental students in Tunisia concerning this issue.
Methods: A study was conducted at the School of Dentistry during November 2008 among 1123 students (777 girls and 346 boys) aged from 18 to 28 years.
Results: Nearly 14% of students were smokers (11.8% boys and 2.4% girls – $p < 10–9$) consuming an average of 16 cigarettes daily. The age of the first cigarette varied from 8 to 21 years (16 ± 2.3 years). Among the students smokers, 66.5% of the fathers and 3% of the mothers were also smokers.
Conclusion: In our study, the smokers' percentage was lower than that noted in Tunisian medical students. However, the prevalence of smoking was more frequent in male as shown by many authors. Dentists can be effective in helping their patients quit smoking. The study findings revealed a critical need and opportunity to include comprehensive cessation by counselling training in the dental school curriculum.

FC277

Interdisciplinary Approaches to Diagnosis of Functional Statement of Dental System

Evgeny Solovykh, Elena Ivanova, Natalia Fokina
Department of General Dentistry, Moscow State University of Medicine and Dentistry, Moscow, Russia

Aim: To find new method of diagnosis and describe main characteristics of the functional statement of the patients in dentistry.
Material and methods: Results of studies of the functional status of the dentition postural and autonomic nervous systems in 251 patients (129 men and 122 women) aged 20–60 years was carried out. All patients were precisely examined to accordance of the rules of clinical dentistry.European stabilometry variant was used for investigation postural system. Electromyography was used for examination functional statement masseter and temporal chewing muscles. Functional statement of the autonomic nervous systemswas estimated by electrocardiography, electrodermatography, breathing movements and fotopletismography.
Results: The patients could be distributed into two groups by the results of cluster analysis. By functional parameters, groups 1 and 2 could be defined as patients with decompensated and compensated functional status, respectively. The characteristics of the functional status of patients in the two groups are presented.Furthermore were find some correlation between the functional parameters of the dental postural and autonomic nervous systems in each group of the patients. It supported\benefited to find new diagnostic parameters of the functional statement of patientsand explain pathogenesis influence between systems.
Conclusion: The function statement of the dental, postural and autonomic nervous system are closely interrelated and can be used as one of the most important diagnosis parameters.

FC278

Switching to CBCT: Is it Beneficial to the Dental Practitioner?

Mushira Mohamed Dahaba, Sahar Hosni, Nagla'a Abdelwahed Abdelwahed, Reham Mohamed Hamdy, Ahmad Mohamed Abdalsamad, Yara Rabia Helaly
Department of Oral & Maxillofacial Radiology, Cairo University, Cairo, Egypt

Introduction: An overview of cone beam computed tomography (CBCT) and its role in orofacial imaging is provided, including comparison with conventional and volumetric computed tomography (CT). The results of several studies conducted at the Oral and Maxillofacial Radiology Department, where the researches were conducted, are summarized.

Using CBCT for the pre- and postoperative implant site assessment necessitates following certain protocols in order to obtain standardization and hence accurate linear and densitometric measurements of jaw bones. Such protocols were established.

The accuracy of CBCT in detecting the actual extension and location of lesions affecting the maxillofacial region as well as the perforation of cortical boundaries was evaluated.

CBCT's ability in revealing the bony components of the Temporomandibular joint was also examined.

Conclusion: It was concluded that it's essential for all dental and orofacial clinicians to be familiar with CBCT imaging. However, the responsibilities and the radiological skill levels of clinicians involved in imaging require consideration.

Free Communication Session 45 | B343 | 30.08.2013 | 15:30–16:30

Theme: Implantology: Implantology

FC279

My Guiding Principles For Long Term Implant Success

Mahmood Hussain Qureshi
Pakistan Academy of Implant Dentistry

Aim: Implantology has been filled with many diverse ideas, whims, or commercially endorsed commodities and thoughts. Over the past 60 years of implantology, more than 80% of topics, which one time were the most highly promoted, proved to be the clinical failures and are so discarded.

Material and methods: This presentation is designed to help create an awareness of the realities of implant treatment and to teach practitioners the simplest ways to adequately treat the most commonly encountered problems related to Implantology. Based on the presenter's 20 years of clinical implantology practice and teaching experience, 20 guidelines will be presented to avoid most of the causes leading to implant complications and failures.

Conclusions: In pursuance of perfection and a comprehensive solution these fundamental steps will provide a successful long term and a predictable solution for implant placement thus gratifying our ambition of the restoration and preservation of patient's oral soft and hard tissues to acceptable levels.

FC280

Photoelastic Stress Analysis of 3 Implant Retained Mandibular Overdentures

Bülent Uludağ[1], Emre Tokar[2]
[1]*Department of Prosthodontics, Ankara University, Ankara, Turkey,* [2]*Department of Prosthodontics, Gazi University, Ankara, Turkey*

Aim: Aim of the study was to evaluate stress distribution of three implant retained mandibular overdentures with various attachment systems.

Materials and methods: A photoelastic model of an edentulous mandible with three implants was fabricated with a photoelastic resin. The implants were placed interforaminal region. Distal implants were set 200 inclinations corresponding to center implant. The interimplant distance among three implants was 11 mm. Three attachment systems were studied on the model: 1) Bar, 2) Bar - Ball, 3) Bar - Rk-1. 100N vertical load was applied to central fossa of right first molar of the overdentures. The stress distribution of the model was recorded photographically with circular polariscope for each design.

Results: The moderate stress level was observed for each design. Lowest stress was transferred to implants with bar attachment among all attachment system.

Conclusions: A bar with distally placed Rk-1 attachment design was transmitted less stress to implants compared to bar with distally placed attachment design. The study was shown that bar with distally placed Rk-1 attachment design is an alternative choice to bar with distally placed ball attachment design.

FC281

Predictable Prognosis of Immediate Implant Placement for Retained Deciduous

Siti Mariam Ab Ghani[1], Graeme Lillywhite[2]
[1]*Universiti Teknologi MARA UiTM, Malaysia,* [2]*Edinburgh Dental Institute, United Kingdom*

Aim: This case report describes the appropriate planning prior immediate implant placement and restoration replacing retained deciduous (upper E's).

Methods: Assessment of the occlusion, space distribution, surrounding soft tissue and patient's expectation of resultant aesthetic were done prior treatment. Pre-treatment casts were made and mounted on the articulator for diagnostic wax-up and fabrication of surgical template.

The surgical template was used during the surgery to clearly locate the position of implants (occlusally and gingivally). Prosthetic stage was done using the Direct Abutment API (all parts included) till the stage of temporization. Assessment of the aesthetic and occlusion of the cemented provisional was done by keeping the provisional out of contact in all excursions. Patient reported no discomfort during the 1-week review. Further appointments were given to mould the peri-implant soft tissue before the final restoration stage. Material selection for the final restorations was cement-retained porcelain fused to precious metal.

Results: There are sufficient data available to support the concept that immediately restored and loaded implants for single tooth situations can achieve integration using many implant systems and protocols. Many authors have concluded that aesthetic results in immediately loaded sites are superior to that achieved with a staged approach due to the gingival architecture preservation in every stage.

Conclusions: Clinicians will have a higher chance of success with appropriate treatment planning, incorporating all the clinical data and understanding the limitations imposed. Selection and risk/benefit analysis for each patient prior treatment will also lead to a more predictable and desirable outcomes.

FC282

Resorbable versus nonresorbable barrier with immediate implantation after functional loading

Sahar Elkholy[1], Husien Elsharkawy[2]
[1]*Department of removable prosthodontics, Pharos University, Alexandria, Egypt,* [2]*Prosthodontics department, Cairo Uinversity, Cairo, Egypt*

Aim of the study: Was to evaluate of the bone height and bone density of peri implant area with resorbable and nonresorbable barriers as guided tissue regeneration with immediate implants after functional loading under mandibular overdenture.
Materials and methods: Eight male patients (the age ranged between 45 and 60 years old) had the upper jaw was fully edentulous and the lower jaw had only two remaining canines and indicated for extractions were selected. Each patient was received two immediate implants after extraction of remaining canines and was divided into two groups. Group I: the left side was received nonresorbable barrier and Group II: the right side was received resorbable barrier. Radiographic evaluation was done for marginal bone height loss and bone density immediately after overdenture insertion and 6 months later.
Results: Mean marginal bone loss with unresorbable barriers was 0.7 ± 0.16 mm and 0.6 ± 0.1 mm with resorbable barrier with non-significant difference between two groups. There was significant increase in bone density with resorbable barrier after 6 months of functional loading with significant difference between two groups.
Conclusion: There was no difference in marginal bone height changes between resorbable and nonresorbable barriers with immediate implant under overdenture after 6 months of functional loading but bone density increased with the use of resorbable barrier over non resorbable barriers. Using of resorbable barrier with immediate implantation did not need second stage surgery for removing the barrier as with non- resorbable one.

FC283
Clinical evaluation of submerged and nonsubmerged implants for single-tooth replacements
Secil Karakoca Nemli, Merve Bankoğlu Güngör, Cemal Aydın, Handan Yılmaz, İrem Türkcan, Hişam Demirköprülü
Department of Prosthodontics, Gazi University, Ankara, Turkey

Purpose: The aim of this study was to evaluate clinical and radiographical results of submerged and nonsubmerged implants for single-tooth replacements and to assess patient-based outcomes.
Material-methods: Twenty patients included in the study, using a split-mouth design, implants inserted using submerged technique compared with nonsubmerged technique. Implants were restored with metal-ceramic crowns after 3 months. At baseline, 6, 12 and 24 months, reconstructions were examined. Standardized radiographs were made, radiographic crestal bone level changes were calculated as well as soft tissue parameters included pocket probing depth (PPD), bleeding on probing (BoP), plaque index (PI), and gingival index (GI). Results were statistically analyzed by two-way repeated measures of variance (ANOVA). To evaluate patient-based outcomes, patients were asked to complete a questionnaire at 6-month follow-up. Wilcoxon paired signed rank test was used to compare scores.
Results: Data of 18 patients were reviewed. Two-way ANOVA showed significant influence of technique ($p < 0.01$). During 24 months, nonsubmerged implants (0.57 ± 0.21 mm) showed significantly lower bone loss than submerged implants (0.68 ± 0.22 mm). Between examinations, there was an average of 0.2 mm bone loss ($p < 0.05$). During study, PI and BOP were not significantly different for groups; PPD of nonsubmerged implants were significantly lower than submerged. GI of the nonsubmerged implants were significantly lower than submerged at 24 months. Patient satisfaction with nonsubmerged implants (median 87.5) was generally significantly higher than submerged implants (median 81.5) ($p < 0.01$).
Conclusions: Nonsubmerged implants showed comparable clinical results with submerged implants, furthermore resulted in higher patient satisfaction due to decreased surgical intervention.

Free Communication Session 46 | B360 | 30.08.2013 | 15:30–16:30

Theme: Dental Treatment & Restorative Dentistry: Prosthetics

FC284
Gradual vs. Immediate Restoration of Occlusal Vertical Dimension
Mai Salah Eldin[1], Mohamed Sherine Elattar[2], Aly Mahmoud Aly[2], Enas Mohamed Shahine[3], Sahar Elkholy[1]
[1]Department of removable prosthodontics, Pharos University, Alexandria, Egypt, [2]Department of Removable Prosthodontics, Faculty of Dentistry, Alexandria university, Alexandria, Egypt, [3]Department of Physical medicine, Rheumatology and Rehabilitation, Faculty of Medicine, Alexandria University, Alexandria, Egypt

Aim of Study: To evaluate clinical and electromyographic influence of gradual versus immediate increase in vertical dimension in patients with temporomandibular joint disorders.
Materials and methods: Twenty patients (with age ranged between 55–65 years) had complete denture with reduced occlusal vertical dimension and signs and symptoms related to the diagnosis of temporomandibular joint disorders. They divided into two groups, each group included ten patients. Group I: Where the occlusal vertical dimension was restored gradually 2 mm for 3 weeks, then was restored to a range of another 3 mm according to the inter-occlusal distance of each patient.

Group II: Where the occlusal vertical dimension was restored immediately to a range of 5 mm according to the inter-occlusal distance of each patient. Both clinical (using The Anamnestic Dysfunction Index Ai)and electromyographic (masseter and temporalis muscles) evaluations were carried out for every patient after 3 weeks, 2 months and 6 months and then clinical evaluation was carried out every month for other 6 months for every patient under study.
Results: Showed that, there was insignificant difference between clinical and electromyographic evaluations of the two groups for improving the clinical symptoms of TMDs, but there was significant increase in activity of the muscles at the follow up after 2 and 6 months with insignificant difference between two groups.
Conclusion: Gradual and immediate restoration of the occlusal vertical dimension could improve the clinical symptoms of TMDs at the same manner. however the immediate restoration was less time consuming and patients were less subjected to clinical procedures.

FC285

Improve Surface Topography of Silicone Elastomer for Maxillofacial Prostheses

Salah Khalaf Al Rawi[1,2], Zaihan Ariffin[2], Adam Husein[2], Fazal Reza[2]

[1]*Improve Surface Topography of Silicone Elastomer for Maxillofacial Prostheses,* [2]*Prosthodontic Department, Faculty of Dentistry, Universiti Sains Malaysia*

Introduction: Maxillofacial losses caused by trauma or postresection surgery are commonly replaced by silicone elastomers. The gypsum mold surface cannot be rendered smooth and this is reflected on the prosthesis surface. This high surface roughness enhances the bacterial adhesion and growth.

Objective: The objective of this study was to coating of gypsum mold in order to improve surface roughness of silicone elastomeric material.

Methods: Laboratory gypsum mold flask surface was coated by clear aerosol acrylic spray by following the manufacturer instructions. The coated molds were used to produce experimental samples of maxillo-facial silicone elastomers. The surface roughness of the newly formed silicon elastomers were compared to other samples prepared by the conventional methods by using the atomic force microscope (AFM). Scanning Electron Microscope (SEM) was used to evaluate topographical of both silicone elastomers and die stone gypsum samples. The differences in roughness between coated and non-coated mold surface were analyzed using t-test ($p < 0.05$).

Results: T-test showed that there is significant difference in the surface roughness between the silicon elastomers prepared by the conventional die stone molds and in the processed molds, ($p < 0.0001$). The AFM and SEM showed clear difference in the surface smoothness.

Conclusions: Lower surface roughness and highly smooth surface of silicone elastomers can be obtained simply by coating the die stone gypsum mold with acrylic spray.

FC286

Panoramic Radiograpic Findings of Implant-supported Mandibular Overdentures

Aydan Avşar[1], Rana Nalçacı[1], Zeynep Yeğin[2], Sadullah Üçtaşlı[2]

[1]*Department of Oral and Maxillofacial Radiology, Ankara University Faculty of Dentistry, Ankara, Turkey,* [2]*Department of Prosthetic Dentistry, Ankara University Faculty of Dentistry, Ankara, Turkey*

Objective: The aim of this study was to evaluate edentulous patients with panoramic radiog-raphy who would receive maxillary complete denture opposed to two-implant-supported mandibular overdenture.

Subjects and methods: In this study, 197(101 male – 96 female) patients, ages ranged from 60 to 75 years, have attended the University of Ankara, Faculty of Dentistry for routine dental treatment.

A dental panoramic radiograph was taken from each patient using the same X-ray machine (Planmeca pan/ceph, Finland). Measurements on panoramic images carried out with Planmeca Romexis 3.0.0.R software. Marginal bone levels were radiographically deter-mined at four points between the mental foraminas. Additionally, the number of intrabony root remains and impacted teeth on panoramic radiographs were recorded.

The data was analyzed using SPSS for Windows Version 12.0.Analysis included fre-quency, cross tabulations, calculation of means Spearman's rho. Significance was set at the 5% level.

Results: The number of impacted teeth observed in females and males were 5 and 7, respectively. The number of intrabony root remains was 18 for females and 11 for males. There were no significant differences in gender for the number of impacted teeth and the number of intra-bony root remains.

The mean marginal bone levels measured between the two mental foramens was 18.51 ± 4.82 mm (min:4.83, max: 29.25) for males and 15.71+-4.46 (min 4.43, max 26.70)for females. There was a significant statistical difference for female gender.

Conclusions: Out of 197 patients 14 patients (7.1%) bone level between interforaminal areas were not suitable for two dental implant placement.

FC287

Microhardness and Surface Roughness of Denture Teeth Stored in Various Beverages

Şule Tuğba Özak, Pelin Özkan

Department of Prosthodontics, Ankara University, Ankara, Turkey

Aim: The purpose of this study was to evaluate the microhardness and surface roughness of four commercially available denture teeth using modified acrylic and composite resin materials against various beverages.

Method: Conventional acrylic resin, reinforced acrylic resin, microfiller composite resin, and nanofiller composite resin teeth were used. From each group of denture teeth, 10 maxillary first molars were immersed in 5 beverages (tea, filtered coffee, cola, cherry juice, and distilled water. The test period of 24 h appears comparable to approximately 1 month of normal beverage consumption. The test periods used in this study were arranged according to this protocol and 1 week, 1 month, 3 months and 6 months of normal beverage consumptions were simulated. Vickers microhardness and surface roughness of denture teeth were measured for each test period. The differences of each value were calculated by one-way ANOVA statistically.

Results: The microhardness values significantly decreased in all beverages especially in 6th month (Tukey HSD test, $p < 0.01$). The surface roughness values significantly increased in all beverages especially in 3th month (Tukey HSD test, $p < 0.01$). There were no statistically significant differences between the beverages (Friedman test, $p > 0.01$). Microfiller composite resin denture teeth had the highest microhardness values and the lowest surface roughness values (Tukey HSD test, $p < 0.01$).

Conclusions: Within the limitations of this study, daily intake of common beverages may change the surface characteristics and microhardness of denture teeth. To improve these mechanical and physical properties new artificial teeth have been developed by controlling the filler particles and polymer matrix.

FC288

Shear Bond Strength of Metal Brackets to Different Ceramics

Pinar Cevik[1], Nejla Karacam[2], Oguz Eraslan[1], Zafer Sari[3]
[1]*Department of Prosthodontics, Selcuk University, Konya, Turkey,* [2]*Department of Orthodontics, Selcuk University, Konya, Turkey,* [3]*Department of Orthodontics, Akdeniz University, Antalya, Turkey*

Aim: The aims of this study were to investigate the effects of various surface-conditioning methods on the surface roughness of ceramics and on the shear bond strength (SBS) of metal brackets bonded to different all-ceramic materials.

Materials and methods: Sixty glazed feldspathic and 60 glazed IPS e-max discs were used in this in vitro study. These two groups divided into six subgroups for surface preparation (n = 10). The specimens were examined following surface-conditioning methods based on the surface treatments: Only silane, 37.5% orthophosphoric acid with silane, diamond burr with silane, 50 μm Al2O3 air abrasion with silane, 9.6% hydrofloric acid with silane and Nd-YAG laser irradiation with silane.

Surface topographies of one specimen of each group was observed by atomic force microscopy. Surface roughness (Ra) values were measured using a profilometer. Metal brackets were bonded to the ceramic surfaces with a light cure composite. The samples were stored in distilled water for 24 h and thermocycled. The SBS of the brackets was measured with an Instron universal testing machine.

Result: For surface roughness, even as, there were no statistically differences between ceramic groups (p = 0.068), there were statistically differences between preparation groups (p = 0.000). Group sandblasting had rougher surfaces compared with those in the other groups. For SBS values, there were no statistically differences between ceramic groups (p = 0.376), there were statistically differences between preparation groups (p = 0.000). Group sandblasting had higher values than those in the other groups.

POSTER DISCUSSION SESSIONS

Poster Discussion Session 01 | B332 | 30.08.2013 | 14:00–15:00

Theme: Dental Treatment & Restorative Dentistry: Pedodontics

PD001

Systemic and Local Ornidazole in the Treatment of Chronic Periodontitis

Soulafa Mohamed Belal[1], Safenaz Saleh Saied[2], Magda Kamal Khalil[3]
[1]*Ministry of Egyptian health-El-gharbia-Egypt,* [2]*Oral medicine, Periodontology, Oral diagnosis & Radiology Department- Faculty of Dentistry-Tanta University-Egypt,* [3]*Pharmaceutical Technology Department-Faculty of Pharmacy-Tanta University-Egypt*

Aim: To assess the clinical and microbiological effects of systemic ornidazole versus local in-situ gel ornidazole as an adjunctive to scaling and root planing (SRP) in the treatment of moderate to severe chronic periodontitis.

Materials & methods: Twenty-one patients (30–45 years old) consisting of 16 females and five males selected from the Periodontology Clinic of the Faculty, were randomized into three groups, seven patients in each group. Control group I patients received SRP only, test group II patients received SRP plus 500 mg of ornidazole twice daily (for 7 days), and test group III patients received SRP plus subgingivally delivered ornidazole carried upon chitosan gel after SRP. Clinical [plaque (PI) and bleeding (BOP) indexes, probing pocket depth (PPD), clinical attachment level (CAL)] and microbiological data [one-site pooled sample, processed by benzoyl-DL-arginine-naphthylamide (BANA) test] were collected at baseline, and 1, 3 and 6 months, post-therapy. Clinical variables were compared by ANOVA and microbiological variables by chi-square tests.

Results: All treatments modalities effectively reduced the signs of periodontitis. All clinical parameters and the subgingival microbiota showed significant reduction after SRP in all groups, with no significant difference between group II & group III at 1& 3 months, which become significant at 6 months in favor to group III.

Conclusions: Within the limitations of this study, the adjunctive use of systemic and local ornidazole in the treatment of chronic periodontitis demonstrated significant clinical and microbiological benefits when compared to SRP alone, and the ornidazole gel had a superior effect over its systemic form.

Theme: Dental Treatment & Restorative Dentistry: Endodontics

PD002

Determination of different EDTA Solutions on Root Dentin Tubule Penetration

Zeliha Yılmaz[1], Nuhan Puralı[2], Sevinç Aktemur Türker[3], Eda Ezgi Aslantaş[1], Hatice Doğan Buzoğlu[1]
[1]*Department of Endodontics, Faculty of Dentistry, Hacettepe University, Ankara, Turkey,* [2]*Department of Biophsics, Faculty of Medecine, Hacettepe University, Ankara, Turkey,* [3]*Department of Endodontics, Faculty of Dentistry, Bulent Ecevit University, Zonguldak, Turkey*

Objective: The aim of this study was to determine the effects of different EDTA solutions (EDTA, EDTA-T, REDTA) in root dentin tubule penetration.

Methods: The crowns of the 20 extracted human premolar teeth were removed and the root canals were prepared by using K files with step-back technique to the master apical file up to #50. The canals were irrigated with 2 ml 2.5% sodium hypochlorite (NaOCl) between each file size. After completion of the instrumentation, 5 ml 2.5% NaOCl was applied. All teeth were irrigated by using three different EDTA solutions as a final flush then the root canals were dried with #30 paper points. After final irrigation, each canal was irrigated with 1 ml, 0.1% RhodaminB solution. The teeth population were assigned into three groups (n = 6/group) with respect to the final irrigation technique employed: Group1: EDTA (5 ml, 17%), Group 2: EDTA-T (5 ml, 17%), Grup:3 REDTA (5 ml 17%). Two teeth were assigned as negative control which was irrigated only NaOCl (5 ml, 2.5%) as final irrigation. All teeth were embedded in acrylic resin block. 1 mm thick three

horizontal sections were taken from coronal to apical and then penetration depth was analyzed using a Confocal Laser Scanning Microscope. Differences among the experimental groups were analyzed using One-way ANOVA test ($p < 0.05$).
Results: There were no significantly differences between EDTA and surfactant added EDTA solutions on dentin tubule penetration ($p > 0.05$).
Conclusion: To add surfactant to EDTA was not enhanced the penetration depth of irrigation solution.

Theme: Dental Treatment & Restorative Dentistry: Materials

PD003
Microleakage Study of a Restorative Resin Through Radioisotopic Methods
Eunice Palmeirão Carrilho[1], Margarida Abrantes[1], Maria Filomena Botelho[1], João Casalta Lopes[1], Anabela Pereira Paula[1], Tânia Afonso[1], Carlos Miguel Marto[1], Diana Pires Rebelo[1], Joana Rita Marques[1], Mário Polido[2], Pedro Ambrósio[1], Manuel Marques Ferreira[1]
[1]Faculty of Medicine, University of Coimbra, Coimbra, Portugal, [2]Instituto Superior de Ciências da Saúde Egas Moniz, Caparica, Portugal

Aim: The purpose of this study was to evaluate the microleakage of the dental restorations using SonicFillTM (Kerr). The null hypothesis was that the type restorative system didn't have influence in what concerns to microleakage.
Method and materials: Sixty noncarious extracted human molars were selected for this study. The teeth were cut in two equal halves occlusogingivally. Class 5 cavities were prepared on the buccal or lingual surfaces of each tooth with gingival margin walls in enamel with cavity dimensions approximately 4 mm mesiodistally, 3 mm occlusogingivally and 3 mm depth. The specimens were divided randomly in four groups. Group 1 and 4 was restored with SonicFillTM (Kerr), while group 2 was restored with FiltekTM Supreme (3M ESPE). The control cavities in group 3 weren't restored. The specimens were stored in distilled water at 37°C for 7 days and after thermocycling 500 cycles between 5°C and 55°C with a dwell time of 30 s. Two coats of nail polish were applied to the external surface around of each cavity except the negative control group, where the crowns were completely sealed with nail polish. The specimens were submersed in a solution of 99mTc-Pertechnetate during 3 h. The radioactivity was counted using a well-type gamma counter and a gamma camera.
Results: Results showed that there were no statistically significant differences ($p > 0.05$) among the materials with respect to microleakage scores.
Conclusion: Based on the results of this study, the use of SonicFillTM (Kerr) doesn't reduce microleakage compared with conventional composites.

Theme: Dental Treatment & Restorative Dentistry: Materials

PD004
Degree of Conversion and Micro-hardness of Nano-hybrid Posterior Composites
Maha Ebrahim Elkorashy[1], Heba Abd Elhamid Shalaby[2], Monazah Gamal Khafagi[3]
[1]Department of Operative Dentistry, Nahda University, Banisuef, Egypt, [2]Department of Dental Biomaterials, Nahda University, Banisuef, Egypt, [3]Departments of Spectroscopy, Physics Division, National Research Center, Cairo, Egypt

Aim: An experiment aimed to study the influence of degree of conversion on micro-hardness values, at different curing distances, of two posterior nano-hybrid composites,
Materials and methods: Thirty discs of GC-G-aenial and GC-Kalore nano-hybrid posterior composites ($n = 5$ for each group) were prepared. Specimens (6 mm in diameter and 2 mm in height) were prepared in a copper mold, covered with mylar strip and polymerized for 40 s, at 3 curing distances: 0, 2 and 4 mm, utilizing halogen (500 mW/cm^2). The degree of conversion of each specimen was calculated by Furier transform infra-red spectroscopy and values of micro-hardness were measured. The resulted data were statistically analyzed by two way-ANOVA and Pearson's test.
Results: The results indicated that 1) Composite types showed insignificant difference of micro-hardness values with different curing distances; 2) at 2 mm curing distance, GC-Kalore showed significant decrease in micro-hardness values compared to GC-G-aenial (2.55 ± 0.15 and 3.05 ± 0.01 respectively); 3) GC-Kalore showed significant decrease in degree of conversion at 0 distance compared to GC-G-aenial (97.59 ± 0.10 and 98.03 ± 98.03 respectively).
Conclusion: Curing distances were passively affected degree of conversion of Nano-hybrid posterior composites consequently micro-hardness.

Theme: General Dentistry and Oral Health

PD005
Oral Health Indicators in Changing Dental Care System
Matveev Andrei[1], Leous Peter[2]
[1]Republican Dental Polyclinic, Ministry of Health, Minsk, Belarus, [2]Department of Community Dentistry, Belorussian State Medical University, Minsk, Belarus

Republic of Belarus has a population of 9.46 million (2012). Oral health services are provided in 1717 state dental establishments by 4595 dentists (stomatologists), of which 23% full or part-time private, and by 1540 dental therapists. Number of private dental clinics has increased from 26 in 1996 to 893 in 2012. In 2012 there were 14.057 million dental visits of which 6% – to private clinics. Aim of this study was to assess possible changes one of important oral health indicator – "Reasons for seeing a dentist" – in connection with changing dental care system from public to partly private.
Methods: The 1996 and 2012 annual reports on oral health care delivery in Belarus were analyzed, assessing reasons for dental

visits: check-up, or cleaning (CL), routine treatment (RT), emergency treatment (ET); average number of extracted permanent teeth per one inhabitant of the country were estimated.
Results: In 1996 years less than 1% of total dental visits were for "CL", 40% – for "RT", and 59% – for "ET"; av. 0.204 teeth/inhabitant were extracted. In 2012 years "CL" visits were 4.7%; "RT" – 63.1%; "ET" – 32.2%; av. 0.168 teeth/inhabitant were extracted.
Conclusion: It is proposed, that the oral health indicator "Reasons for seeing a dentist" in the country is improving in recent years and this trend coincided with the raising of private sector in the predominantly public oral health care system.

Theme: General Dentistry and Oral Health

PD006
Moral Dilemmas of Greek Dentists in Care Provision
Freideriki Paraskevi Vlachou[1], Evgenia Kontopoulou[1], Vassiliki Topitsoglou[1], Georgios Menexes[2], Sotirios Kalfas[1]
[1]School of Dentistry, Aristotle University of Thessaloniki, Thessaloniki, Greece, [2]School of Agriculture, Aristotle University of Thessaloniki, Thessaloniki, Greece

Aim-purpose: To explore the knowledge, views, and possible decisions of Greek dentists in relation to ethical dilemmas encountered upon treatment of specific patient cases, such as child abuse, treatment of HIV-infected patients and handling of patient recourse to justice.
Methods: A self-administered questionnaire has been distributed to 230 dentists working in the capital and second biggest city of the country during May-September 2011. For adequate response, personal contact with the dentists was sought and the questionnaires were given to them during a visit by one of the authors. One week later, the completed questionnaires were collected in a closed envelope upon a new visit.
Results: The majority (51.6%) of the 200 dentists responded would avoid contacting the authorities for abused child and they would try to solve the problem through discussion. About 10% of the dentists would act against the patient's interests to support a colleague, while 35% of them would avoid treating an HIV-infected patient, this avoidance being due to insufficient application of hygiene measures, as claimed by 10% of them. Almost 90% of the responders believe that <10% of mistreated patients would sued their dentists and that this reaction is best avoided if a friendly, not strictly professional, relation exists between the patient and the dentist.
Conclusion: A considerable number of Greek dentists express confusing aspects in ethical issues and appear to lack knowledge or will to handle certain uncomfortable situations.

Theme: Preventive Dentistry: Orthodontics

PD007
Serial Extraction in Early Treatment
Michele Tepedino[1], Vincenzo Quinzi[1], Iancu Maciej Potrubacz[1], Aida Meto[2], Claudio Chimenti[1]
[1]Department of Biotechnological and Applied Clinical Sciences, University of L'Aquila, Italy, [2]Department of Dentistry, Medical University of Aldent, Tirana, Albania

Aim: Serial extraction is an interceptive orthodontic procedure usually initiated in the early mixed dentition; it is designed to anticipate and minimize the development of a fully matured malocclusion in the permanent dentition, and it is accomplished by the extraction of certain deciduous and permanent teeth in an orderly sequence and predetermined pattern to guide the erupting permanent teeth into a more favourable position. It is successful if it minimizes orthodontic appliances needs. There are three possible extraction patterns, however serial extraction should be more of a series of observation and guidance with changing approaches as the patient's orofacial complex develops. The main advantages for the patient are related to the self-esteem of children who see their teeth aligned at an early age, to the possibility to better influence growth, to an early correction of the malocclusion with a better patient's compliance and a reduced treatment time, and to having better results with the periodontal condition of teeth erupting spontaneously in the center of the alveolar ridge.
Conclusions: Selection is very important for the success of serial extraction, although no exact method exists. There are many factors to be considered that help in taking a decision. Timing of the various steps is very important.

Two clinical cases are reported as an example.

Theme: Implantology: Oral Medicine

PD008
bFGF Upregulates the Expression of NGFR in PC12 Cells
Michiharu Shimosaka[1], Yoshitsugu Ishikawa[1], Ujjal K. Bhawal[2], Yoshimitsu Abiko[2], Koh Shibutani[1]
[1]Department of Anesthesiology, Nihon University School of Dentistry at Matsudo, Japan, [2]Department of Biochemistry and Molecular Biology, Nihon University School of Dentistry at Matsudo, Japan

Aim: The reciprocal and highly regulated processes of cellular proliferation, cellular differentiation, and progression to a postmitotic state during embryogenesis generate the cellular diversity in the developing nervous system. Growth factors, in part, can regulate these proliferative or differentiation processes by analogous mechanisms. Basic fibroblast growth factor (bFGF), a member of FGF family, has broad biological functions involving the regulation of cell growth, differentiation, and proliferation. As extension and remodeling of neurites play essential roles in development and neuronal plasticity, we investigated a role for nerve growth factor receptor (NGFR) on bFGF-induced neurite outgrowth in PC12 cells. Our goal in the present study was to determine if there is a causal link between bFGF and NGFR.
Results: Results of these studies indicate that bFGF is required for NGFR-induced changes in morphology and transcriptional induction of the gene. We have provided convincing evidence that inhibitor of bFGF, PD173074, completely inhibited NGFR protein expression, whereas it partially blocked the NGFR protein expression in response to bFGF in PC12 cells. Another important finding of our study provides the data on the involvement of bFGF in MAPK-dependent signaling pathways and neurite outgrowth in PC12 cells, which suggests a central role of MAPK in the neuronal induction by bFGF. Taken together, these results raise the possibil-

ity that bFGF activates a MAPK-mediated pathway related to NGFR expression.

Poster Discussion Session 02 | B332 | 30.08.2013 | 15:30–16:30

Theme: Dental Treatment & Restorative Dentistry: Pedodontics

PD009

Oral Health Status of Children by Place of Residence

Riina Runnel[1], Eino Honkala[2], Sisko Honkala[2], Jana Olak[1], Rita Nommela[1], Mare Saag[1]
[1]*Faculty of Medicine, University of Tartu, Estonia,* [2]*Faculty of Dentistry, Kuwait University, Kuwait*

Aim: Of the study was to chart the situation of oral health in Estonia during mixed dentition.
Methods: The study was carried out in southeastern Estonia among elementary school children (average age was 8.3 year) by place of residence. The schools included in the examination were randomly chosen according to the location of the school and the number of pupils (n = 485, 10% of all pupils in this area at this age). All teeth were observed and registered by ICDAS code and converted to DMFT index. The social background and the level of fluorides in drinking water vary in the area of the study. Both of them were considered in data analyze.
Results: The mean DMFT index was 0.97 and DMFS 1.62 in permanent dentition; the same numbers in mixed dentition were accordingly 5.93 and 11.86. Children residing in rural areas (presumably in families with lower income) and studying in smaller schools had a higher number of caries lesions and a lower number of fillings in the permanent dentition. There was no statistically significant difference between the groups in the mixed dentition. Analyzing the data by the level of fluorides in drinking water, the only difference was detected in the occurrence of caries lesions.
Conclusions: The difference in caries indices in mixed dentition by place of residence in Estonia was smaller than expected. Variation calculated by the fluoride level of drinking water reflected statistically only in the number of caries lesions. Reasons of the non-expected difference required further researches.

Theme: Dental Treatment & Restorative Dentistry: Prosthetics

PD010

Prosthetic Rehabilitation of a Maxillo-Mandibular Gunshot Defect: Clinical Report

Demet Çağıl Ayvalıoğlu[1], Bilge Gökçen Röhlig[1], Belir Atalay[2]
[1]*Department of Prosthodontics, Istanbul University, Turkey,* [2]*Department of Oral Surgery, Istanbul University, Turkey*

Aim: The use of dental implant is a predictable treatment option for both partially and complete edentulism, as well as maxillofacial defects. Defects either congenital or acquired by trauma or tumor resection can result in significant aesthetic deformities and functional disorders which may result in psychological sequelae. The incapacitating nature of the defect makes reconstruction of maxilla and mandible challenging. Extensive soft and hard tissue loss usually requires an implant-supported or retained prosthesis to obtain adequate facial support and restoration of oral functions. The purpose of this case report is to present prosthetic rehabilitation of a patient with mandibular and maxillary gunshot defect.
Case: The patient was rehabilitated using implant supported fixed partial dentures, tooth supported fixed partial dentures and removable partial dentures. Despite limited mouth opening and anatomical deficiencies, the patient's aesthetic and functional demands were fulfilled.

Theme: Preventive Dentistry: Caries

PD011

Caries Assessment in Young Children Using WHO and ICDAS-II Criteria

Anastasia Sergeevna Rodionova, Natalia Kuyumdzhidi, Victoria Naumova, Svetlana Derevyanchenko, Elena Efimovna Maslak
Volgograd State Medical University, Volvograd, Russia

Aim: To compare the results of caries assessment by ICDAS-II and WHO criteria in young children.
Methods: The study was approved by Volgograd Regional Ethic Committee. Cross-sectional investigation was conducted in Volgograd Pediatric Clinic No 15 in 2010, 596 well-child visitors were enrolled: 288 aged 4–11 months (G1), 220 aged 12–23 months (G2), 88 aged 24–35 months (G3), mean age 9.4 months, 15.5 months and 27.6 months respectively. Informed mothers' consents were obtained. The caries status was assessed by WHO and ICDAS-II criteria. Statistical analysis was performed by STATISTICA-6, caries prevalence, indexes mean score and 95% confidence interval (CI) were calculated.
Results: According to WHO-criteria caries free were 100% children in G1, 96.4% in G2, and 75.0% in G3, dmfs index was 0.21 (CI 0.02–0.44) and 1.59 (CI 0.99–2.19) in G2 and G3 respectively. According to ICDAS-II criteria caries free were 97.2% children in G1, 94.1% in G2 and 70.5% in G3, ICDAS-II score 1–2 was revealed in 2.8% (CI 1.83–3.77) children in G1, 4.6% (CI 3.19–6.01) in G2, 22.8% (CI 18.33–27.27) in G3, score 3–6 was only revealed in 1.3% (CI 0.54–2.06) children in G2 and 6.7% (CI 4.04–9.37) in G3. Number of children needed treatment was 2.9% to 4.5% higher according to ICDAS-II criteria compared with WHO criteria.
Conclusions: The caries status assessment by ICDAS-II criteria revealed more carious lesions in young children than assessment by WHO criteria; the assessment caries on noncavitated level by ICDAS-II may assist practitioners to promote comprehensive treatment plan for young children.

Theme: Preventive Dentistry: Caries

PD012

Effect of Prophylactic Applications on Enamel Demineralization During Orthodontic Treatment

Hande Şar Sancaklı[1], Ugur Erdemir[1], Evren Öztaş[2], Sevda Özel[3], Müyesser Saraç[2], Taner Yücel[1], Esra Yıldız[1]
[1]*Department of Operative Dentistry, Istanbul University Faculty of Dentistry, Istanbul, Turkey,* [2]*Department of Orthodontics, Istanbul University Faculty of Dentistry, Istanbul, Turkey,* [3]*Department of Biostatistics and Medical Informatics, Istanbul University Faculty of Medicine, Istanbul, Turkey*

Aim: To investigate the caries inhibitory effect of fluoride containing varnish(F), flouride/ tricalciumphosphate containing varnish (FTCP), chlorhexidine containing varnish (CHX) on enamel surfaces subjected to fixed orthodontic appliances when assessed by laser fluorescence (LF).
Material-method: 408 teeth in 17 patients (aged 14–22) wearing fixed orthodontic appliances are included in the study. Split-mouth design was used for each patient (1 quadrant/each application); Group1:Fluoride varnish(FluorProtector); Group2;F/TCP varnish (Clinpro TCP Varnish), Group3; CHX; (Cervitec Plus), Group4: no treatment(control). Each applications were performed at every 3 months during the orthodontic treatment. All patients were instructed to use a standard-fluoride containing toothpaste (1450 ppm NaF) and informed about their basic oral hygene routines. Bracket-bonded buccal enamel surfaces were measured at the four surrounding side by laser fluoresence device; DIAGNOdent (Kavo) by two calibrated examiners at the baseline, 3.6–12 months and after 24 months. The mean reading value was calculated for each tooth and the LF changes between the time intervals were evaluated. LF changes between the groups were analyzed by Friedman Variance Analyzis Test while Kruskal Vallis test revealed the changes due to time intervals.
Results: LF readings increased with time in all groups especially in the control and CHX group when compared to F and FTCP ($p < 0.001$). Both F and FTCP group showed less LF difference in treatment duration ($p \geq 0.05$) except when compared between baseline and 24-months ($p < 0.001$). The findings of this in vivo study indicated that fluoride containing varnishes are recommended during the fixed orthodontic treatments to inhibit the enamel demineralization assessed by LF.

Theme: Preventive Dentistry: Public Health

PD013

Work Engagement Among Dutch Dental Hygienists

Yvonne Buunk-Werkhoven[1], Vanessa Hollaar[2], Corrie Jongbloed Zoet[3]
[1]SPOH ARTS, Amsterdam, The Netherlands/Dutch Dental Hygienists' Association, Nieuwegein, The Netherlands, [2]Education of Dental Hygiene, HAN University of Applied Sciences, Nijmegen, The Netherlands/Dutch Dental Hygienists' Association, Nieuwegein, The Netherlands, [3]Dutch Dental Hygienists' Association, Nieuwegein, The Netherlands

Objectives: The aim of this study was to investigate the level of work engagement among Dutch dental hygienists.
Methods: Fifteen hundred and twenty questionnaires were randomly administrated to members of the Dutch Dental Hygienists' Association (Nederlandse Vereniging van Mondhygiënisten; NVM). The questionnaire consisted of the short form Utrecht Work Engagement Scale (UWES-9): a hypothesized three-factor structure of work engagement (Vigor, Dedication and Absorption). Statements about how one feels at work were answered on 7-point rating scales (0 = never to 6 = always).
Results: A convenient sample of 490 dental hygienists (32%), with a mean age of 38.2 years (SD = 10.1) responded and a level of work engagement of 4.77 (SD = 0.90) was found. They had a mean score on the dimensions Vigor of 4.74 (SD = 0.74), Dedication 5.08 (SD = 0.89), Absorption 4.48 (SD = 1.12). A significant correlation of the subscale Absorption with mean age was found ($r = -0.11$, $p < 0.05$).
Conclusions: Dutch dental hygienists reported a (very) high level of work engagement. A lot of dental hygienists experienced at least once a week to daily a high level of well-being at their work. Just a very small amount of the dental hygienists reported to experience (very) low level of well-being at their work. On work engagement and on the three dimensions, dental hygienists reported not only extremely higher mean scores compared with the manual norms, based upon a variety of professions, but also in comparison with the mean scores among Dutch dentists.

Theme: Preventive Dentistry: Public Health

PD014

Evaluation of an Oral Health Improvement Programme in a Prison Setting

Chuen Albert Yeung[1], Tahira Akbar[2], Stephen Turner[2], Markus Themessl-Huber[2], Stephanie Campbell[1], Celia Watt[1], James Duffy[1], Gillian Lindsay[1], Paul O'Neill[1], Derek Richards[3], Ruth Freeman[2]
[1]NHS Lanarkshire, United Kingdom, [2]Dental Health Services Research Unit, University of Dundee, United Kingdom, [3]South East Scotland and Tayside Dental Public Health Managed Clinical Network, United Kingdom

Aim: To evaluate the effectiveness of a three-year oral health improvement programme which was designed using a whole settings approach to improve the oral health of prisoners, their families and prison staff in a local prison in Lanarkshire, Scotland.
Methods: A controlled questionnaire-based survey was used to measure the oral health knowledge, attitudes and behaviours of two groups of prisoners, including intervention and control groups. Focus groups were carried out among selected prisoners and prison staff. Interviews were also conducted among prison staff and stakeholders to investigate the process, challenges and sustainability.
Results: A total of 107 prisoner questionnaires were completed. The intervention group consisted of 58 prisoners while the control group had 49 prisoners. The intervention group showed statistically significant differences in oral health knowledge and attitudes compared with the control group. However, there was no statistically significant difference in oral health behaviours between these two groups. A convenience sample of 14 prisoners and 20 staff participated in focus groups. Qualitative data suggested improvement in the oral health knowledge and behaviours of the prisoners, but little change in environment, culture and policy for the whole prison. Other initiatives such as father-child activities were assessed as having worked well. Eight stakeholders were interviewed and completed the Nuffield Partnership Assessment Tool. Scores indicated that partners were working well together.
Conclusions: The three-year oral health improvement programme was successful in improving oral health knowledge and attitudes of prisoners, but change in behaviours was only indicated in qualitative data.

Theme: Preventive Dentistry: Orthodontics

PD015

Comparison of Arch width Dimensions Among class I and class II div 1 Malocclusion Groups

Hasan Mehdi Zaidi, Ambreen Thobani, Babur Ashraf, Syed M. Faizan, Arif Pyarali Suleman
Department of Orthodontics, Fatima Jinnah Dental College, Karachi, Pakistan

Objective: The aim of this study is to 1) compare the arch width dimensions in adults with normal occlusion to those with Class II Division 1 malocclusion. 2) Compare and calculate the maxillary and mandibular arch width difference in both groups.
Methodology: A cross- sectional study conducted at Alvi Dental Hospital & Fatima Jinnah Dental College. A total of 100 Class I subjects (43 males, 57 females) and 85 Class II division 1 (43 males, 42 females) patients, from 13–24 years were selected having all permanent teeth erupted from 1st molar to 1st molar. There was no history of previous orthodontic treatment. Patients with syndromes or grossly carious teeth and posterior crossbites were excluded.
Results: Mean maxillary intermolar, intercanine & interalveolar width for Class I group was 51.6 mm, 34.2 mm, 59.5 mm and for Class II division 1 it was 49.2 mm, 32.5 mm and 57.2 mm, respectively. Mean mandibular intermolar, intercanine & interalveolar width for Class I group was 50.4 mm, 26.4 mm and 55.8 mm and for Class II division 1 it was 50.3 mm, 26.3 mm and 55.4 mm, respectively. Mean intermolar width difference was 1.2 mm for Class I and −1.0 for Class II group.
Conclusions: Maxillary dental arch is narrower in Pakistani adults with Class II Division 1 malocclusion, as intermolar, intercanine and interalveolar dimensions were significantly smaller than Class I sample. Males of both the groups had larger arch width dimensions than the females. Arch width difference was negative for Class II group indicating posterior crossbite tendency.

POSTERS SESSION 03 (P419–P627)

Theme: Dental Treatment & Restorative Dentistry: Caries

P419

Prevalence of Talon Cusp in a Turkish Sub-population

Emre Özel[1], Enver Alper Sinanoğlu[2]
[1]*Department of Operative Dentistry, University of Kocaeli, Kocaeli, Turkey,* [2]*Department of Oral and Maxillofacial Radiology, University of Kocaeli, Kocaeli, Turkey*

Purpose: The aim of this study was to investigate the prevalence of talon cusps on permanent teeth in a Turkish population and their distribution among different type of teeth.
Materials and methods: Clinical and radiographical examination of 8388 Turkish subjects (4731 female, 3657 male) were conducted to determine the talon cusp on permanent teeth. All cases were evaluated in accordance to the classification by Hattab et al. The records and radiographs of the patients with talon cusps were evaluated in terms of age, gender, location, affected tooth, talon type and treatment procedure. Statistical analysis was performed by using Chi-square test ($p < 0.05$).
Results: Thirty-one patients presented talon cusps with a total number of 59 teeth. 22 talon cusps were classified as trace-talon (37.29%), 30 were semi-talon (50.85%) and the remaining 7 were true-talon (11.86%).
Conclusion: The prevalence of talon teeth were found to be 0.36% on permanent teeth in a sub-population of Turkish adults.

P420

Influence of Cavity Design on Cuspal Deflection in Maxillary Premolar

Ivana Kantardzic[1], Darko Vasiljevic[2], Larisa Blazic[1], Tatjana Vukadinov[1]
[1]*Department of Restorative Dentistry and Endodontics, School Of Dentistry, Faculty of Medicine, University of Novi Sad, Novi Sad, Serbia,* [2]*Institute of Physics, University of Belgrade, Belgrade, Serbia*

Aim: To investigate the influence of cavity design on cuspal deflection in maxillary premolar using finite element analysis.
Materials and methods: Three-dimensional models of maxillary premolar with three cavity preparation designs: mesio-occlusal-distal cavity, mesio-occlusal-distal cavity with 2.0 mm palatal cusp reduction and mesio-occlusal-distal cavity with 2.0 mm buccal and palatal cusp reduction, were generated using SolidWorks 2011 software. All cavities were simulated to be restored with direct resin composite restoration. Static axial load with the resulting force of 200 N was applied on the occlusal surface of a tooth at the palatal cusp tip and both marginal ridges, simulating maxillary premolar in the maximum intercuspal position.The same software was used for finite element analysis. Cuspal deflection values were calculated and recorded for the models.
Results: Performed numerical simulations showed no differences in cuspal deflection among tested models.
Conclusions: This study showed no influence of cavity preparation design on cuspal deflection, suggesting that in maxillary premolar with mesio-occlusal-distal cavity cuspal reduction has no advantage.

Theme: Dental Treatment & Restorative Dentistry: Endodontics

P421

Comparison of Various Smear Layer Removal Techniques on push-out Bond Strength of MTA Fillapex

Esma Ozeroglu[1], Betül Ozçopur[1], Sıddık Keskin[2]
[1]*1Department of Endodontics, YuzuncuYil Univercity Faculty of Dentistry, Van, Turkey,* [2]*Biostatistics, YuzuncuYil Univercity Faculty of Dentistry, Van, Turkey*

Introduction: The purpose of this study was to compare the smear layer removal efficacy of EDTA, chitosan, Er, Cr: YSGG laser or

ultrasonic irrigation regimes on push-out bond strenght of MTA fillapex.
Methodology: Twenty extracted single-rooted human teeth were randomly divided into four groups (n = 5). During preparation, after each file size root canals were irrigated with 1% NaOCl. Final irrigation regimes were used respectively; Group 1, 3 ml 17% EDTA for 3 min; Group 2, 3 ml 2% Chitosan for 3 min; Group 3, saline for 1 min with ultrasonics; Group 4, saline for 1 min with Er, Cr: YSGG laser (Biolase Technology, Inc, San Clement, CA). Then the canal spaces were filled with MTA fillapex (Angelus, VDW) using single cone technique. After incubation for one week, roots were sectioned into 1 mm thickness and dislodgement resistance of the samples were measured using a universal testing machine at a crosshead speed of 0.5 mm/min. Data were analyzed using Kruskall-Wallis test ($p = 0.05$).
Results: Statistical analysis showed no significant difference between the push-out bond strength of the tested groups. ($p > 0.05$)
Conclusions: Under the present in vitro conditions; using either of the EDTA, chitosan, ultrasonics or Er, Cr: YSGG laser for final irrigation may be considered as an alternative to each other.

P422
Evaluation of Surface Characteristics of Rotary Nickel-Titanium Instruments Produced by Different Manufacturing Methods
Uğur İnan, Melek Gürel
Department of Endodontics, Ondokuz Mayıs University, Samsun, Turkey

Aim: The purpose of this study was to investigate the surface quality of new and used rotary NiTi instruments manufactured by traditional grinding process and twisting methods.
Materials and methods: In this study, a total of 8 TF (SybronEndo, Orange, CA, USA) and 8 Mtwo (VDW, Munich, Germany) instruments were evaluated. Size 25.06 of four new TF and four Mtwo instruments were collected for the study. Also 4 sets of TF and Mtwo instruments were used to shape mandibular first molar teeth of two patients in routine clinical use. Used and new files were attached to metal holders with double sided tape and each sample was placed on the AFM and analyzed on three points along a 3-mm section at the tip of the file. Three dimensional AFM images were processed with Nanoscope 6.13 software and quantitative measurements according to topographic deviations (root mean square (RMS)) were collected. The data were statistically analyzed with paired samples t- test and independent samples t test.
Results: Mean RMS values for new and used TF 25.06 files were 10.70 ± 2.80 nm and 21.58 ± 6.42 nm, and mean RMS values for new and used Mtwo 25.06 files were 24.16 ± 9.30 nm and 39.15 ± 16.20 nm respectively; the difference between them was statistically significant ($p < 0.05$).
Conclusion: According to the RMS values, new TF 25.06 files had better surface quality than the new Mtwo 25.06 files and used Mtwo 25.06 files showed more deterioration than the used TF 25.06 files.

P423
Effect of MTAD and Er:YAG Laser on Smear Layer Removal: An SEM Evaluation
Figen Eren Giray[1], Işıl Kalyoncu[1], Başak Durmuş[1], Yıldız Garip Berker[2], İlknur Tanboga[1]
[1]*Department of Pediatric Dentistry, School of Dentistry, Marmara University, Istanbul, Turkey,* [2]*Department of Endodontics, School of Dentistry, Marmara University, Istanbul, Turkey*

Introduction and Aim: Various organic acids, instruments and lasers have been used to remove the smear layer from the surface of instrumented root canals. The aim of this study was to determine the effectiveness of MTAD (a mixture of a tetracycline isomer, an acid, and a detergent) and Er:YAG laser to remove the smear layer, and compared with that of 17% EDTA and 5.25% NaOCl.
Materials and methods: Twenty-eight extracted maxillary and mandibular incisors were prepared with ProTaper Universal rotary files. Following each file use, the root canals were irrigated with 5.25% NaOCl. The teeth were randomly allocated to four treatment groups; (1)17% EDTA (control group), (2) 5.25% NaOCl, (3) Er:YAG laser and (4) MTAD. All teeth were processed for scanning electron microscopy (SEM) and the removal of the smear layer was examined in the apical, middle and coronal thirds. Analyses of SEM images were performed using a four grade scale.
Results: There was a significant difference between the groups ($p < 0.0001$). The middle and coronal thirds of the root canals in MTAD group showed lower average scores than those in groups EDTA/ Er:YAG laser. In the apical, middle and coronal thirds of the root canal there was no significant difference between the EDTA and Er:YAG laser groups.
Conclusions: MTAD removes most of the smear layer when used as an intracanal irrigant.

P424
Comparison of Four Electronic Apex Locators to Determine The Major Foramen
Demet Altunbaş[1], Alper Kuştarcı[2], Dilara Arslan[3]
[1]*Department of Endodontics, Cumhuriyet University, Sivas, Turkey,* [2]*Department of Endodontics, Akdeniz University, Antalya, Turkey,* [3]*Department of Endodontics, Bezmialem University, Istanbul, Turkey*

Aim: To evaluate in vitro the accuracy of four electronic apex locators, Dentaport ZX, Raypex 5, Endomaster and VDW.Gold in detecting the major foramen using the clearing technique.
Methodology: Forty-eight extracted human single-rooted teeth with mature apices were used for the study and divided into four groups of 12 teeth. All teeth were embedded in an alginate model. The electronic measurements were taken following the manufacturers' orientations using a #15 K-file attached to the holder. Then the teeth were cleared and photographed under a stereomicroscope with a digital camera. The distance between the tip of the file and the major foramen was measured by using image analysis software programme. Positive and negative values were recorded when the file tip was beyond or short of the major foramen and zero value when the file tip and the major foramen coincided. Statistical

analysis were performed using the Kruskal-wallis and chi-squared test at a significance level of 0.05.
Results: The mean distance between the file tip and the major foramen were 0.302, 0.065, 0.117, 0.258 mm in the Dentaport ZX, Raypex 5, Endomaster and VDW.Gold groups, respectively, with no statistically significant differences ($p > 0.05$).
Conclusion: Under the in vitro conditions of this study, all electronic apex locators showed an acceptable determination of the major foramen.

P425

The Quality of Different Preparation and Root Canal Filling Techniques in Curved Root Canals

Neslihan Şimşek[1], Fuat Ahmetoglu[1], Levent Akıncı[1], Arife Kapdan[2]
[1]*Department of Endodontics, Inonu University, Malatya, Turkey.*, [2]*Department of Pedodontics, Cumhuriyet University, Sivas, Turkey.*

Aim: The aim of this study was to evaluate the quality of different root canal filling techniques such as lateral compaction and thermoplasticized injectable gutta percha in curved root canals which were prepared Revo-S (Micro-Mega, Besançon, France) or self-adjusting file (SAF; ReDent-Nova, Ra'anana, Israel) using digital radiographs.
Material-methods: Curved root canals of 40 extracted mandibular molar teeth were prepared using SAF or Revo-S instruments. After determination of root canal curvatures and radii in two directions, the canals were divided two subgroups ($n = 20$, $p > 0.05$). Both mesiobuccal and mesiolingual canals were shaped and filled with AH Plus and either cold lateral compaction technique or high-temperature thermoplasticized injectable gutta percha obturation technique. The specimens were stored for 1 week at 370 C and 100% humidity to allow the complete setting of the sealer. Postoperative digital radiographs were taken to evaluate the quality of root canal fillings using a modified scoring system originally suggested by Kersten et al (1). Data were analyzed using Mann-Whitney tests.
Results: All groups exhibited similar root curvature ($p > 0.05$). In terms of the preparation techniques, no significant differences were found between the root canal filling techniques ($p = 0.051$, $p = 0.127$).
Conclusions: Under the conditions of the present study, neither preparation nor obturation techniques did not affect the quality of root canal filling in curved root canals.
References: 1. Kersten HW, Wesselink PR, Thoden van Velzen SK. The diagnostic reliability of the buccal radiograph after root canal filling. Int Endod J 1987; 20: 20–4.

P426

Comparing Time Spending between when Masseren kit, Ultrasonic and CFS using for Retrieving Broken File

Can Şivet
Department of Endodontics, Marmara University, Istanbul, Turkey

Introduction: There have been many different devices developed to retrieve fractured instruments during endodontic procedures. The file removal process becomes even more difficult when breakage occurs in the apical third of the canal. When an attempt to bypass such a fragment becomes difficult, it should be retrieved by mechanical devices. Variations in success rates have been reported according to devices used for removal of separated instruments.The purpose of this study is to compare the duration of use of the devices which were successful in retrieving of the seperated endodontic file from the root canal.
Methods: In this study 60 mandibular first premolar teeth were used. Rotary notched instruments were run at different pressures with a high-torque handpiece to break the instruments and impact them to apical 1/3 level of the canal walls. Attempts were made to visualize all fractured instruments under a dental loop after creating a straight-line access to the fragment. Broken instruments were removed with ultrasonic, Maseren Kit and Canal Finder System and successful time spending results were recorded.
Results: In the Ultrasonic group, the overall success time was 211 s in the Masseren Kit's it was 91 s in the Canal Finder system's it was 252 s and in the Bypass's it was 287 s Success time were significantly higher when attemp to bypass fractured file.
Conclusions: Maseren Kit used in this study for fractured instruments were effective, and three times greater success time was obtained. Bypassing fractured fragment in the apical 1/3 is more difficult and time spent than other methods.

P427

Fatigue and Fracture Resistance of Devitalized Teeth: Finite Element Analysis

Ksenija Zelic Mihajlovic[1], Arso Vukicevic[2], Nenad Filipovic[3], Gordana Jovicic[2], Obrad Zelic[4], Marija Djuric[1]
[1]*Laboratory for Anthropology, Institute of Anatomy, School of Medicine, University of Belgrade, Belgrade, Serbia,* [2]*Faculty of Engineering, University of Kragujevac, Kragujevac, Serbia,* [3]*Bioengineering Research and Development Center Kragujevac, Kragujevac, Serbia,* [4]*Clinic for Periodontology and Oral Medicine, School of Dentistry, University of Belgrade, Belgrade, Serbia*

Aim: This study represents a part of major project investigating the phenomenon of increased fragility of devitalized teeth. The Finite-Element-Method is used to analyze fracture resistance and fatigue behavior of dental tissues in various phases of root-canal-treatment.
Materials and methods: Two intact upper premolars of the same patient with very similar external and root canal morphology were used. One tooth remained intact while the other one underwent root canal enlargement up to the size of 0.40 mm at the physiological apex, with 0.1 mm increment every 1 mm coronally. It was restored with mesio-occlusal Class II composite filling. Both teeth were scanned and used to create 4 FEA models: intact tooth, tooth with mesio-occlusal Class II composite restorations and two models with root-canal-treatment representing initial and final enlargement of the canal. Critical breaking axial force was determined by compression test. Material characteristics were taken from the literature. Mechanical performance of dental tissues were analyzed using Finite-Element-Method.

Results: Comparing with intact tooth, premolar with Class II restoration had reduced strength for about 20% and could survive 11% less cycles during cyclic load. Devitalizated tooth with initial root canal enlargement showed greater reduction of strength (28%) and number of survived cycles was decreased for 33% in fatigue testing. The canal spreading up to final enlargement had small additional influence on tooth resistance both on critical force and on cycling load.
Conclusion: Our results elucidate the influence of changes in tooth geometry during root-canal-treatment and crown restoration on increased fragility of devitalized teeth.

P428

Treatment of Horizontal Root-Fractured Maxillary incisors – Two Case Reports

Neslihan Büşra Özerol, Uğur İnan
Department of Endodontics, Ondokuzmayıs University, Samsun, Turkey

Aim: To describe a conservative approach in the treatment of horizontal root-fractures and their one-year follow up.
Case: Management of root fractures depend on the extent of the fracture line, the pulp situation, occlusion, dislocation of fragments and the general health of the patient.

Case 1: A 33 year-old male patient was referred to our clinic with the complaint of root fracture two months after a traffic accident. Diagnosis of root fracture on maxillary central incisor was accomplished by clinical and radiographic examination. Pain was observed in horizontal and vertical percussion tests, and also mobility was observed. Coronal part of root fracture did not respond to electrical pulp testing. Radiographic examination revealed healing with interposition of soft tissue and presence of radiolucency. The treatment plan comprised of splinting the coronal fragments and using calcium hydroxide as an intracanal medicament. Then 1 week later, root canal therapy was perfomed to coronal part of the root.

Case 2: A 30 years-old female was referred to our clinic as a result of fracture of maxillary right central insicor, occurred 2 days ago. At radiographic examination horizontal root fracture was determined. Pain to palpation, percussion of teeth, normal mobility and positive response of pulp testing was determined in clinical examination. Endodontic therapy was performed and calcium hydroxide was applied at first visit. 1 week later, root canal obturation of both coronal and apical parts was completed.
Results: At one-year follow up, the teeth were asymptomatic, and clinical and radiographic examinations revealed healing patterns.

P429

Effects of Frequency Alterations of ND:YAG Laser Applications on the Adhesion of Epiphany

Umut Tunga, Elif Kalyoncuoğlu, Şenay Kaya, Murat Kurt, Tuğrul Kırtıloğlu
Department of Endodontics, Ondokuzmayıs University, Samsun, Turkey

Objectives: To evaluate the adhesion of a resin-based sealer to human dentine irradiated with Nd:YAG laser at two different frequency parameters, using the push-out test.
Study design: Fourty eight maxillary anterior teeth were instrumented using crown-down technique. After each instrument, the root canals were irrigated with 5 ml 2.5% NaOCl. Specimens were divided into four groups (n:12): Group C (control group), No was performed to the specimens. Group 1, dentine was treated with 2 ml of 17% EDTA for 5 min. Group 2 and 3, dentine were irradiated with Nd:YAG laser at 10 Hz and 15 Hz, respectively. The root canals were then filled with Epiphany SE-Resilon. The roots were sectioned 4 mm below the cemento-enamel junction to provide 4 mm thick dentine discs which were centered inside aluminum discs and embedded in acrylic resin and submitted to a push-out test.
Results: Statistically significant differences were found among the groups. Group 3 showed significantly higher bond strength than the other groups ($p < 0.05$). Group 2 showed the lowest adhesion values ($p < 0.05$).
Conclusion: An increase in laser frequency increased the adhesion of the Epiphany sealer to dentine walls.

P430

Dentin Pulp Complex Regeneration and Laser phototherapy

Márcia Martins Marques[1], Maria Stella Moreira[1], Rejane AndradeDe Carvalho[2], Ivana Márcia Diniz[1], Fernanda Campos Almeida Souza[1], Itamara Lucia Itagiba Neves[3], Giulio Gavini[1]
[1]Department of Restorative Dentistry, University of Sao Paulo, Sao Paulo, Brazil, [2]Department of Endodontics, University of Rio Grande do Norte, Rio Grande do Norte, Brazil, [3]Department of Dentistry at Heart Institute InCor, University of São Paulo

Aim and propose: Laser Phototherapy (LPT) is able to improve cell migration, thus could be useful for promoting homing of periapical stem cells into dental root canals. The aim was to analyze the influence of LPT on the root dental pulp regeneration in rat molars.
Materials and methods: The dental pulp tissues of twenty molar roots of rats were extirpated. Then, the root canals were endodontic treated and filled with blood clot from hemorrhage provoked at the periapical tissue. These roots were randomly divided into two groups, as follows: Lased and non-Lased. The LPT was done using a diode laser (660 nm; 20 mW, 0.028 cm, 5 J/cm², 7 s, 14 J per point) using punctual technique. The crowns of the molars were restored with glass ionomer. Thirty days later the teeth were histologically analyzed.
Results: Seventeen out of the 20 dental roots were retrieved for histological analyses. Partial or total filling content was observed inside the root canals in both groups. In some cases this content was interpreted as newly formed connective tissue that underwent to necrosis (53%), whereas in others remnants of infected blood clots (35%) were present, where contamination occurred due to crown breakdown or restoration loss. In two cases (12%) of the lased group newly formed connective tissue was observed. In one these cases complete dental pulp tissue included an odontoblast-like layer.

Conclusion: It is possible to achieve dental pulp regeneration from blood clot inside the root canal by LPT stimulation. This could probably be outcome of periapical stem cell homing.

P431

Effect of Tooth Localization on Dimensional Changes of Pulp Chamber in Renal Patients

Dina Erdilek[1], Yasemin Benderli[1], Tamer Erdem[2], Kağan Gökçe[3], Elif Defne Tacettinoğlu[4], Rian Dişçi[5], Selmin Kaan Aşçı[4]
[1]Deparment of Restorative, Faculty of Dentistry, Istanbul University, Istanbul, Turkey, [2]Deparment of Radiologic, Faculty of Dentistry, Istanbul University, Istanbul, Turkey, [3]Deparment of Restorative, Faculty of Dentistry, Yeditepe University, Istanbul, Turkey, [4]Deparment of Endodontics, Faculty of Dentistry, Istanbul University, Istanbul, Turkey, [5]Department of Public Health, Faculty of Medicine, Istanbul University, Istanbul, Turkey

Objective: The aim of this study was to evaluate the effect of maxillar or mandibular localization of the teeth on dimensional changes of pulp chambers in hemodialysis and transplanted patients.
Materials and methods: Forty-four patients (aged 20–50 years) with chronic renal disease over one year were examined due to their maxillar or mandibular localization and dimensional measurements of the pulp chambers were performed. Full-mouth periapical radiographs of all of the patients were taken and images were adapted to a software programme where outer lines of images of the teeth were determined and drawn digitally. The inner areas and the outer lines of pulp chambers were measured automatically. Ratios of the pulp areas to tooth areas were calculated for each tooth and the findings were evaluated statistically by ANOVA test.
Results: Comparison of dimensional changes of the pulp chambers of renal patients with those of healty individuals on both the maxillar and mandibular tooth localizations showed that, pulp chambers of renal patients were significantly smaller than those of the controls' ($p < 0.001$). The difference of the tooth localization on upper or lower jaws, has also a significant effect on dimensional changes of the pulp chambers.
Conclusion: Considering of the effect of maxillar or mandibular localization of the teeth on dimensional changes of the pulp chambers in hemodialysis and transplanted patients, it was shown that tooth localization on different jaws could be effective for the amount of abnormal mineralization in pulp chambers.

P432

The Influence of 17%EDTA and 10%citric Acid on Root Canal Dentin in Combination with 2.5% Sodium Hypohlorite

Ilijana Muratovska[1], Aneta Atanasovska Stojanovska[2], Arijan Daci[2], Vanco Spirov[3], Vera Stojanovska[1]
[1]Department of Cariology and Endodontics, Skopje, Macedonia, [2]Department of Periodontology, Skopje, Macedonia, [3]Department of Oral Surgery, Skopje, Macedonia

Aim: The objective of the present study was to evaluate the capacity of chelators 17%EDTA and 10%citric acid used in root canal alone or combined with 2.5% sodium hypochlorite to remove calcium ions from root canal dentin and quantify the extracted calcium ions released during root canal therapy by atomic spectrophotometry absorbance.
Material-methods: Total 40 pieces of dentin were analyzed. Dentin samples were immersed in reagents (about 2–3 ml) and left in for 15 min. After the expiration of the time they, were washed out and put on chemical watch glasses to dry at room temperature for 2–3 h. Then teeth were crushed to fine powder in mortar with pestle. Crushed tooth samples scales 0, 05 g (to the nearest 0, 0001 g) in glass vials to which is added 1 ml HNO3, 1 ml H2O2 and 1 ml HCl. Then the glasses are placed on the hot plate and heat until crashed teeth get disoluted. Solutions obtained by the thermal decomposition of the teeth quantitatively transmitted measures in small botles of 50 ml. Measured samples complement redestilized water to marked.
Results: In the study results shows the effect of chelating solutions on a Calcium ration in root dentine with statistically significant changes ($p < 0.05$) in short term application of combined irritant solutions of 17%EDTA and 10%citric acid with with 2.5% sodium hypohlorite.
Conclusion: The conclusion is based on findings that 2, 5%sodium hypochlorite removes the organic parts of the smear layer leaving the dentin substrate to the action of the chelators as preferred combination.

P433

A Conservative Approach for Complicated Crown-Root Fracture: A Case Report

Makbule Bilge Akbulut, Ayce Unverdi Eldeniz
Department of Endodontics, Selcuk University, Konya, Turkey

Introduction: Dental traumatic injuries are highly prevalent among children and adolescents. Crown-root fractures of anterior teeth present difficulties for restoration. This case report describes the treatment of a complicated crown-root fracture of maxillary right lateral incisor with extensive loss of tooth structure and uncomplicated crown fracture of maxillary right central incisor in a young adult.
Case: The 15-year-old male patient was presented to Endodontic clinic with post-traumatic injury. After the mobile crown-root fragment of lateral incisor was removed, root canal therapy was performed in two visits. Calcium hydroxide was used as an intracanal dressing. Root canal filling, glass fiber post cementation and adhesive tooth fragment reattachment were performed. Central incisor was restored with composite restoration. Early stage success was achieved with the observance of good functional and aesthetic outcomes. However the patient did not attend follow-up visits and returned after 14 months with secondary trauma which resulted fracture of the reattached part and minor fractures extending to middle root so the tooth was extracted.
Conclusion: As it is crucial to retain the tooth to maintain space and to protect alveolar bone height, clinicians should always consider trying reattachment of tooth fragments. The case presented here is sufficient and effective in postponing fixed prosthetic restorations or implant treatments.

P434

Is it Possible to Reduce File Numbers of the Conventional Rotary Systems?

Gül Çelik Ünal[1], Murat Maden[1], Ahmet Savgat[1], Cevat Emre Erik[1], Hikmet Orhan[2]
[1]*Department of Endodontics, Faculty of Dentistry, Süleyman Demirel University,* [2]*Department of Public Health, Faculty of Medicine, Süleyman Demirel University*

Aim: To evaluate whether it is possible reduce file numbers of the conventional rotary systems and to compare with Reciproc.
Methods: A total of 45 simulated canals with 40o curvature in clear resin blocks were prepared with conventional rotary systems; ProFile orifice shaping #3 and final flaring #25/.06 (Dentsply Tulsa Dental, Tulsa, OK), Reciproc R25 (VDW, Munich, Germany), and ProTaper shapping file SX and finishing file F2 (Dentsply Maillefer, Ballaigues, Switzerland). Instruments were used one time before being replaced. Pre- and post-instrumentation views were analyzed using digital images captured by a camera. Prepared inner and outer walls at 1–10 levels was measured by using a software programme. The transportation, instrumentation time, change of working length, and instrumentation fractures were evaluated. Data were analyzed by ANOVA, Kruskal Wallis and Independent T Test ($P < 0.05$).
Results: Reciproc removed more mass in total and caused less transportation in middle and coronal third ($p < 0.05$). The transportations performed in the apical third, opposite to the curve. There was no significant difference among the groups in terms of maintaining the original working length. Reciproc was significantly faster ($p < 0.05$). Only one instrument fracture (25/0.06 ProFile) was noted. All groups showed one each ledge.
Conclusion: Within the limitations of this study, ProFile and ProTaper files have a potential for reducing the file numbers in shaping for curved root canals. However, Reciproc produced with the concept of a single file, was determined that more advantageous in terms of time and shaping ability.

P435

Can An Avulsed Tooth Survive Without A dentist? – a case report

Anıl Teke, Ayşe Diljin Keçeci
Department of Endodontics, Faculty of Dentistry, Süleyman Demirel University, Isparta, Turkey

Aim: To present an avulsed permanent maxillary central incisor, which was replanted randomly 12 years ago without any professional treatment.
Case: A healty 22-year-old male referred to the Department of Endodontics, related to ache of the tooth 11 in February 2010. In his dental history, it is informed that, he fell to the ground in the schoolyard before 12 years and the right central incisor was avulsed.

The avulsed tooth was replanted immediately by the school janitor but he did not referred to any dentist until 2010. He mentioned now and then absess formation in frontal apical area of the related tooth.

The clinical examination revealed the presence of color change, and sensitivity to percussion, but the absence of vitality, mobility or ankylosis. Radiographic examination showed the presence of inflammatory external root resorption and an extensive apical lesion. A nonsurgical root canal treatment was performed in two visits. Then, intracoronal bleaching was performed.

Three years after treatment, recall examination revealed a normal periodontal tissue with absence of infection, mobility, ankylosis, progressive resorption or apical lesion. The tooth color had no relapse in this period.

P436

The Effect of Laser Irradiation on Root Surface: Shear-Bond Strength Study

Melek Akman[1], Kezban Çelik[1], Betül Ozcopur[2], Sema Belli[1]
[1]*Department of Endodontics, Selcuk University, Konya, Turkey,* [2]*Department of Endodontics, Yuzuncuyıl University, Van, Turkey*

Aim: To evaluate the effects of 17% EDTA or Nd:YAG laser on shear bond strength of epoxy resin based sealer AH Plus (Dentsply, De Trey, Konstanz, Germany) to root dentin.
Methodology: Twelve extracted premolars were decoronated. The roots were longitudinally sectioned using a diamond saw under water cooling to obtain two root halves from each tooth ($n = 24$). The cut surfaces were grounded with 800 grit emery paper. Three-mm high build-ups with a constant surface area of 3.45 mm^2 were created using AH Plus sealer and allowed to set (37°C, 100% humid, 72 h). The samples were tested to failure for shear bond strength (1 mm/min). The cut surfaces were re-grounded and subjected to 5.25% NaOCl for 5 min. Two subgroups were created and then treated with 17% EDTA or laser irradiation as follows: G1: 17% EDTA for 5 min G2: Nd:YAG laser (10 pps, 10 s, 1.5 W, 100 mJ and 15 Hz). Shear bond strength test was repeated for each sample. The data was calculated (MPa) and analyzed using paired samples t-test.
Results: Nd:YAG Laser treatment did not change shear-bond strength of AH Plus ($p = 0.238$). 17% EDTA treatment decreased shear bond strength of AH Plus ($p = 0.000$).
Conclusion: Nd:YAG Laser treatment did not effect shear bond strength of AH Plus to root dentin. Therefore can be used safely for disinfection of the root canal.

P437

The Effect of Acidic Environment on MTA and Bioaggregate

Melike Hüda Bayram[1], Emre Bayram[1], Hüseyin Taşkan[2]
[1]*Department of endodontics, GaziosmanpaŞa University, Tokat, Turkey,* [2]*Personal clinic, Elazığ, Tokat*

Introduction: The aim of this study was to compare the effect of acidic environment on the dislodgement resistance of mineral trioxide aggregate (MTA) and Bioaggregate (BA) (Innovative BioCeramix, Vancouver, Canada)
Methods: Eighty freshly extracted human maxillary central were used in this study. Teeth were sectioned transversally 4 mm below

the cemento-enamel junction to provide 4-mm-thick dentine discs that were embedded in acrylic resin. Next, the specimens were randomly assigned to two experimental groups according to the type of the root canal repair materials (n = 40). Specimens of each material were randomly divided into 4 groups (n = 10) according to storage media:, group A: butyric acid (pH = 4.4), group B: butyric acid (pH = 5.4), group C: butyric acid (pH = 6.4), group D: phosphate-buffered saline (PBS) (pH = 7.4). Dislodgment resistance was then measured using a universal testing machine.
Results: MTA and BA had the same dislodgement resistance. The dislodgment resistance of MTA and BA was significantly reduced ($p < 0.05$) after exposure to acidic environment. After rise of acidic pH, there was a statistically significant difference among groups; the MTA D group had significantly the highest bond strength, and the MTA group A had the lowest ($p < 0.05$).
Conclusions: MTA and BA is influenced by the acidic environment.

P438

Efficacy of Ibuprofen and Celecoxib in Controlling Post-Endodontic Pain

Abu Bakr Sheikh, Mahenau Afghan Janjua, Bilal Hussain Khan, Mubasshir Saleem, Usman Rehman
Department of Operative Dentistry, Fatima Jinnah Dental College, Karachi, Pakistan

Introduction: The occurrence of postoperative pain is not a rare event even when root canal treatment hasfollowed acceptable standards. Post-operative pain is almost exclusively due to the development of acute inflammation at the peri-radicular tissues in response to an increase in the intensity of injury coming from the root canal system. NSAIDs have been shown to be very effective for managing pain of inflammatory origin. For controlling post-endodontic pain COX-2 selective inhibitorscan be prescribed as they provide analgesia and anti-inflammatoryaction while avoiding adverse effects on gastrointestinal tract and other tissues related to non-selective NSAIDs.
Objective: To compare the efficacy of ibuprofen and celecoxib in controlling post-endodontic pain.
Study design: Quasi Experimental study.
Settings: Department of Operative Dentistry, FJDC
Duration: 22nd December 2006 to 29th April, 2008 (1 year 4 months)
Subject and methods: One hundred patients requiring root canal treatment and meeting the criteria of the study were equally divided into two groups, A and B. Pulpectomy was done and canals prepared till ISO #25 file reached the estimated working length. Patients in group A were administered Ibuprofen and those in group B were given Celecoxib. First dose was given preoperatively. Each patient rated their pain on a visual analog scale at initial and then 4, 8, 12, 24 and 48 h after initiation of endodontic therapy.
Results: There was no statistically significant difference in post-endodontic pain between the groups of patients taking Ibuprofen and Celecoxib.
Conclusions: Ibuprofen and Celecoxib have similar efficacy in controlling post-endodontic pain.

P439

CBCT Evaluation of Multiple Idiopathic Internal Resorptions in Permanent Molars: Case Report

Atakan Kalender[1], Meltem Dartar Öztan[2], Fatma Basmacı[1], Umut Aksoy[1], Kaan Orhan[3]
[1]Department of Endodontics, Near East University, Faculty of Dentistry, Lefkosa, Turkey, [2]Department of Endodontics, Ankara University, Faculty of Dentistry, Ankara, Turkey, [3]Department of Dentomaxillofacial Radiology, Near East University, Faculty of Dentistry, Lefkosa, Turkey

Background: Internal inflammatory root resorption is a rare condition in permanent teeth, which requires the presence of necrotic and infected pulp tissue within the coronal portion of the root canal system as well as inflamed pulp tissue apical to the resorptive defect. The aetiology of internal root resorption is not completely understandable, trauma and chronic pulpitis are considered the main risk factors.
Methods: We report a case of the multiple idiopathic resorption in the permanent maxillary and mandibular molars in a healthy 33-year-old female patient. In addition to clinical examination the patient was imaged using conventional radiography techniques and cone beam computed tomography (CBCT).
Results: The patient had recurrent throbbing pain in her #46. The radiographic examination including "panoramic radiography and CBCT" revealed that radiographic evidence of internal resorption in #36, #37, #46, #47, #26, #27, #16, #17 and also including in unerupted #17, #26, #27, #28 teeth. The definitive diagnosis was made with the histopathological examination of the extracted tooth.
Conclusions: Internal root resorption is a rare clinical process that should be examined using different radiographic modalities. CBCT seems to be useful in evaluation of the lesions with superior diagnostic performance.

P440

An in vitro Evaluation of Cytotoxic Effects of BioAggregate and Mineral Trioxide Aggregate

Esma Asuman Çavdar Tetik[1], Meltem Dartar Öztan[2], Taibe Arsoy[3]
[1]75, Yıl Dental Hospital, Ankara, Turkey, [2]Department of Endodontics, Ankara University, Ankara, Turkey, [3]Foot and Mouth Disease Institute, Ankara, Turkey

Aim: The aim of this study was to evaluate the cytotoxic effects of BioAggregate (BA) in comparison with Mineral Trioxide Aggregate (MTA) on L 929 cells.
Methodology: Fifteen discs of each material BA and MTA were prepared. Then the samples were aged for 24, 48 and 72 h in DMEM/F12. After each ageing interval, cytotoxicity of the extracts to cultured fibroblasts (L 929) was measured by MTT assay. The degree of cytotoxicity for each sample was determined according to the reference value represented by the cells with a pure culture medium. Statistical significance was determined by Kruskal-Wallis and Friedman tests.
Results: There was no statistically significant difference between BA and MTA in the rates of cell viability at 24-h evaluation. BA

group showed higher rate of cell viability than MTA at 48 and 72 h.
Conclusion: Both BA and MTA displayed an acceptable biocompatibility.

P441
Evaluation of Surface Quality of Rotary NiTi Instruments using SEM
Uğur İnan, Melek Gürel
Department of Endodontics, 19 Mayıs University, Samsun, Turkey

Aim: The aim of this study was to evaluate the types of defects observed on new rotary NiTi instruments using scanning electron microscopy (SEM).
Materials and methods: The study was conducted using new sets of rotary NiTi instruments of four different brands of different manufacturing methods. The instruments included were ProTaper (Dentsply Maillefer, Ballaigues, Switzerland), Mtwo (VDW, Munich, Germany), RaCe (FKG Dentaire, La Chaux-de-Fonds, Switzerland) and Twisted Files (TF) (SybronEndo, Orange CA, USA). Eleven instruments of each commercial brand were used (total = 44). The instruments were carefully removed from their original packages and analyzed with SEM (JSM 6400; JEOL, Tokyo, Japan) for the presence of defects such as irregular edge, debris, grooves, microcavities/pitting and scraping. Final 3 mm of the instruments were examined at wide range of magnifications and no type of treatment or preparation was performed. The SEM micrographs were analyzed by 2 skillful observers.
Results: All files showed defects and no instrument was free of imperfections. Major defect was presence of grooves and 100% of Mtwo and ProTaper instruments presented scratches and grooves. While RaCe instruments presented surface debris in 100% of the samples, surface debris was observed in 72.7% of ProTaper and 45.4% of Mtwo instruments. TF had the least surface debris on the instruments (18.2%). While 63.6% of Mtwo and 54.5% of ProTaper and RaCe instruments presented scraping, TF presented scraping only in 27.3% of the samples.
Conclusion: All instruments showed some imperfections. TF instruments presented less manufacturing defects than the instruments manufactured by traditional methods.

P442
Non-Surgical Repair of Iatrogenic Root Perforation Using Mineral Trioxide Aggregate: A Case Report
Taha Özyürek, Cangül Karabulut, Ebru Özsezer Demiryürek
Department of Endodontics, Ondokuz Mayis University, Samsun, Turkey

Aim: To describe the non-surgical treatment of a lateral perforation in the cervical third of the root of a maxillary left incisor using mineral trioxide aggregate (MTA).
Case: 21-year-old female patient was referred our clinic due to cervical root perforation in her maxillary left incisor that occured during erroneous endodontic access cavity preparation by a undergraduate student. Clinic examination showed the tooth was not tender to percussion and palpation. Radiographic examination showed a wide periapical lesion surrounding the apex and also lateral perforation site. Following isolation with rubber dam, proper access cavity was prepared and root canal was explored with aid of ultrasonic instruments. Apical patency was obtained with # 08 C+ file then working length was determined by periapical radiographs. The root canal was prepared up to size #40 K file under copious irrigation with 2% chlorhexidine then dressed with calcium hydroxide. One week later calcium hydroxide was removed and final irrigation was achieved with 2% chlorhexidine. The root canal was obturated with AHPlus and Thermafill technique to the perforation level. Perforation site was restored with MTA and sterile moist cotton pellet was placed onto MTA for setting. One day later setting of MTA was controlled and the tooth was restorated with light cure composite resin. 3rd month follow-up revealed the tooth was asymptomatic and patient had no complaints.
Result: MTA provides an effective seal of root perforations and improves the prognosis of iatrogenic perforated teeth that would otherwise be compromised.

P443
Root Canal Treatment of a Mandibular Canine with Two Canals: A Case Report
Hande Özyürek[1], Taha Özyürek[2], Cangül Karabulut[2]
[1]Department of Dentistry, Tirebolu State Hospital, Giresun, Turkey, [2]Department of Endodontics, Ondokuz Mayis University, Samsun, Turkey

Aim: To present the diagnosis and root canal treatment of mandibular canine showing anatomical variation with two root canals.
Case: 30-year-old female patient was referred to our clinic for root canal treatment of mandibular canine due to symptomatic pulpitis. Clinical examination revealed the pulp was vital, the tooth was not tender to percussion and palpation. Radiographic examination revealed profound dentin caries associated with pulp chamber. Following administration of local anesthesia, the tooth was isolated with rubber dam, the caries was removed and endodontic access cavity was prepared. During examination of pulp chamber floor under magnification via loupe (×4) an extra orifice was explored. Working lenghts were determined by electronic apex locators. Biomechanical preparation was achieved with ProTaper Rotary System up to F5 size under copious irrigation with 5.25% NaOCI. 17% EDTA and 5.25% NaOCI were used for final irrigation. The canals were dried with sterile paper points and obturated by cold lateral compaction technique with AH Plus and gutta percha. The tooth was restorated with light-cured composite resin.
Result: Detection of anatomic variations is essential for successful treatment. Clinicians should consider the possible variations and always search for second root canal in mandibular canines. Magnification with dental loupes and operating microscope enhance the possibility to detect anatomical variations.

P444

Effects of Rotary Instruments on Treatment of Young Permanent Tooth

Ece Çalışkan[1], Didem Öner Özdaş[2]
[1]*Department of Endodontics, Istanbul Aydin University, Istanbul, Turkey,* [2]*Department of Pedodontics, Istanbul Aydin University, Istanbul, Turkey*

Introduction: Large periapical abcess may easily be caused by caries on young permanent tooth if it is not treated at the beginning. The large abcess is treated by either root canal treatment or extraction of tooth.

Case: 12 year old girl patient appealed to the clinic with pain and swelling on lower left second molar tooth. Clinical examination showed extensive carious lesion accompanied with pain on percussion. Pulp testing gave negative result and an extensive radiolucency surrounding both mesial and distal roots were observed in radiographic examination. Root canal preparation was performed with ProTaper rotary system using endomotor (EndoMaster /EMS). Straight line access was achieved with ProTaper Sx file and apical enlargement was concluded with ProTaper F2 file. Canals were irrigated with 2.5% NaOCl. Large periapical lesions can resolve by nonsurgical endodontic therapy employing calcium hydroxide intracanal interappointment medicament. At this case we used calcium hydroxide paste for endodontic therapy for 15 days.

After 15 days, pain on percussion was not present and size of lesion observed to begin decreasing radiographically. Obturation was performed with lateral condensation technique, master cone (ISO 30) and AH Plus. Patient was followed at first, third and sixth month radiographically. The size of the lesion was decreaced markedly. After the root canal obturation the crown of the tooth restored with using split crown(An-Ger G&A polyester crown forms and P250 composite)

Conclusion: Using rotary instrument is not a usual way for treatment of young permanent teeth. The fast success of treatment using rotary instrument may result on young permanent tooth.

P445

In vitro Evaluation of Impact of Rinsendo Irrigation System on Apical Extrusion

Fatma Çiçekdağı, Gülgün Cansu Gündüz, Yıldız Garip Berker
Marmara Üniversitesi Diş Hekimliği Fakültesi Endodonti Anabilim Dali Istanbul

Aim: In this study, the aim was to evaluate the apical irrigant extrusion of Rinsendo, a hydrodynamic activation system, at different needle penetration depths.

Material-method: We used 45 single rooted human teeth. Teeth were instrumentated to an apical size of 25.06 with Protaper Universal® system. After the preparation root canals were irrigated and dried with paper points. A metal device with an apparatus to place the milimetric sheets parallel to teeth were used to position the teeth to observe the apical irrigant extrusion. Teeth were divided into three groups (n:15 for each group) randomly. In group 1 and 2, teeth were irrigated with methylen blue using Rinsendo, which was placed 5 mm and 7 mm short of working length, respectively. In group 3 (control group) teeth were irrigated with methylen blue by positioning a 27 gauge endodontic needle and syringe 1 mm short of working length. Finally, the distance between the most extruded methylen blue stain and the apex of the tooth which was marked on the milimetric sheet was measured.

Result: Significantly less apical extrusion was observed in group 3 in accordance with group 1 ($p = 0.004 < 0.001$) and group 2 ($p = 0.007 < 0.001$). Although there wasn't any significant difference between group 1 and 2, less apical extrusion was observed in group 1 ($p = 0.497 > 0.05$).

Conclusions: Using the conventional irrigation tips results in less apical extrusion when compared to Rinsendo. However, the safety of Rinsendo can be increased by lessening the penetration depth of the needle.

P446

Post Operative Evaluation of Peri-Radicular Healing after Endodontic Surgery

Rajat Pratap Singh[1], Surendra Kumar Mishra[2]
[1]*Rajat Pratap Singh,* [2]*Surendra Kumar Mishra*

Introduction: The purpose of this paper is to evaluate the healing of peri-apical lesions in a group of patients whose teeth were managed with periapical surgery. Periapical surgery should be considered as an extension of non surgical treatment because the underlying etiology of the disease process and the objectives of treatment are same i.e. prevention or elimination of apical periodontitis including the removal of pathological tissue and microorganisms.

Conclusion: The success of periapical surgery depends on proper root canal preparation, Apicectomy & obturation rather than the method of filling whether it is orthograde or retrograde.

Theme: Dental Treatment & Restorative Dentistry: Esthetics

P447

The Effect of Office Bleaching Application on the Color and Translucency of Five Resin Composites

Nurcan Ozakar Ilday, Mustafa Duzyol, Yusuf Ziya Bayındır, Nilgun Seven, Ozcan Karatas
Department of Restorative Dentistry, University of Atatürk, Erzurum, Turkey

Objectives: The aim of this study was to investigate the effect of office bleaching agents on the color and translucency of different resin composites.

Methods: Twenty-four disk-shaped specimens (1 mm thickness, 8 mm diameter) were fabricated from each resin composite (Gradia Direct, Filtek Ultimate, Majesty Esthetic, Valux Plus and Ceram-X) and divided into three subgroups – two different bleaching kits (Hydrogen Peroxide (HP) 38% Opalescence Boost (OB), HP 38% Whitesmile Power Whitening (WP) and a control group (n = 8). Baseline CIE L*a*b* color coordinates were measured

using spectrophotometry and translucency parameters (TP) were calculated. Experimental groups were treated with bleaching agents according to manufacturers' instructions. The control group was stored in distilled water (DW) for 14 days. Color and translucency measurements were repeated after bleaching procedures, and color differences were calculated. ΔE values >3.3 were considered clinically unacceptable. Data were analyzed using ANOVA and the paired sample *t*-test ($\alpha = 0.05$).

Results: Clinically unacceptable color change was detected for Majesty Esthetic/OB, Ceram-X/OB, Ceram-X/WP groups ($\Delta E > 3.3$). There was a significant color difference between the control and bleached specimens using different kits ($p < 0.05$). The Ceram-X/OB group (4.13 ± 0.58) exhibited the greatest color change. The highest baseline TP value was in the Ceram-X group (12.47 ± 1.38) ($p < 0.05$). TP values in each group between baseline and the end of the 14th day revealed no statistical significant translucency difference ($p > 0.05$).

Conclusions: Application of two office bleaching kits resulted in clinically unacceptable color change for some resin composites. Translucencies of the resin composites were not affected by office bleaching procedures.

P448

Achieving the Desired Color in Discolored Teeth Using Leucite-Based CAD-CAM Laminate Systems

Sedanur Turgut[1], Bora Bağış[2], Elif Aydoğan Ayaz[1]
[1]*Department of Prosthodontics, Faculty of Dentistry, Karadeniz Technical University, Trabzon, Turkey,* [2]*Department of Prosthodontics, Faculty of Dentistry, Izmir Katip Celebi University, Izmir, Turkey*

Purpose: To evaluate the cumulative effect of the abutment tooth and resin cement color on the resultant optical properties of porcelain laminate veneers (PLVs) fabricated with leucite-based CAD/CAM blocks.

Methods and materials: Two hundred and twenty-four ceramic specimens were prepared from the IPS Empress CAD (Ivoclar Vivadent) with four different shades of HT-A1, LT-A1, MT-A1 and Bl-1. The ceramic discs were cemented to resin composite discs with shade A3.5. For the cementation, different shades of TR (translucent), WO (white opaque), B0.5 (white) and A1 (light yellow) light-cure resin cements (RelyX Veneer) were chosen. L*, a*, b*, chroma and hue values of each cemented ceramic and the A1 shade tab (Ivoclar, Vivadent), were recorded using a colorimeter. Three-way ANOVA, Tukey's HSD tests were used for statistical analyses ($p < 0.05$).

Results: L*, Cab*, hab* and ΔE values of PLVs were influenced by ceramic shade, ceramic thickness, cement shade, and interaction terms of the three variables ($p < 0.001$). There were significant differences between the 1-mm-thick ceramic veneers that exhibited higher L* and lower Cab* values. Using Tr shade cement resulted in lower L* and higher Cab* values for all thicknesses and ceramic shades, whereas the WO shade cement resulted in higher values. ΔE values varied between 2.2 and 11.8 units for the 0.5-mm-thick ceramics and between 0.8 and 8.8 units for 1-mm-thick ceramics.

Conclusions: Clinicians should select the translucency level of the ceramic block with the shade when a leucite-based CAD/CAM system is chosen. Using the WO shade resin cement seems to be more effective in masking the discolored abutment tooth.

P449

Novel Esthetic Treatment of Bilateral Gemination of Maxillary Central Incisors

Heleni Vastardis[1], Iosif Sifakakis[2], Christos Chryssafidis[3]
[1]*Department of Oral Biology, School of Dentistry, National and Kapodistrian University of Athens, Athens, Greece,* [2]*Department of Orthodontics, School of Dentistry, National and Kapodistrian University of Athens, Athens, Greece,* [3]*Department of Operative Dentistry, School of Dentistry, National and Kapodistrian University of Athens, Athens, Greece*

Introduction: Gemination and fusion are developmental anomalies in size, shape and structure of the dentition. Gemination or twinning refers to the development of two teeth from a single tooth bud. As it usually represents an unsuccessful attempt of a tooth bud to divide, gemination results to a variable degree of separation of roots and crowns. Dental fusion is defined as the union of two or more distinct tooth buds and depending on the time and the specific site of the developmental insult, the phenotype of the condition also varies. Both differential diagnosis and clinical management of the conditions constitute major challenges in Dentistry.

A multidisciplinary approach is required to meet patient's needs and expectations and balance possibilities and limitations. While treatment modalities include prosthetic rehabilitation with or without endodontic therapy, Orthodontics and autogenous transplantation, the hemisection of the fused tooth seems to be the treatment approach of choice for most clinicians.

Case: We report a case of bilateral gemination of the maxillary central incisors in an orthodontic adolescent patient and present a conservative restorative treatment via porcelain laminated veneers (PLV) that preserves pulp vitality, ensures proper periodontal ligament function and provides excellent esthetics.

P450

Differences in Color of Maxillary Central Incisor Depending on Gender

Aleksandra Andjelkovic, Dubravka Markovic, Branislava Petronijevic
Department of Dentistry, Medical Faculty, University of Novi Sad, Novi Sad, Republic of Serbia

Aim: Color and the appearance of teeth are complex phenomena under the influence of combined effects of extrinsic and intrinsic coloring as well as optical properties of teeth such as transmission and reflection of light. The aim of this study was to evaluate differences in color depending on gender.

Materials and methods: This study was conducted on 80 dental students (40 males and 40 females) between 20 and 24 years. The color of maxillary right central incisor was determined with intraoral spectrophotometer. As a result of the measuring, VITAPAN classical and VITA 3D-Master color is shown. L*, a* and b* values were noted down for each result. During the research the

participants filled in the questionnaire regarding dietary habits and cigarette consumption. The obtained results were processed by using $\chi 2$, *t*-test and Mann-Whitney test.
Results: According to Mann-Whitney test results that were not a statistically significant color differences for women and men teeth. Based on the p value of 0.860573, there was no difference in the lightness of maillary central incisor between genders, nor in red-green tone. Statistically significant difference exists when the blue and yellow balance is concerned.
Conclusions: Considering the limitations of this study, the results show that there is no difference in the color of maxillary central incisor between the genders. Also blue-yellow tone is less visible with female gender students. The consumption of cigarettes, coffee, tea, Coca-Cola, red wine as well as apples and beetroot does not affect teeth color.

P451
Bleaching of Non-Vital Teeth Stained After Endodontic Treatment: Case Report
Aslı Ardıçlı, Emin Türköz
Department of Restorative Dentistry, Gazi University, Ankara, Turkey

Introduction: In recent years, tooth whitening has become one of the most rapidly growing concern of esthetics dentistry. With the growing awareness of esthetics and conservative treatment options, there is a greater demand for the procedures to solve such unsightly problems like tooth staining. Tooth staining may occur due to extrinsic or intrinsic reasons. One of the major causes of intrinsic staining is endodontic treatment. Reasons such as excessive bleeding after the removal of pulp, kind of the materials used for treatment as well as the inadequate or no cleaning of canal filling or sealing materials from pulp chamber during endodontic treatment can cause tooth staining.
Case: The aim of this study was to evaluate the success of bleaching applied with the walking bleaching technique using the agent containing %35 H2O2 (HP whiteness superendo) to the teeth that are stained due to endodontic treatment. Four different patients were treated with bleaching agent containing %35 H2O2. Patient were followed up for 1 year.

P452
Chairside CAD/CAM Technology: A Report of Two Cases
Verda Türel
Department of Restorative Dentistry, Faculty of Dentistry, Atatürk University, Erzurum, Turkey

İn recent years with the rapid advancement of CAD/CAM systems, it has been able to make the dental restorations with the support of computer in the field of dentistry. By using CAD/CAM systems, working methods were simplified and able to use newer and more high-quality materials. This case report presents restorations being used CAD/CAM systems of two cases showing an upper right first molar tooth with the complaint of thermal sensitivity and a maxillary midline diastema. In the first case, it was observed an old composite filling on the tooth. Old filling was removed. By using CAD/CAM system, a ceramic inlay was made then cemented with a dual-cure resin cement. In the second case, teeth were treated with laminate veneer by using CAD/CAM system. CAD/CAM systems are exremely aesthetic but some CAD/CAM systems require expert user and devices are expensive.

P453
Single-Visit Bridges Using Bondable Reinforcement Ribbon and Natural Tooth: A Non-Invasive Technique
Emine Kara
Department of Restorative Dentistry, Yuzuncu Yil University, Van, Turkey

Introduction: Loss of anterior teeth causes a major problem with phonation and esthetics. The replacement of anterior teeth lost by periodontal reasons with porcelain fixed prosthesis can mostly not commute the aesthetics of natural teeth. For this reason, adhesive bridges that have been done using patient own teeth are employed to provide the patient's natural aesthetics. In addition this can be done with a minimally invasive approach. The bondable reinforcement ribbon (Ribbond®) is quite common in adhesive bridges. Ribbond based single-visit bridges provide strength, durability and immediate convenience. Ribbond based bridges are cost effective and reliable.
Case: This case report presents the replacement of anterior teeth which are extracted for periodontal reasons for attaining the function and aesthetic again with adhesive bridges in three different cases.

Theme: Dental Treatment & Restorative Dentistry: Materials

P454
Element-Release from Orthodontic Brackets in Artificial Saliva with Different Acidity
Evşen Tamam[1], Hatice Gökalp[2]
[1]*Department of Prosthodontics, Gazi University, Faculty of Dentistry, Ankara, Turkiye,* [2]*Department of Orthodontics, Ankara University, Faculty of Dentistry, Ankara, Turkiye*

Objective: The increasing use of nickel containing devices in orthodontics and the growing prevalence of nickel allergy in the population significantly increases the interest in biocompatibility studies of these devices. The decisive factor determining the biocompatibility of orthodontic brackets is their corrosion behavior. The aim of study was to test the hypothesis that increased acidity would have affected on amounts of element release from new stainless steel brackets.
Methods: We assayed the corrosion resistance, in terms of ion release, stainless steel orthodontic brackets in artificial saliva with various acidities. Orthodontic brackets (n = 10) were exposed to artificial saliva (37°C) at pH 2.4 and 7 for different periods (1–15 days). The daily amount of Ni and Cr ions released from brackets was determined using an atomic absorption spectrophotometer and an in-vitro day-to-day ion release pattern has been obtained for 15 days. The release amount of individual Ni and Cr

ions was statistically analyzed by multifactorial ANOVA for analyzing factors, including the pH, and immersion period. Tukey's test was chosen as the following multiple-comparison technique when necessary.

Results: Results showed that pH value, and immersion period, respectively, had a significantly statistical influence on the release amount of Ni and Cr ions. The higher acidity resulted in higher amounts of ions released for all periods. The amount of Ni and Cr ions released in all test solutions decreased day by day during 15 days period. The amount of Cr ions released in solution for all 15 days period was lower than Ni ions.

P455

A New Technique in the Production of Dental Models: A Vacuum Cabin

Yusuf Ziya Akpınar, Muhammed Ali Aslan, Numan Tatar, Betül Yılmaz

Department of Prosthodontics, Faculty of Dentistry, Abant İzzet Baysal University, Bolu, Turkey

Aim: The purpose of this in-vitro study was to evaluate and compare four different poure tecnniques on the physical properties of dental stones.

Material and Methods: ADA type IV dental stone was used to make a dental cast. Tooth preparation was performed on the prefabricated lower jaw between tooth number of 43 and 33. Impression was taken using Wash technique with C type silicon impression on the preparated teeth. Using four different techniques (manual, vacuum mixer, vacuum mixer + vacuum suction cabin and cabin) on the vibrator machine, ADA type 4 dental plaster was poured into silicone impression. After samples were taken of the impression, the buble countering was performed using 40× steromicroscopy. Sixty millimeter long 30 mm diameter hollow cylinder block made of Teflon mold was prepared for mechanical test. ADA type IV dental stone was poured in the circular teflon mold with four different techniques mainly handed, vacuum mixer, vacuum cabin and combination of vacuum mixer and cabin. A total of 60 specimens were under three point bending test using the universal test machine. One way ANOVA showed significant differences between groups both buble countering ($p < 0.001$) and mechanical test ($p < 0.05$).

Results: The vacuum cabin, a new technique, produced smooth and buble free dental cast. Using the vacuum cabin with combination of vacuum mixer, increased the physical properties of dental cast.

P456

Microtensile Bond Strength of All-Ceramics with Different Core-Veneer Ratio

Cennet Elçin Sağırkaya[1], Erhan Çömlekoğlu[2], Mine Dündar[2], Akın Aladağ[2], Mehmet Ali Güngör[2], Celal Artunç[2]

[1]*Department of Prosthodontics, Ordu University School of Dentistry, Ordu, Turkey,* [2]*Department of Prosthodontics, Ege University School of Dentistry, İzmir, Turkey*

Aim: To investigate the bond strength for differing core (Tc)/veneer (Tv) thickness ratio (1 mm/3 mm; 2 mm/2 mm; 3 mm/1 mm) in all-ceramic systems with microtensile bond strength test method (MTBS).

Materials and methods: Three different veneering ceramics, two of which were feldspathic and the other fluor–apatite, respectively with their corresponding cores, namely zirconium-dioxide (Zirkonzahn Gmbh) (Z), glass-infiltrated alumina (In-Ceram Alumina, Vita) (A) and lithium-disilicate (IPS Emax, IvoclarVivadent) (E) were used for MTBS test. Ceramic cores (8 × 8 mm) (N = 9) were fabricated according to the manufacturers' instructions [core thicknesses for each group: 1 mm (Z1, E1, A1), 2 mm (Z2, E2, A2), 3 mm (Z3, E3, A3)]. The veneering ceramics (3, 2 and 1 mm thickness) were condensed in stainless steel moulds and fired. Ten non-trimmed beam rectangular specimens were obtained from each block (n = 10). The specimens were stored in distilled water (37◦C, 7 days). Bond strength tests were performed in the universal testing machine (Autograph, Shimadzu, Japan, cross-head speed:1 mm/min). The bond strengths (MPa ± SD) were recorded and statistically analyzed (ANOVA, Post Hoc Dunnett T3; $\alpha = 0.05$). The fracture sites were examined with scanning electron microscopy (SEM) (JEOL JSM-5200, Japan).

Results: The mean MTBS values of E2 group were significantly higher (14.04 ± 3.58) than the other groups instead of E3 (11.91 ± 3.04) and A2 (9.59 ± 1.81). Lowest mean MTBS value belonged to group A3 (7.80 ± 1.14). SEM revealed predominantly adhesive failures at the core/veneer interface.

Conclusion: Tc/Tv ratio was a dominant controlling factor for the failure initiation site in bilayered ceramic discs. Tc and Tv should be considered to prevent mechanical failure of the ceramics.

P457

Composites Roughness and Microhardness After Different Bleaching Techniques

Andreia Leal[1], Anabela Paula[1], Miguel Marto[1], Diana Rebelo[1], Pedro Ambrósio[1], Miguel Esteves[2], Amílcar Ramalho[2], Manuel Ferreira[1], Eunice Carrilho[1]

[1]*Dentistry Department, Faculty of Medicine, University of Coimbra, Portugal,* [2]*CEMUC, University of Coimbra, Portugal*

Aim: Evaluate roughness and microhardness of SonicFill™ (Kerr), and compare it with FiltekSupremeXTE™ (3M ESPE) after two bleaching regimens.

Methods and materials: Sixty cylindrical specimens (10 × 2 mm) of each composite were prepared and divided into six groups (n = 20). Groups 1, 2: no treatment. Groups 3, 4: 10% carbamide peroxide (CP). Groups 5, 6: 35% hydrogen peroxide (HP) plus LED. After treatments, specimens were thermocycling (500 cycles, 5°C/55°C, dwell time 30″). Mechanical roughness tester was employed to measure the surface roughness parameters and Vickers test to measure microhardness.

One-Way-ANOVA, Tukey and Bonferroni methods with a significance level of 5% were used for the statistical analysis.

Results: For SonicFill™, there was no statistically significant difference in microhardness between the control group (1) and the bleached groups (3, 5), but there was difference between CP and

HP treatments; for FiltekSupremeXTE™ there was no significant difference in microhardness among all groups.

There was no significant difference in Ra and Rq among all groups. Rz parameter showed no statistically differences among all groups for SonicFill™ but, in Filtek SupremeXTE™ there was a significant increase between control and bleaching treatments; Rsk showed no statistically differences among all groups for SonicFill™ and Filtek SupremeXTE™, except for 2 and 4, where the Rsk increased with CP.
Conclusion: The microhardness of FiltekSupremeXTE™ is less affected by bleaching than SonicFill™.

Both bleaching treatments affects Rz in FiltekSupremeXTE™contrary to SonicFill™, but only the CP treatment affects the Rsk in FiltekSupremeXTE™ with no significant effect in SonicFill™.

P458

Microleakage of Pressable and Machinable Ceramic Inlays

Nurdan Polat Sağsöz[1], Ömer Sağsöz[2], Mehmet Yıldız[2]
[1]*Department of Prosthetic Dentistry, Ataturk University, Erzurum, Turkey,* [2]*Department of Restorative Dentistry, Ataturk University, Erzurum, Turkey*

Purpose: The aim of this study was to evaluate microleakage of pressable and machinable ceramic inlays luted with two different adhesive resin cement.
Materials and methods: Forty extracted caries-free human molar teeth were used in this study. Molars were prepared for Class II mesio-occlusal-distal (MOD) inlays with enamel gingival margins. Teeth were divided into two groups according to restoration tecnique; machinable or pressable indirect ceramic inlays, and further divided into two groups again for luting cement; self adhesive resin cement (Rely × U200), adhesive resin cement (Rely × ARC) (n = 10). In machinable ceramic group teeth were received feldspar ceramic inlays made with a CAD/CAM system. In pressable ceramic group teeth were received leucite glass-ceramic inlays made by a dental laboratory. After luting procedure restored teeth were stored in distilled water and basic fuchsin solution (0.5%) each for 24 h at 37°C respectively. Than the teeth were sectioned mesiodistally with a diamond wafering blade mounted on a low-speed saw. Images of restored tooth sections were captured with a digital camera and a five-point scale was used to record microleakage scores. Data were analyzed using one-way ANOVA and Tukey's HSD post hoc tests statistically ($\alpha = 0.05$).
Results: There were significant differences within restoration tecniques and luting cements. Pressable inlays luted with Rely × ARC showed the highest, and machinable inlays luted with Rely × U200 showed the lowest resistance to microleakage.
Conclusion: Restoration tecniques and luting procedures directly affects the microleakage performance, so it is important to choose proper material in dentistry.

P459

Color Stability of Different Resin Based Restorative Materials

Elif Öztürk[1], Gizem Kaçar[2]
[1]*Department of Restorative Dentistry, Hacettepe University, Ankara, Turkey,* [2]*Department of Restorative Dentistry, Kocaeli University, Kocaeli, Turkey*

Aim: The aim of this study was to evaluate the color stability of five different resin composites after immersing in three different soft-beverages for 30 days.
Materials and methods: Two hundred disk-shaped specimens (diameter:10-mm and thickness:2-mm) were made from five different resin composites (FiltekZ550, TetricN-Ceram, ClearfilMajesty-Esthetic, CavexQuadrantUniversalLC, ClearfilAP-X). Each specimen was cured under the mylar strips for 20 s from each of top and bottom surfaces. All of the specimens were stored in distilled water for 24 h at 37°C. The specimens were polished with a multi-step polishing discs (Optidisc, Kerr, CA, USA). Color measurements of each specimen were performed using a spectrophotometer (VitaEasyShade) according to the CIEL*a*b* color scale at baseline and after 30 days of immersion in three different soft-beverages (Redbull, Coca-Cola, and Dimes-Lemonade). Control groups were stored in distilled water during the study. Color changes (ΔEvalues) of the groups were recorded. The data were statistically analyzed using one way repeated measures ANOVA and Bonferroni correction tests (SPSS18.0; $p = 0.05$), as well as a multivariate analysis (GeneralLinearModel) to test the influence of composite type, beverage type and both together.
Results: Significant differences were observed at baseline between the five different resin composites ($p < 0.05$). There were statistically significant differences between the ΔE values of the experimental groups after 30 days of immersion ($p < 0.05$). The effect of composite type (EtaSquaredValue[ESV] = 0.691) on ΔE values of the goups was the highest followed by composite type together with beverage type (ESV = 0.296) and beverage type (ESV = 0.147) respectively.
Conclusions: The tested soft-beverages in the present study caused color changes at a 30-day evaluation period for the tested resin composites.

P460

Numerical Analysis of Damage Mechanics of Dental Trilayer Systems

Ehsan Homaei[1], Omid Barazandeh Ahmadabadi[1], Khalil Farhangdoost[1], Majid Akbari[2]
[1]*Department of Mechanical Engineering, Ferdowsi University of Mashhad, Mashhad, Iran,* [2]*Faculty of Dentistry, Mashhad University of Medical Sciences, Mashhad, Iran*

Purpose: To find the optimum combination of materials and thicknesses to provide a tough, damage resistant multi-layer system with numerical methods (XFEM), without the need of exhaustive experiments which are difficult or costly to model.
Materials and methods: Extended Finite element method (XFEM) is used to assess the critical loads for the onset of damage modes such as radial cracks, cone cracks and plastic deformation in dental prostheses, consisting of a spherical indenter contacting a brittle outerlayer (porcelain)/metal (Pd/Co/Au alloys) -core/dentin-substrate trilayer system in concentrated loading. XFEM provides flexibility in modeling, as crack need not be aligned with the element edges. XFEM in particular not only has the ability to successfully solve crack propagation problems but also can model crack initiation process. The overall thickness of metal (dm) and porcelain (dp) layers is assumed to be 1.5 mm (dm+dp).

Results: It is found that harder and stiffer metal core has the higher critical load for radial cracks. Furthermore, it can be inferred that thinner metal layers are more susceptible to radial cracking, while thicker ones are more exposed to cone cracking. Yielding of metal core makes additional flexural stress at overlaying brittle surface and consequently, facilitates radial cracks.
Conclusions: Generally speaking, the minimum thickness of porcelain layer is recommended to be 0.5 mm, avoiding the structure from cone cracks. Furthermore, the metal layer shouldn't be too thin to protect dentin and inhibit radial cracking. Finally, hardness of metal is better to be high sufficiently to prevent it from plastic deformation.

P461

Comparative Evaluation of Surface Coated Compomer and Glass Ionomer Cement in Vitro

Ilhan Uzel, Fahinur Ertuğrul
Department of Pediatric Dentistry, Ege University, Izmir, Turkey

Aim: Physical and chemical similarity, high compatibility with dental hard tissue and long lasting survival in oral cavities are the requested characteristics of restorative materials. In addition, aesthetic and mechanical characteristics of these materials play a vital role. Therefore, the aim of this study was to evaluate the colour stability and surface roughness of surface-coated or varnish applied high-viscosity glass ionomer cement (GIC) and surface-coated compomer following thermocycling.
Methods and materials: Disc-shaped specimens (n = 10, 10 × 2.5 mm, colour stability specimens; n = 30, 6 × 2.5 mm surface roughness specimens) were prepared forming the following groups; I-Fuji IX GP eXtra, II- Dyract eXtra, III-Fuji IX GP eXtra + Fuji Varnish, IV-Fuji IX GP eXtra + G-Coat Plus, V- Dyract eXtra + G-Coat Plus. Colour and surface profiles were measured at baseline and after thermocycling (5,000 cycles, 5–55°C). Colour measurements were performed (CIE L*, a*, b*) using a spectrophotometer (EasyShade, VITA) and surface roughness (Ra) was determined with a profilometer (Mitutoyo SJ-301). Discoloration data were analyzed using Tukey and Dunnett T3 tests, surface roughness data were analyzed using T and Dunnett T3 tests ($p = 0.05$).
Results: Varnish application created a significant increase in the discoloration ($p < 0.05$) and surface roughness properties ($p < 0.05$) of GIC after thermocycling whereas surface coating did not present any influence on GIC ($p < 0.05$) or compomer ($p < 0.05$).
Conclusions: Varnish application increased susceptibility to discoloration and surface roughness of GIC after thermocycling. Surface coating presented stability against discoloration and surface roughness following thermocycling.

P462

Relation of the Wear Resistance of Dental Materials to their Mechanical Properties

Todor Tsonkov Uzunov[1], Ivan Emilov Chakalov[1], Maria Dimitrova Dacheva[2], Rumen Zlatev Yankov[2]
[1]*Department of Prosthetic Dentistry, Faculty of Dentistry, Medical University, Sofia,* [2]*Institute of Mechanics, Bulgarian Academy of Sciences, Sofia*

Aim: The aim of the present study was to determine the relationship between wear resistance of dental materials and their hardness and elastic modulus.
Material and methods: For the aim of this research five dental composites (Filtek Ultimate "3M ESPE", Filtek Silorane "3M ESPE," Herculite-XRV "Kerr," Charisma "Heraeus Kulzer," Heliomolar "Ivoclar Vivadent") have been used. The chewing simulator "Sofia" has been used to assess the abrasion resistance employing specially designed samples of each of the materials. Afterwards, the samples have been tested by Nano Indenter G200. Instrumented indentation is based on the indentation hardness test applied to small volumes where displacements are continuously monitored during a loading-unloading sequence. Indentation hardness and modulus are calculated from the load-displacement curves taking into account the geometry of the indenter tip.
Results: The wear extent of the five tested materials after 50,000 chewing cycles has been evaluated with profilometer and the obtained results are: Filtek Ultimate – 47.19 μm, Filtek Silorane – 135.24 μm, Herculite-XRV – 67.55 μm, Charisma – 132.85 μm, Heliomolar – 87.27 μm. The values of modulus of elasticity were defined for each of the samples. The indentation hardness (H) of the investigated materials is: Filtek Ultimate – 1,029 GPa, Filtek Silorane – 0.703GPa, Herculite-XRV – 0.605GPa, Charisma – 0.503GPa, Heliomolar – 0.465GPa.
Conclusions: For the five studied composite restorative materials there is no apparent linear relationship between the wear extent and the material hardness and modulus of elasticity. Essential role for the material deterioration have the adhesive and fatigue wear mechanisms observed during the experiment fretting.

P463

Microleakage of Class V Restorations: Compomer, Nanohybrid or Self-Adhesive Flow Composite

Pınar Yılmaz Atalı[1], Berna Gökkaya[2], Faik Bülent Topbaşı[1]
[1]*Department of Operative Dentistry, Marmara University, İstanbul, Turkey,* [2]*Department of Pediatric Dentistry, Marmara University, İstanbul, Turkey*

Aim: The aim of this in vitro study to assess the microleakage of class V cavities restored with compomer, a new self-adhesive flowable composite, a nanohybrid composite, a nanohybrid flowable composite.
Methods and materials: Thirty standardized Class V box cavities were prepared on the buccal surface of maxillary incisors. Teeth were randomly assigned into six groups (n = 5). Grup I: Grandio + FuturoBond NR (Voco); Grup II: Grandio Flow + FuturoBond NR (Voco); Grup III, IV and V: Embrace Wet Bond (EWB) (Pulp-Dent) with no adhesive, with FuturoBond NR (Voco) or PrimeBond NT (Dentsply); Grup VI: Dyract XP + PrimeBond NT (Dentsply). After finishing and polishing, the teeth were stored in distilled water at 37°C for 30 days, coated with nail varnish, and immersed in a %0.05 basic fuchsine, and then longitudinally sectioned. Dye penetration was measured with a stereomicroscope at ×50 magnification at both coronal and gingival margins. Data were analyzed with Kruskal-Wallis, Mann-Whitney and Wilcoxon tests ($p = 0.05$).

Results: There is no significant difference for dye penetration surface between all groups in coronal ($p = 0.143$) and gingival margins ($p = 0.198$). The application of bonding agent with EWB provided better marginal sealing than those without at class V cavities but it is not significant ($p > 0.05$).
Conclusion: Both resin-based composites and compomer showed microleakage in Class V restorations. Self-adhesive flowable composite may be used with bonding agent to predict better marginal seal.

P464
Influence of Time and Caffeinated Drinks on Colour Stability of Nanocomposite Resin
Farah Hidayah Mohd Fazli[1], Maziahtul Zawani Munshi[1], Haliza Hassan[2], Nik Zarina Nik Mahmood[1]
[1]*Centre of Studies for Restorative Dentistry, Faculty of Dentistry, Universiti Teknologi MARA, Shah Alam, Selangor, Malaysia,*
[2]*Centre for Statistical & Decision Science Studies, Faculty of Mathematical and Computer Sciences, Universiti Teknologi MARA, Shah Alam, Selangor, Malaysia*

Objective: This study evaluated the influence of time and caffeinated drinks on the colour stability of nanocomposite resin.
Materials and methods: Two nanocomposite resins, Filtek Z350 (3M ESPE) and Grandio (VOCO) of A3 shade were investigated. Hundred and two discs (5 mm × 2 mm) were fabricated using a mold. Fifty-one discs from each brand were polymerized and polished. The discs were then divided into three groups of 17 discs and were immersed in three caffeine mediums; coffee, tea and cocoa at five time intervals; 1, 5, 10, 20 and 30 min. Staining colorimetric value of each disc was assessed by spectrophotometer Minolta CM-C3500. Data from the color change were collected and subjected to statistical analysis by one-way ANOVA ($p < 0.05$). For immersion time, the data were subjected to post-hoc, Tukey Test ($p < 0.05$).
Results: Filtek Z350 and Grandio showed significant colour change ($p = 0.004$) on immersion with caffeinated drinks. The lowest color change of 1 min (0.49 ± 0.19), 5 min (0.61 ± 0.24), 10 min (0.67 ± 0.27), 20 min (0.90 ± 0.30) and 30 min (0.80 ± 0.32) was obtained from Filtek Z350 in coffee medium. Post-hoc, Tukey Test, indicated that there was significant difference in colour changes at 10 min of exposure to all mediums (p value = 0.0001) in Filtek Z350, and as early as 1 min (p value = 0.0001) in Grandio.
Conclusions: Caffeinated drinks significantly affect colour stability of nanocomposite. Filtek Z350 showed color change at 10 min and Grandio at 1 min after exposure to all mediums.

P465
Analysis of Reasons for the Placement and Replacement of Restorations Provided By Selected Dental Practitioners
Hakan Çolak[1], Çoruh Türksel Dülgergil[1], Abdülkadir Şengün[1], Ertuğrul Ercan[1], Bahadır Uğur Aylıkci[2]
[1]*Department of Restorative Dentistry, Kırıkkale, Turkey,*
[2]*Department of Periodontology, Kırıkkale, Turkey*

Aim and objective: The aim of this study was to report the reasons for placement and replacement of direct restorations in public dental services in Turkey.
Materials and methods: A group of dental practitioners working in public dental services were invited to take part in the study. Each participant was asked to record the reason for placement or replacement of restorations from a list of potential reasons. In addition, Class and materials used for each restoration placed and replaced also recorded.
Results: A total of 58 dentists were contacted and 47 responded. Details of the reason for placement or replacement was received on 4096 restorations; 84% of these were first-time restorations and 16% were replacement restorations. The reasons for placement of the restorations were principally primary caries (96%), followed by non-carious defects (%2) and other reasons (2%). Of these, 34% were Class I, 45% were Class II, 21% were Class III, 3% were Class V. The clinical diagnosis of secondary caries (32.5%) was the main reason for replacement of all types of restorations studied, followed by pain (19.2%) and lost of restorations. Resin composite (58%) was the most commonly used restorative material followed by amalgam (37%) and with a minimal use of glass ionomer cement (2%).

P466
Effect of Hemostatic Agent on the Bond Strength of Adhesives
Saffet Başaran, Duygu Tuncer, Derya Merve Halaçoğlu, Kıvanç Yamanel, Çiğdem Çelik, Neslihan Arhun
Department of Restorative Dentistry, Başkent University, School of Dentistry, Ankara, Turkey

Objectives: The aim was to determine the effect of blood contamination and hemostatic agent application on the shear bond strength (SBS) of different adhesives to dentin.
Materials and methods: Seventy-two extracted human molars were used in this study. Teeth were mounted acrylic in moulds. Mesial and distal surfaces were removed to obtain flat dentin surfaces ($n = 144$) and grinded with a 600 grit sandpaper. The samples were randomly divided into four main groups ($N = 36$) based on the adhesive system and application prodecure. Group I: Single Bond 2 (etch-and-rinse). Group 2: Clearfil SE Bond (two-step self-etch). Group III: Single Bond Universal (multimode, etch-and-rinse). Group IV: Single Bond Universal (multimode, all-in-one self-etch). Subgroups composed of no treatment (control), blood contamination and blood contamination+hemostatic agent applications. Resin cylinders (Filtek Z550) were bonded to the dentin surfaces according to the manufacturers' instructions. A shear load was applied to the specimens using universal testing machine at a cross-head speed of 0.5 mm/min until failure. Data were analyzed statistically ($p < 0.05$).
Results: Statistically significant differences were observed between no contamination (control) and blood+hemostatic agent contamination groups for both Single Bond 2 (etch-and-rinse) and Single Bond Universal (multimode, all-in-one self-etch) ($p < 0.05$). When the adhesive systems were compared to each other, no statistically significant differences were found in all contamination groups and control group for the mean SBS values ($p > 0.05$).

Conclusion: In case of blood contamination or usage of hemostatic agent after blood contamination, SBS of adhesive systems to dentin have a tendency to decrease.

P467

Bond Strengths of Two-Step Self-Etch Adhesives to Laser-Irradiated and Bur-Cut Dentin

Emine Gülşah Göktolga Akın[1], Seyda Herguner Siso[2], Hakan Akin[3]

[1]Department of Restorative Dentistry, Cumhuriyet University, Sivas, Turkey, [2]Department of Restorative Dentistry, Bezmi Alem University, Istanbul, Turkey, [3]Department of Prosthodontics, Cumhuriyet University, Sivas, Turkey

Objective: To evaluate the microtensile bond strength (μTBS) of two-step self-etch adhesive systems to bur-cut and Er:YAG laser-irradiated dentin after water storage and thermocycling.

Materials and methods: Seventy-two-third molars were used in this study and they were randomly divided according to cavity preparation method (bur-cut and Er:YAG laser). Two-step self-etch adhesive systems (Clearfil SE Bond, AdheSE and Adper SE Plus) were used to bond the composite to dentin. Following the adhesive procedure, the specimens were subdivided according to aging conditions (24 h in water control (C), 6 months of water storage (WS) and 10.000 thermocycles (TC). μTBS was determined in a universal testing machine. Three-way ANOVA, independent samples *t*-test and post hoc comparisons test ($\alpha = 0.05$) were performed on all data.

Results: No significant difference was found in μTBS between bur-cut and Er:YAG laser-irradiated dentin ($p > 0.05$). In addition, there was no statistical difference in μTBS between C, TC, and WS specimens ($p > 0.05$). The highest μTBS to dentin was observed in both laser-irradiated and bur-cut cavity preparation methods in Clearfil SE Bond group.

Conclusions: Neither bur-cut or Er:YAG laser-irradiated dentin was affected by the aging methods used to simulate degradation of the adhesive interface. Er:YAG laser treatment may be used as an alternative cavity preparation method.

P468

The Effects of Different Polymerization and Preparation Techniques on the Microleakage of Composite Laminate Veneers

Neslihan Çelik[1], Merve İşcan Yapar[1], Numan Taşpınar[2], Nilgün Seven[1]

[1]Department of Restorative Dentistry, Ataturk University, Erzurum, Turkey, [2]Department of Medical Pharmacology, Ataturk University, Erzurum, Turkey

Purpose: The purpose of this study was to evaluate the correlation of the direct and indirect polymerization technique and different preparation techniques (window, Feather, Bevel, incisal overlap) to microleakage for composite laminate veneers.

Methods and Materials: Eighty-four caries free human maxillary central incisors were randomly assigned to 12 groups (n = 7) and designed with four different preparation techniques (1: window type, 2: feather type, 3: bevel type, 4: incizal overlap type). Nanohybrid resin composite was used for preparation. A1 shade was chosen for standardization. Group A; Composite laminate veneers polymerized using direct light curing. Group B; Composite laminate veneers polymerized through indirect polymerization with a combination of pressure, light and heat using a light cup and heat cup, Group C; Composite laminate veneers polymerized using direct polymerization and additionally heat cured in an oven. The specimens were submitted to thermocycling, coated with nail varnish, and then immersed in %5 basic fuchsine solution for 24 h. Following that all specimens were immersed in % 65 nitric acid solution for volumetric dye penetration test. Samples diluted with distilled water and centrifuged. The clearest parts of the solutions were received and microleakage determined by a spectrophotometer (wavelength 600 nm). Data were analyzed by two way ANOVA and Tukey post hoc multiple comparisons test ($p < 0.05$).

Results: Comparison of direct and indirect polymerization techniques revealed no statistically significant difference between composite laminate specimens ($p > 0.05$). There were significant difference between preparation technique ($p < 0.05$). Microleakage value of window type was lower than the other preparation techniques.

P469

Temperature Rise During Composite Resin Polymerization at Different Curing Times and Curing Modes

Nurcan Özakar İlday, Omer Sagsoz, Ozcan Karatas, Yusuf Ziya Bayındır

Department of Restorative Dentistry, University of Atatürk, Erzurum, Turkey.

Objective: This study evaluated temperature rise in silorane- (Filtek Silorane) and dimethacrylate-based (Filtek Z550) composite resin systems at different curing times and curing modes.

Materials and methods: Forty dentin disks (1.5 mm thickness, 8 mm diameter) were prepared from sound human third molars. Composite resins polymerized with a LED light curing unit (LCU), in two modes (Plasma mode 3,6,9,+2 s/Normal mode 10,20,30,+2 s). Temperature rise in the dentin samples under the composite resin disks was measured using a K-type thermocouple wire connected to a data logger. Differences (ΔT) between baseline and each time interval were recorded. Data were analyzed using ANOVA and the independent sample t test ($\alpha = 0.05$).

Results: There were significant differences in mean temperature rises between different modes and polymerization times ($p < 0.05$). Light polymerization of silorane-based composite resin (Filtek Silorane) resulted in significantly higher temperature rises than in dimethacrylate-based composite (Filtek Z550) for each polymerization time interval and curing mode ($p < 0.05$).

Conclusion: With the exception of two groups (Filtek Silorane baseline/30 s and Filtek Silorane baseline/30 + 2 s), maximal temperature increase determined in all groups was not critical for pulpal health.

P470

Effects of Cavity Configuration and Flowable Composite Liner on Microtensile Bond Strength to Dentin

Fatma Ayaz, Dilek Tagtekin, Funda Yanıkoglu
Department of Restorative Dentistry Marmara University, Istanbul, Turkey

Objective: Due to polymerisation shrinkage of resin based composites, a high configuration factor in deep Class I cavities leads to a certain amount of stress when the material is bonded. The aim of this in vitro study was to evaluate the influence of C-factor and intermediary flowable composite liner on bonding to dentin.
Methods: Forty extracted human third molars were randomly divided into two groups. Class I cavities and flat dentin surfaces on the same dentin depth were prepared and further divided into four subgroups according to the employed adhesive/composite combination. Two adhesive systems Solobond M (Voco) or Clearfil SE Bond (Kuraray) were used in conjuction with a composite (Herculite XRV, Kerr) placed incrementally. A flowable composite GrandioSO Heavy Flow (Voco) or Clearfil Majesty Flow (Kuraray)] was applied as a liner in half of the teeth of each group with their corresponding adhesives. Four stick specimens with 1 mm² of bonding area were prepared from the center of the each tooth. All specimens were thermocycled for 5000 cycles between 5 and 55°C and subjected to micro-tensile bond strength (μTBS) test.
Results: Kruskal Wallis and Mann Whitney *U* tests were used for the statistical analyses. The adhesive systems evaluated were not significantly different ($p > 0.05$). The flat surface groups exhibited higher bond strengths than the cavity groups. No statistical difference was seen between the groups with and without flowable composite liner ($p > 0.05$).
Conclusion: Increasing C-factor negativelly effected the μTBS. Using a flowable composite liner is not an effective technique to improve the μTBS.

P471

Effects of Surface Conditioning Methods on Repair Bond Strengths of Amalgam Restorations

Özden Özel Bektaş[1], Gülşah Göktolga Akın[1], Diğdem Eren[1], Mutlu Özcan[2]
[1]*1Department of Restorative Dentistry, Faculty of Dentistry, Cumhuriyet University, Sivas, Turkey,,* [2]*Clinic for Fixed andRemovable Prosthodontics and Dental Materials Science, Center for Dental and Oral Medicine, University of Zürich, Switzerland*

Object: This study tested the bond strength of a resin cement to a fresh and an aged amalgam after six conditioning methods using shear test method.
Materials and methods: One hundred and twenty specimens were prepared by filling the amalgam into a teflon split mold Then specimens were divided into two main groups (fresh and aged). For aging; 60 specimens were subjected to 5,000 thermocycles. Then groups were divided into six subgroups according to surface conditioning method used. In this way, 12 grups were obtained. Gr1- fresh amalgam- Al2O3+ alloy primer; Gr2- fresh amalgam- Frez; Gr3- fresh amalgam -silica coating + Silane; Gr4-fresh amalgam-Laser; Gr5- fresh amalgam-silicon carbide (Control); Gr6-fresh amalgam- Al2O3+ silane; Gr7-aged amalgam- Al2O3+ alloy primer; Gr8-aged amalgam-Frez; Gr9-aged amalgam- silica coating + Silane; Gr10- aged amalgam-Laser; Gr11- aged amalgam-silicon carbide (Control); Gr12 aged amalgam-Al2O3 + silane. After conditioning of the surfaces with related protocols, the bonding agent was applied. The resin composite was bonded to amalgam by use of molds (inner diameter: 3.6 mm and height: 4 mm). Then, the samples were attached to the jig of universal testing machine with a notched blade attached to a compression load. Shear force was applied as close as possible to the surface of the substrate at a crosshead speed of 0.5 mm/min until fracture occurred.
Results: Shear bond strength test method results yielded with the different surface conditioning methods showed statistically significant differences ($p < 0.0001$). Silica coating followed by silanization showed higher bond strength results compared to those of other conditioning methods.

P472

Preventing Microbial Adhesion by Different Coating Materials on PMMA

Meral Arslan Malkoç[1], Nilüfer Tülin Polat[1], Ayçe Ünverdi Eldeniz[2], Hilal Şiriner[1], İsmail Hakkı Uzun[1]
[1]*Department of Prosthodontics, Faculty of Dentistry, İnönü University, Malatya, Turkey,* [2]*Department of Endodontics, Faculty of Dentistry, Selçuk University, Konya, Turkey*

Objectives: The aim of this study was to investigate the effect of different ceromers on denture base acrylic resin in the inhibition of oral microbial adhesion.
Methods: Heat polymerized acrylic resin was used in this study. For the evaluation of the antimicrobial activity, 80 standardized acrylic resin specimens were obtained. Each specimen was prepared to a uniform size (10 mm • 10 mm • 2 mm) and polished using silicon carbide abrasive paper up to #1000 under running water. Specimens were divided into four groups ($n = 20$): non-coated group, Glimo-Teos coated group, a Glimo-Teos + ZiO2 coated group and a Glimo-Teos+ TiO2-coated group. Specimens were submitted to the adherence assay with C. albicans (ATCC 90028). Adhered cells were detached from the acrylic resin surface by ultrasonic waves in phosphate buffered saline solution (PBS). This cell solution was serially diluted in PBS and plated on medium.

Descriptive data were analyzed by means of one-way ANOVA (parametric approach), $\alpha = 5\%$. Post hoc multiple comparisons were performed according to Tukey HSD test (5%).
Results: There were significant differences on Glimo-Teos +TiO2 (4.69 ± 0.2) group when compared to other groups ($p < 0.05$), but no statistically significant differences were found among the non-coating (5.45 ± 0.3), Glimo-Teos (5.29 ± 0.2) and Glimo-Teos + ZiO2 (5.26 ± 0.2) groups ($p < 0.05$).
Conclusion: Results indicate that Glimo-Teos +TiO2 coating is suitable for clinical application, but further studies using different test methods are needed for this coating material.

P473

Evaluation of Cytotoxicity of Ceromer-Coated PMMA by Real-Time Cell Analysis

Nilüfer Tülin Polat[1], Esma Başak Gül[1], Derya Özdemir Doğan[2], Ahmet Altun[3], Mustafa Hayati Atala[1]

[1]Department of Prosthodontics, Faculty of Dentistry, İnönü University, Malatya, Turkey, [2]Department of Prosthodontics, Faculty of Dentistry, Cumhuriyet University, Sivas, Turkey, [3]Department of Pharmacology, Faculty of Medicine, Cumhuriyet University, Sivas, Turkey

Objective: The aim of this study is to evaluate the cytotoxicity of various ceromer coated PMMA by real- time cell analyzer.

Methods: Forty-eight disc specimens (5 × 2 mm) of heat polymerized acrylic resin were prepared according to ISO 10993–5 protocol. Six groups were formed; heat-polymerized acrylic resin, post-polymerization heat applicated group, Glymo+TEOS, Glymo+TEOS+ZnO2, Glymo+TEOS+TiO2 and Polymer A174 + TEOS coated acrylic groups. After the sterilization, materials were incubated in Dulbecco's modified eagle's culture medium for 1, 4 and 7 days. A real-time cell analyzer was used to evaluate the cell survival. After seeding 100 ml of the L-929 fibroblast cell suspensions into the wells (20,000 cells/well) of the E-plate 96, the cells were exposed to 100 ml of extracting solution containing the components released by the acrylic resins (1/1 and 1/2 dilutions) and monitored every 1 h for 85 h. The statistical analyses used for the proliferation experiments were one-way analysis of variance (ANOVA) and Tukey-Kramer multiple comparisons tests.

Results: None of the studied groups were found cytotoxic for both dilutions and different time intervals ($p > 0.05$).

Conclusion: None-of the used coating agents were found to be cytotoxic. Further studies about the cytotoxicity of ceromers would be helpful to better understand the biological risks and to improve the biocompatibility of the ceromers.

P474

Effect of Coating with Different Ceromers on the Mechanical Properties of PMMA

Esma Başak Gül[1], Mustafa Hayati Atala[1], Nilüfer Tülin Polat[1], Meltem Asiltürk[2], Ahmet Gültek[3]

[1]Department of Prosthodontics, Faculty of Dentistry, İnönü University, Malatya, Turkey, [2]Department of Material Science and engineering, Faculty of Engineering, Akdeniz University, Antalya, Turkey, [3]Department of Chemistry, Faculty of Arts and Sciences, İnönü University, Malatya, Turkey

Objective: The aim of this study was to evaluate the transverse and impact strength and elastic modulus of heat-polymerized acrylic resin after coating with different ceromers.

Methods: Transverse strength and modulus of elasticity test specimens were prepared in the dimensions of 65 × 10 × 2.5 mm (5 groups, n:10). The dimensions of the impact strength test specimens were 60 × 7.5 × 4 × mm (5 groups, n:10). Test group specimens were coated with Glymo-TEOS, Glymo-TEOS-TiO2, Glymo-TEOS-ZrO2 and A174-TEOS, control groups were non-coated.

The specimens were tested for transverse strength with the use of a 3-point loading apparatus in a universal testing machine. The impact test was carried out with a Charpy-type pendulum impact tester. The data were analyzed with multifactorial analysis of variance and Tukey post hoc tests ($p < 0.05$).

Results: Glymo-TEOS-TiO2 and A174-TEOS had significantly increased the transverse strength of PMMA. All ceromers had caused statistically significant increase in the elastic modulus of PMMA. While the Glymo-TEOS-ZrO2 had significantly decreased the impact strength, the increase in the strength values of other ceromers was not statistically significant.

Conclusion: Coating with ceromers had substantially improved the mechanical properties of PMMA.

P475

The Effect of Ceromer-Coating on Some Physical Properties of PMMA

Nilüfer Tülin Polat[1], Meral Arslan Malkoç[1], Bekir Eşer[1], Güler Yıldırım Altuntarım[1], Meltem Asiltürk[2]

[1]Department of Prosthodontics, Faculty of Dentistry, İnönü University, Malatya, Turkey, [2]Department of Material Science and Engineering, Faculty of Engineering, Akdeniz University, Antalya, Turkey

Objectives: The aim of this study is to investigate the effect of ceromer coating on the water sorption, solubility and dimensional stability of a heat-polymerized acrylic resin.

Methods: Water sorption and solubility tests were done according to the ADA 12 standards. Conventional heat-polymerized acrylic resin disks (50 ± 1 × 0.5 ± 0.05) were prepared. The specimens were separated into two groups randomly. The testing group was coated with Glymo-Teos. The water sorption and solubility values (g/cm3) were calculated.

In order to evaluate the dimensional stability, 10 brass specimens (20 × 12 × 2 mm) with stainless steel spheres (1 mm diameter) as reference points on each corner were prepared. Two groups of acrylic (n = 10) were prepared from the brass specimens. The testing group was coated with Glymo-Teos. Various measurements were done with various phases, such as polymerization, drying, 15, 30 days of incubation period. The distance between the reference points were measured in μ with a camera attached to a stereomicroscope. Four measurements for each specimen were transferred into one value with vectorial calculation.

Water sorption and solubility data were evaluated with independents samples-t test and dimensional stability values were evaluated with paired sample t and independent sample t tests.

Results: Water sorption and solubility values of Glymo-Teos group were statistically significantly ($p < 0.05$) lower than the control group. The dimensional decrease in Glymo-Teos group between the "metal-drying" phases was significantly higher ($p < 0.05$) than the acrylic group.

Conclusion: Ceromer coating of acrylic resin had lowered the water sorption and solubility values, and increased the dimensional change of the acrylic resin.

Theme: Dental Treatment & Restorative Dentistry: Pedodontics

P476

Effect of KTP Laser and Ozone in Primary Root Canals

Arife Kapdan[1], Alper Kuştarcı[2], Tutku Tunç[3], Zeynep Sümer[3]
[1]*Department of Pediatric Dentistry, Faculty of Dentistry, Cumhuriyet University, Sivas, Turkey,* [2]*Department of Endodontics, Faculty of Dentistry, Akdeniz University, Antalya, Turkey,* [3]*Department of Microbiology, Faculty of Medicine, Cumhuriyet University, Sivas, Turkey*

Aim: The objective of this study was to evaluate the antimicrobial activity of KTP laser and gaseous ozone in experimentally contaminated root canals of primary teeth.
Materials and methods: Forty eight root canals from primary insisors teeth were selected. After preparation and sterilization, the specimens were inoculated with 10 µl Enterococcus faecalis for 24 h at 37°C. The contaminated roots were divided into two experimental groups, one negative control group, and one positive control group of 20 teeth each: Group 1, KTP laser group (1,5 W); Group 2, gaseous ozone group (150 s); Group 3, sodium hypochlorite group (NaOCl) (negative control); and Group 4, saline group (positive control). Sterile paper points used to sample bacteria from the root canals were transferred to tubes containing 5 ml of brain heart infusion broth. Then 10 µl suspension was incubated in culture media for 24 h. The colonies of bacteria were counted and data were analyzed statistically using Kruskal-Wallis and Mann-Whitney U tests.
Results: There were statistically significant differences between all groups ($p < 0.05$). Complete sterilization was achieved in the 2.5% NaOCl group. The number of bacteria was significantly reduced in experimental groups in comparison with the positive control group.
Conclusions: Although KTP laser and gaseous ozone have a significant antibacterial effect on infected root canals of primary teeth, with the gaseous ozone being more effective than the KTP laser, 2.5% NaOCl showed the best antibacterial effect.

P477

The Evaluation of the Bluegrass Appliance's Effectiveness in Children with Thumb-Sucking Habit

Begüm Gök, Zuhal Kırzıoğlu
Department of Pediatric Dentistry, Faculty of Dentistry, Süleyman Demirel University, Isparta, Turkey

Aim: The aim of this study is to implement the Bluegrass appliance to children with thumb-sucking habit who do not respond to the reminder treatment, and to evaluate the results.
Methods: Aged between 4 and 11 years, one hundred sixty-one children admitted to the Pedodontics clinic with a thumb-sucking habit were included in the study. The patients were initially given a reminder treatment for 2–3 weeks. The Bluegrass appliance was prepared for 28 children who did not respond to the reminder treatment and who accepted to participate in the study. The required ethical and parental consents were obtained. If the habit was ceased or not, the time for the cessation of the habit, and the 2-year follow-up period were evaluated.
Results: Thirty-two out of 161 patients discontinued the therapy. The reminder treatment failed in 92 patients. Twenty-eight children who did not respond to the reminder treatment accepted to participate in the Bluegrass appliance treatment. Eight patients did not show up for the control examinations, and were excluded from the study. The study was continued with 20 patients. The Bluegrass appliance had a success rate of 72% in children aged between 4 and 6 years, who constituted 65% of all patients. The success rate was lower in children aged between 9 and 11 years, who constituted 35% of all patients.
Conclusion: The effective period for the appliance was determined as 2–3 months. The Bluegrass appliance gave better results, especially in children aged between 4 and 6 years.

P478

Management of Orofacial Infection in Pediatric Patients Attending a Dental Clinic in Ankara

Hasan Ayberk Altug, Metin Sencimen, Gurkan Rasit Bayar, Tamer Zerener, Abdullah Tugrul Coskun
Department of Oral & Maxillofacial Surgery, Gulhane Military Medical Academy, Ankara, Turkey

Introduction: Orofacial infections are common in pediatric patients. Bacterial invasion, chemical irritation, or trauma can cause orofacial infections. The most common cause is dental caries and after that bacterial invasion of the tooth pulp. The inflammation begins with a necrotic pulp and spreads into the surrounding periodontal ligament and bone. The inflammatory process causes bone resorption. Orofacial infections can turn into abscess and may be collected in maxilla-facial region such as submandibular abscess.
Methods and materials: We examined management of orofacial infection on five pediatric patients who attended a dental clinic in Ankara (2010–2012). The average age of the patients was ten. Our patients were three girls and two boys. There were three submandibular abscesses, one buccal abscess and one fossa canina abscess in our events. All of abscesses were occurred by dental caries.
Conclusion: Although orofacial infections affect both sexes equally some studies shows a preponderance of girls. Caries is main etiology for orofacial infections in children. The treatment of choice for orofacial infections of dental origin is root canal therapy for a restorable tooth or extraction for a nonrestorable tooth.

P479

Oral Health Status of 9–11 years Old Latvian Children

Julija Kalnina, Inga Rendeniece, Simona Skrivele, Ruta Care, Anda Brinkmane
Department of Conservative Dentistry, Riga Stradins University, Riga, Latvia

Aim: To determine the prevalence and severity of dental caries, oral hygiene and periodontal conditions in 9–11 year old children.
Materials and methods: The sample consisted of 158 patients (88 boys, 70 girls) aged 9–11 years (mean 9.81 ± 1.15) were examined clinically and by bitewing X-ray for caries diagnosis. Caries severity (DMFT, dmft) and caries prevalence (% DMFT > 0, % dmft > 0) were calculated. Oral hygiene was evaluated by a Silness & Löe plaque index, simplified oral hygiene

(OHI-S) Green-Vermillion index. The periodontal conditions were recorded using CPITN (Community Periodontal Index of Treatment Needs). The study was given ethical approval by Riga Stradiņš University Ethical Committee.
Results: Ninety percent of examined children had caries, mean dmft and DMFT index (decayed, missing and filled teeth) were 3.54 (±2.16) and 1.86 (±1.98), mean dmfs and DMFS (decayed, missing and filled surfaces) were 7.15 (±5.41) and 2.98 (±3.53). Mean Silness & Löe plaque index was 1.53 (±0.70), mean simplified oral hygiene (OHI-S) Green-Vermillion index was 2.21 (±0.99). An average of 1.35 sextants had healthy periodontal tissue, gingival bleeding was detected in 3.32 sextants, calculus – 1.32 sextants.
Conclusions: Results of this study suggest high caries prevalence and insufficient oral hygiene in Latvian children. The above findings stress the need for an effective program of oral prevention in these children.

P480

Dahl Concept in the Treatment of a Complicated Trauma Case

Didem Sakaryalı, Alev Alaçam
Department of Pediatric Dentistry, Gazi University, Ankara, Turkey

Introduction: Vertical dimension is an important factor for satisfactory aesthetic and functional restorations. To increase the vertical distance temporary crowns, orthodontic treatment, extention of the length of crowns and Dahl concept can be applied.
Case: This case report describes treatment procedures for a thirteen year old patient whom vertical dimension decreased after a traumatic injury. As a result of the clinical evaluation, complicated crown fracture on the right central incisor and mobility on the left central incisor was observed. In the radiological evaluation crown root fracture on the left central incisor had diagnosed. After extraction of fractured coronal part of the left central incisor, root canal treatment was initiated for both teeth. The following treatment was planned as fiber post and strip crown restoration. However, during endodontic treatment period, increased overbite was developed. For ideal aesthetic and functional restorations it is planned to increase the vertical dimension. In this case Dahl concept applied as an acrylic anterior bite plane to increase the interocclusal space for available restorations. After using Dahl appliance for 10 weeks, sufficient distance for fiber post and strip crown restoration was obtained and final restorations have done. There was no aesthetic and functional problems during 2 years.
Conclusion: The Dahl concept appears to be safe and avoids performing destructive restorative procedures on compromised teeth.

P481

Knowledge and Attitude about Light Curing Units: A Survey of Dental Clinicians in Samsun, Turkey

Sezin Özer[1], Emine Sen Tunç[1], Nuray Tüloglu[2], Sevgi Canbaz[3]
[1]*Department of Pediatric Dentistry, Faculty of Dentistry, Ondokuz Mayıs University, Samsun, Turkey,* [2]*Department of Pediatric Dentistry, Faculty of Dentistry, Osmangazi University, Eskisehir, Turkey,* [3]*Department of Public Health, Faculty of Medicine, Ondokuz Mayıs University, Samsun, Turkey*

Purpose: The aim of this study was to evaluate dental clinicians' knowledge and attitude about light curing units and material science in Samsun, Turkey.
Materials and methods: A total of 448 dental clinicians were sent a letter introducing the study and asking for their cooperation. Data was collected using a self-reporting questionnaire in which dental clinicians were asked about demographic information, current LCUs and material science.
Results: A total of 184 questionnaires were returned, giving a response rate of 41%. All of the respondents were used RBCs. Most of the respondents (75; %41) preferred LED units. Although 102 (55%) of the respondents had LCUs which offer different options for irradiation, most of them used conventional mode for irradiation. According to the results dental clinicians had low level of knowledge about LCUs and material science.
Conclusion: Based on the results, it seems necessary for dentists to take part in continuing dental education programs related to the newer technologies to improve their knowledge and practice.

P482

In vitro and SEM Assessment of Resin Crowns with Post-Core in Primary Teeth

Zuhal Kırzıoğlu[1], Anya Dalmış[2], Yücel Yılmaz[3], Ayşegül Sarıtekin[1]
[1]*Department of Peadiatric Dentistry, Suleyman Demirel University, Isparta, Turkey,* [2]*Dental Hospital, Aydin, Turkey,* [3]*Department of Peadiatric Dentistry, Ataturk University, Erzurum, Turkey*

Aim: This study compared the fracture load, tensile strength, failure mode, fracture extent and SEM evaluation of short post core plus celluloid resin composite crowns on primary anterior teeth.
Materials and methods: A total of 88 extracted primary anterior teeth were used. Mushroom-shaped retention undercut was performed in the root. The teeth were randomly divided into four groups and restored with short post-core plus celluloid crown forms using hybrid, flowable packable composites, and short fiber post plus flowable composite. Half of the teeth in each group were selected for fracture load and tensile strength tests and SEM evaluation. The crowns were fractured or dislodged. Two teeth restored from each groups were micrographed under SEM. All data were statistically analyzed.
Results: The fracture load and tensile strength values ranged 232N to 350N and 181N to 224N, respectively. There was a significant difference among the groups for fracture load ($p < 0.05$), but not significant for tensile strength ($p > 0.05$). Packable composite exhibited lower values than did those of the other groups. A significant difference existed in failure types among groups ($p < 0.05$). Failure types was predominantly mixed for groups, except for short fiber post plus flowable composite. For failure extents, there was no significant difference among the groups ($p > 0.05$). A close interface connection was observed in flowable composite group under SEM.

Conclusion: This study showed that the higher fracture load and tensile strength values a short-post plus composite celluloid crown possessed, the lower would be the possibility failure.

P483

Dental Age in A Group of Turkish Children with Tooth Agenesis

Derya Ceyhan, Zuhal Kırzıoğlu
Department of Pediatric Dentistry, Faculty of Dentistry, Süleyman Demirel University, Isparta, Turkey

Aim: To determine the development degrees of teeth in children with tooth agenesis and to compare those with children with no tooth agenesis and to give a direction to clinical approaches and forensic sciences and anthropology.
Methods: Files of 452 patients who presented to our clinic and were eventually diagnosed as cases of missing teeth, were reviewed. Aged between 7 and 15 years, healthy patients with at least one congenital permanent missing tooth excluding 3rd molars and complete records with saticfactory panoramic radiographs and similar socio-economic background and ethnic origin were specified. Sixty-six individuals with 1–6 missing teeth and 20 individuals with more than six missing teeth were included in group I and group II, respectively. Forty-two healthy individuals with no tooth agenesis were included in control group. The differences between the dental age estimated by Haavikko's method and the chronological age were evaluated by statistically. Correlation coefficent between the number of missing teeth and the differences between ages was calculated.
Results: In respect to differences between ages, the differences between group means were statistically significant ($p < 0.05$). Boys and girls, in group I, group II and control group, were 1.1, 1.7, 0.4 years and 1.2, 1.5, 0.6 years, respectively, more rested in the dental age than the chronological age. Calculated correlation coefficent between the number of missing teeth and the differences between ages was 0.439 and it was statistically significant ($p < 0.05$). As the number of missing teeth increases, difference between the ages increases.
Conclusions: Our results show that tooth agenesis and it's severity affect tooth development.

P484

Effects of Er:YAG Laser on Mineral Content of Sound Dentin in Primary Teeth Using ICP-AES Technique

Cigdem Guler[1], Meral Arslan Malkoc[2], Veli Alper Gorgen[1], Erhan Dilber[3], Mehmet Bulbul[4]
[1]Department of Pediatric Dentistry, Faculty of Dentistry, İnönü University, Malatya, Turkey, [2]Department of Prosthodontics, Faculty of Dentistry, İnönü University, Malatya, Turkey, [3]Department of Prosthodontics, Şifa University, Faculty of Dentistry, İzmir, Turkey, [4]Department of Prosthodontics, Faculty of Dentistry, Gaziantep University, Gaziantep, Turkey

Aim: The aim of this study was to evaluate the mineral content of sound dentin in primary teeth prepared using an Er:YAG laser at two different power settings.
Materials and methods: The study teeth comprised 33 primary second molars which were randomly divided into three equal groups. The occlusal third of the crowns were cut with a slow-speed diamond saw. The groups were as follows: group A, control group; group B, dentin irradiated with the Er:YAG laser at 3.5 W;and group C, 4 W. The levels of Ca, K, Mg, Na and P in each dentin slab were measured by inductively coupled plasma-atomic emission spectrometry (ICP-AES). One sample from each group was evaluated using scanning electron microscopy (SEM). Data were analysed by one way analysis of variance and Tukey HSD tests.
Results: There were no significant differences among the groups for Ca, K, Mg, Na, and P level, or for the Ca/P ratio ($p > 0.05$). SEM micrographs indicated that the surface irregularities increased with increased power setting.
Conclusion: Er:YAG laser treatment at two different power setting did not affect the mean percentage weights of Ca, K, Mg, Na, and P level, or the Ca/P ratio.

P485

A Novel Technique for Restoring Infected Anterior Primary Teeth under GA

Manal Ahmed El Shiekh, Mervat Abd Elmoniem Rashed, Dalia Mohamed Moheb
Department of Pediatric Dentistry, Faculty of Dentistry, Cairo University, Cairo, Egypt

Dental caries is the most common chronic disease of childhood& restoration of severely decayed primary anterior teeth is often considered as a special challenge by pedodontists. The principle goal of pediatric restorative dentistry is to restore the damaged teeth to enable them perform normal function and also from an esthetic point of view.
Objective: The aim of this study was to evaluate the clinical and radiographic success new technique for root canal filling of pulpally affected primary anterior teeth.
Methods: Fifteen healthy children 3–5 years old, without sexual variation were included in a cases series study. The children had pulpy involvement upper anterior teeth; all cases were treated under GA.

Root canal cleaning and shaping for the affected teeth followed by filling of the apical one-third of the root canals with Metapex (Meta biodent.) and the rest of the canals and the NuSmile crowns were filled with Fugi IX or Riva luting (SDI) for crown cementation at the same time.
Results: All treated cases showed satisfactory results in terms of clinical and radiographical evaluations over 1 year follow up. None of these cases showed any signs of periapical infection or crown root fracture.
Conclusion: This novel technique may offer a good approach for restoring decayed primary anterior teeth under general anathesia.

P486

Evaluation of Oral and Dental Status in Children after Bone Marrow Transplantation

Özlem Martı Akgün[1], Ceren Yıldırım[1], Günseli Güven Polat[1], Feridun Başak[1], Aybarshan Yılmaz[1], Orhan Gürsel[2], Vural Kesik[2]
[1]Department of Pediatric Dentistry, Gulhane Medical Academy, Ankara, Turkey, [2]Department of Pediatrics, Gulhane Medical Academy, Ankara, Turkey

Aim: To assess the count of the number of decayed, missing, filled teeth (DMFT), gingival health, and oral status of children after bone marrow transplantation (BMT).
Materials and methods: Thirty-one patients (10 females, 21 males; mean age = 10.38) treated with BMT and 31 healthy children (18 females, 13 males; mean age = 9.74) were selected for this randomized clinical study. The study protocol was approved by the Research Ethics Committee and written informed consent was obtained from all participants. All dental examinations were applied by one calibrated examiner and performed under natural light using a dental mouth mirror and a metallic dental probe. The dental examinations of the study group were applied 100 days after BMT. The DMFT, Plaque Index (PI), Gingival Index (GI) and Bleeding on Probing (BOP) values were recorded. For the statistical analysis and calculations SPSS for Win (SPSS, Ver. 15.0, Chicago, IL, USA) was used. The level of significance was set at $p \leq 0.05$.
Results: The differences between PI, GI, and BOP (p 0.05) values were not statistically significant in both groups. Although DMFT index values were lower in children treated with BMT compared to children from the control group, the difference between the two groups was not statistically significant ($p = 0.054$).
Conclusions: Although children in study group have a high risk for dental caries and periodontal problems, there were no differences in all indexes values between both groups due to the fact that periodic oral examination was performed by a dentist before and after BMT.

P487

Multidisciplinary Approach for Treatment of Fusion Anomaly

Mehmet Sinan Doğan[1], Serhat S. Atılgan[2], Mehmet Ünal[1], Ayşe Günay[1], Yasemin Yavuz[3]
[1]Department of Pedodontics, Faculty of Dentistry, Dicle University, Diyarbakir, Turkey, [2]Department of Oral & Maxillofacial Surgery, Faculty of Dentistry, Dicle University, Diyarbakir, Turkey, [3]Department of Restorative Dentistry, Faculty of Dentistry, Dicle University, Diyarbakir, Turkey

Aim: Tooth abnormalities consist depending on hereditary, trauma, systemic or local factors during the period of development of the teeth. Fused teeth may occur when tooth germs contacted with adjacent tooth germ by physical acts.

This clinical case is presented anomally of supernumerary tooth and maxiller permanent incisal tooth.
Case report: Nine-years-old male patient was admitted to the Dicle University Department of Pediatrıc Dentistry for complaining of aesthetic, After clinical and radiographic examination were realized fusion between maxillary incisal teeth with supernumerary teeth. The patient's was evaluated with maxillofacial surgeon. Then were decided to take the tooth at palatal position. Restorative treatment of the patient's was performed remaining teeth. There was no symptoms at clinical and radiographic follow-up after 6 months.
Conclusion: Especially dental abnormalities appear in the anterior region importance, because cause problems of function, aesthetics, phonation and orthodontic. Teeth abnormalities should be evaluated clinically and radiologically and treated multidisciplinary approach. Early diagnosis and treatment of these anomalies, prevents unwanted problems in the future.

P488

Relationship Between Body Mass Index and Dental Caries Among Children in Istanbul

Aslı Patır Münevveroğlu, Beyza Ballı Akgöl, Tuğba Erol
İstanbul Medipol Üniversitesi Diş Hekimliği Fakültesi Pedodonti Anabilim Dalı

Aim: The aim of this study was to investigate the association between age-and gender-specific body mass index (BMI-for-age) and dental caries among children aged 2–12 years in İstanbul, Turkey.
Methods: The dmft/DMFT index (following World Health Organization criteria) were used to assess the subjects' dental caries experience. The BMI (Body Mass Index) percentile was calculated using BMI-for-age criteria as underweight (<5th percent), normal-weight (5th–85th percent), at risk of being overweight (>85th and <95th percent) and overweight (> or = 95th percent).
Results: Of children examined, 54.5% were normal-weight, 22.2% were at risk of being overweight, and 23.3% were overweight. The mean dmft was 3.32 and the mean DMFT was 0.36. There was no significant difference between dmft/DMFT scores amongst the BMI-for-age groups.
Conclusion: Almost one in five children (22.2%) examined were deemed to be at risk of being overweight, or were classified as overweight (23.3%). There was no association between dmft/DMFT scores and BMI-for-age scores.

P489

Shear Bond Strength of Composite Resins on Primary Tooth Enamel

Çiğdem Küçükeşmen[1], Selim Erkut[2], Hakkı Cenker Küçükeşmen[3]
[1]Department of Pediatric Dentistry, Faculty of Dentistry, Süleyman Demirel University, Isparta, Turkey, [2]Department of Prosthetic Dentistry, Faculty of Dentistry, Başkent University, Ankara, Turkey, [3]Department of Prosthetic Dentistry, Faculty of Dentistry, Süleyman Demirel University, Isparta, Turkey.

Aim: The aim of study was to determine the shear bond strengths (sbs) of composite samples polymerized with halogen light source which were bonded to primary molar's enamel with total-etch and self-etch bonding systems.
Materials and methods: In study, a total-etch bonding system (Single Bond, 3M/USA), a self-etch bonding system (One-Step, Bisco/USA) and a composite resin material (Charisma, Heraeus-Kulzer/Germany) were used. Samples were bonded with total-etch and self-etch bonding systems on teeth's surfaces (n = 10), and they were polymerized for 40 s with a conventional halogen light source (Hilux 200, Benlioğlu/Turkey, 450 mW/cm2). Sbs values were tested with an universal test device (LRX-Universal, Lloyd Instruments/England, 1 mm/min). Values were initially measured as "Newton (N)," then they were calculated as "MegaPascal

(MPa)." Data were statistically analysed with Two-Way-ANOVA ($p < 0.05$). Fracture types of samples were determined under a stereomicroscope (Leica AG, CH-9435 Heerbrugg, Switzerland, ×25 resolution) and thay were calculated as percentage (%).
Conclusion: "Sbs" values of composite samples bonded to primary teeth enamel with total-etch bonding system were statistically found higher (20.7 MPa) than "sbs" values of samples bonded to primary teeth enamel with self-etch system (15.9 MPa; $p < 0.05$). Fracture type was mostly observed as "adhesive (60–80%)" in total-etch and self-etch groups respectively. As a result, both bonding systems and composite material were found succesful to provide enough shear bond strength on primary tooth enamel. In addition, self-etch bonding system was found preferable for young or handicaped children and even, geriatric patients owing to its ability of providing shorter clinical working times.

P490
Rare Hamamy Syndrome: Clinical and Dental Findings
Cigdem Guler, Gul Keskin
İnönü University, Faculty of Dentistry, Department of Pediatric Dentistry, Malatya, Turkey

Aim: Hamamy syndrome is a rare genetic disorder. Severe hypertelorism with midface prominence, myopia, mental retardation, and bone fragility can be caused by homozygous mutation in the IRX5 gene on chromosome 16q11.2. Hanan Hamamy discovered the syndrome in 2007.
Clinical reports: In this paper we describe the clinical and dental findings of this syndrome in a 10 year old boy referred to the dental clinic because of severe pain in Malatya, Turkey. His parents were consanguineous marriage. His brother also affected syndrome. Clinical finding was diagnosed mild hypertelorism with midface prominence, and osteopenia with repeated fractures. Myopia, hearing loss, mental retardation, heart disease, and blood disorder were not detected. Dental finding included enamel hypoplasia, severe dilacerated maxillary and mandibular incisor and lateral teeth, delayed eruption of teeth, taurodontizm, loss of lamina dura and malocclusion. The dental treatment included root canal treatment, composite restorations, extractions and removable prostheses.
Conclusion: This paper highlights features of Hamamy syndrome and its dental rehabilitation.

P491
Intracoronal Radiolucent Lesion Treated with Endodontic Regenerative Therapy
Zeliha Hatipoğlu, Didem Atabek, Neşe Akal
Department of Pediatric Dentistry, Gazi University, Ankara, Turkey

Aim: The aim of this report is to introduce the regenerative endodontic treatment protocol using a variation of the triple antibiotic paste of an immature tooth with intracoronal radiolucent lesion.
Case: A 10 year-old girl was referred to Gazi University Department of Pediatric Dentistry with complaint about mandibular right second premolar tooth that developed abscess. After radiographic examination, incomplete root formation (1/3 root formation) was diagnosed. The tooth was irrigated with 5.25% sodium hypochlorite with minimal instrumentation, followed by triple antibiotic (metronidazole, ciprofloxacin and amoxicillin) paste dressing. Instead of minocycline that principally recommended for regenerative procedures, amoxicillin is used in order to avoid the discoloration of the crown. At a subsequent visit, the antibiotic paste was removed, a blood clot aroused in the canal by irritating periapical tissues and the canal was sealed with BioAggregate (Innovative BioCeramix Inc. Vancouver, British Columbia Canada), glass ionomer cement and composite resin.
Conclusion: According to the 12 months radiographic and clinical follow-ups, the tooth was symptomatic with no discoloration, periapical radiolucency was healed and the root continued to develop.

P492
Revascularization of Immature Permanent Incisors with Necrotic Pulps
Aylin Akbay Oba[1], Seda Alp[1], Merve Erkmen Almaz[1], Işıl Sönmez[2]
[1]*Department of Pediatric Dentistry, Kırıkkale University, Kırıkkale, Turkey*, [2]*Department of Pediatric Dentistry, Adnan Menderes University, Aydın, Turkey*

Aim: The purpose of this study was to evaluate the clinical efficacy of 3Mix-MP paste on pulp revascularization for necrotic immature anterior permanent teeth.
Materials and methods: The study was carried out with ethical committee approval and the informed consent form was signed by the parent or the guardian. Thirty teeth of twenty-three patients (8–14 ages), each with an immature permanent tooth with pulp necrosis, were recruited. A triantibiotic mix was used to disinfect the pulp for 2 weeks. Then a blood clot was created in the canal, over which mineral trioxide aggregate was placed. Patients were recalled periodically (1, 3, 6 and 12 months).
Results: One of the patients did not attend any recall appointments. Eleven teeth were excluded from the study (as a result of pain or failure to induce bleeding after canal disinfection) and instead received a standard apexification procedure. After follow-up sessions, the remaining teeth ($n = 18$) were found to be asymptomatic, apical periodontitis was resolved and there was radiographic evidence of proceeding root development.
Conclusion: Revascularization could be effective for managing immature permanent teeth with pulpal necrosis with appropriate case selection.

P493
Clinical Evaluation of Two Different Restorative Materials in Primary Teeth
Fatih Şengül, Taşkın Gürbüz
Department of Pediatric Dentistry, Ataturk University, Erzurum, Turkey

Introduction: The aim of this study was to evaluate clinical success of primary teeth class II lesions restored with compomer and giomer composite resin followed up for 24 months.
Materials and methods: This study was carried out on 74 primary molars of 23 children (13 boys, 10 girls) in the age range of 5–7 years. The class II lesions in primary molars of a patient were restored using compomer (Dyract AP) and giomer (Beatiful). Restorations were evaluated according to FDI-criteria and their survival rates were determined. Data were analysed with Pearson chi-square, Kaplan-Meier and Wilcoxon (Breslow) tests ($\alpha = 0.05$).
Results: The failure rates of general, aesthetic, functional and biological evaluation results of compomer were 33.3%, 19.4%, 33.3%, and 14.9% and of giomer were 15.8%, 7.9%, 15.8%, and 13.2%, respectively. There was not any statistically significant difference in restorative materials at the end of the 24 months. Functional failure was the main factor in restorative material failure.

Theme: Dental Treatment & Restorative Dentistry: Periodontics

P494
MDR1 Gene Polymorphisms and Drug Induced Gingival Overgrowth
Erkan Şüküroğlu[1], Feriha Çağlayan[2], Güliz N. Güncü[2], Doğukan Yılmaz[2], Mustafa Göktaş[3], Melih Babaoğlu[3]
[1]Department of Periodontology, Karadeniz Technical University, Trabzon, Turkey, [2]Department of Periodontology, Hacettepe University, Ankara, Turkey, [3]Department of Pharmacology, Hacettepe University, Ankara, Turkey

Objective: Gingival overgrowth is a known side effect of particular drugs. However pathogenesis of this side effect is uncertain. P-glycoprotein (P-gp) is a transport protein that has an important role on the effectiveness and distribution of these drugs. Polymorphisms of the gene (MDR1) coding P-gp can alter the expression and function of this protein. The aim of the present study was to investigate the certain MDR1 polymorphisms as risk factors for gingival overgrowth.
Methods and Materials: One hundred and six patients including 36 cyclosporine, 25 phenytoin, 25 nifedipine and 20 diltiazem users were enrolled in the study. Periodontal clinic parameters and the degree of gingival overgrowth were evaluated. Genetic analysis of C3435T and G2677/A polymorphisms were also investigated from blood samples by PCR.
Results: As expected, all clinical periodontal parameters were significantly higher in patients with gingival overgrowth in all drug groups, except diltiazem. However, any statistically significant association between single nucleotide polymorphisms in C3435T and G2677/A polymorphic regions of MDR1 gene and gingival overgrowth was not detected for all drug groups.
Conclusions: According to the present results, it can be suggested that MDR1 C3435T and G2677T/A polymorphisms are not risk factors for drug induced gingival overgrowth. Due to the limited number of the participants, further studies conducted on larger patient groups may clarify the impact of the MDR1 gene polymorphisms on drug induced gingival overgrowth.

P495
Therapeutic Effects of Melatonin on Alveolar Bone Resorption After Experimental Periodontitis in Rats. A Biochemical, Histochemical and Stereologic Study
Oğuz Köse[1], Seçkin Özkanlar[2], Taner Arabacı[1], Varol Çanakçı[1], Sümeyra Akman[1]
[1]Faculty of Dentistry, Department of Periodontology, Ataturk University, Erzurum, Turkey, [2]Faculty of Veterinary Medicine, Department of Biochemistry, Ataturk University, Erzurum, Turkey

Aim: The present study aimed to investigate effects of systemic melatonin administration on alveolar bone resorption process in experimental periodontitis in rats.
Methods: Twenty-one male Sprague Dawley rats were divided into three groups (C: control, Ped: periodontitis induced, and Mel+Ped: periodontitis induced and treated with melatonin). For the periodontitis induction, the rats' first molar teeth were ligatured submarginally for 5 weeks. After the ligatures removal, melatonin treatment was begin to given Mel+Ped groups with a single dose of 10 mg/kg/Bw for 15 consecutive days. End of the treatment period, all groups animals were anesthetized. After intracardiac blood collection, all animals were sacrificed and mandible tissues were removed for histopathologic and biochemical analysis. Serum samples were used the determined to calcium (Ca), phosphorus (P), and bone alkaline phosphatase (B-ALP) concentrations. Myeloperoxidase level was determined in the gingival tissue homogenates. All animals right mandibles were used to histopathologic analysis.
Results: In the biochemical analysis, melatonin treatment was decreased the alveolar bone resorption and MPO activity. According to immunohistochemical receptor activator of nuclear factor kappa-B ligand (RANKL) staining, osteoclast activity was decreased with the melatonin treatment.
Conclusion: This study evidenced that alveolar bone resorption increased with the increase of oxidative stress-mediated osteoclast cell activity, and emphasized that osteoclast activity decreased, while the concentration of B-ALP could be increased with the melatonin administration.

P496
Preemptive Etodolac for Pain Prevention after Traditional and Flapless Dental Implant Surgeries: A Double-Masked, Parallel-Group, Placebo-Controlled, Randomized Clinical Trial
Oğuz Köse, Taner Arabacı, Cenk Fatih Çanakçı, Alparslan Dilsiz, Alper Kızıldağ
Department of Periodontology, Faculty of Dentistry, Ataturk University, Erzurum, Turkey

Aim: This study aimed to investigate the effects of preemptive single dose etodolac medication on pain prevention and patient comfort following conventional flapped and flapless dental implant surgeries.
Materials and methods: Thirty-two patients who had bilateral partial or total tooth deficiency at their upper jaw were divided into two groups. Half of the patients were selected for traditional

surgery and others for flapless surgery. Each patient received etodolac, 600 mg, or placebo randomly 1 h before the surgeries. Pain intensity and discomfort scores were recorded by participants based on a visual analog scale and four-point verbal rating scale at postoperative 1st, 2nd, 4th, 6th, 12th, 24th and 48th hours. Furthermore; patients were suggested to use a rescue analgesic only if the pain was intolerable, and to record it.
Results: Etodolac was superior to placebo in both traditional and flapless surgery groups and results were more superior in flapless-etodolac group especially at 2nd, 4th and 6th hours. Rescue medication use was more excessive in traditional-placebo group than others. Moreover, pain and discomfort scores and rescue medication using were almost similar in traditional-etodolac and flapless-placebo groups.
Conclusion: The findings of this study suggest that the preemptive single dose etodolac, 600 mg, medication was considerably effective in the management of postoperative pain and discomfort following both surgeries.

P497

Effects of Two Different Periodontal Recall Programs on Oral Hygiene and Gingival Health of Patients Undergoing Fixed Orthodontic Treatment: A Year Follow Up

Oğuz Köse[1], Taner Arabacı[1], Filiz Akkabak[2], Cenk Fatih Çanakçı[1], Varol Çanakçı[1]
[1]Faculty of Dentistry, Department of Periodontology, Atatürk University, Erzurum, Turkey, [2]Faculty of Dentistry, Department of Orthodontics, Atatürk University, Erzurum, Turkey

Objective: To compare the effects of two different periodontal recall programs on gingival health of patients undergoing fixed orthodontic treatment.
Materials and methods: Fifty-four adolescents, who will be undergoing fixed orthodontic treatment, were divided into two equal groups (Group 1, Group 2). Group 1 was selected for periodontal recall program consisting of 4-week intervals, and Group 2 was selected for periodontal recall program consisting of 3-month intervals. The periodontal parameters (plaque index [PI], gingival index [GI] and bleeding on probing [BOP]) were recorded at the baseline and at the all recall appointments during 1 year.
Results: All periodontal parameters showed a significant increase from the baseline to the first recall appointment for either group ($p < 0.01$). Group 2 had significantly lower PI, GI and BOP values than Group 1 at all recall appointments ($p < 0.01$).
Conclusions: This study emphasized that periodontal recall program consisting of 4-week intervals seemed to be more successful than the recall program consisting of 3-month intervals in terms of periodontal health of patients undergoing fixed orthodontic treatment.

P498

Severity of Pain During Supportive Periodontal Treatment Using a Er, Cr: YSGG Laser or a Sonic Scaler

Mükerrem Hatipoğlu, Burak Kale, Zeliha Aytekin, Mehmet Özgöz
Department of Periodontology, Akdeniz University, Antalya, Turkey

Background: The aim of this study was to evaluate the subjective intensities of pain during supportive periodontal treatment using a Er, Cr: YSGG laser or sonic scaler.
Methods and materials: Thirty patients with periodontal pockets (≥5 mm, at least two areas) following conventional periodontal therapy were treated using a sonic scaler and an Er, Cr: YSGG laser. A visual analogue scale (VAS) was used for pain assessment directly after each treatment procedure.
Results: Pain assessment during treatment showed that laser treatment (mean: 0.8, max:3, min:0) caused less pain than the sonic device (mean: 3.8, max: 8, min: 1) ($p < 0.05$) with no difference in the treatment time.
Conclusions: The results indicated that using an Er, Cr: YSGG laser during supportive periodontal treatment, painful sensations can be reduced compared with sonic scaler instrumentation.

P499

Occlusal Correction in A Compromised Periodontium – A Finite Element Study

Pratibha Panduranga Kundapur[1], Gowtham Suresh Perumalswamy[2], Bailoor Satish Shenoy[3]
[1]Department of Periodontics, MCODS, Manipal University, Manipal, India, [2]Department of Dental surgery, PSG Institute of Medical Sciences and Research, Dr. MGR Medical University, Coimbatore, India, [3]Department of Automobile and Aeronautical Engineering, MIT, Manipal University, Manipal, India

Background: Premature contacts on teeth may be a factor in the progression of periodontal disease.
Aim: The present study evaluated the effect of premature occlusal contacts and their correction using coronoplasty on the magnitude and distribution of forces in the periodontium. The influence of proximal support was also assessed.
Materials and methods: Finite element models of a mandibular molar with normal as well as compromised periodontal support were constructed using ANSYS 11. Four situations were considered: (1) Normal occlusal contacts in a tooth with healthy periodontium (2) Premature occlusal contacts in a tooth with healthy periodontium (3) Same occlusal prematurities in a tooth with compromised periodontium (4) Coronoplasty performed on models to eliminate premature contacts. Each of these models had an additional subcategory of presence of adjacent tooth contact mesially. 100 N force was delivered in the centric occlusal contact points of the teeth. Maximum von Mises stress in the periodontal ligament and bone were then assessed.
Results: Occlusal forces, which were axial in direction in centric contacts, increased in magnitude and changed direction in the presence of a premature contact. Higher stresses were observed when there was no adjacent tooth contact. Following coronoplasty, the forces decreased in magnitude. The periodontally compromised tooth without adjacent contact benefitted the most out of occlusal correction.
Conclusion: Occlusal correction by coronoplasty may bring about substantial changes supporting healing in a compromised periodontium. Moreover, presence of the adjacent tooth may allow more favourable distribution of loads.

P500

The Effect of Oral Mouthwashes on Dark Pigmented Subgingival Bacteria

Natasa Nikolic Jakoba[1], Milena Radunovic[2], Selma Bilalovic[1], Sasha Jankovic[1], Vojislav Lekovic[1]
[1]*Department of Periodontology, Faculty of Dental Medicine, University of Belgrade, Belgrade, Serbia,* [2]*Department of Micobiology and Immunology, Faculty of Dental Medicine, University of Belgrade, Belgrade, Serbia*

Introduction: Among subgingival dental plaque bacteria, the most aggressive potential have Gram-negative anaerobic dark pigmented bacteria including *P. gingivalis*, *P. intermedia* and *P. nigrescens*. The use of oral antiseptics is widespread in the treatment of periodontal disease in order to reduce the number of microorganisms responsible for their initiation and progression.
Aim: The aim of this study was to evaluate the antimicrobial effect of eight oral antiseptics on dark pigmented bacteria of subgingival dental plaque.
Materials and methods: Fifteen patients suffering from chronic periodontitis were included in the study. Periodontal status and oral hygiene were recorded. Pooled samples of subgingival dental plaque transported in 1 ml thioglycolate broth were inoculated on Schedler agar for the purpose of cultivation. From the total bacterial cultures, dark pigmented colonies were selected to obtain subcultures. Discs of filter paper, 5 mm in diameter, soaked with examined mouthwashes were placed on the Schedler agar. Diameter of the growth inhibition zone of bacterial colonies around the disks was measured 7 days following inoculation.
Results: Active oxygen® and Gengigel® showed no antibacterial activity on treated bacteria. Other examined mouthwashes (Curasept 220®, Colgate Plax®, Perio Aid 0.12®, Perio Aid 0.05®, Vitis®, Lacalut®) demonstrated antibacterial effect with no statistically significant difference in diameter of the growth inhibition zone among them.
Conclusion: Most of the examined mouthwashes showed antibacterial effect on dark pigmented subgingival bacteria, which justifies their use in the treatment of periodontal disease.

P501

Improvement of Indexes of Arteriosclerosis with Treatment of Periodontal Disease

Nobuhiro Sasaki[1], Noriko Sasaki[2], Ritsugou Hirose[2], Kuniko Hirose[2], Fumitaka Kobayashi[3]
[1]*Tokyo Dental College Dept of microbiology,* [2]*Katsutadai Dnetal Clinic,* [3]*Tokyo Dental College Dept of Clinical Pathophysiology*

Purpose: We examined the morbidity of periodontal disease in patients who had had carotid echography and measured arteriosclerosis related markers and periodontal disease related makers in the blood serum to more clearly identify the relationship between chronic periodontitis and arteriosclerosis.
Methods and materials: In principle, 12 patients were selected that had chronic periodontitis, who had not received antibiotic on the first visit. Examination of fingertip plasma IgG antibody titers against periodontopathic bacteria was contracted to the Leisure Inc. and it examined the antibody tiers of four types of bacteria (A.a.,P.g.,P.i.,E.c.) by using an ELISA method in which a method described by Murayama et al. (Ad Dent Res, 1988) was modified. The blood serum was separated from peripheral blood by normal methods and tests on arteriosclerosis related markers (C-reactive protein = hs-CRP), TNF-α and adiponectin were contracted to the SMS Corporation.
Results: The average ratio of a pocket of 7 mm or more, in the six males, was 34.1%, and that of females was 5.5%. A correlation between a prevalence of periodontal pockets of 7 mm or more, and a serum antibody titer against P.g., was observed and the antibody titer (6.9) in males was higher than that (2.08) of the females. The average value of the arteriosclerosis related markers in serum were as follows: for males, CRP: 0.134 mg/dl; TNF-α: 1.71 pg/ml; and adiponectin: 8.1 μg/ml, and for females, CRP: 0.091 mg/dl; TNF-α: 1.01 pg/ml; and adiponectin: 17.5 μg/ml.

P502

Covering of a Multiple Miller III type Gingival Recession

Sıla Cagrı İsler, Mustafa Özcan, Gönen Özcan
Department of Periodontology, Gazi University, Ankara, Turkey

Introduction: The recession of gingiva is increasingly becoming a more prominent condition for patients because of root hypersensitivity, erosion, root caries and aesthetic considerations. The main goal of plastic periodontal surgery procedures is to obtain root coverage and optimal aesthetic appearance. Several new techniques have been used to achieve root coverage for the surgical treatment of multiple adjacent recession type defects. The modified tunnel technique is an alternative technique which has minimizing surgical trauma and achieving predictable aesthetic result. Surgical treatment of class Miller III defects ara more challenging, mainly due to loss of inter-proximal bone and soft tissues.
Case: In this case report, a 40 year old female patient had class Miller III gingival recession on her maxillary premolars. The gingival recession defect was treated a modified tunnel technique in combination with a subepitelial connective tissue graft.
Conclusion: The use of a microsurgical concept with minimal invasive surgical technique which improves the success rate of connective tissue grafting and increases the amount of root coverage, reduces surgical trauma and allows more precise approximation of the wound margins.

P503

The Effects of Obesity on Local and Circulating Levels of Tumor Necrosis Factor Alpha and Interleukin 6 at Patients with Chronic Periodontitis

Oğuz Köse[1], Cenk Fatih Çanakçı[1], Abdulkadir Yıldırım[2], Varol Çanakçı[1], Taner Arabacı[1], Alparslan Dilsiz[1], Ebru Sağlam[1]
[1]*Department of Periodontology, Faculty of Dentistry, Atatürk University, Erzurum, Turkey,* [2]*Department of Biochemistry, Faculty of Medicine, Atatürk University, Erzurum, Turkey*

Aim: The aim of this study is to evaluate the possible effects of obesity to the local and systemic tumor necrosis factor-alpha (TNF-α) and ınterloukin-6 (IL-6) levels in patients with chronic periodontitis (CP).
Material and method: According to the study protocol, four groups which each one were consisted of twenty-two subjects were planned as follows: periodontally healthy patients with normal weight (O-P-); patients with normal weight and CP (O-P+), periodontally healthy patients with obesity (O+P-) and patients with obesity and CP (O+P+). Serum and salivary samples were obtained a week before the recording of clinical periodontal parameters. Local and systemic levels of TNF-α and IL-6 were measured as biochemically.
Results: In serum and saliva, both TNF-α and IL-6 levels were the lowest in (O-P-) group ($p < 0.05$). The highest TNF-α and IL-6 levels were observed in (O+P+) group, while only IL-6 levels were statistically significant ($p < 0.05$).
Conclusion: It was observed that local and systemic TNF-α and IL-6 levels were significantly increased in obese patients with periodontitis. The findings of our study show that obesity may play a role on periodontitis by negatively influencing the inflammatory parameters act in the pathogenesis of periodontal diseases.

P504

Treatment of Single Tooth Recession with Laterally Displaced Flap: A Case Report

Kemal Akdemir, Elif Öncü, Ramazan Sağıcı
Department of Periodontology, Necmettin Erbakan University, Konya

Introduction: This technique, originally decribed by Grupe and Warren in 1956 was the standart technique for many years and is still indicated in some cases. The laterally positioned flap can be used to cover isolated, denuded roots that have adequate donor tissue laterally and vestibular depth.
Case: Thirty-two years old female who has 7 mm cilinical atachment loss (CAL) on left maxillary canin was treated with this techique. After removing epithelium around the denuded root surface the exposed connective tissue was the recipient site for the laterally displaced flap and we scaled and planed the root surface. First full-thickkness after partial-thickness flap was used because of the thickness of the gingiva but the latter is preferable because it offers the advantage of more rapid healing in the donor side and reduces the risk of loss of facial bone height. With a #15 blade, a vertical incision from the mesial of canin and distal of second premolars' gingival margin was made to outline a flap adjacent to the recipient site. A releasing incisions were made to avoid tension on the base of flap, which can impair the circulation when the flap is moved. After sliding the flap laterally on to the adjacent root we fixed the flap to the adjacent gingiva and alveolar mucosa with interrupted sutures.

The clinical measurements made at baseline, after 2 weeks, 1 and 12 months. The mean coverage of the recessions was 90% and there were no bone loss, dehiscence and fenestration in the donor site.

P505

Effect of Periodontal Health, Oral-Hygiene and Socio-Demographic Structure on Halitosis

Başak Kuşakcı Şeker[1], Atilla Berberoğlu[2], Emre Şeker[3], Hayriye Tümer[2]
[1]*Department of Periodontology, Faculty of Dentistry, Osmangazi University, Eskisehir, Turkey,* [2]*Department of Periodontology, Faculty of Dentistry, Near East University, TRNC, Mersin 10, Turkey,* [3]*Department of Prosthodontics, Faculty of Dentistry, Osmangazi University, Eskisehir, Turkey*

Objective: The purpose of this study was to evaluate the association of oral malodor with periodontal-health, tongue-coating, oral hygiene practices, smoking and socio-demographic variables and to compare organoleptic-scores (OS) with Halimeter® measurements.
Methods: A questionnaire-survey was conducted to patients who recruited at the Periodontology Department between January and November 2011 by interview. 612 (298 female/314 male) subjects aged 20–80 years (mean-age;39.07 ± 14.79) were divided into four age-groups (20–34, 35–49, 50–64, 65–80). Subjects self-reported their halitosis, medical-history, oral hygiene habits, education-level and smoking-status. In the clinical examination, values of oral malodor were gathered through organoleptic assessment and by the measurement of volatile-sulphur-compounds (VSCs). Plaque-index (PI), calculus-index (CI), bleeding on probing (BOP), pocket-depths, tongue-coating-score (TCS) and decayed-missing-filling-teeth-index (DMFT) were recorded.
Results: The prevalence of halitosis was found 51.9% for the organoleptic assessment ($OS \geq 2$) and 54.08% for the Halimeter® measurement ($VSCs \geq 110pbb$). There were significant correlation between OS and VSCs values in general-population and age-groups [(r: 0.82), ($p < 0.05$)]. Significant correlation found between OS-VSCs values and PI [(rOS:0.45;pOS < 0.05), (rVSC:0.41;pVSC < 0.05)], CI [(rOS:0.46;pOS < 0.05), (rVSC:0.40; pVSC < 0.05)] (except 65–80), mean value of pocket depth [(rOS: 0.56; pOS < 0.05), (rVSC:0.61; pVSC < 0.05)], the-deepest-pocket value [(rOS:0.69;pOS < 0.05), (rVSC:0.73;pVSC < 0.05)], TCS [(rOS:0.55;pOS < 0.05), (rVSC:0.44;pVSC < 0.05)] and DMFT (except 35–49, 50–64) [(rOS:0.25;pOS < 0.05), (rVSC:0.23; pVSC < 0.05)]. In addition there were significantly differences between BOP, oral hygiene habits, education-level, age, self-reported halitosis and OS-VSCs values[(pOS < 0.05), (pVSC < 0.05]. For the logistic regression analysis results, the factors most strongly associated with VSCs values are respectively:TCS [(OR:2.85), ($p < 0.05$)], the deepest pocket value[(OR:2.09), ($p < 0.05$)] and daily using of dental floss [(OR: 1.87), ($p < 0.05$)].

Tongue-coating, the deepest-pocket value and daily-flossing were the factors that most strongly associated with VSCs values. Organoleptic score could still be considered as the gold standard for diagnosis of halitosis according to our findings.

P506

The Prognosis of the Tooth with Endodontic Periodontal Combined Lesion Treated by Regenerative Approach: 5 year Follow, A Case Report

Mehmet Vehbi Bal, Vahdi Umut Bengi
Department of Periodontology, Gulhane Military Medical Academy, Ankara, Turkey

Background: In the treatment of endodontic – periodontal combined lesions are compremised as a result of differential diagnosis and unpredictable prognosis. These lesions requires both endodontic theraphy and periodontal regenerative procedure. Several techniques and materials present different treatment choices as providing more successful prognosis. In this case report, we present a treatment of an incisor tooth which had an endodontic-periodontal combined lesion result of trauma with mucogingival – regenerative approach and the prognosis of treatment in 5 years.
Case: A 20 year old male patient revealed to our Dental Department suffering discoloration on his 41 numbered tooth. Intraoral examination revealed crown fracture and deep Miller II gingival recession with 7 mm probing depth at buccal site and there was an severe apical radiolusency at periapical radiography. Also, the tooth showed no vitality without mobility. In the treatment procedure, firstly non-surgical periodontal treatment completed. Eight weeks later, a large buccally flap opened, granulomatous tissues removed. Root canal treatment and apically resection applied. Defect area filled with demineralized bone greft and flap primarly closed using double-flap technique. Six weeks after, crown restoration have completed with composite and fiber post. Clinically and radiographically successful results of the treatment have been observed for 5 years with the stability of periodontal soft and hard tissues.
Conclusion: We concluded that in treatment of the teeth with severe endodontic-periodontal combined lesion and muco-gingival problem can be treated in the same operation with long-term stable and successful results.

Theme: Dental Treatment & Restorative Dentistry: Prosthetics

P507

Computer-Controlled Immediate Provisionalization Using Ovoid Pontic Design

Firuzan Tan, Pınar Ateş, Mine Dündar Çömlekoğlu, Muharrem Erhan Çömlekoğlu, Celal Artunç
Department of Prosthodontics, School of Dentistry, Ege University, Izmir, Turkey

Introduction: The ovoid pontic design in a fixed dental prosthesis (FDP) has been recommended for gingival contouring and rehabilitation of extraction sockets in the esthetic region besides proper functioning. The convex design of ovoid pontic maintains a concave soft tissue outline.
Case: After intraoral and radiographic examination of a 25-year-old male with increased mobility and pain due to trauma in maxillary incisors, intra-oral digital impression was made (Cerec AC Blue Cam, Sirona). The extraction of both maxillary central incisors followed by an immediate provisional FDP with ovoid pontic design were planned after the extraction for socket preservation. After teeth preparation and before surgery, the central incisors were resected from the digital model to perform a concave soft tissue outline in the edentulous ridge mucosa and physiologic stimulus of the soft tissue. Provisional restorations were modelled immediately using a computer-aided design (Cerec 4 software, Sirona) and milled from acrylic blanks (Telio CAD, IvoclarVivadent -Cerec MCXL, Sirona). After glazing, restorations were temporarily luted (TempoCem®NE). Dental floss was checked for free passage between the pontics. After 2 weeks the convexity of the pontics was decreased. A definitive CAD/CAM fabricated (IPS e-max zirCAD, IvoclarVivadent) zirconia FDP was prepared 1 month after placement of the provisional restoration.
Conclusion: After a follow-up period of 6 months, interdental papilla, gingival contour, consistency and esthetic appearance were clinically healthy and the patient had no complaints. Long-term clinical trials may be reqired for the clinical outcome of ovoid pontic design effect on FDPs.

P508

Palatinal Laminate Veneers in Case of a Nutritional Disorder

Gamze Öztürk, Muharrem Erhan Çömlekoğlu, Habibe Öztürk, Mehmet Sonugelen
Department of Prosthodontics, School of Dentistry, Ege University, Izmir, Turkey

Introduction: Ceramic veneers are a conservative and minimal invasive treatment approach for esthetic and functional rehabilitation of compromised anterior teeth. This protective treatment can also help in rehabilitation of hypersensitivity of eroded or abraded teeth. CAD/CAM materials and milling techniques also aid in achieving optimized, durable and design-controlled prosthetic restorations.
Case: In this clinical report, an alternative use of ceramic laminate veneers was described for rehabilitation of acid-eroded palatinal surfaces of maxillary posterior teeth of a 20-year-old female. Intraoral examination revealed wear facets on the palatinal surfaces of posterior teeth due to a nutrition disorder. CAD-CAM fabricated glass-ceramic veneer restorations were planned for palatinal reconstruction of maxillary posterior teeth without any tooth preparation. Intraoral optical impressions (Cerec AC Blue Cam, Sirona, Germany) of the compromised teeth were made. Veneers were modelled (Cerec 3.8 software) and milled from glass-ceramic blocks (IPS Empress CAD and IPS e.max CAD, Ivoclar, Schaan, Liechtenstein) in the CAM unit (Cerec MCXL, Sirona). Following glazing procedure, restorations were luted with a dual-curing resin cement (Variolink II, Ivoclar). Successful functional and esthetic results were achieved after a follow-up period of 6 months and the patient had no complaints.
Conclusion: Ceramic laminate veneers can be used alternatively for minimal invasive and conservative treatment of severely eroded/abraded palatal tooth surfaces, but long-term randomized controlled clinical trials are necessary for clinical outcome of this alternative ceramic laminate veneer application.

P509

Bimodal Approach in Single Implant Esthetics: A Clinical Report

Ece Şengün, Aliye Akçalı, Muharrem Erhan Çömlekoğlu, Akın Aladağ
Ege University, School of Dentistry, Department of Prosthodontics, Izmir, Turkey

Introduction: Preservation of bacteria-resisting connective tissue area and biological width around dental implants aid in prevention of bone loss. During the prosthetic stages, the biological width is being disturbed with sequential removal and insertion of the healing cap. In order to prevent this, a zirconia abutment at the time of implant placement followed by provisional crown fabrication through a bimodal clinical approach has been described in this clinical report.
Case: A provisional restoration for the planned extraction of the maxillary right central incisor of a 51-year-old female with increased mobility due to vertical root fracture was fabricated on an obtained cast before extraction and surgery. A standard bone level implant (RC:4.1 mm, 14 mm, Straumann) was placed and after 8 weeks healing period, a prefabricated zirconia abutment was selected and adapted and the non-occluding provisional crown was luted with a composite resin (Aelite All Purpose, Bisco) on the abutment. The patient was recalled after 1 week for control. After 8 weeks, an all-ceramic crown (IPS Empress CAD Multi C14, Ivoclar Vivadent) was prepared using a CAD/CAM system (Inlab, Sirona) and luted with a dual-curing resin cement (Variolink II, Ivoclar Vivadent). The patient was followed-up for 1 year without any complaints.
Conclusion: Preservation of gingival contour through controlled and guided prosthetic restoration healing around single implants at the esthetic region with bimodal approach is a predictable clinical application, however long-term clinical studies are required for the continuum of the gained gingival and periimplantary status.

P510

3D Volumetric Evaluation of Laminate Veneer Preparations

Ali Ozan Zencircioğlu[1], Merve Türkekul[1], Burçin Vanlıoğlu[2], Yasemin Kulak Özkan[2]
[1]Marmara University, Istanbul, Turkey, [2]Department of Prosthodontics, Marmara University, Istanbul, Turkey

Objectives: The aim of this study was to evaluate the amount of removed tooth tissue for laminate veneer preparations performed by two dental students and a prosthodontist.
Methods: Laminate veneer preparations were performed at nine maxillary central incisors by two dental students (S1, S2) and a prosthodontist (P) with dimple method using same diamond burs to be in the ideal depth range of 0.4–0.6 mm. All teeth were scanned before and after preparations with 3shape visual system. The removed enamel tissue from incisal, middle and cervical 1/3 parts on buccal surfaces of teeth were measured.
Results: On the incisal third; the preparation depth was 0.35–0.50 mm for P, 0.39–0.85 mm for S1, 0.61–0.79 mm for S2. On the middle third; 0.46–0.33 mm for P, 0.61–0.85 mm for S1, 0.79–0.78 mm for S2. On cervical thirf P prepared 0.47–0.50 mm, S1; 0.57–0.70 mm, S2; 0.66–0.65 mm. Approximately removed enamel tissue from buccal surface was 0.45 mm for P, 0.61 mm for S1, 0.67 mm for S2. Removed tissue volume was measured to be 21 mm3 for P, 40 mm^3 for S1, 44 mm^3 for S2. Clinically experienced prosthodontist has removed approximately double less tooth tissue than dental students.

P511

Dental Pulp Reaction to Abutment Teeth Preparation for Fixed Prostheses

Zohra Nouira, Manel Grati, Imen Guesmi, Dalenda Hadyaoui, Belhassan Harzallah, Mounir Cherif
Department of Prosthetic Dentistry, Monastir Dental University, Monastir, Tunisia

Aim: Our Objective is to evaluate the defense potential of dental pulp in vital abutment teeth during the preparation phase in which many types of pulp aggressions may take place as well as the evaluation of preparation-related pulpitis frequency.
Material: A 14-item questionnaire containing information related to:

- Patients
- oral hygiene
- abutment teeth
- dental prostheses type
- pulp reaction to the preparation procedure

Methods:

- A 2 to 5 weeks follow-up from clinical examination to abutment teeth preparation including control of dental pulp integrity.
- Data collection.
- Coding and input using the SPSS program version 17.0
- Statistical analysis using averages to describe quantitative data and relative frequencies to describe qualitative variables.
- A descriptive study for specificities related to the patients, the periodontal environment, the abutment tooth and to the prosthodontic treatment.
- An analytic study for the different correlations such as:
  Correlation: crown height and pulp reaction.
  Correlation: Crown material and pulp reaction.

Results: This study has shown that short teeth presented pulpitis after the preparation in 84% of the cases.

The crown material and the situation of finish line compromise pulp integrity: supragingival, paragingival or intrasulcular, the percentages correspond to teeth which had been devitalized.
Conclusion: This clinical study shows effective dental pulp defense mechanism during abutment teeth preparation phase. Pulpitis occurrence frequency was noted. Precautions are needed to prevent iatrogenic pulpitis during the preparation phase. Moreover, respecting procedural recommendations is vital for the preservation of the pulp from potential aggression.

P512

The Effect of Different Surface Treatments on the Flexural Strength of Repaired Acrylic Denture Base Resin

Sedanur Turgut[1], Fatih Mehmet Korkmaz[1], Bora Bagis[2], Elif Aydogan Ayaz[1], Sabit Melih Ates[3]
[1]*Department of Prosthodontics, Faculty of Dentistry, Karadeniz Technical University, Trabzon, Turkey,* [2]*Department of Prosthodontics, Faculty of Dentistry, Izmir Katip Celebi University, Izmir, Turkey,* [3]*Department of Prosthodontics, Faculty of Dentistry, Recep Tayyip Erdoğan University, Rize, Turkey*

Objectives: This study investigated the transverse repair strength of a conventional heat- polymerized acrylic resin specimens repaired with auto-polymerizing resin after the repair surfaces were treated with different techniques.

Methods: A total of fifty rectangular specimens (65 × 10 × × 3.3 mm) (n = 10) of heat-polymerized acrylic resin (QC 20) which was repaired with auto-polymerizing resin following surface treatments: Group 1 (intact specimens as a control), Group 2 (without surface treatment), Group 3 (wetting with methyl-methacrylate), Group 4 (Er;Cr;YSGG laser application 3 W-20 Hz), Group 5 (Er;Cr;YSGG laser application 4 W-20 Hz). The flexural strength was measured by a three-point bending test using a universal testing machine with a 100 Kgf load cell in the center of repair at 5 mm/min cross-head speed. All data were analyzed using 1-way ANOVA and Tamhane test ($p < 0.05$).

Results: Group 1 (control) showed (38.65 ± 8.16 MPa) significantly highest flexural strength values than the other groups ($p < 0.05$). Group 5 (5.78 ± 2.11 MPa) demonstrated significantly lower values than group 2 (13.48 ± 5.87 MPa), Group 3 (24.08 ± 5.55 MPa), and Group 1 ($p < 0.05$). Group 4 showed higher values (15.05 ± 9.59 MPa) than Group 5, but this difference was not statistically significant ($p > 0.05$).

Conclusions: Er;Cr;YSGG laser treatment alone was not able to improve the flexural strength of the repaired acrylic resin, but wetting the repair surfaces with methyl-methacrylate may be preffable method to increase the flexural strength of denture base repairs.

P513

Value of Ultrasonic Computerized Axiography in Clinical Functional Oral Diagnosis

Florin Eugen Constantinescu[1], Marian Vladimir Constantinescu[2]
[1]*Romanian Association of Oral Rehabilitation and Posturotherapy – Roposturo,* [2]*Faculty of Dentistry, University of Medicine and Pharmacy "Carol Davila", Bucharest, Romania*

Aim: The increase in incidence of craniomandibular disorders has stimulated dentists to develop better methods to evaluate, investigate and treat these affections. Craniomandibular disorders have become a problem for many patients who find only a low amount of pain relief in current treatments.

Materials and methods: One hundred and fifty subjects (97 female, 53 male) presented for craniomandibular disorders at the Dental Prosthetics Clinic of the Faculty of Dentistry "Carol Davila", Bucharest, Romania. Out of these, 90 had objective symptomatology and were included in the study (58 women, 65%; 32 men, 35%; age range: 17–37 years). The patients were clinically analyzed according to the "Evaluating occlusal relationships, mandibular dysfunction, and temporomandibular joint pain by palpation" protocol of Bohl C.F. and Knap F.J. The ultrasonographic examination was done using the JMA system with which we measured mouth opening capacity, protusive movements and right and left laterotrusion.

Results: After muscular palpation examining, pain was found at the following sites in our cohort: pterygoideus lateralis muscle (72 patients), temporal muscle (24 patients), pterygoideus medialis muscle (18 patients), masseter muscle (12 patients). Thirty-eight patients presented no pain.

The mean mouth opening capacity was 46.8 mm (range: 20.1–61.2 mm). Out of the 90 subjects, 54 presented a normal functioning temporomandibular articulation (36%), 22 had unilateral dysfunction (14.67%) and 14 had bilateral dysfunction (9.33%).

Conclusions: Aside from the clinical examination, computerized ultrasonographic axiography represent a valuable tool for the diagnosis of craniomandibular disorders, allowing for a modern and efficacious treatment.

P514

Inlay Retained Bridges: About A Clinical Case

Sihem Hajjaji, Nouha M'ghirbi, Mohamed Bel Waer, Hayet Hajjami, Abdellatif Boughzella
University Medical Center, Farhat Hached, Sousse, Tunisia

Introduction: Composite resin or ceramic esthetic inlays are an essential therapy in our daily practice. Their indications are accurate, and they are essentially based on the defect volume, the number of restorations to be performed, and the condition of the cavity limits.

This therapy has long been reserved for single tooth restorations. Currently, the inlays can also be used as a bridge support, and this evolution could not have been possible without the contribution of bonding.

Conclusion: In fact, knowing the available materials, being able to use them, and developing a simple, reproducible and reliable protocol ensure the treatment success.

P515

Anterior Restoration: A Multidisciplinary Challenge

Rachid El Ouali, Hicham Soualhi, Layla Assila, Amal El Yamani
Department of Fixed Protheses, Dental School, Mohammed V University, Rabat Morocco

Introduction: Prosthetics are at the crossroads of dental disciplines. In case of multidisciplinary rehabilitation prosthetics is often crowning and finishing the case.

Restoration of the anterior sector is a fastidious and tricky challenge. Indeed, they should respond to biological, mechanical, functional and aesthetic aims of the treatment. This multiplicity of objectives requires upstream from the therapeutic decision, a variety of information collect (about aesthetic, function, anatomical data) and a multidisciplinary approach.

Case: Through clinical cases, we will highlight the contribution of periodontics to ensure integration and improve the prognosis of anterior prosthetic restorations.

P516

Effect of Different Surface Treatment on Bond-Strength of Denture Base

Meral Arslan Malkoç, Nilüfer Tülin Polat, Bekir Eşer, Feyza Çivitci, Hilal Şiriner
Department of Prosthodontic Dentistry, Faculty of Dentistry, İnönü University, Malatya, Turkey

Aim: Prosthodontists may concentrate on the implantation and make a removable connection with the implants simply by fitting the female parts to the removable denture. The study was designed to evaluate the effect of different surface treatment on bond strength between denture base and two different locator abutment luting acrylics.
Materials and methods: A heat-polymerized denture base resin (Paladent; Heraus Kulzer), and two different locator abutment luting auto polymerized acrylics (Ufi Gel; Voco, Quick Up, Voco) were used. A total of 80 specimens were prepared from the denture base resin according to manufacturer instructions, and divided into eight groups of 10. Then applied with six combinations of three different surface preparation method (Ethyl acetate, Methylene chloride, Er-YAG Laser) and two locator abutment luting agents; two groups were also bonded with two luting acrylics without surface treatment as control. After 24 h of storage at 37C, the shear bond strength (MPa) of the specimens was measured in a universal testing machine. Kruskal Wallis analysis of variance and the Mann Whitney U tests were performed for the statistical analysis.
Results: Ethyl acetate application increased the bond strength between the denture base and locator abutment luting acrylic significantly ($p < 0.05$). No significant differences were detected between methylene chloride and laser treatment, compared to controls ($p > 0.05$).
Conclusion: The study revealed that surface chemical treatment with ethyl acetate improved the bond strength. The Ufi Gel with ethyl acetate surface treatment is recommended as the combination possessing the most bond strength among the other combinations.

P517

Effect of Nano-Silver Acrylic Resin Against Adhesion of Candida Albicans

Chaivut Prunkngarmpun[1], Suneeborn Kunchoun[1], Raveewan Vongpetch[1], Sukrit Ingpanjalap[1], Sopon Boonlue[2]
[1]Faculty of Dentistry, Khon Kaen University, Thailand, [2]Faculty of Sciences, Khon Kaen University, Thailand

Aim: The study was to compare mean of colony forming unit (CFU) of Candida albicans that adhere on nano-silver acrylic resin.
Methods and materials: By mixing nano-silver particle to polymer part of heat cured acrylic resin, whose incorporating dose were 0 (control), 250, 500, 750, 1000, 2500 and 5000 ppm, respectively, 10 samples per group size of 15 × 10 x 2 mm3 were made. The yeasts were grown on Sabouraud broth at 37c 180 rpm for 6 h. After that, the samples were added in test tube and continuously incubated in shaking incubator for 12 h. The grossly adherent cells of Candida albicans was removed by vibrating in sterile distilled water for 20 s. Then add the sample into test tube with new Sabouraud broth and continuously incubated in shaking incubator for 18 h. These Sabouraud broth samples were diluted and incubated in Sabouraud agar at 37c for 18 h. The colonies were counted and statistic analysis was performed by One way ANOVA at significant level = 0.05.
Results: The result show that mean of colony forming unit (CFU) of nano silver acrylic resin in control group were different significantly from 250, 1000 and 2500 ppm (p-value = 0.007 p-value = 0.030 p-value = 0.022 respectively.).
Conclusion: Even though the nano-silver act as bactericide, to mixed with acrylic resin, the concentration have to be adjusted for the suitable out come.

P518

Effect of Fiber Laser on Surface Roughness of Zirconia

Server Ünal[1], Remzi Niğiz[1], Aslıhan Üşümez[2], Zelal Seyfioğlu Polat[1], Mustafa İlhan[3]
[1]Department of Prosthodontics, Dicle University, Diyarbakır Turkey, [2]Department of Prosthodontics, Bezmi Alem Vakıf University, Istanbul, Turkey, [3]Department metallurgical and materials engineering, Marmara University, Istanbul, Turkey

Purpose: The purpose of this study was to investigate the surface roughness of zirconia after fiber laser application.
Material and methods: Five sintered zirconia discs were used. Different power and frequency of fiber laser applied to each of zirconia discs surface.

1 sample: 60 watt/40 khz
2 sample: 100 watt/80 khz
3 sample: 75 watt/80 khz
4 sample: 100 watt/20 khz
5 sample: as control

Surface roughness of the specimens of zirconia were evaluated with scanning electron microscope (SEM) analyse.
Results: Surface roughness of all samples which applied fiber laser were different than control sample. Also cracks were seen in some samples. The SEM analyse view of the sample 4 was different from all samples. On the surface of sample 4, the formation of clear pits and formation of microretentive grooves were seen.

P519

Influence of Pressing and Layering Technique on Color of Zirconia

İsa Yöndem, Daime Cengiz, Esra Talay
Selcuk University, Faculty of Dentistry, Department of Prosthodontics, Konya, Turkey

Objectives: Color matching between zirconia restoration and natural teeth is a common clinical problem. The purpose of this study was to evaluate the effects of two different application methods of veneering ceramic and liner material on the color stability of a zirconia based all ceramic system.
Methods: Forty ceramic specimens (15 × 12 x 2 mm3) were fabricated from a zirconia-based porcelain (IPS e-max ZirCAD) using an Isomet low-speed saw. The specimens were randomly divided into four groups (n = 10). Group LT, zirconia specimens were investigated with additional veneering ceramic (IPS e.max Ceram) using layering technique. Group LTL, additionally the group LT was applied to the liner material (IPS e.max ZirLiner). Group PT was designed for investigation the influence of a ceramic veneering, which was applied in pressable technique. Group PTL, additionally the group PT was applied to the liner material. Baseline and after 48 h storage in the coffee solution, color measurements of specimens were made with a colorimeter, and color differences (ΔE) were calculated. The data were analyzed with a 2-way ANOVA followed by Tukey HSD tests ($p = 0.05$).
Results: There were significant differences between the color difference values of all groups ($p < 0.05$). Group LT showed the highest ΔE values (2.66 ± 0.41), and the lowest ΔE values were recorded for PTL group (0.8 ± 0.29) ($p < 0.05$).
Conclusions: The color of a zirconia based all ceramic system is influenced by layering and pressing methods and liner material.

Theme: Dental Treatment & Restorative Dentistry: Prosthetics

P520
CAD/CAM Solution for Inclined Dental Implants
Erkan Sancaklı, Ebru Demet Çifter, Ali Balık, Meltem Özdemir Karataş, Mahmut Ömer
Department of Prosthodontics, Istanbul University, Istanbul, Turkey

Introduction: Excessive angulations of dental implants are one of the most challenging problems for the prosthodontists. Although dental implant manufacturers fabricate angulated abutments, it can be used to compensate the inclination up to 20°. Custom abutment fabrication remains to be the only solution to restore the inclined implants when patients are unwilling to deal with further surgical procedures. Custom abutments can be prepared either by casting, or by using CAD/CAM techniques.
Case: In this case report prosthetic rehabilitation of 57 years old female patient using CAD/CAM designed custom abutments is presented.

P521
Effect of Multiple Firings on Bond Strenght of Zirconia-Porcelain
Daime Cengiz, Esra Talay, İsa Yöndem
Selcuk University, Faculty of Dentistry, Department of Prosthodontics, Konya, Turkey

Objectives: Zirconia ceramics are coated with veneering ceramic to improve the aesthetics. During the veneering process material is fired usually three times. Firing cycles increase with clinical adaptation and integrity problems. The aim of this study was to evaluate the effect of multiple firings on shear bond strenght of between zirconia core and veneering ceramic.
Methods: Fifty ceramic blocks specimens (15 × 12 x 2 mm3) were cut from yttria-stabilized zirconia blocks and sintered. These specimens were veneered with 3 mm thick and 5 mm diameter IPS e.max Ceram porcelain. Specimens were divided into five groups and subgroups were fired 1, 3, 5, 7 and 10 times respectively according to manufacturer instructions of veneer ceramics which are advised by the manifacturer of zirconia core systems. Shear bond strength was performed with a testing machine at a cross head speed of 0.5 mm/min. Data were statistically analyzed using ANOVA ($p = 0.05$).
Results: Shear bond strength and SD (Mpa) for five groups were 13.97 ± 3.36; 16.25 ± 2.13; 14.86 ± 3.72; 14.03 ± 3.99; 13.4 ± 4.65 respectively. The second group had the highest bond strength and the fifth group had the lowest bond strength. There was no significant difference between the bond strengths of each of the five groups ($p = 0.466$).
Conclusions: The heat treatment associated with the veneering procedure on a zirconia core material study did not significantly affect shear bond strength.

P522
Treatment of Unilateral Cleft Lip and Palate: Case Report
Esra Talay[1], Ezgi Çavdar[2], İsa Yöndem[1]
[1]Selcuk University, Faculty of Dentistry, Department of Prosthodontics, Konya, Turkey, [2]Selcuk University, Faculty of Dentistry, Department of Periodontology, Konya, Turkey

Introduction: Cleft lip and palate are the most common congenital anomalies which causes aesthetic and functional problems. Most common difficulties are insufficient alveolar bone quality and quantity, inadequate soft tissue, and poor abutment teeth. Although cleft lip and palate patients could be reconstructed with conventional prosthesis or implant retained prosthesis, clinicians still face some difficulties in prosthetic reconstruction.
Case: In this clinical report a treatment plan of 22-years-old patient with unilateral cleft lip and palate who complained about both unaesthetic appearance by reason of tooth loss on the anterior segment of maxilla because of alveolar segments' fusion problems and functional deficiency depending on the lack of anterior teeth and occlusal dysfunction were explained. A detailed medical and dental anamnesis was obtained. Due to structure loss in the cleft area standard fixed dental prosthesis were contraindicated by the esthetic reasons and clean ability problems. Therefore preparation of the maxillary teeth for 14 unit fixed metal – ceramic prosthesis with a special bar attachment in the anterior part for removable partial prosthesis was planned. Intraoral adjustments were done and glazed metal – ceramic restoration was luted with resin cement.
Conclusions: The treatment has provided compensation of structure loss and support the soft tissue so the treatment successfully met the patient's esthetical and functional expectations.

P523

Comparison of Marginal Fit of Three-Unit FPDs Fabricated with Four Different Casting Techniques

Kemal Çavdarlı, Süha Türkaslan
Department of Prosthodontics, Suleyman Demirel University, Isparta, Turkey

Objectives: The aim of this study is to evaluate and compare the marginal fit of three-unit FDPs using four fabrication techniques, and to conclude in which area the largest misfit is present.
Methods: Firstly a stainless steel master model was produced. The first impression was made with additional silicone, and master and working models were then produced. A total of 40 three-unit FDPs were fabricated with four different production techniques: conventional casting method (CC), milled metal farbricated with CAD/CAM (MM), induction casting Co–Cr (İC), and direct laser metal sintering (LS). Each of the four groups consisted of three-unit ten FDPs. Fit of the marginal gaps was measured in a stereomicroscope, digital photos were taken at 56× magnification and then analyzed using measurement software. Statistical analyses were performed with one-way ANOVA and Tukey's test.
Results: Best results were recorded for LS groups. This group was followed by MM, İC and CC groups in order. Significant differences were present between CC and LS ($p < 0.05$). The regression analyses presented differences within the parameters: production technique, tooth size, position and measurement point ($p < 0.05$).
Conclusion: Best fit was found in the LS group followed by MM, İC and CC. In all four groups, best marginal fit in both abutments was buccal and lingual side in the deepest part of the chamfer preparation. The greatest misfit was present at contact region in all specimens.

P524

Implant-Supported Bar Overdentures Using CAD/CAM Technology and 3-D Design Software: Case Series

Bilge Gökçen Röhlig, Demet Bereket Ayvalıoğlu, İbrahim Doğan
Department of Prothesis, Istanbul University, Istanbul, Turkey

Introduction: Several techniques have been described for the successful restoration of the edentulous ridges; local anatomic conditions and patient-related factors determine the choice of treatment modality. One alternative is the implant-retained bar overdenture which is reported to be the appropriate treatment choice for patients with inadequate bone volume in the posterior maxilla and mandible. The frameworks are conventionally fabricated with the lost wax-casting technique, cast-on abutment technique, computer numerical control milling or laser sintering. Recently computer-aided design/computer-aided manufacturing (CAD/CAM) technology is being used in fabrication of the frameworks and it offers the benefits of high rigidity and precise fit to the superstructure.
Case: This report describes the fabrication of maxillary and mandibular implant-supported milled titanium bars and overdentures of three patients.

P525

Treatment of Different Prosthetic Indications with CAD/CAM

Umut Can Tuğan
Department of Prosthodontics, Faculty of Dentistry, University of Yüzüncü Yıl, Van, Turkey

Objective: Computer-aided design (CAD) and computer-aided manufacturing (CAM) have become an increasingly popular part of dentistry over the past 25 years. The technology, which is used in both the dental laboratory and the dental office, can be applied for many kind of restorations. In this study patients with different prosthetic indications which treated by using CAD/CAM Cerec4.0 system, will be presented.
Methods: The first patient conducted to our clinic with a big filling. After cavity preparation, molar tooth with only two walls remaining was vital. Its treatment was planned by using an modified onlay restoration. The second case was a inley restoration in left maxillary premolar. The third patient had a big class five cavity in his canin tooth. The tooth was filled for many times before. Cavity preparations of the patients' was done and digital impressions were taken with intraoral camera (Omnicam; Sirona). Restorations designed digitally with Cerec4.0 system. Final restorations were prepared using milling machine. So the feldspathic full ceramic restorations cemented with dual-cure resin cements.
Results: After these treatments, the restorations resulted with a high biocompatibility and aesthetic satisfaction.
Conclusion: CAD/CAM technology has achieved clinical success in marginal adaptation and aesthetic.

P526

Prosthetic Reconstruction of Cleft Lip and Palate Patient

Oya Kaymakbayraktar[1], Emrah Baca[1], Gülümser Evlioğlu[1], Ayfer Kaynar[2]
[1]*Department of Prosthodontics, Istanbul University, Istanbul, Turkey,* [2]*Department of Oral & Maxillofacial Surgery, Istanbul University, Istanbul, Turkey*

Introduction: Although patients with cleft lip and palate (CLP) are not seen regularly in general dental practice, this is a frequent congenital anomaly. The cause of CLP is unknown, but possible causes are malnutrition and irradiation during pregnancy, psychological stress, teratogenic agents, infectious agents (viruses), and inheritance. Most clefts are likely caused by multiple genetic and nongenetic factors. Prosthetic reconstruction of the anterior maxilla is important for these patients. Edentulous cleft palate patients present with restorative difficulties due to their compromised maxillary arches as well as the presence of scar tissue in their palates and lip.
Case: This paper describes the prosthetic rehabilitation of a 41 years old male patient who has applied to Istanbul University Faculty of Dentistry Department of Prosthodontics, with CLP, surgically treated CLP when he was 12.

After surgery, palatal defect was reconstructed but the scar tissue was stil extant and his maxillary lateral incisor was missing. Other teeth were missed by reason of carries and periodontal disease. In oral examination also decreased vertical dimension was noticed. Vertical dimension of occlusion was increased by temporary crowns

and neither TMD nor masticatory muscle pain was recorded during routine controls made 3 months time. The treatment was finished with fixed prosthesis, supported by teeth and implants.

P527

Determination of Skeletal Class in Total Edentoulism

Jadranka Bundevska, Biljana Kapusevska, Vesna Korunoska Stevkovska
Faculty of Dental Medicine, Medical University "St. Kiril i Metodij", Clinic for prosthodontics, PHO Dental clinical center Sv. Pantelejmon, Skopje, R. Macedonia

Aim and Purpose: Our aim is to determinate the skeletal class in total edentoulism during denture fabrication, by using the Steiner analysis.

Materials and methods: For this purpose we made lateral craniograms of 60 subjects, 30 from each sex.

During the analyze we used basic reference points: S; N; A and B; the SN-plane and angles: SNA and SNB, which are formed between these previously mentioned points. These reference points are used for the skeletal relation determination. From their particular values we discover the relation between the jaws and the cranial base. In the Steiner analysis, the accent is placed on the difference between SNA and SNB angles, i.e the angle ANB. If the difference is between 2o – 4o, we have I skeletal class; if the difference is larger than 4o, we have II class or distal occlusion; and if we have angle smaller than 2o, we have III class or mesial occlusion.

Results: From the analysed shots of 30 male respondents, 21 of them were classified in I class, 4 of them were classified in II class and 5 of them were classified in III class. Thirty female subjects exhibited following results: 24 were classified in class I, 3 were classified in II class and another 3 were classified in III class.

Conclusions: Using this analyse, beside of determining the skeletal class, we can make a correct treatment planing of total edentoulism by placing the tooth in the right place on the denture, based on maloclussion type.

P528

Long-Term Clinical Results with Immediate Dentures

Gordana Kovacevska[1], Biljana Koseva[2], Aleksandar Kovacevski[3]
[1]*Faculty of Dental Medicine, Medical University "St. Kiril i Metodij", Clinic for prosthodontics, PHO Dental clinical center Sv. Pantelejmon, Skopje, R. Macedonia,* [2]*Private practice, D-r Kovacevska, Skopje, R. Macedonia,* [3]*Private practice, Impacta Dental, Skopje, R. Macedonia*

Objectives: The aim of this study includes a retrospective clinical evaluation of placement different immediate dentures (ID), in the prosthetic rehabilitation.

Materials and methods: Through the cases we will show you our standing point and results acquired with adequate correction with partial and total immediate dentures, in prosthetic treatment of 48 patients, were installed between 2005 and 2011, 40 in the upper jaw and 8 in the lower jaw.

This lecture will present clinical evaluation included clinical protocols associated with each type, laboratory protocols and post-insertion care.

Results: Our results show that the most suitable approach for prosthetic rehabilitation in one visit is placement of immediate dentures. Satisfaction of the non changed appearance of our patients treated with ID shows that there are advantages of this method compared to the method of the teeth extraction, time needed for stabilization and resorption of the alveolar bone procesus.

Conclusions: Immediate dentures can be successfully used in cases where tooth extraction is indicate. For archiving maximal aesthetics, preventive and functional results, protocol for ID should be made individually for each patient.

P529

Neurophisiological Resistance of the Carriers in Alternative Dental Bridges

Biljana Kapusevska[1], Nikola Dereban[2], Jadranka Bundevska[1], Vesna Korunoska[1], Mirjana Popovska[3], Ilijana Muratovska[4]
[1]*Department of Prosthodontics, Faculty of Dentistry, University St. Cyril and Methodicus, Skopje, Macedonia,* [2]*Department of Dentofacial Orthopedics, Faculty of Dentistry, University St. Cyril and Methodicus, Skopje, Macedonia,* [3]*Department of Periodontology, Faculty of Dentistry, University St. Cyril and Methodicus, Skopje, Macedonia,* [4]*Department of Dental Patology, Faculty of Dentistry, University St. Cyril and Methodicus, Skopje, Macedonia*

Aim: The goal of the study is to show the neurophysiological resistance of the carriers in alternative dental bridges, to determine the amount of pressure on the carrier, more precisely how much mastication pressure can he withstand when it is directly on him, and how much he can withstand when it is on the pontic.

Methods and materials: We used 200 patients from our ongoing clinical work, with cantilever dental bridges. We did the measuring, by measuring the mastication pressure using an electric gnathodynamometar, individualy constructed, in a time frame of around 6 months after the permanent cementing of the dental bridges.

Results: The results showed a resistance of the carriers of 125N, and of the pontics of 85N (given as an average of all observed cases).

Conclusion: We came to the conclusion that whenever there is an indication for a cantilever dental bridge (most commonly when there is a lateral incisor missing, and there are no conditions for an implant) or shortened dental arches, when crafting a distal pontic, an alternative solution is justified in terms of functionality and reasonable durability.

P530

Survey of Prosthodontic Impression Materials and Procedures for Dentures In General Dental Practice in Istanbul, Turkey

Yılmaz Umut Aslan, Burcu Erenler, Tutku Burcu Çakır, Yasemin Özkan
Department of Prosthodontics, Faculty of Dentistry, Marmara University, Istanbul, Turkey

Purpose: The purpose of this study was to survey members of Turkish Dental Association to evaluate current impression materials and methods for denture prosthodontics in Istanbul, Turkey.
Materials and methods: An anonymous questionnaire was mailed to all 400 active TDA members in the Turkey in 2013. Data analysis was performed via frequency distribution and chi square statistics.
Results: Two hundred and eighty-five questionnaires were returned by members of the TDA (71.25% return rate). The majority of the reporting dentist use a border-molded custom tray for final impressions for complete denture prosthodontics. The most popular material for border molding was plastic modeling compound (70.17%). Variability of the materials used for final impressions was observed, with the most popular materials being condensation silicone (52.68%) for fixed dentures and Zinc oxide eugenol (61.78%) for complete dentures. Dual Phase Putty/Wash impression technique (73.26%) for fixed dentures is popular among other techniques. Statistically significant differences were found in the materials used for border molding by dentist ($p < 0.05$).
Conclusion: There was variability of the materials and techniques used for final impressions by TDA members, however, overall there was an agreement on the materials and techniques used by dentist. Using condensation silicone impression materials for fixed dentures and zinc oxide eugenol impression materials for complete dentures were observed in TDA members in Turkey.

P531

Comparison of Complete Dentures Constructed With Two Different Impression Techniques: A Case Report

Nurten Baysal, Simel Ayyıldız, Hande Yeşil
Department of Prosthodontics, Gülhane Military Medical Academy, Ankara, Turkey

Purpose: The aim of this case report was to compare the functional usage of complete dentures that were fabricated by using both conventional and neutral zone impression techniques.
Case: A 73-year-old female patient was referred to the Department of Prosthodontics with the complaint of functional disability of her mandibular complete denture. In clinical examination, the misfit of mandibular denture, phonetic problems due to the maxillary denture and vertical dimension loss was determined. There was an advanced mandibular ridge resorption and it was decided to construct two different complete dentures for the patient with different impression techniques. One of the dentures was prepared according to neutral zone impression technique and the other was produced with conventional techniques. Patient firstly used the neutral zone denture for 8 weeks. Eight weeks later, the conventional dentures were replaced with neutral zone dentures. Two weeks later the patient referred to the clinic with major complaints and stated that the neutral zone dentures were more comfortable.
Conclusion: The neutral zone technique is an alternative approach for the construction of complete dentures for advance resorption of the ridges. The technique aims to construct a denture that is shaped by muscle function and surrounding oral structures. This technique may provide a more stable and retentive complete dentures for patients that have highly atrophic ridges.

P532

Treatment of Dental Asymmetry in a TMD Patient

Emrah Baca[1], Bahar Gürpınar[1], Erkan Sancaklı[1], Ali Balık[1], Necla Aslı Koçak[2]
[1]*Department of Prosthodontics, Istanbul University, Istanbul, Turkey,* [2]*Department of Periodontology, Istanbul University, Istanbul, Turkey*

Case: A 30 year old female patient has applied to Istanbul University Faculty of Dentistry Department of Prosthodontics for her Tmj pain and dental esthetic problems. Her severe visits to other dentists and esthetic surgeons, because of mandibular deviation, asymmetry in the dental arch, correspondingly her esthetic complainings she has told to have orthognatic surgery to resolve the problem.

In intra and extra oral examination for TMD also decreased vertical dimension of occlusion has noticed. Research Diagnostic Criteria for Temporomandibular Disorders form was filled. For increasing the vertical dimension of occlusion and treatment of TMD a centric relation splint was fabricated and the patient has used it for 3 months. After 3 months no symptoms was recorded for TMD.

The treatment of asymmetry was planned by starting periodontal surgery procedures. Crown lengthening was made for right maxillary region. After routine controls and gum healing metal fused to porcelain crowns was decided depending on the patient's choice.
Conclusion: Asymmetry problem was solved with fixed prosthodontics and the treatment was finished by receiving the approval of the patient. Routine controls for each 6 months was suggested.

P533

The Comparison of the Precision of Different Dental Radiographic Methods in Mandibular Periimplantary Measurements: An In Vitro Pilot Study

Zeynep Yılmazcan[1], S. Arat[2], Hakan Bilhan[1], F. Unalan[1], Onur Geçkili[1]
[1]*Department of Prosthodontics, University of Istanbul, Faculty of Dentistry, Istanbul, Turkey,* [2]*Department of Prosthodontics, Medipol Mega Hospital and University, Istanbul, Turkey*

Purpose: The aim of this in vitro study was to investigate and compare the precision of several radiodiagnostic methods used in dentistry for the measurement of periimplantary sites.
Materials and methods: Six dental implants were placed in a human cadaver mandible. Periapical radiographs obtained with the parallel as well as the bisecting angle technique, digital and conventional panoramic radiographs were used for implant and periimplant bone measurements. The measurement results at each implant were statistically analyzed.
Results: The ICC values for the inter-observer reliability were 0.79 for implant diameters and 0.96 for implant lengths. Statistical significance was not detected between the differences of the measurements of the two examiners from the original implant dimensions related to anatomic locations. For both of the examiner measurements, significantly less difference from the original implant dimensions was detected in the parallel technique compared to the other techniques ($p < 0.05$).

Conclusions: The present study showed that the most precise peri-implant bone measurements can be obtained from periapical radiographies obtained by the parallel technique.

P534

Evaluating the Effects of Different Surface Treatments and Different Resin Luting Agents in the Zirconia Post System which Produced by CAD/CAM for Retantion

Derya Toprak Gündüz[1], Zelal Seyfioğlu Polat[2], Filiz Keyf[3]
[1]Department of Prosthodontics, Oral and Dental Health Center, Mardin, Turkey, [2]Department of Prosthodontics, Dicle University, Diyarbakır, Turkey, [3]Department of Prosthodontics, Hacettepe University, Ankara, Turkey

Aim: This study investigated the effect of surface treatments of the retentive strength of zirconia posts which had been produced by Computed Aided Design/Computer Aided Manufacturing (CAD/CAM) technique to root canals.

Methods and materials: Maxillary central incisors (n = 120) were obtained and assigned randomly to 12 groups (n = 10 per group).

Three different type of surface roughness.

1 Hydrofloric acid,
2 Al2O3 partical abrasion,
3 CoJet silica coating system (and 3 control groups) were applied to the posts surfaces and the posts were cemented adhesively with 3 different adhesive luting
a MDP contain cement,
b Bis-GMA Based Resin,
c Adhesive Resin Based cements

To the prepared sample, at the Instron Testing Machine by the help of appropriate equipment the tensile tests evaluated.

Results: All treatment methods increased the tensile strength of zirconia posts compared to the control group ($p < 0.005$). In the surface treatment techniques Al2O3 partical abrasion (129.17N) and CoJet silica coating technique (108.03 N) were finding effective and in the adhesive cement, which is contain MDP was finding most effective ($p < 0.005$).

P535

Missing Anterior Tooth Rehabilation by Porcelain Fixed Denture in Adolescense

Tuba Orhan[1], Tuba Talo Yıldırım[2], Filiz Acun Kaya[3], Diyadin Doğan[1]
[1]Diyarbakir Mouth and Tooth Health Center, Diyarbakir, Turkey, [2]Department of periodontology Clinic, Diyarbakir Mouth and Tooth Health Center, Diyarbakir, Turkey, [3]Department of periodontology Clinic, Dicle University, Diyarbakir, Turkey

Introduction: The lost of anterior tooth can be depressing to the patient both psycologically and socially in adolosencent patients. Temporary replacement of the tooth can minimize these concerns. Many approaches have been described for this temporary replacement. This article presents an alternative approach for oral rehabilation of the pre adolescent female who has lost anterior central tooth in early age.

Case: 12 years old girl applied to clinic with missing central tooth on maxilla. She was unhappy due to her appearence. She was young for implant or fixed porcelain dentures. And patient did not want to use a removable partial denture. In her anamnesis she lost her tooth after traumva. We planned a temporary metal reinforced porcelain denture including pontic and only supports from neighbour teeth's singulums. We cemented denture. As a result she was happy with her new appearance.

P536

Evaluating the Compressive-Shear Bond Strength of Different Surface Roughness of Zirconia Post System that has Luted with Different Luting Agents

Derya Toprak Gündüz[1], Zelal Seyfioğlu Polat[2], Filiz Keyf[3]
[1]Department of Prosthodontics, Oral and Dental Health Center, Mardin, Turkey, [2]Department of Prosthodontics, Dicle University, Diyarbakır, Turkey, [3]Department of Prosthodontics, Hacettepe University, Ankara, Turkey

Aim: His study was going to examined as the effect of resistance and fracture types of zirconia posts that have three different typed of surface roughness and then which were luted with three different adhesive luting cements.

Methods and materials: Maxillary central incisors (n = 120) were obtained and assigned randomly to 12 groups (n = 10 per group). The post spaces were prepared into the root canals and 120 directly fabricated acrylic resin posts and core patterns were obtained. The 120 resin post and core core patterns were transferred to a dental laboratory to be dublicated to zirconia post and core foundations with the use of CAD-CAM technique. Obtained zirconia post and core speciments were assigned to 12 experimental groups (three control groups) (n = 10).

Three different surface treatments methods

1 Hydrofloric acid ethcing,
2 Al2O3 partical abrasion,
3 CoJet silica coating system were used to make surface roughness of the posts.

And then posts were luted with the use of three adhesive luting agents

a MDP contain cement,
b Bis-GMA Based Resin,
c Adhesive Resin Based cements.

To the prepared sample, at the Instron Testing Machine by the help of appropriate equipment the compressive-shear tests evaluated. The results were examined with ANOVA and also with Tukey HSD and Dunnett t tests ($p < 0.005$).

Results: There were no significally differences were found for the compressive-shear strength ($p < 0.005$). And also the fracture types were examined mechanically and with ARI and BRI index. The fracture type were classified into the four types. The most seen fracture types were the 1/3 cervikal third vertically fracture types.

P537

The Effect of Different Sprue Designs on the Internal Porosity of Cast Titanium Crowns

Reza Darabi

Department of Prosthodontics, School of Dentistry, Isfahan Azad University, Isfahan, Iran

Statement of Problem: Porosity is a frequently observed casting defect in titanium dental casting.

Purpose: This study measured the effects of different sprue design on the internal porosity of cast titanium alloy crowns.

Methods and materials: Sixty complete veneer crowns were fabricated on a stainless steel die with a 150 – degree sloping shoulder using customized wax patterns.

All wax patterns were sprued with three different sprue designs (Reservoir, Runner bar and Rousseau) and were invested with an alumina – magnesia investment. Castings were made with commercially pure titanium [cp Ti (grade II)] according to the manufacturer's instructions. The castings were carefully cleaned. Internal porosities were quantified with photographs and radiographs by computerized image analyses. Data were analyzed with an ANOVA with a confidence level of 95%.

Results: There were statistically significant differences in the values of porosity between 3 types of sprue designs. The Reservoir sprue design had the least internal porosity comparing to the other designs.

Conclusions: Improvements in the porosity of titanium crowns was the result of the Reservoir sprue design with vent. Effects of different sprue designs on internal porosity and their effects on casting accuracy and marginal adaptation of cast titanium crown and bridges must be evaluated to achieve better evidence and clinical relevance.

Key words: Titanium, Sprue design, internal porosity.

P538

Dental Implant-Retained Mandibular Overdenture in A Child With Ectodermal Dysplasia

Serdar Kılıç[1], Subutay Han Altıntaş[1], Nuray Altıntaş[2], Özkan Özkaynak[3], Adem Kuşgöz[4], Mehmet Bayram[5]

[1]Department of Prosthodontics, Faculty of Dentistry, Karadeniz Technical University, Trabzon, Turkey, [2]Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, Karadeniz Technical University, Trabzon, Turkey, [3]Private Practice, Antalya, Turkey, [4]Department of Pediatric Dentistry, Faculty of Dentistry, Karadeniz Technical University, Trabzon, Turkey, [5]Department of Orthodontics, Faculty of Dentistry, Karadeniz Technical University, Trabzon, Turkey

Introduction: Ectodermal dysplasias are relatively rare and are characterized by the abnormal development of embryonic ectoderm derivatives such as hair, nails, teeth, and skin. The objective of this case report was to present the prosthetic rehabilitation of a 6-years old growing child with hypohidrotic ectodermal dysplasia after placement of two mini endosseous implants in anterior mandible and to introduce clinical effectiveness of this prosthetic procedures after 4-years follow up.

Case: A 6-years old boy with ectodermal dysplasia have maxillary oligodontia and mandibular anodontia with undevelopment of alveolar processes. The treatment option considered for this child included constructing implant retained removable denture in mandible and removable partial denture in maxilla supported by first molars. Evaluation of post- treatment cephalograms revealed facial growth during the 15-months period and the same prosthetic procedures have been renewed for two times in the following 4 years. Satisfying functional and esthetic results have been achieved and no problem has been detected related with mini implants and growth pattern within the 4 years follow-up period.

Conclusion: The placement of implants in anterior mandibula region also seems to be a promising approach. Because of less vertical bone growth in this region, implant placement does not adversly effect the transverse mandibular growth. The placement of implants facilitated patient to accept and handle with the removable denture easily. Treatment option in this patient is considered to be a proper method and this further motivates the child patient psychologically during the growing period because of satisfying function and esthetic.

Theme: General Dentistry and Oral Health

P539

Objective Understanding of Emotional Changes Induced by Viewing Dental Treatments

Taki Sekiya[1], Zenzo Miwa[1], Natsumi Tsuchihashi[2], Kumiko Sugimoto[2]

[1]Pediatric Dentistry, Department of Oral Health Sciences, Division of Medical and Dental Sciences Graduate School, Tokyo Medical and Dental University, Tokyo, Japan, [2]Basic Oral Health Science, School of Oral Health Care Sciences, Faculty of Dentistry, Tokyo Medical and Dental University, Tokyo, Japan

Aim: Since the understanding of emotional changes induced by dental treatments is important for dentists to provide a safe and comfortable dental treatment, we analyzed electroencephalogram (EEG), electrocardiogram (ECG) and facial electromyogram (EMG) during watching video images of dental treatments to search for the best objective indices reflecting emotional changes.

Materials and methods: Fourteen healthy subjects (six males and eight females) with the mean age of 22.6 ± 3.2 (SD) years voluntarily participated in the present study. EEG, ECG and EMG of the corrugator muscle was recorded during watching video images of intra-oral examination, infiltration anesthesia and cavity excavation. By analyzing EEG and ECG, the emotional changes and autonomic nervous activities were estimated, respectively. The subjective discomfort level was acquired by Visual Analog Scale method. This study was approved by the Ethics Committee of our university.

Results: Analysis of EEG and ECG demonstrated that watching the image of infiltration anesthesia and cavity excavation induced a lowering of relaxation level and an increase in sympathetic nervous activity which elevates with mental stress. The peak activity of corrugator muscle was increased by watching all examined images. The subjective discomfort level was highest during watching infiltration anesthesia image.

Conclusion: These results suggest that subjective discomfort can be seized to some extent by analyzing EEG, ECG and EMG, but the close relationship between subjective feelings and these indices has not been obtained yet. Further investigation is required to find the

most suitable index to understand the emotional states of patients during dental treatments.

P540

Salivary Histatin Levels and Fungal Colonisation in Down Syndrome

Tomoko Komatsu[1], Hidefumi Kumada[2], Eva J Helmerhorst[3], Salih Erdjan[3], Frank G. Oppenheim[3], Nobushiro Hamada[2], Chang Il Lee[4]

[1]Division of Dentistry for the Special Patient, Department of Clinical Care Medicine, Kanagawa Dental University, Yokosuka, Japan, [2]Division of Microbiology and Immunology Department of Infection Control, Kanagawa Dental University, Yokosuka, Japan, [3]Department of Periodontology and Oral Biology, Boston University, Henry M. Goldman School of Dental Medicine, Boston, MA, USA, [4]Division of Pharmacology, Department of Clinical Care Medicine, Kanagawa Dental University, Yokosuka, Japan

Aim: Histatin 5 is a small molecular weight salivary protein that has been shown to possess antifungal activity against *C. albicans*. We investigated the relationship between concentrations of salivary histatin 5 and the oral fungal colonization in the twelve young individuals with Down syndrome (DS) (mean of age 8.4 ± 0.5) and age- and gender-matched healthy controls (HC).
Materials and methods: Whole saliva samples were used to determine the concentrations of histatin 5 by the Human histatin 5 enzyme-linked immunosorbent assay kit®. Microbiological samples were collected from the dorsal surface of the tongue, and cultured on CHROMagar® medium and blood medium to evaluate the carriage of species of Candida and oral bacteria, respectively.
Results: Sixty seven percent of DS and 17% of HC had positive fungal culture and the species of *C. albicans* were only found in both of them. The mean number of both *C. albicans* and total oral bacteria in DS also significant higher compared to the HC. Mean of histatin 5 levels were significantly lower (523.72 ± 338.43 ng/ml) for the DS compared to HC (1017.01 ± 492.31 ng/ml; $p < 0.01$).
Conclusions: The data from this study suggested that the level of the colonization of *C. albicans* was significantly higher in DS individuals, whereas the concentration of histain 5 was significantly lower. From these results, it would be likely contributing to the enhanced predisposition of DS of oral candidiasis due to reducing histatin 5 such as salivary antifungal protein.

P541

Orofacial Features of Treacher Collins Syndrome

Eno Gace

Department of Dentistry, Albanian University, Tirana, Albania

Introduction: Treacher Collins Syndrome is a rare autosomal dominant disorder of cranio facial development. Major features include mid face hypaplasia, micrognathia, microtia, conductive hearing loss and cleft palate. The present case report describe a 6 years old male with TCS with several extra and intraoral findings such as: mid face hypoplasia, zygomatic bone hypoplasia, anti mongoloid slant of palpebral fissures, mandibular rethrognatia and mandibular disostosis, conductive hearing loss, high incidence of caries, lips incontinence, oral breath and speech difficulty.
Methods and Materials: Management strategies and behavioral approaches of patients with TCS from dental perspective will be discussed.

P542

Intraoral Radiographic Errors on Photostimulable Phosphor Plates (PSP) Taken by Dental Students

Asım Dumlu, Gizem Kızılyel, Mehmet Oğuz Borahan

Department of Dentomaxillofacial Radiology, Faculty of Dentistry, Marmara University, Istanbul, Turkey

Objective: The objective of this study was to assess the technical errors of intraoral radiographs on photostimulable phosphor plates (PSP) taken by dental students who were introduced dental radiology practise for the first time.
Methods: One hundred and seven dental students attending preclinical radiology training with a mandatory 3 h per week teorical lectures and practical radiology training before clinical practise, were asked to perform six periapical radiographies (maxillary/mandibular molars, premolars, incisors) with the bisecting angle projection technique using PSP (Soredex, DIGORA Optime). All of the images were exposed on the same X-ray training model with finger fixed to phantom head (Morita P27-XR.2 + AM-90D) by dental radiography device (New Life Radiology SRL, Italy) with the same imaging parameters (70 kV, 8 mA). Six hundred and forty-two intraoral radiographies were evaluated by three observers for technical errors including; missing the apices/crowns of teeth, cone-cut, overlapping of contact points, foreshortening, elongation, reversed image, double image, wrong placement of radiograph. The percentages of errors were calculated.
Results: The most frequent error seen in this study was elongation (%29). Respectively the others were; missing apices of teeth (% 25.3), overlapping of contact points (%20), missing crowns of teeth (%16.9), cone-cut (%12.3), foreshortening (%3.8), wrong placement of film (%2.49), reversed image (%0.4), double image (%0.2).
Conclusions: Our results show that students had difficulties in placing the film and adjusting the angulation of tube head so practical training time should be satisfactory for students to learn how to take accurate radiographs. Formal curriculum should be revised to prevent these errors and improve our teaching skills.

P543

Oral Health and Menopause: Investigation on Salivary Secretion and Components

Kumiko Sugimoto[1], Naomi Yoshida[2], Satoe Suzuki[3], Hideki Kudo[3]

[1]Basic Oral Health Science, School of Oral Health Care Sciences, Faculty of Dentistry, Tokyo Medical and Dental University, Tokyo, Japan, [2]Department of Dental Hygiene, Faculty of Health Sciences, Chiba Prefectural University of Health Sciences, Chiba, Japan, [3]Department of Clinical Laboratory Medicine, Faculty of Health Science Technology, Bunkyo Gakuin University, Tokyo, Japan

Aim: The purpose of this study is to clarify whether salivary secretion and components are influenced by menopausal state, since it is generally recognized that women in menopause tend to suffer from oral health problem such as xerostomia.
Materials and methods: One hundred and eleven female dental hygienists aged 40–59 years voluntarily participated in this study and the unstimulated saliva and blood was collected from them. Fourteen subjects with hysterectomy and diseases such as hyperpiesia and diabetes were excluded from the analysis. The subjects were divided into three groups of pre-menopause, menopause and post-menopause, based on menstrual states. Salivary secretion rate and concentrations of several salivary components and serum estradiol were measured, and those relationships with menopausal states were analyzed. This study was approved by the Ethical Committee of our universities.
Results: The serum estradiol concentration of pre-menopausal group was significantly higher than the other groups. The salivary secretion rate was higher in pre-menopausal group compared with post-menopausal group and correlated with serum estradiol concentration. No differences between three groups were observed in the components of saliva such as antioxidant and secretory IgA. The salivary amylase activity which is regarded to elevate with internal stress tended to negatively correlate with estradiol concentration.
Conclusions: These results suggest that decrease of serum estradiol may result in decrease in salivary flow which may in turn cause problems of oral health at menopause. Furthermore, the tendency of negative correlation between estradiol and salivary amylase levels suggests the association between estradiol level and internal stress.

P544

Dental Health Attitudes and Behaviour of Dental Students

Anıl Alnıak[1], Başak Doğan[2]
[1]*Department of Periodontology, Yeni Yüzyıl University, Istanbul, Turkey,* [2]*Department of Periodontology, Marmara University, Istanbul, Turkey*

Aim: To compare the oral health behaviour and attitudes among the preclinical and the clinical dental students in Marmara University.
Materials and methods: Five hundred and thirty-eight dental students were surveyed by using a Turkish version of Hiroshima University-Dental Behavioural Inventory (HU-DBI). The study design was approved by the Faculty of Medicine, Istanbul University (14102009-03).
Results: The mean HU-DBI score of all students was 6.37 ± 1.81 while the mean HU-DBI score of the clinical students (7.19 ± 1.54) was significantly higher than the preclinical students (5.32 ± 1.59) ($p = 0.000$). The percentage of the preclinical students who have used a dye to see how clean their teeth are, who brush each of teeth carefully and who thinks that they can clean their teeth without toothpaste was significantly lower than the clinical students ($p < 0.001$). Significantly higher ($p < 0.05$) percentage of the preclinical students, compared to the clinical students, use a hard bristles toothbrush, brush with strong strokes, worry about bad breath and colour of their teeth and gums, put off going to dentist until they have a toothache; agree on that their gums tend to bleed while brushing; think that their teeth are getting worse despite daily brushing, tooth brushing alone don't prevent gum disease, and they can not help having false teeth when they are old.
Conclusions: The oral health attitudes and behavior of dental students improved with the increasing level of education. Preventive dentistry courses should be taught in the beginning of the dental curriculum of the preclinical years.

P545

Oral Health Conditions of Brazilian Schoolchildren

Sandra Maria Ferraz Mello, Danilo Barral Araújo, Roberto Paulo CorreiaDe Araújo
Institute of Health Sciences, Federal University of Bahia, Brazil

The epidemiological survey of oral health found by SB Brazil 2010 pointed to a reduction in DMFT 2.8 (2003) to 2.1 (2010), at 12 years of age.
Objective: To determine the oral health status of schoolchildren, aged 7–12 years, in Bahia, Brazil, in order to identify carriers of sickle cell anemia.
Methods: Cross-sectional, descriptive and comparative analytical approved by the Ethics Committee of the Maternity Climério de Oliveira, UFBA, No. 111/09. The sample consisted of 350 children of both sexes. Were added to the instruments used for oral health epidemiological investigations recommended by WHO (1997) examination of Hb electrophoresis to detect sickle cell anemia and quality assessment tests to salivate.
Results: 72.5% of the sample had mixed dentition and 56.3% had caries experience. The dmft and DMFT were 1.45 and 0.53, respectively, and 38.3% children had white spots on dental units and of these 38.3% were of fluorosis. 58.95% had normal salivary flow. The DAI showed 77.2% children with malocclusion. 84.3% have already made a visit to the dentist and 75.7% reported brushing their teeth twice or more a day. We did not identify any children with sickle cell anemia.
Conclusion: Conclusion: The oral health of schoolchildren showed an acceptable standard, indicating the need for orthodontic intervention and there were no children with sickle cell anemia in the sample suggesting the investigation of infant mortality, being a city with a predominantly black population.

P546

Oral Health Attitudes and Behavior Among Patients in a Dental Hospital in Ankara, Turkey

Gökçe Soğancı[1], Nuran Özyemişci Cebeci[2]
[1]*Topraklık Mouth and Dental Health Centre,* [2]*Hacettepe University Polatlı Vocational School of Health Services*

Introduction: The aim of this study was to have a foresight about oral health behavior among patients who visit one of dental hospitals in Ankara.
Materials and methods: Questionnaire was prepared using Turkish version of Hiroshima University Dental Behavioural Inventory (HU-DBI) and additonal seven questions. Two hundred and fifty-eight number of patients participated. Edentulous patients were

kept out of the study. Data were statistically analyzed by Pearson's Chi-Square tests.

Results: Of 258 patients responded, 134 was female and 124 was male. The average age of the patients was 32.8. 13.2% of the patients was graduated from primary school, 14.3% secondary school, 33.3% high school, 4.3% open university, 31.8% university, 3.1% post graduate. Correlation between oral health behavior and different age groups, gender, education was studied. There was significantly difference between variant age groups and to worry about wearing dentures in old age, to be taught toothbrushing, to clean teeth well without toothpaste, to be told that they had brushed their teeth very well by a dentist (p 0.05). There was significantly difference between gender and to worry about visiting the dentist, to get worse of teeth despite daily brushing, to brush each teeth carefully (p 0.05). There was significantly difference between educational level and to brush each teeth carefully, to be taught toothbrushing, to use a dye to see how clean the teeth are, to brush before going to bed, to take medicine before visiting dentist, to floss teeth (p 0.05).

P547

Endocrown: A Clinical Case

Anissa Ben Moussa, Imen Guesmi, Zohra Nouira, Amina Khiari, Jilani Saafi, Belhassen Harzallah, Mounir Cherif
department of prothesis dendistry, dentistry university, monastir, tunisia

Objective: The goal of this work is to use an alternative to full-coverage crowns with a root canal anchorage, making it possible to have a good aesthetic and functional results while preserving the biomechanical integrity of the posterior teeth keeping an excellent retention.

Clinical case presentation: A 23-year-old patient presented to the fixed prosthodontics department requesting a crown restoration of the first mandibular molar.

Intra-oral examination revealed an unesthetic and voluminous occlusal amalgam. The molar was devitalized. The endodontic treatment was satisfactory. After removal of the amalgam, a gross intracoronal cavity with supra-gingival walls was disclosed.

The prosthetic decision was to design a ceramic endocrown using CAD/CAM.

Conclusion: The endocrowns can be regarded as an alternative to the full-coverage crowns for the restoration of the endodontically treated posterior teeth mainly those with insufficient coronary height and with sufficient tissue available to allow a stable and durable bonding.

P548

Cental Odontogenic Fibroma – Case report

Pedro Mesquita[1], Jaime Portugal[2], Helena Salgado[1]
[1]*Departamento de Anatomia e Histologia Dentária, Faculdade de Medicina Dentária da Universidade do Porto, Porto, Portugal,*
[2]*Departamento de Biomateriais da Faculdade de Medicina Dentária da Universidade de Lisboa, Lisboa, Portugal*

Introduction: Central odontogenic fibroma (CFO) is a benign odontogenic tumour derived from the dental mesenchymal tissues. It is an uncommon pathology that could be found in all age-groups, and in both the mandible and the maxilla. In the maxilla, this lesion mainly involves the anterior region, whereas in the mandible, the lesion tends to be located in the posterior area. Radiologically, it presents as a well defined unilocular or multilocular radiolucency. CFO usually develops asymptomatically. However, larger and more severe lesions may be associated to root resorption and/or displacement of the neighbouring teeth. Treatment involves surgical enucleation as well as follow-up of the patient.

Case: A 24-year-old caucasian male patient was referred, reporting a pressure on the left side of the upper jaw. There were no other symptoms and no recent history of pain. Clinical examination did not reveal buccal or palatal expansion but left maxillary second premolar was with mobility. Radiographic evaluation showed the presence of a unilocular radiolucent well-defined area involving the roots of the maxillary left canine, first and second premolars. After endodontic treatment of involved teeth (23, 24, 25), the lesion was surgically removed under general anaesthesia. The histopathological diagnosis confirms a central odontogenic fibroma. The patient showed no clinical or radiographic signs of recurrence 1 year after surgical excision.

Conclusion: Rarity of this tumour excludes it from most differential diagnosis, and when diagnosed, it is an unexpected finding. It is important that health care professionals have in mind this lesion when diagnosing odontogenic tumors.

P549

Tooth Agenesis: Is There More Than Missing Teeth?

Spiridon Silvestros[1], Heleni Vastardis[2], Athanasios Armakolas[3], Michael Koutsilieris[3]
[1]*Department of Prosthetics, School of Dentistry, National and Kapodistrian University of Athens, Athens, Greece,*
[2]*Department of Oral Biology, School of Dentistry, National and Kapodistrian University of Athens, Athens, Greece,*
[3]*Department of Experimental Physiology, Medical School, National and Kapodistrian University of Athens, Athens, Greece*

Introduction: Tooth agenesis is the most common developmental anomaly of the human dentition. It occurs as part of a genetic syndrome or as an isolated sporadic or familial finding. The genetic basis of familial tooth agenesis has been established through the identification of mutations in the MSX1, PAX9 and AXIN2 genes. Two of them (MSX1, PAX9) seem to be critical for premolar and molar development whereas, AXIN2 is associated with a less tooth-specific agenesis type but with predisposition to colorectal cancer. Given this association it would be most helpful to use tooth agenesis as a phenotypic marker for the development of colorectal cancer.

The aim of our study is to investigate the genetics of tooth agenesis in a Greek population, and to estimate the incidence of AXIN2 mutations and their association to colorectal cancer.

Materials and methods: Following approval from the Institution Ethics Committee, 150 tooth agenesis patients of Greek descent participated to sequence analyses of the regions containing known MSX1, PAX9 and AXIN2 mutations as previously described. Seventy-five colorectal cancer patients were also screened for the same mutations.

Results: We have identified four novel mutations in the MSX1 and PAX9 genes which are expected to create considerable changes in the structure and function of the relevant proteins and 3 AXIN2 polymorphisms in our Greek sample. These three polymorphisms are present in both tooth agenesis and colorectal cancer patients.
Conclusion: Further work should define the association of the novel genetic defects to the two phenotypes (tooth agenesis and colorectal cancer).

P550
Wiskott–Aldrich Syndrome: A Case Report
Mustafa Aydınbelge[1], Salih Doğan[1], Gamze Gündüz[1], Ekrem Ünal[2], Türkan Patıroğlu[2]
[1]Department of Pediatric Dentistry, Erciyes University, Kayseri, Turkey, [2]Department of Pediatrics, Division of Pediatric Hematology and Oncology, Erciyes University, Kayseri, Turkey

Introduction: Wiskott Aldrich syndrome (WAS) was first described by Alfred Wiskott in 1937 as a triad of discharging ears, eczema, and thrombocytopenia. In 1954 the syndrome was rediscovered by Robert Aldrich. He demonstrated an X-linked mode of inheritance in a family with 16 affected males within six generations.

WAS is a severe X-linked Primary Immunodeficiency characterized by thrombocytopenia with microplatelets, eczema, recurrent infections, and predisposition to autoimmune disease and malignancy. It is a rare syndrome, and the incidence rate is approximately 4 in every 1 million live male births with no clear ethnic or racial predilection.

The features associated with WAS include dysfunction of nearly all effector arms of the immunity, as well as thrombocytopenia with platelet dysfunction. As a consequence of these abnormalities, children and adults with this syndrome have recurrent bleeding, recurrent and significant infection with common opportunistic organisms, autoimmune diseases, and lymphoreticular malignancies. Autoimmune diseases affect from 22% to 72% of WAS patients and the most common manifestation is autoimmune hemolytic anemia, followed by vasculitis, arthritis, neutropenia, inflammatory bowel disease, and IgA nephropathy.
Case: The purpose of this case presantation is to report a case of Wiskott Aldrich syndrome with oral involvement demonstrated by 4 years old boy patient.

P551
Biological Interactions of Plasma Needle for Dentistry
Zethy Hanum Kassim[1], Jamie Harle[2], Vehid Salih[3], Ailbhe Mcdonald[3]
[1]Center of Studies for Restorative Dentistry, Universiti Teknologi MARA, Selangor, Malaysia, [2]Department of Physics, University of Liverpool, Liverpool, UK, [3]Eastman Dental Institute, University College London, London, UK

Aim: Prohibitive aspect of plasmas for dental treatment comes from ROS (reactive oxygen species) or changes of saliva pH, which may cause local damage in the environment around the plasma away from the site of treatment. This study aimed to investigate these biological interactions by considering plasma-cell contact and plasma-treated medium contact at varying plasma operation parameters.
Materials and methods: AlamarBlue® assay was performed to assess proliferation of cells Human osteoblast cells (MG63) and human gingival fibroblast cells (HGF) following plasma treatment. The effects of plasma helium flow rate and duration of exposure on the cells were compared using a two-way analysis of variance (ANOVA). Both MG63 and HGF cells subjected to direct and indirect plasma treatment were also assessed qualitatively using scanning electron microscope (SEM).
Results: Indirect exposure to plasma led to some cell death. Scanning electron microscopic (SEM) images, showed that direct plasma exposure within the operating parameters led to total cell death. MG63 cells were significantly affected by duration of exposure whilst HGF cells were significantly affected by plasma gas flow rate.
Conclusion: The plasma needle used in this study requires further calibration and optimisation as well as in vitro testing before any considerations of primary in vivo animal testing can be done in view of future use for dental treatment.

P552
Effects of Odor of Arborous Essential Oil on Saliva and Relaxation
Yoko Kono[1], Aya Yamagami[1], Koji Shibuya[2], Kumiko Sugimoto[2]
[1]Cognitive Neurobiology, Graduate School of Medical and Dental Sciences, Tokyo Medical and Dental University, Tokyo, Japan, [2]School of Oral Health Care Sciences, Faculty of Dentistry, Tokyo Medical and Dental University, Tokyo, Japan

Aim: Since arborous essential oils are known to induce mental relaxation, we investigated the effects of essential oil of himekuromoji (Lindera umbellata var. lancea), one of popular arborous aroma in Japan, on saliva and autonomic nervous activities.
Methods: Nineteen healthy volunteers aged 26.1 ± 4.5 years (the mean ± SD) smelled himekurmoji for 5 min through a mask attached to the smell bag filled with vapor of the essential oil. The saliva was collected for 3–5 min before and right after smelling himekuromoji. The weight of saliva was measured immediately after collection. The concentrations of secretory immunoglobulin A (sIgA), the dominant substance of mucosal immune activity, and antioxidant capacity in collected saliva were measured using the respective assay kit. In addition, salivary α-amylase activity that is known to increase with internal stress was measured before and after smelling. Throughout the experiment, the electrocardiogram was recorded to estimate autonomic nervous activities through power spectral analysis. This study was approved by the Ethical Committee of our university.
Results: The salivary flow rate tended to increase and the concentration of sIgA significantly increased after smelling himekuromoji. However, salivary α-amylase activity and antioxidant capacity were not influenced. During smelling, parasympathetic nervous activity significantly elevated with accompanying a reduction of sympathetic nervous activity.
Conclusion: This study demonstrated that smelling of himekuromoji induced increase in salivary sIgA concentration and

elevation of parasympathetic nervous activities with reduction of sympathetic nervous activities, suggesting that himekuromoji may be effective for improvement of oral immunity and enhancement of relaxation.

P553

Oral Health of Children with Blood Disorders and Childhood Cancers

Lily Azura Shoaib[1], Syarida Hasnur Safii[2], Rossita Mohamad Yunus[3], Farinawati Yazid[1], Zeefitri Saniah Bidin[1], Halimah Awang[1]
[1]*Department of Children Dentistry and Orthodontics, Faculty of Dentistry University of Malaya, Kuala Lumpur, Malaysia,* [2]*Department of Oral Pathology & Oral Medicine & Periodontology Faculty of Dentistry, University of Malaya, Kuala Lumpur, Malaysia,* [3]*Institute of Mathematical Sciences, Faculty of Science, University of Malaya, Kuala Lumpur, Malaysia*

Aim: To determine oral health status and examine the association between dental disease prevalence and patients' medical conditions.
Methods: Upon ethical approval, dental clinical records of paediatric oncology ward patients were retrieved; incomplete records were excluded. Demographic information and medical diagnosis of subjects were compiled. Clinical findings, carried out using (i) Simplified Oral Hygiene Index (OHI-S), (ii) Gingival Index (GI), decayed, missing and filled teeth (dmft) index and Decayed, Missing and Filled Teeth (DMFT) index were recorded as well as complaints related to oral symptoms.
Results: Subjects (N = 321; 197 male and 104 female) comprised primary dentition age group (n = 146, 48.5%), mixed dentition age group (n = 96, 31.5%) and permanent dentition age group (n = 59, 19.6%). Ethnicity-wise, 51.2% were Malays, 41.2% Chinese, 6.6% Indians and 1.0% others.

Leukaemia, red cell disorder, other blood disorders and miscellaneous tumours were diagnosed in 49.2%, 10.3% and 40.5% of the subjects, respectively. All subjects were at different stages of disease upon examination.

Prevalence of gingivitis was low in leukaemia (10%), red cell disorder (7%) and other tumours groups (18%), however it was higher in other blood disorders group (33%) and miscellaneous tumours (40%).

For oral health status category, the odds ratio for caries prevalence with poor OH was 7.12 (95% CI 2.33–21.64, $p < 0.05$). The association between gingivitis and caries prevalence was found to be not statistically significant ($p > 0.05$).
Conclusion: Young patients with blood disorder and childhood cancers appear to be more at risk of dental caries in spite of relatively low prevalence of gingivitis.

P554

Relationship Between Gastroesophageal Reflux Disease and Dental Erosion

Fatma Aytaç[1], Engin Ersöz[2]
[1]*Department of Restorative Dentistry, Gaziosmanpasa University, Tokat, Turkey,* [2]*Department of Restorative Dentistry, Ankara University, Ankara, Turkey*

Aim: The aim of this study was to investigate the casual relationship between gastroesophageal reflux disease and dental erosion.
Methods: The research was performed with two working groups consisting of the total of 100 people between the ages of 16 and 65. Ethics committee approval was received. Fifty individuals who described symptoms of reflux at least 1 years and endoscopic oesophagitis have been identified formed the patient group and 50 healthy individuals formed the control group. The people who have the habit such as rumination, vomiting or bruxsizm and any medication users were excluded. Dental erosion was evaluated by the Smith and Knight index. Pearson chi-square test and Fisher exact test were used for the statistical analysis.
Results: Wear of palatal surface of maxillary teeth was observed in the patient group, but no wear was observed in the control group ($p < 0.05$). Wear of insizal surface of maxillary anterior teeth and occlusal surface of maxillary/mandibular posterior teeth was observed at certain rates in both groups, but the values were higher in the patient group ($p < 0.05$). The wear values of cervical and buccal/labial surfaces of maxillary teeth, cervical, buccal and lingual surfaces of mandibular posterior teeth and all surfaces of mandibular anterior teeth were not found different between the groups ($p > 0.05$).
Conclusion: Dentists should be considered the GERD patients as a risk group in terms of dental erosion and should be in interdisciplinary co-operation with gastroenterology for acid suppression and treatment of the disease.

P555

Evaluation of Location of the Mental Foramen: A Radiographic Study

Derya Yılmaz, Faruk Akgünlü, Burcu Apaydın Gezgin, Füsun Yaşar
Department of Oral Radiology, Selçuk University, Konya, Turkey

Aim: The aim of the present study was to investigate the location of the mental foramen on digital panoramic radiographs of the patients in a selected Turkish population.
Materials and methods: In this study, 323 digital panoramic radiographs of patients (163 females, 160 males) were analyzed. The patients' ages ranged from 13 to 68 years, and mean age was 30.4. All patients had fully erupted lower premolars and there was no missing teeth in the mandibular anterior region. In addition, the radiographs were free from radiolucent or radioopaque lesions in the lower arch. Both of the mental foramens were definable on all panoramic radiographs. The different locations of mental foramen on panoramic radiographs were evaluated according to first and second lower premolars and as symmetric and asymmetric. The average distance between mental foramen and inferior border of mandible was also analyzed.
Results: The most frequent locations of mental foramen are between first and second premolars (%61.1) and in line with the second premolar (%26.6). Mental foramen was symmetrical in % 61.3 of patients. Its average distance, on the right side, to the inferior border of the mandible is 13.28 mm, on the left side it is 13.13 mm.

To know the position of the mental foramen is important for regional anastesia, surgical procedures and the placement of osseointegrated implants in the mandibular premolar region.

P556

Prevalence of Temporomandibular Disorders in Faculty of Dentistry, University of Malaya

Nosizana Mohd Salleh[1], Pang Yok Wen[1], Tan Hui Ying[1], Lily Azura Shoaib[2]

[1]Department of Prosthetic Dentistry, University of Malaya, Kuala Lumpur, Malaysia, [2]Department of Children Dentistry and Orthodontic, University of Malaya, Kuala Lumpur, Malaya

Aim or Purpose: The aim of this epidemiological study was to determine the prevalence of Temporomandibular Disorders (TMD) among students, staffs, and patients in Faculty of Dentistry, University of Malaya.

Methods: A total of 488 subjects, aged 16 to 84 year old, which were selected randomly from students, staffs and patients in Faculty of Dentistry, University of Malaya. Ethical approval was obtained prior to the study. Questionnaire based interview and clinical examinations were carried out according to the Research Diagnostic Criteria for Temporomandibular Disorders (RDC/TMD). Diagnosis was made and information regarding ethnic groups, socio-demographic data, dental status, parafunctional habits were included.

Results: One hundred and ninty-six (40.2%; 84 male and 112 female) subjects were diagnosed with RDC/TMD. Distribution of each RDC/TMD group were as follows; group I – 31.1% (N = 61), group II – 56.1% (N = 110), group III – 7.7% (N = 15) and multiple diagnoses of subgroup combination 5.1% (N = 10). RDC/TMD were diagnosed in 36.2%, 45.4%, 17.4% and 1% within the ethnic group; Malay, Chinese, Indian and other races respectively. No statistically significant difference was noted between ethnic ($p > 0.05$). Among the subjects wearing denture 40.6% (N = 69) were diagnosed with RDC/TMD. Parafunctional habits showed significant association in the subjects diagnosed with TMD.

Conclusions: Result of the study indicated within subjects diagnosed with RDC/TMD group II was found to be higher.

P557

Incidence of Canine Impaction and Transmigration

Burcu Apaydın Gezgin, Füsun Yaşar, Derya Yılmaz, Faruk Akgünlü

Department of Oral Radiology, Selcuk University, Konya, Turkey

Aim: The aim of this study was to evaluate incidence of impacted maxillary and mandibular canines and determine the incidence of transmigrant maxillary and mandibular canine teeth with regard to their transmigration patterns in a Turkish subpopulation.

Materials and methods: Maxillary canine impaction is a well known dental anomaly and the incidence is in the range 0.8–2.8%. Mandibular canine impaction is less frequent and the incidence was reported to be 20 times lower than that for maxillary canines. Migration of a tooth across the midline is an even rare anomaly. In this study, 1780 consecutive panoramic radiographs were evaluated. The transmigrant mandibular canines were classified according to Mupparapu.

Results: The incidence of canine impaction was found to be 3.03%. The incidence of canine transmigration was 0.44%. The most frequent impacted canines were maxillary left canines (41.53%) and the most frequent position was mesioangular position (73.84%) and the most frequent transmigration pattern was type 1 (50%).

According to a study which was performed in 2004 with Turkish patients, incidence of canine impaction was found 3.58% and the incidence of canine transmigration was 0.31%. According to our results the incidence of impacted canine teeth and transmigration may be more frequent than was previously thought.

P558

Fibro-Osseous Lesions: A Clinicopathological Study and Reclassification

Afshin Kavoosi, Payam Tawakoli

Department of Pathology, Faculty of Dentistry, Kermanshah University of Medical Sciences, Kermanshah, Iran

Introduction: Fibro osseous lesions are a group of osseous lesions defined as replacement of normal bone structure with connective tissue, osseous and/or cementum-like calcified materials. For many years, the lesions have shown complications in classification. There is not a fully accepted classification for these lesions. The aim of this study was to determine clinicopathological features of these lesions and attempt to re-classification of fibro-osseous lesions.

Materials and methods: One of the fibro-osseous lesions group was selected and evaluated by light microscopy. In order to correct diagnosis, clinical variables, such as age, sex, location of lesion, pain, expansion as well as radiographic features were recorded. Also, microscopic features, including connective tissue stroma, type of calcified materials, inflammatory cells, and presence of giant cells, hemorrhage and osteoblastic border were recorded. In addition, the pattern of calcified materials, produced by the lesion, was studied by polarized light microscopy.

Results: Among 8893 cases, fibro osseous lesions were found consisting of 0.82% of total cases. Ossifying fibroma showed the highest frequency (59.9%). Whilst, periapical and focal cemento-osseous dysplasia (each 1.3%) revealed the lowest. Fibrous dysplasia consisted of 13.6% and Juvenile ossifying fibromas 2.7% of total cases. Fibro osseous lesion were prevalent in females in the 2nd decade.

Conclusion: Base on the results of the study, the necessity of combining all clinical, radiographic, surgical and pathologic findings is emphasized to achieve final correct diagnosis of fibro-osseous lesions. In addition, in controversial cases, applying polarized light microscopy is recommended as an adjunct diagnosis tool.

Theme: Implantology: Implantology

P559

SEM and Fractography Analysis of the Screw Threads of a Loosened Abutment and Fractured Abutment at the Same Patient: A Case Report

İkbal Leblebicioglu, Emel Kırac, Bülent Kesim, Ayşegül Güleryüz Gürbulak, Aytaç Yaşar, Taha Yaşar Manav
Depertment of Prosthodontics, Erciyes University Dentistry Faculty, Kayseri, Turkey

Aim: The aim of the present study is an analysis and structural examination of screw thread of a fractured abutment and loosened abutment compared with screw threads of a new abutment screw.

Case: The fractured abutment screw was determined in the clinical examination of the patient who consulted to the prosthodontology department with the complaint of his fractured Locator abutment.In his clinical examination it was seen that his Locator abutment at 33 region was fractured and the fractured part of the screw was still inside the implant. The other Locator abutment at 43 region was also loosened. The fractured screw was removed with an ultrasonic instrument successfully and the other abutment also removed in order to be changed with a new one. Both of the abutments were changed with new ones and the occlusion of the all dentures were turned into bilateral balanced occlusion. Six months and twelve months after the delivery of the dentures, the patient came for his recalls. There was not seen any problems in his clinical examination. The loosening of screw threads, fractured screw threads were retrieved and analyzed under SEM. They were also compared to screw thread with a new Locator abutment of the same implant system.

Conclusion: Many alterations and deformations were present in concavities and convexities of threads in the loosened and fractured screws. No macroscopic alterations or deformations were observed in the loosening abutment.

P560

Clinical and Radiological Evaluation of Implants with Different Abutment-Implant Connection

Levent Özgür[1], Birgül Özpınar[2], Bülent Gökçe[2], Pelin Güneri[3]
[1]*Turkish Army Forces Rehabilitation and Care Center, Ankara, Turkey,* [2]*Department of Prosthodontics, Ege University, Izmir, Turkey,* [3]*Department of Oral and Maxillofacial Radiology, Ege University, Izmir, Turkey*

Aim: In this study, the aim was to measure the crestal bone loss and periodontal effects of dental implants with different abutment-implant connections after prosthetic loading by using a split-mouth study design.

Materials and methods: Total of 31 bone level with platform switching design (BL) and 31 tissue level (TL) implants were applied on nine patients. The day of the delivery of 62 implants was recorded as baseline (0) and follow-up periods were determined as 3rd and 6th months post-insertion. However, seven patients with 46 implants (23 TL, 23 BL) were followed-up for 12 months. For radiological evaluations, periapical radiographs which were taken with standard parallel technique were used. For periodontal assessment, sulcus depth (SD) modified plaque index (MPI) and bleeding on probing (BOP) indices were employed.

Results: Increased bone loss on TL implants were observed for all time periods (B3 TL: 0.110 ± 0.101 mm; BL: 0.072 ± 0.067 mm; B6 TL: 0.205 ± 0.151 mm; BL: 0.150 ± 0.126 mm; B12 TL: 0.271 ± 0.167 mm; BL: 0.170 ± 0.099 mm). However, only the differences between the baseline and the 12th month were significant ($p = 0.007$). Periodontal indices around TL implants also resulted in higher values but these were substantial ($p > 0.05$).

When clinical and radiographic results were considered, BL implants revealed notable clinical performance than TL implants for the preservation of the crestal bone and periodontal health.

P561

Short Implant Rehabilitation of Patients with Atrophic Maxilla: Case Series

Nihat Akbulut[1], Kaan Yerliyurt[2], Mehmet Kemal Tümer[1]
[1]*Department of Oral and Maxillofacial Surgery, Gaziosmanpasa University, Tokat, Turkey,* [2]*Department of Prosthodontics, Gaziosmanpasa University, Tokat, Turkey*

Objectives: Short dental implants, having length of 8 mm or less, can be placed or used as an alternative to bone augmentation procedures for allowing the placement of longer implants.

Short implants could be a simpler, cheaper and faster alternative with less associated morbidity to longer implants placed in augmented bone.

We present three patients having maxillary alveolar crest deficiency rehabilitated with short implants restorations.

Case Series: In this study, we used short implants with plateau design, screwless, locker taper, in length of 6–8 mm for rehabilitation severely resorbed maxillary alveolar crest in patients.

Case 1: A 43-year-old male patient had lost the right maxillary premolar and molar teeth. Three pieces of short implants with 6 and 8 mm in length were inserted in this region. After 5 months, this area restored with implant supported crown – bridge prostheses.

Case 2: A 60-year-old male patient had fully edentulous maxillary arc with prolapsed sinuses. Eight piece of short implant has been placed in the upper jaw. Then the patient's upper jaw was restored with implant supported fixed prosthesis.

Case 3: A 56-year-old male patient had edentulous right posterior maxillary arc and also he had a little bit sinus prolapsed situation in his molar region. He finally treated with crown-bridge restoration supported with short length of implants.

Conclusions: This study shows that the use of short implants may be considered for prosthetic rehabilitation of the severely atrophic maxilla as an alternative to more complicated surgical techniques as sinus, nasal floor lifting, etc.

P562

Esthetic Solutions for Congenitally Missing Maxillary Lateral Incisors

Ali Şirali[1], Seda Özturan[1], Fethiye Çağlar[1], Alper Gültekin[2]
[1]*Department of Periodontology, Bezmialem University, Istanbul, Turkey,* [2]*Department of Oral Implantology, Istanbul University, Istanbul, Turkey*

Introduction: There are various alternatives for treating congenitally missing lateral incisors. Treatment options include using canines as substitutes, tooth-supported restorations, auto-transplantation and orthodontically preparing adequate space for a single tooth implant.
Case: In our cases; considering arch length discrepancy, upper incisor inclinations and facial esthetics, it was decided to prepare adequate space for lateral implants on one side and to restore peg shaped lateral incisors prosthetically on the other side. To achieve this goal after levelling and aligning; opening the required space with coil-springs was initiated. As there was no contralateral tooth available to measure the mesiodistal width of the lateral incisors; it was calculated according to the central incisors. After preparing enough space for both lateral incisors; consulting with oral implantology we decided to assess the skeletal maturity of the patients. Hand and wrist radiograph validated our implant placement time. Pre-prosthetic orthodontic treatment was successful. Enough space for both single tooth implants and restorations were prepared orthodontically with paying attention to the root divergence in the implant site. For both patients, Nobel GroovyTM implants (3.5 mm diameters, 10 mm length) were inserted on the agenesis sides. After having waited for 3 months for osseointegration, NobelProcera ZirconiaTM abutments were placed and Zirconium crown restorations were prepared for both sides.
Conclusion: Among all treatment options for congenitally missing lateral incisors, preparing adequate space for implants and restorations is the most conservative approach to provide esthetic and functional demands.

P563

Comparison of an Alloplastic and a Xenogeneic Bone Graft Materials

Andreia Figueiredo[1,3,4], Patrícia Coimbra[2], António Cabrita[1], Fernando Guerra[3], Margarida Figueiredo[2]
[1]*Experimental Pathology Service, University of Coimbra, Coimbra, Portugal,* [2]*Chemical Engineering Department, University of Coimbra, Coimbra, Portugal,* [3]*Dentistry Department, University of Coimbra, Coimbra, Portugal,* [4]*Health Sciences Department, Catholic Portuguese University, Viseu, Portugal*

Aim or purpose: To compare two bone graft materials that are used for the same purposes in implantology procedures.
Materials and methods: Grafting material morphology was assessed by scanning electron microscopy (SEM), by spreading a few granules on a double-sided carbon conductive tape. Particle size distribution was determined by laser diffraction spectrometry. At least three measurements were performed for each sample. Information regarding samples porosity and pore size distribution was obtained by mercury intrusion porosiometry. The porosity was calculated as the ratio of the total volume of mercury intruded and the total sample volume. Two samples of each material were analyzed by this technique. The particles real density (mass per volume of solid, excluding empty spaces) was determined by gas pycnometry. Samples specific surface area was measured by the nitrogen adsorption technique using the BET method. For contact angle analysis, the materials were compressed into tablets with a manual hydraulic press.
Results: The results showed that the two grafts have quite different characteristics in practically all the evaluated properties. In what concerns shape, surface topography and size, xenogeneic granules, besides being larger, are irregular, and exhibit sharp-edged tips, while synthetic ones are approximately cylindrical, with round contours, and more uniform in size. Also, the specific surface area of the xenogeneic material is considerably higher than the one of the synthetic one.
Conclusions: It is believed the provided data will assist clinicians to make a more informed choice between these two classes of regeneration materials.

P564

Evaluation of Periodontal Regular Maintenance for Dental Implant Patients

Ai Sakuma[1], Yuki Iwaki[2], Ryunosuke Kazama[2], Akihisa Mano[1], Yukio Aso[1]
[1]*Aso Dental Clinic, Shizuoka, Japan,* [2]*Tokyo Medical and Dental University, Removal Partial Denture Prosthodontics, Tokyo, Japan*

Purpose: The aim of this retrospective study was to evaluate the effect of 5-years of regular maintenance for patients with dental implants.
Methods and materials: Seventy-four patients with 284 implant cases that visited our private dental office (Aso Dental Clinic) between 2007 and 2013 were selected. They were divided into a regular periodontal maintained group (RG; 49 patients with 198 implant cases, 21 men and 28 women) and an irregular group (IG; 25 patients with 86 implant cases, 13 men and 12 women). Each patient was evaluated in terms of plaque control record (PCR), bleeding on probing (BOP), and the number of pockets with probing depth over 4 mm (NP) at initial visit and 5 years after implant treatment. The amount of bone resorption (BR) and remaining supportive bone (RSB) of each implant were measured on x-ray film, and the proportion of implants with BR over 2 mm (BRP) was calculated in each group. Fisher's exact test was used to analyze BRP between the two groups. The student *t*-test was used to analyze other survey items between the two groups.
Results: There were significant differences in PCR between the groups at both times ($p < 0.05$). The BR of IG showed a significantly higher value following 5 years ($p < 0.01$). The BRP of IG also showed a significantly higher value following 5 years ($p < 0.05$).
Conclusion: The results suggest that regular maintenance may prevent bone resorption following dental implant treatment.

P565

Clinical and Radiograohic Evaluation of Implants Placed with CT-Derived Surgical Guides

Erkut Kahramanoğlu[1], Burçin Vanlıoğlu[1], Yaşar Özkan[2], Yasemin Kulak Özkan[1]

[1]Department of Prosthodontics, Marmara University, Istanbul, Turkey, [2]Department of Oral and Maxillofacial Surgery, Marmara University, Istanbul, Turkey

Purpose: As implant dentistry is evolving toward accelerated treatment protocols, with immediate or delayed functional and nonfunctional loading, the importance of presurgical planning becomes paramount. Based on three-dimensional implant planning software for computed tomographic (CT) scan data, customized surgical templates could be designed to ensure high precision transfer of the implant treatment planning to the operative field. The aim of the present study was to evaluate a concept including a treatment planning procedure based on CT scan images and a customized surgical template (Simplant Software, Materialise, Leuven, Belgium).

Materials and methods: Ten complete edentulous and four partial edentulous jaws were included in this study. Patients received a CT of the appropriate arch using a denture with radiopaque markers indexed to the opposing arch. The software allowed precise planning for implant placement after which the planned case was sent to a manufacturing facility for splint and prosthesis construction. A total of 92 implants were installed according to the surgical guide and patients were fallowed for a mean period of 5 years.

Results: Interactive computer imaging can allow precise planning for implant position and the images can be used for guide splint. This technology is powerful, easy to use, and is a significant advance in implant dentistry. The advent of CT imaging, and CT-derived surgical templates allow for clinically significant improvements in accuracy, time efficiency, and reduction in surgical error, benefiting the patient, surgeon, restorative dentist, and the laboratory.

P566

Clinical and Radiographic Evaluation of Early Loaded Maxillary Anterior Single Tooth Bone Level Implants

Yaşar Özkan[1], Burçin Vanlıoğlu[2], Erkut Kahramanoğlu[2], Yasemin Kulak Özkan[2]

[1]Department of Oral and Maxillofacial Surgery, Marmara University, Istanbul, Turkey, [2]Department of Prosthodontics, Marmara University, Istanbul, Turkey

Purpose: The aim of this study was to evaluate the clinical and radiographic outcome of early loaded implants in the esthetically demanding regions.

Methods and materials: Patients were treated with implant (Straumann Bone Level Implant, Institute Straumann, Basel, Switzerland) supported all ceramic single crowns and followed for 2–4 years. The implants were evaluated by clinical and radiographic parameters. Clinical parameters like plaque index, sulcus bleeding index, peri-implant probing depth (PD), and marginal bone loss (MBL) were recorded. Repeated-measurement ANOVA, Kruskal-Wallis test, Wilcoxon signed rank test and paired samples test were used for statistical analysis.

Results: Fifty-five implants were placed in 47 patients. At the recall examinations, all implants were successfully integrated, demonstrating healthy peri-implant soft tissues as documented by standard clinical parameters. Plaque accumulation scores of 2 and 3 were not noted during the entire study. At baseline the mean PD value was 2.15 (0.62) mm, 2.24 (0.61) mm at 2 years. The PD of the implants at 3 years was 2.22 (0.62) and the mean PD of 7 implants was 1.86 (0.37) mm at 4 years. There were no statistically significant differences between time intervals ($p > 0.05$). All implants showed less than 0.5 mm MBL. Seven of the implants showed an increase at the level of the bone contact. The difference between baseline and last recall in mean MBL value was 0.119 ± 0.21 mm in mesial side, and 0.158 ± 0.254 mm in distal side. There were no statistically significant differences within time ($p > 0.05$).

P567

Comparison of Two Block-Out Methods for Mandibular Implant Retained Overdentures

Süha Serhat Türkaslan, Sibel Kan, Zeynep Başağaoğlu Demirekin

Department of Prosthodontics, Süleyman Demirel University, Isparta, Turkey

Objective: The aim of this study was to compare two direct incorporation methods of o-ring attachments over for both angled and parallelly inserted implants used as retantive components for mandibular overdentures.

Materials and methods: Forty dental practitioners were assigned for this study. Each practitioner were asked to attach the o-ring retentive component to the previously fabricated overdenture prostheses. Eighty implants analogs (40 angled, 40 parallel) with ball attachment abutments were embedded in 40 gypsum models, simulating the edentulous mandibular ridge. Twenty models were including 30° angled to each other and 20 models were including parallel o-ring abutments. Randomised 40 gypsum models including implants either angulated or parallel were given to 40 dentists. Each dentist used composite resin or rubber dam for block-out material equally.

Results: Direct attachment incorporation with rubber dam was found less successful for both groups; but the angulated group recorded statistically significant lower scores. Composite resin was successful for both groups and the parallel group scored higher.

Conclusion: When implant retained overdentures are in question, while incorporating the attachments to the overdenture, the preference of composite resin as a block-out material is superior to rubber dam.

P568

Clinical Study of Immediate Loading of Implants in Partialful Edentulous Jaws

Wei Jiang, Yueling Li, Ming Yu, Huijuan Tu

Shanghai Jiading Dental Diseases Prevention and Cure Center, Shanghai, China

Purpose: To determine the feasibility of using primary stability as a predictor of implant success the short-term clinical result of treatment.

Materials and methods: This study included 36 partially edentulouspatients, in whom a total of 86 implants were placed (34 in maxillary and 52 in mandibular). All implants were immediately loaded. Within 2 h providing support for fixed provisional prosthesis and noble-metal-ceramic crowns were completed within 3 months. All patients were followed up by 1, 3, 6, 12 months and after the patients were checked every 6 months.
Results: No implants were lost during follow-up (range 5–36 months, mean of 19 months), and no infections, nerve or sinus damages or other accidents occurred. No implants exhibited periimplant radiolucencies. Moreover, immediate loading seems to increase the ossification of the alveolar bone around endosseous implants.
Discussion: This research showed that immediate loading is a viable treatment modality. The favorable success rate reported for rough-surfaced implants suggest that adherence to a protocol, an important parameter of which is primary stability above 32 Ncm, can lead to osseointegration.
Conclusions: The results suggest that patients who are partially edentulous may be immediately restorations, and provide that the dental implants are adequately stable immediately after their surgical placement. The experience described in this study indicate that immediate loading with restorations using appropriate surgical and restorations techniques with one-stage JIAD (KOM) implant system can predicate the partially edentulous mandible in some cases. Further study is needed to determine the long-term result of immediately loaded implants.

P569

Surgical Guide and Multiple Implant Procedures

Adrian Mihail V. Nistor, Marian Vladimir Constantinescu, Michael Gross, Grigore Lazarescu
Department of Restorative Dentistry, Faculty of Dentistry, Baskent University, Ankara, Turkey

Aim: To present the experience of authors in the routine of surgical guide. From the diagnostic to the final prosthesis there are important and precise steps and every one must be planned based on a rigorous observations. The authors have a rich documentation of multiple clinical situations but is important to demonstrate the capability to choose the architecture of surgical guide and the surgical protocol.
Methods and materials: In this study were introduced 32 patients who where diagnosed with multiple edentations caused by various factors (decays, periodontal disease, trauma, etc.). For everyone was realized a surgical guide according to surgical protocol and finally to prosthetic plan. The titanium surgical guide was produced by the 3D model using CBCT. Surgical procedure was planned and realized using surgical guide tooth-supported (21 patients) or mucosa supported (11patients). In 12 cases was necessary bone addition to correct bone loss caused by pathological origin or to add in the sinus floor elevation. One hundred and six implants were introduced using surgical guide under local anesthesia.
Results: Immediate results using surgical guide are excellent only if are respected the surgical plan and adequate protocol. In 3 cases was necessary to re-suture the surgical wound caused by local conditions of oral flaps. Failure of implants was observed only in 4 cases due to inadequate bone quality.
Conclusions: Implant surgical procedures using prefabricated surgical guide are improved only if we use an adequate protocol both in planning and in the accurate technique.

P570

Oral Implantology by the Electro-Wielding Technique

Mihaela Raescu[1], Massimo Azaria De Cesare[2], Florin Eugen Constantinescu[3], Carmen Defta[4], Marian Vladimir Constantinescu[1]
[1]UTM Bucharest, Romania, [2]University Federico Napoli II, Napoli, Italy, [3]Romanian Association of Oral Rehabilitation and Posturotherapy – ROPOSTURO, [4]University of Medicine and Pharmacy "Carol Davila", Bucharest, Romania

Aim: The aim of this study is to demonstrate the efficiency of a method through which, in the same session, after inserting the implants you can rehabilitate the prosthetic field by using a resin fixed denture, restoring the function and aesthetics of the stomatognathic system.
Materials and methods: The implanto-prosthetic protocol (for the two clinical situations presented) consists of 3 phases: presurgical, surgical and postsurgical.

The presurgical phase consists of the instrumental and radiological evaluation of the general and specific conditions.

The surgical phase consists of anesthesia, preparation of the implantation situs (flapless), positioning the titan implants and wielding the titan solidification bar (placement, wielding, cooling).

The postsurgical phase consists of establishing a fixed prosthesis and reestablishing the occlusal relationships in the same session.
Results: The results showed the efficiency of the electro-welding technique associated with a minimally invasive surgery technique, which recalibrates the functionality and aesthetics of the stomatognathic system.
Conclusions: The one step electro-welding implantology is an efficient technique, that brings predictable results in rehabilitation of the total edentulous patients. Using the immediate load, it provides comfort and fast recovery of the patient health.

Theme: Implantology: Oral Medicine

P571

Transcriptome Analysis of bFGF-Induced Rat Pheochromocytoma Cells

Yoshitsugu Ishikawa[1], Michiharu Shimosaka[1], Yu Fujita[1], Ujjal K Bhawal[2], Yoshimitsu Abiko[2], Koh Shibutani[1]
[1]Department of Anesthesiology, Nihon University School of Dentistry at Matsudo, Japan, [2]Department of Biochemistry and Molecular Biology, Nihon University School of Dentistry at Matsudo, Japan

Aim: Growth factors can regulate the proliferative or differentiation processes by analogous mechanisms. Basic fibroblast growth factor (bFGF), a member of FGF family, has broad biological functions involving the regulation of cell growth, differentiation, and proliferation.
Methods and materials: We sought to elucidate the pattern of the molecular mechanisms governing the bFGF-induced rat pheochromocytoma cell line, PC12, likely involve multiple converging signal transduction pathways. Total RNA was extracted after 24 h of bFGF-treatment in PC12 cells and monitored mRNA levels using Affymetrix GeneChip (rat Genome 230 2.0 Array). GeneChip data was analyzed by GeneSpring software and Ingenuity Pathway Analysis system. Real-time RT-PCR and Western blot were used to investigate the gene expression changes.
Results: The differentially expressed genes represented functions as diverse as growth and differentiation. DUSP showed a greater than two fold change in expression relative to those in control cells. Altered mRNA levels in GeneChip analysis were confirmed by real-time RT-PCR. We have identified differential gene expression up-regulated or down-regulated with the up-regulation of DUSP in bFGF-treated cells. Another important finding of our study provides the data on the involvement of DUSP in ERK-dependent signaling pathways in PC12 cells, which suggests a central role of ERK in the neuronal induction by bFGF.
Conclusion: These findings indicate that the molecular mechanisms underlying the DUSP response of PC12 cells to bFGF treatment likely involve multiple converging signal transduction pathways.

Theme: Implantology: Oral Pathology

P572

Medical Management of Complications Induced by Biphosphonates in Maxillomandibular Complex

Jeaneth Lopez[1], Carlos Javier Alzaibar[2], Enid Margarita King[2], Miguel Angel De Camara[2], Sasha Abdulhadi[2]
[1]Department of Oral Pathology. Universidad Central De Venezuela, Caracas, Venezuela, [2]5th year Student. Universidad Central De Venezuela, Caracas, Venezuela

Biphosphonates are compounds used in prevention and treatment of bone resorption pathologies. They are mainly prescribed by doctors in the field of gynecology, traumatology, oncology and endocrinology.
Purpose: Establish the knowledge and management of the medical area about the complications aroused by the biphosphonates treatment in the maxillomadibular complex. MATERIALS AND METHODS A survey was made to a population of 71 venezuelan medical professionals in the areas of gynecology, traumatology, oncology and endocrinology who prescribed different types of biphosphonates between October 2011 and July 2012. RESULTS Most of the professionals surveyed prescribe biphospfonates using bone densitometry as the main diagnosis criteria, been alendronate and ibandronate the most commonly prescribed BFF. Seventy-seven percent of the ones who prescribe BFF don't refer the patient to the dentist to get an evaluation before starting the biphosphonates therapy. Only 17% of the doctors have seen a case of osteonecrosis of the jaw in their practice and in case of finding evidence of osteonecrosis 77% of the surveyed would suspend the treatment and only 7% would consider following the dentist's guidance.
Conclusions: There's a lack of communication between Venezuelan dentists and doctors resulting in doctor's poor understanding of the complications in the maxilo-mandibular complex caused by the treatment involving BFF. We strongly suggest creating stronger bonds between both professions in order to reduce complications involving the maxilo-mandibular complex and ensure the patient's wellbeing.

Theme: Implantology: Oral Surgery

P573

Retrospective Investigation for the Space-Occupying Lesions of the Temporomandibular Joint

Juanhong Meng[1], Xuchen Ma[2]
[1]Department of Oral & Maxillofacial Surgery, Peking University School of Stomatology, Beijing, China, [2]Center for TMD & Orofacial Pain, Peking University School of Stomatology, Beijing, China

Purpose: To study the clinical, radiological and pathological manifestations of space-occupying lesions of the temporomandibular joint and provide references for the early diagnosis and treatment of these diseases.
Methods and materials: To review the clinical data of space-occupying lesions of the temporomandibular joint in Peking University School of Stomatology between January of 1990 and March of 2013. Two hundred and twenty-seven cases of temporomandibular joint space-occupying lesions undertaken surgery and verified by pathological examinations were selected for the retrospective analysis.
Results: Among 227 tumors and tumor-like lesions of temporomandibular joint with surgery, female was 153, male was 74, and the ratio of female to male was 2.1:1. The ages ranged from 8 to 70 years old, and the median age was 36. The courses of diseases were half a month to 20 years, and the median was 2 years. There were benign tumors and tumor-like lesions, 212, occupying 93.39%; malignant tumors, 15, occupying 6.61%. Osteoma was the commonest among all of the lesions, 33.04%. The followings were condylar hypertrophy, 20.26% and synovial chondromatosis, 15.42%. Chondrosarcoma is the commonest among the malignant tumors, 3.08%; then followed by osteosarcoma, metastasis and synovial sarcoma, etc.
Conclusions: Space-occupying lesions of the temporomandibular joint include tumors and tumor-like lesions which may mimick the symptoms of TMD, and the differential diagnosis is necessary. The clinician must be careful to these lesions so as to give the early diagnosis, correct treatment and avoid misdiagnosis.

P574

Minimally Invasive Approach for the Treatment of Advanced BRONJ

Lukas Hauer, Daniel Hrusak, Lubor Hosticka, Pavel Andrle, Jan Jambura, Petr Posta
Clinic of Dentistry, Department of Maxillofacial Surgery, University Hospital and Faculty of Medicine in Pilsen, Charles University in Prague, Czech Republic

Introduction: Osteonecrosis of the jaw is a rare but serious adverse side effect of specific type of antiresorptive and/or biological therapy, which affects bone metabolism. Bisphosphonate – related osteonecrosis of the jaw occurs especially in oncological patients, but also much less frequently in patients with metabolic bone diseases. Up to 70% of these lesions arise after invasive procedures in the oral cavity.
Case: The authors present an unusual case of 57 years old woman with rheumatoid arthritis and glucocorticosteroid – induced osteoporosis receiving prednisone, leflunomide and alendronate. Osteonecrosis of the mandible with progression up to the 3rd stage with a pathological fracture developed gradually after teeth extractions in this patient. This lesion was treated by minimally invasive procedures, symptomatic and antibacterial therapy, which led to the complete resolution (systemic and local antimicrobials, pain control, superficial debridement, sequestrectomy in local anesthesia, semi-liquid diet, idle mode). The clinical course of this pathological condition in a period of 5 years is presented.
Conclusion: The jaw bone under the influence of bisphosphonate medication may still have sufficient healing potential even in the cases of severe osteonecrosis. Therefore a conservative approach may be considered even in patients with nondisplaced and nonmobile mandibular pathological fractures with minimal clinical symptoms. A radical surgical treatment with potential risk of deterioration could be reserved for other cases of pathological fractures and for symptomatic and refractory lesions of the 3rd clinical stage.

P575

Effects of Ozone Therapy on Postoperative Discomfort Following Third Molar Surgery

Hakkı Oğuz Kazancıoğlu[1], Esma Kürlü[2], Nihat Demirtaş[1]
[1]*Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, Bezmialem Vakif University, Istanbul, Turkey,* [2]*Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, Istanbul University, Istanbul, Turkey*

Objective: To evaluate the efficacy of the therapeutic ozone application in the management of pain, swelling, and trismus associated with surgical removal of impacted mandibular third molars.
Study design: Twenty consecutive patients with asymptomatic bilateral impacted mandibular third molars were recruited into the study. One side was extracted and received ozone therapy (study side), and the other side was extracted 2 weeks later from the first operation and received sham ozone therapy (negative control side), or diametrically opposed to this for correlation of post-operative pain development by patients.
Results: The study consisted of 20 patients (mean age: 22.6 $\pm$ 2.3 years, ranges from 18 to 25 years) with asymptomatic bilateral impacted mandibular third molars. No differences were found for mouth opening and swelling for both sides. The degree of pain and the number of analgesics tablets taken was significantly lower at study side. This study showed that ozone therapy had positive effect on OHIP-14 questionnaire results. Alveolar osteitis, paraesthesiae, bleeding, or altered nerve sensation was not observed in any patient post-operatively.
Conclusion: This study has demonstrated that ozone therapy is useful for the reduction of postoperative pain and it increases quality of life after third-molar surgery. However, it has no effect on postoperative swelling, and trismus.

P576

Evaluation of Life Quality after Apicoectomy

Cena Dimova[1], Ivona Kovacevska[2], Zlatko Georgiev[3], Biljana Evrosimovska[4], Kiro Papakoca[1]
[1]*Department of Oral and Maxillofacial Surgery, Faculty of Medical Science, University "Goce Delcev", Stip, Macedonia,* [2]*Department of Cariology and Endodontology, Faculty of Medical Science, University "Goce Delcev", Stip, Macedonia,* [3]*Clinic of Pedodontology, Faculty of Dentistry, University "Sts Ciryl and Methodius", Skopje, Macedonia,* [4]*Clinic of oral Surgery, Faculty of Dentistry, University "Sts Ciryl and Methodius", Skopje, Macedonia*

Aim: The aim of this study was to evaluate patient experience of quality of life following apicoectomy using two different techniques: preoperative and intra operative ortograde canal opturation.
Methods and materials: The study consisted of 40 patients referred for oral surgical treatment (apicectomy with periapical osteotomy). Three operators were carried out the treatments. All patients were given a questionnaire with 15 questions to evaluate their quality of life for 7 days after the oral surgery interventions. The patient's answers were referred as: not at all-1; very little-2; some-3; quite a bit- 4; very much-5). An equal number of patients were assigned to each group. Group 1 was treated by preoperative canal opturation and Group 2 was treated by intra operative ortograde canal opturation.
Results: The average time needed for completion the surgical procedure was approximately 35 min. The results showed that patients in Group 1 reported significantly more pain and took significantly more analgesics on day 5. On days 1 and 2, patients of the Group 2 reported significantly more difficulty in mouth opening, mastication, and the ability to speak.
Conclusion: High incidence of symptoms were reported by the patients in both groups. There were no significant differences found in the distribution of patients according to age, gender, periradicular diagnosis, and site of operation between the two groups. The technique using the preoperative canal opturation provided significantly less postoperative pain, but more difficulties in mouth opening, mastication, and the ability to speak immediately postoperatively.

P577

Cutaneous Metastasis from Esophageal Squamous Cell Carcinoma Resembling Morphea: A Case Report

Umit Ertas, Ertan Yalcın
Oral and Maxillofacial Surgery, Ataturk University Faculty of Dentistry, Erzurum, Turkey

Background: Cutaneous metastasis of malignant neoplasms are generally uncommon, but are being diagnosed with increasing frequency in recent years. In about 3–10% of patients with malignant neoplasms develop cutaneous metastases. Oesophageal carcinoma metastatic to the skin is relatively infrequent, accounting for approximately 3% of cutaneous metastases.

Aim: The aim of this presentation is to describe a case cutaneous metastasis from esophageal squamous cell carcinoma resembling morphea.
Case: We report an 80-year-old male, with pain over left half of the face, severe trismus, intraoral swelling, a scar-like lesion, hyperpigmented, violet-pink coloured, hard on palpation on the skin of the left cheek, and movement of the jaws was restricted.
Conclusions: Cutaneous metastases are of diagnostic importance because they may be the first presenting sign of an undiscovered malignancy and because they may indicate a poor prognosis and early fatal termination.

P578

Apicoectomy with Er-Yag Laser-Analysis of Resected Tooth Surface

Vancho Spirov[1], Vera Stojanovska[2], Lidija Popovska[2], Ilijana Muratovska[2], Oliver Dimitrovski[1], Blagoja Dastevski[1]
[1]Department of Oral surgery, University St.Ciril and Methodius, Skopje, Republic of Macedonia, [2]Department of Dental pathology, University St.Ciril and Methodius, Skopje, Republic of Macedonia

Introduction: Laser is a device that produces light beam that is monochromatic, coherent and focused. The speed and efficiency of laser procedures are defined by the laser parameters, the surface area of the target and the speed with which the operator moves the hand. To achieve optimal effect, depending on the desired intervention is necessary to set appropriate terms of energy/power and frequency to obtain ideal results.
Aim of purpose: Our goal was to compare the VSP pulse, which creates the Er: YAG laser with his contact extension with the work of mechanical handpiece efficiency in their apical resection of the root, and to make analysis of resected root surface.
Material and methods: For the realization of set goals, we included 75 patients of both sexes. The samples were divided by random into five groups. The first four groups were treated with Er: YAG laser with different parameters and the fifth was a control group treated with mechanical handpiece. Analysis of the resected tooth surface was made with SEM microscope.
Results and discussion: The survey results showed a direct correlation between energy used and the time of resection. Increasing the pulse energy increases the damage of the tooth or the number of cracks of the resected tooth surface.
Conclusion: Ideal pulse parameters amounted 200 mj/20 Hz followed by 200 mj/30 Hz with subsequent equivalent effect is three times greater risk of cracking from mechanical handpiece and six times longer during the resection of the tooth surface.

P579

RFA Evaluation of Three Types of Early Loaded Implants and Marginal Bone Loss after 4 Years

Erkut Kahramanoğlu[1], Burçin Vanlıoğlu[1], Argir Liaje[1], Yaşar Özkan[2], Yasemin Kulak Özkan[1]
[1]Department of Prosthodontics, Marmara University, Istanbul, Turkey, [2]Department of Oral and Maxillofacial Surgery, Marmara University, Istanbul, Turkey

Purpose: To analyze implant stability of three different implant systems using RFA analysis and to correlate RFA measurements with 4 years of clinical and radiographical evaluation.
Methods and materials: Seventy -five implants were placed in 30 subjects posterior regions. Twenty-three Straumann (Institute Straumann AG, Waldenburg, Switzerland) (STR), 28 Astra (Astratech AB, Molndal, Sweden) (AST) and 24 Thommen (Thommen Medical AG, Waldenburg, Switzerland) (SPI) implants were inserted. RFA measurements were performed at implant placement, 1,2,3,4,5,6,7 and 8 weeks. Implants were loaded with prostheses after 8 weeks. After cementation of prosthesis all subjects were examined radiographically at 6, 12, 24, 36 and 48 month follow-ups.
Results: The results showed that there was no difference in the mean implant stability quotient (ISQ) values at implant placement (78.39 ± 3.95 for STR and 76.57 ± 5.12 for AST and 75.13 ± 5.72 for SPI). ISQ values were different between group ($p = 0.01$) (76.17 ± 4.45, 74.79 ± 5.59 and 71.50 ± 5.99 respectively for STR, AST and SPI). The effect of the dental arch and the diameter of the implant on the implant stability were statistically significant ($p = 0.01$). Mean marginal bone loss after 4 year was 0.22 ± 0.4 mm for ITI, 0.31 ± 0.5 mm for ASTRA, 0.39 ± 0.36 mm for SPI. All of three implant systems showed higher ISQ than clinically acceptable values for immediate/early loading. The success rate and bone loss after 4 years were similar to the values reported in the literature, thus early loading may be a useful procedure that allows reduction in treatment time.

P580

Solitary Bone Cyst: A Case Report

Uğur Sorkun[1], Abdulkadir Burak Cankaya[1], Vakur Olgac[2], Ayfer Kaynar[1]
[1]Department of Oral Surgery, Faculty of Dentistry, Istanbul University, Istanbul, Turkey, [2]Department of Oncology, Department of Tumor Pathology and Oncologic Cytology, Instute of Oncology, Faculty of Medicine, Istanbul, Turkey

Introduction: Solitary bone cyst is an intraosseous pseudocyst having a tenuous lining of connective tissue without epithelium, either empty or filled with serous or sanguinous fluid which also can be referred as simple bone cyst, traumatic bone cyst, hemorrhagic bone cyst, hemorrhagic cyst, idiopathic bone cavity and unicameral bone cyst.
Case: This case report describes a clinically and radiographically an atypical case of a large multilocular solitary bone cyst involving the mandibular left body and chin region of a 13 year old boy.

P581

Maxillary Sinus Floor Augmentation and Immediate Implant Placement in Congenital Adrenal Hyperplasia: Case Report

Meltem Koray[1], Nedim Ozer[2], Beril Alkan[1], Hakkı Tanyeri[1]
[1]Istanbul University, Faculty of Dentistry, Department of Oral Surgery and Oral Medicine, Istanbul, Turkey, [2]Medipol University, Faculty of Dentistry, Department of Oral and Maxillofacial Surgery, Istanbul, Turkey

Introduction: Congenital adrenal hyperplasia is an autosomal recessive hereditary disorder related to the adrenal glands, with a deficiency of 21-hydroxylase, leads to decreased production of cortisol and aldosterone with increased androgen secretion. We present a case of female patient with congenital adrenal hyperplasia rehabilitated with maxillary sinüs floor augmentation and immediate implant placement.
Case: Forty-two-year-old female patient with congenital adrenal hyperplasia was using daily 0.5 mg dexamethasone. She had inadequate bone volume condition for implant placing and underwent sinus augmentation. Radiologic evaluation included orthopantomography and maxillary computed tomography. Preoperative radiograph shows 4–6 mm of residual bone height. Corticosteroid doses should be increased in those patients who take less than 30 mg a day, if the dose administered falls under this amount, the human body is not prepared to manage a stress¬ing situation, which may cause an adrenal crisis. This can be avoided by duplicating the normal dose before and after the dental proce¬dure. On the day of surgery 8 mg dexamethasone was administered to patient. During stress periods additional doses of medications are needed to avoid an adrenal crisis. Peroperatively she was administered 1 mg Midazolam, 40 mg Petidin HCL and 80 mg Methylprednisolone respectively. Treatment with antihypertensive drugs must not be interrupted. Postoperatively Cefazolin sodium (Im 2 × 1), Naproxen sodium (2 × 1) and %2 Chlorhexidine gluconate (3 × 1) was prescribed for 7 days. Five implants were placed after internal sinus lift in maxillary area after extractions and four implants were placed in mandible. After osteointegraion, the implant supported fixed prosthesis were performed.

P582

Effectiveness of A New Flap Technique on Primary Wound Healing After Lower Third Molar: A Pilot Study

Ümit Yolcu, Ahmet Hüseyin Acar
Department of Oral and Maxillofacial Surgery, Inonu University, Malatya, Turkey

Objective: To investigate the effectiveness of a new flap design on primary wound healing.
Study design: In this split mouth study, 13 patients with bilateral mesio-angular impacted mandibular third molars were included. Twenty-six 26 mesio-angular impacted mandibular third molars were extracted. Two different flap designs were used: a modified triangular flap and a new flap technique. On the 7th day after surgery, sutures were removed and primary wound healing was evaluated.
Results: In modified triangular flap group, wound dehiscences developed in 7 of 13 the patients. In the new flap group, wound dehiscences developed in 3 of 13 the patients.
Conclusion: The new flap technique seems to be more effective on primary wound healing after lower third molar surgery.

P583

Surgical Management of Panfacial Fracture: A Case Report

Umit Ertas, Ertan Yalcin, Nesrin Saruhan
Department of Oral and Maxillofacial Surgery, the Faculty of Dentistry, Ataturk University, Erzurum, Turkey

Introduction: Panfacial fractures present remarkable challenges to both surgeon and patient. Panfacial fractures are defined as fractures that simultaneously involve the upper, middle, and lower face. This type of trauma mainly involves the mandible, maxilla, zygomatic complex, naso-orbito-ethmoid region, and frontal bone and is often associated with emergencies, such as craniocerebral injury. Severe panfacial fractures can lead to complicated facial deformities, malocclusion and limited facial movement. This can lead to posttraumatic deformities that greatly influence the patient psychologically and limit his social rehabilitation, sometimes permanently.

Treatment of panfacial fractures can be difficult, because there are often no available stable structures to use as a focal point to re-establish bone continuity. The surgeon's task is to ensure a complete anatomical, aesthetic, and functional repair of the face, fully restoring it to its original three-dimensional shape.
Case: In this report, a panfacial fracture due to traffic accident, involved Le Fort I maxillary fracture, mandibular symphysis fracture and bilateral mandibular condyle fracture and its treatment with open reduction.

P584

The Interdisciplinary Treatment of Insufficient Inter-Oclusal Distance

Hilal Alan[1], N. Tülin Polat[2], Neslihan Şimşek[3], Cem Özgür[1], Ümit Yolcu[1]
[1]*Department of Oral and Maxillofacial Surgery, Inonu University Faculty of Dentistry Malatya, Turkey,* [2]*Department of Prosthetic Dentıstry, Inonu University Faculty of Dentistry Malatya, Turkey,* [3]*Department of Endodontics, Inonu University Faculty of Dentistry Malatya, Turkey*

Introduction: Deficiencies occur in inter-oclusal distance because of the position of the teeth to be replaced in the long-term untreated partial edentulous patient.
Case: In our poster presentation, we aimed to present a 43-year old woman who suffered from partial edentulism was referred to our hospital. There were inadequate inter-arch distance and bone height for placing endoosseos dental implants in the left posterior maxilla at clinical examination. A mucous retention cyst determined along the left sinus lining on the cone beam CT. The symptomless cyst was removed in order to do sinus lifting operation. There was no problem after 3 months and sinus lifting was performed with alloplastic graft material. After a healing period (6 month) inter-arch distance was increased with alveolar bone removing on the left posterior maxilla and endoosseoz dental implants were inserted in that area. Also posterior mandibular premolars were treated endodontically. All posterior teeth were restored with metal fused ceramic restorations.

P585

Maxillary Primary Intraosseous Carcinoma Arising De Novo: A Case Report

Zeynep Fatma Zor[1], Oguzhan Demirel[2], Ilkay Peker[2], Arzu Zeynep Yildirim[3]

[1]*Department of Oral&Maxillofacial Surgery, Gazi University, Ankara, Turkey,* [2]*Department of Oral Diagnosis and Radiology, Gazi University, Ankara, Turkey,* [3]*Department of Prosthodontics, Gazi University, Ankara, Turkey*

Aim: Maxillary primary intraosseous carcinoma (PIOC) is a rare malignant neoplasm with poor diagnosis. In this case report we represent a case of PIOC in the posterior maxilla.
Case: A 45 year-old male applied to our clinic painless swelling in the left posterior maxilla last 10 days.

He had no systemic disease and habit except smoking for 20 years. There were no anomalies extraorally. Intraorally we observed a non-ulcerated area of red, bleeding swelling between the teeth 2.4 and 2.7 on the left maxillary alveolar ridge. Patient proclaimed that the teeth 2.6 in the lesion exfoliated spontaneously. Panoramic radiography showed a large unilocular radiolucency in the left maxilla with ill-defined borders. Inferior border of the maxilla associated with the lesion was missing, no cortical boundaries of maxillary sinus could be viewed and the nasal septum was deviated to the right. The patient was guided to the oral&maxillofacial surgery clinic for biopsy. Histopathological observation showed squamous cell carcinoma (SCC). So he was treated by hemi-maxillectomy and radical neck dissection in the otolaryngology clinic. After the operation for prothetic rehabilitation an obturator was done. There were no metastases and recurrence after 1 year follow-up.
Conclusion: Histological evidence of SCC, no ulceration on the lesion and no distant primary tumor at the time of diagnosis and at least 6 months during the follow-up are the three specific criteria of PIOC. There were a few case reports about the maxillary PIOC. Early diagnose and radical treatment is very important for better prognosis.

Theme: Preventive Dentistry: Caries

P586
In-Vitro Studies on Na-alginate/Cetylpyridinium chloride Complex as an Antiplaque Agent
Sang Kyun Chae, John Hwan Lee, Taehun Park, Chanho Kim
Department of Personal Care Reasearch, Amorepacific Corporation, Yongin, Republic of Korea

Purpose: The purpose of study was to investigate the effects of sodium alginate with cetylpyridinium chloride (CPC) complex on In-vitro dental plaque formation.
Methods: Mucin coated Hydroxyapatite (HAP) Disks (Clarkson Chromatography Products) were placed in a 24 well and treated with 1 ml of test solution for 1 h at 35°C.

Test solutions were (1) CPC with different types of anionic polymers as sodium alginate, sodium carboxymethyl cellulose, xanthan gum, (2) CPC with differentiated sodium alginate content as 0% to 1.0% (3) The tested CPC with sodium alginate complex was compared to chlorhexidine 0.12%.

After treated 1 h, each well was washed three times and an overnight bacterial culture, biofilms of Streptococcus mutans (NCTC 10449), was added to each well. After 24 h incubation, stained with 1 ml of 0.1% (w/v) crystal violet and stained adherent cells were dispersed with 1 ml of 70% ethanol. The absorbance at 590 nm (OD590) was measured using a SpectraMax 190/spectrophotometer (Molecular Devices, LLC., USA).
Results: (1) CPC with sodium alginate complex significantly inhibited the growth of dental plaque compared to CPC with other anionic polymers.

(2) The antiplaque activity of CPC/sodium alginate complex enhanced as sodium alginate content increases.

(3) CPC and sodium alginate complex was highly effective against dental plaque formation than chlorhexidine 0.12%.
Conclusions: Sodium alginate enhanced delivery of CPC to musin coated HAP disk. Na-alginate/CPC complex was significantly inhibited the growth of dental plaque In-vitro.

P587
Comparison of the Efficiency of Conventional and Modernistic Methods: An In Vitro Study
Gökhan Özkan[1], Aydan Kanlı[2]
[1]*Adnan Menderes Üniversitesi, Diş Hekimliği Fakütesi, Ağız, Diş ve Çene Radyolojisi, Aydin,* [2]*Hacettepe Üniversitesi, Diş Hekimliği Fakütesi, Ağız, Diş ve Çene Radyolojisi, Ankara*

Aim: The aims of this study were; to evaluate the validity of micro-CT and the performance of pen type laser fluorescence device.
Materials and methods: Sixty extracted teeth with intact occlusal surfaces were evaluated by two calibrated examiners, using laser fluorescence device, micro-CT, bitewing radiographs and ICDAS II visual examination system. Histological examination was performed as the gold standard for the present study.
Results: Laser fluorescence device showed high performance when compared with radiological and visual examination methods. Micro-CT showed the best performance within the all methods.
Conclusions: Pen type laser fluorescence device is a suitable method for detecting occlusal caries lesions and micro-CT can be used as a valuable method to compare the caries detection methods.

P588
Efficacy of Photodynamic Therapy (PDT) in Decreasing *S. mutans*
Tezer Ulusu[1], Gizem İnan[1], Gülçin Akça[2], Aylin Gençkan[1], Çağdaş Çınar[1]
[1]*Department of Pediatric Dentistry, Gazi University, Ankara, Turkey,* [2]*Department of Medical Microbiology, Gazi University, Ankara, Turkey*

Objective: The aim of this study was to assess the effect of erythrosine and rosebengal –mediated photodynamic therapy (PDT) on oral infections caused by *S. mutans*.
Methods and materials: Saliva samples of 60 children aged between 8 and 10 who have not brushed their teeth more than 12 h prior to the procedure were evaluated. Only saliva samples in which *S. mutans* generated were used. *S. mutans* were grown in

a constant-depth film fermenter. Each saliva sample which *S. mutans* generated were divided to six identical parts in order to constitute six groups as follows: control group with no treatment (group A), rosebengal applied group (group B), erythrosine applied group (group C), rosebengal and light applied group (group D), erythrosine and light applied group (group E), and only light applied group (group F). The samples in groups D, E, F were subjected to light for 2 min. The bactericidal efficacy of each group was evaluated by observing *S. mutans* proliferation. Statistical analyses were performed with PAST software. One way ANOVA analysis and Tukey's pairwise comparisons were performed.

Results: Significant decrease of *S. mutans* proliferation was only observed when biofilms were exposed to both erythrosine and light and rosebengal and light (One way ANOVA test result, $p < 0.01$). Besides, erythrosine applied group, rosebengal applied group were found to be relatively effective on *S. mutans* proliferation as well (according to Tukey's pairwise comparisons; $p < 0.05$ for each as well).

P589

Remineralization and Caries Prevention Using Ammonium Hexfluorosilicate and Shrimp Paste

Doaa Abdellatif Elsharkawy, Asmaa Ahmed Mosleh, Maha Ahmad Niazy
Department of Operative Dentistry, AlAzhar University, Cairo, Egypt

Aim: To evaluate using fermented shrimp paste (SP) and ammonium hexafluorosilicate (SiF) for remineralization potential and acid resistance of enamel and root dentin.

Methods: One hundred and twenty Bovine enamel and 120 bovine dentin specimens were used in the study. Baseline radio density was measured for all specimens using digital radiography. Half of the enamel and half the dentin specimens were used for evaluation of remineralization potential of the agents, where the specimens were subjected to a demineralizing agent (phosphoric acid), then radio density was re evaluated. Either SiF or SP was applied to the surfaces and radio density was re-evaluated. For the preventive phase of the study, the agents were applied to the specimens prior to the application of the demineralizing agent to assess their effect on acid resistance. Radio density was evaluated after subjecting the specimens to the demineralizing agent. Changes in radio density were compared using paired *t*-tests.

Results: With remineralization, Both SP and SiF showed significant change in enamel radiodensity while with dentin, only SiF was effective in remineralization. For acid resistance, mineral loss was significantly less than the control specimens for both enamel and dentin. SiF was more effective than SP with the dentin specimens while SP had a significantly more pronounced effect on enamel.

Conclusion: both agents can be beneficial for remineralization and acid resistance, with SiF being more effective in remineralization due to its high Fluoride content and low pH, and SP due to its high Calcium and protein content.

Theme: Preventive Dentistry: Epidemiology

P590

The Relationship of Temporomandibular Disorders and Body Posture at Different Dentition Stages

Canan Dağ[1], Nurhan Özalp[2], Mustafa Dağ[3]
[1]Dentalite Oral and Dental Health Clinic, Ankara, Turkey, [2]Departmeny of Pediatric Dentistry, Ankara University, Ankara, Turkey, [3]Department of Oral and Maxillofacial surgery, Gulhane Military Medicine Academy, Ankara, Turkey

Aim: Temporomandibular disorder (TMD) is a pathological situation including masticatory muscles, head-neck muscles and temporomandibular joint. The relationship between body posture and alterations at stomatognathic system has become a subject of interest. The aim of this epidemiological study was to investigate the relationship between TMD and postural changings.

Methods and materials: This study included 1375 individuals was planned as a cross-sectional study containing the intra-oral and extra-oral examinations and evaluation of the photographs taken in front and in profile to investigate the association between TMD and body posture.

Results: As a result of general investigation of all children, forward head position and different shoulder levels were statistically related to the TMD ($p < 0.05$). At primary dentition, there was no significant relation between the forward head position and TMD, however, different shoulder levels were found to be significantly related to the TMD ($p < 0.05$). At mixed dentition, both of these parameters were statistically related to the TMD ($p < 0.05$). At the permanent dentition, there was no relation between the body posture and TMD.

Conclusion: TMD and body posture are parameters affect each other. The longitudinal studies including homogeneous sample groups at primary, mixed and permanent dentititons are needed for better evaluation of these relationship.

P591

The Effect of Socio-Demografic Factors on Partial Denture Classification among the Turkish Population

Gamze Mandali, Aysegul Yurdakos, Kazim Serhan Aksit
Department of Prosthodontics, Private Provincial Administration of Istanbul, Oral and Dental Diseases Hospital, Istanbul, Turkey

Objective: To examine the individuals with partial edentulousness in the Turkish population from a socio-demographic perspective based on the Kennedy classification in order to determine the risk factors for teeth losses.

Materials and methods: The study consisted of 1706 partial denture wearers (911 men and 795 women). The maxillary and mandibular structures of patients according to Kennedy classification and their age, sex, place of birth and education status were evaluated. The collected data was analyzed using both the chi-squared test and Fisher's Exact Chi-Squared test at a significance levelof $p < 0.05$.

Results: A statistically significant difference was observed among the maxillary/mandibular Kennedy classes in terms of age groups

($p < 0.001$), the types of prostheses used and maxillary/mandibular Kennedy classes in the antagonist jaws ($p < 0.01$) and maxillary Kennedy classes and birthplaces ($p < 0.05$).
Conclusion: Socio-demographic changes were found to be closely related with the Kennedy classification of partial denture wearers.

P592
Caries Status among Kindergarten Children in Kuwait
Fotooh Ali Alali[1], Huda Shaker Nazar[1], Sabiha Abdulkadir Al Mutawa[1], Jitendra Ariga[2], Pramod Soparkar[3]
[1]Ministry of Health, Superintendent of Oral Health, National Oral Health Program, [2]School Oral Health Program, Kuwait-Forsyth, Kuwait, [3]Forsyth Institute, Cambridge, MA, USA

Objectives: The aim of this study was to investigate the caries prevalence and severity in kindergarten children in Kuwait.
Materials and methods: In a cross sectional survey, a representative sample of 808 children were chosen from 23 kindergarten schools in Al-Farwaniya governorate in Kuwait. Two dental hygienists examined the children at their schools. Examination was done using mirror and periodontal probe with the presence of artificial light source on a portable dental chair. Dental data collected were: decayed, missed, and filled teeth along with other socio-demographic data.
Results: In 2010, eight hundred and eight children were examined with the mean age of the children that were examined was 3.7 ± 1.1 years. Male children were 46% (n = 370) and females were 54% (n = 438). Caries prevalence in 4 year olds children was 61%. Children without caries experience were 37%. The mean dmft was 4.3 ± 5. The mean decayed teeth were 4 ± 4.7, the mean missing teeth 0.2 ± 0.7, and the mean filled was 0.2 ± 0.7. No statistical significant differences were seen between genders; both gender had almost similar caries prevalence and caries severity.
Conclusion: Caries prevalence and severity in kindergarten school was high among the examined group. These results indicate an urgent need for a prevention program in Kuwait to control early childhood caries. Oral prevention program for children in age group of 1 to 4 years should be planned in future.

P593
Disk Position and Articular Eminence Inclination in Patients with Temporomandibular Joint Internal Derangement
Mehmet Ali Elçin[1], Şebnem Erçalık Yalçınkaya[1], Tonguç Sülün[2]
[1]Department of Dentomaxillofacial Radiology, Faculty of Dentistry, Marmara University, Istanbul, Turkey, [2]Department of Prosthodontics, Faculty of Dentistry, Istanbul University, Istanbul, Turkey

Objective: The purpose of this study was to investigate the association of disk displacement with the inclination of the articular eminence in patients with temporomandibular joint internal derangement.
Methods: A total of 208 joints of 104 patients (28.94 ± 9.35 year-old, n = 84 female/n = 20 male) with TMDs were examined by magnetic resonance imaging (MRI). Bilateral MRI scans in the sagittal (closed and open) position were evaluated. The disk position was classified as: 1- normal position '45.7%', with anterior disk displacement (ADD) 2- with and 3- without reduction (DDwR: "27.9%," DDwoR: "26.4%"). The angulation between the Frankfurt horizontal plane and the posterior slope of the articular eminence was analyzed with a software program (OsiriX Dicom Viewer). Asymptomatic side of the patients was also evaluated. One-way Anova and student-t tests were used for the statistical analysis.
Results: There was no statistically significant difference between articular eminence inclinations in normal joints, DDwR and DDwoR (50.65 ± 10.68, 50.75 ± 10.22 and 46.93 ± 9.67 respectively), ($p = 0.071$). The disk position of the patients with DDwoR was statistically significant compared with normal patients and patients with DDwR (88.93 ± 17.16, 14.45 ± 10.80 and 60.96 ± 22.45 respectively), ($p = 0.001$).

There were no statistically significant gender differences regarding the angle of the disk and articular eminence.
Conclusions: Although articular eminence inclination appears not to be directly related with the development of DD based on the findings of this studied population, it has been observed that the steepness of the articular eminence is decreased and leads to the flattening in the joints with DDwoR as a result of degenerative changes.

P594
Prevalence of Dental Caries and Periodontal Disease in Children in Latvia in the Period of 10 years
Simona Skrivele, Sandra Berzina, Inguna Rence Bambite, Ruta Care, Anda Brinkmane, Inga Rendeniece, Egita Senakola, Julija Kalnina
Riga Stradins University, Department of Conservative Dentistry

Aim: To assess prevalence of dental caries, periodontal diseases in children at the age of 12 in Latvia in the period of 10 years.
Materials and methods: The studies were carried out in 2001 and 2011. In 2001 were examined 1876 children and in 2011 – 5448 children. The studies were approved by the RSU Ethics Committee. Oral health assessment was performed using portable dental chairs with standard lights, dental mirror, a blunt probe and a periodontal probe. In order to assess caries the DMFT index was used. Periodontal conditions were assessed using CPITN.
Results: The mean DMFT in 2001 was 5.03, DMFS – 7.38 and in 2011 – 3.35 and 5.11. In 2001 the largest component of DMFT formed caries (DT – 2.93) and filled teeth (FT) – 1.96. In 2011 the largest component of DMFT was formed by filled teeth (FT – 2.14) and caries (DT – 1.17). In 2001 study 56.93% of the examined children had healthy periodontal condition, gingival bleeding – 41.2%, dental calculus – 1.87%. In 52.22% of the examined children in 2011 had healthy periodontal tissue, but gingival bleeding was detected in 42.3% of the children, respectively. Dental calculus was found in 5.26% of the children.
Conclusions:

1 In accordance with WHO data, the prevalence of caries among 12-year-old children in Latvia shows an average score.

2 The largest part of DMFT index structure comprises filled and decayed teeth.
3 Gingival bleeding is the most common periodontal pathology in 12-year-olds in Latvia.

P595
Clinical Epidemiological Analysis of Carabelli, Paramolar Tubercles in Turkish Population
Mağrur Kazak
Department of Restorative Dentistry, Istanbul Aydin University, Istanbul, Turkey

Individual teeth vary remarkably in size, form, root shape, cusps. These characteristic differences occure not only among individuals, more importantly, among populations. Aim of this study is to analyse the prevelance of carabelli and paramolar tubercles in Turkish population according to age, gender, ethnic background and genetic predisposition.
Materials and methods: In this study, 145 patients (47 male, 98 female) in between age of 15–65 (mean age 34.70 ± 10.81 year old) were analysed clinically according to the presence of carabelli and paramolar tubercles in molar teeth. Gender, date of birth, homeland and any family member having company during this dental visit were asked to patients and marked on questionare forms. Also, dental examinations of these patients were done for detecting carabelli and paramolar tubercles in the maxillary and mandibulary molars. All datas were statistically analysed by SPSS 15.0 programme, Chi-Square and Fisher's Exact Chi-Square tests.
Results: Carabelli tubercles were determined in 44.1% (n:64) of the cases. Fifty percent (n:32) of carabelli tubercles were bilateral. Paramolar tubercles were determined in 6.9% (n:10) of the cases. Thirty percent (n:3) of paramolar tubercles were bilateral. Eight percent (n:8) of paramolar tubercles were detected in mandibula instead of maxilla. The frequency of paramolar and carabelli tubercules according to gender, ethnic background and genetic predisposition were not statistically significant ($p > 0.05$).
Conclusions: Paramolar tubercles can be noticed unexpectedly on the mandibulary molars instead of maxillary molars as well. More reseraches needed to detect this difference among populations to understand the role of genetic factors.

Theme: Preventive Dentistry: Orthodontics

P596
Dental Arch Dimensions in Yemeni Aged between 10 and 15 years
Nasr Hamid Alqudaimi[1], Fadhel Ali Alsanabani[2]
[1]*Department of Orthodontic, Thamar University, Yemen,*
[2]*Department of Conservative Dentistry, Thamar University*

Purpose: To assess the dental arch dimensions of Yemeni children aged (10–15) years, which is important to clinicians in orthodontics.
Methods: The sample was divided in to two groups, mixed dentition group aged (10–12) years divided into normal occlusion group (50 females,50 males) and class I with anterior dental crowding group (50 females, 50 males). Permanent group aged (13–15) was divided into normal occlusion group (50 females, 50 males) and class I with anterior dental crowding group (50 females, 50 males). Studying models form the upper and lower arches were constructed and evaluated to for upper and lower arches measurements by study models by scanner, digitizing and analyzing the data by a software program. Thirteen linear distances were utilized, which represented the dental arch width, length, segmental and palatal measurements.
Result and conclusion: The study found greater mean values for most of maxillary and mandibular arch dimension than class I with anterior dental crowding group in both mixed and permanent dentition. In the mixed dentition females and males, there is no significant difference in the majority of the measured dental arch dimensions. However, most of dental arch widths, and arch perimeter showed a significant difference between females and males, In permanent dentition, while no significant difference between females and males in arch lengths in both normal occlusion and class I with anterior dental crowding.

P597
Treatment of a Malocclusion Class III Associated with Open Bite with GEAW
Honorato Vidal, Armandino Alves, Claudia Pinto, Alexandra Reis, Marta Alves
Universidade Católica Portuguesa – Centro Regional das Beiras

Introduction: The Class III with open bite malocclusion is difficult to correct, often involving the need for orthognathic surgery. In these anomalies, the position and inclination of the occlusal plane are particularly affected by posterior occlusal vertical dimension. Thus, when the occlusal plane is more horizontal, a malocclusion of class III can develop due to anterior rotation of the mandible. The elimination of the discrepancy and the reconstruction of the occlusal plane should be the key objectives in the treatment of this anomaly.

GEAW (Gum Metal edgewise archwire therapy) is an evolution of MEAW technique, by using Gum metal, a superelastic alloy, that can be bended.
Case: The patient is a young adult woman, with a Class III skeletal pattern and skeletal open bite, dolichofacial, and with maxillary and mandibular crowding. She was orthodontically treated using the GEAW technique.

Orthodontic treatment with GEAW allowed to correct a complex malocclusion, without orthognathic surgery. It was observed, beyond the correction of occlusion, an improvement in the profile and facial aesthetics.
Conclusion: Class III with open bite malocclusions are usually quite complex and often need to be treated using orthognathic surgery.

The control of the occlusal plane allows us to deal properly with this type of malocclusion, attaining stability, without using orthognathic surgery, when the facial profile is favorable. The use of Gum Metal facilitates orthodontic treatment with the MEAW technique because it eliminates the need of complex loops.

P598

The Effects of Pluronic and VEGF Applications on Bone Formation in Interpremaxillary Suture During Orthodontic Sutural Expansion by using CBCT

Hilal Karamehmetoglu[1], Abdullah Ekizer[2], Aysegul Dogan[3], Ahmet Ercan Sekerci[4]

[1]Department of Orthodontics, Bezmialem University, Istanbul, Turkey, [2]Department of Orthodontics, Erciyes University, Kayseri, Turkey, [3]Department of Genetics and Bioengineering, Yeditepe University, Istanbul, Turkey, [4]Department of Dento-Maxillofacial Radiology, Erciyes University, Kayseri, Turkey

Aim: The aim of this experimental study was to evaluate the effects of Pluronic and VEGF on bone formation in response to expansion of the interpremaxillary suture in rats by using Cone Beam Computed Tomography (CBCT).

Materials and methods: Thirty-six male, 50- to 60-day-old Wistar rats were divided into four equal groups (control and experimentals). Both groups were subjected to expansion for 5 days, and 50 cN of force was applied to the maxillary incisors with helical spring. The retention period lasted for 10 days. Experimental groups were treated with single-dose of Pluronic, VEGF and Pluronic+VEGF in the mid-palatal suture locally and nine control animals received physiologic saline solution. The mean bone density values in hounsfield unit (HU) of the newly formed bone were recorded using Mimics 10.1 image analysis software (Materialise NV, Leuven, Belgium). Wilcoxon signed ranks test was used for statistical evaluation.

Results: Significant differences were found between experimental groups and control group. New bone density values showed higher values in the Pluronic ($p = 0.008$, 1.21-fold), VEGF ($p = 0.038$, 1.11-fold), Pluronic+VEGF ($p = 0.011$, 1.35-fold) than the control.

Conclusion: Bone radiological measurements revealed that bone architecture in the experimental groups was improved and positive effects on early phase of bone regeneration in the premaxillary suture in response to expansion and may be beneficial in routine maxillary expansion procedures.

P599

Prediction of Lower Third Molar Impaction Using Lateral Cephalometric Radiographs

Loredana Golovcencu[1], Daniela Anistoroaei[1], Dana Cristiana Maxim[2]

[1]Orthodontics, University of Medicine and Pharmacy "Gr.T.Popa", Iasi, Romania, [2]Paediatric Dentistry, University of Medicine and Pharmacy "Gr.T.Popa", Iasi, Romania

Aims: This study was designed to investigate the reliability of lateral cephalometric films measurements regarding the risk of third lower molar impaction in adolescents who undergone orthodontic treatment.

Materials and methods: The study sample consisted of 78 adolescent orthodontic patients divided into nonextraction treatment group and lower first premolars extraction treatment group. Standardized lateral cephalometric radiographs were taken for each patient before and after orthodontic treatment. On lateral cephalometric films we measured the available space for lower third molar eruption, the angle between the third molar long axis and the mandibular plane and the angle between the tangent to the occlusal face of the lower third molar and the palatal plane. Comparative and correlative analysis were performed between the groups.

Results: There was a 16.7% increase in lower third molar chances for eruption post orthodontic treatment in the nonextraction group, comparative to 14.2% in the extraction group considering the available distal space. The angle formed by the long axis of the tooth with the mandibular plane increased with 5.84° in the extraction group and decreased with 3.45° in the nonextraction group at the end of the orthodontic treatment. The angle formed by the tangent to the occlusal face of the lower third molar with the palatal plane decreased with the same amount in both groups.

Conclusions: Lateral cephalometric radiograph is a reliable investigation for lower third molar prediction and the orthodontic treatment with or without first lower premolar extraction has little or no influence on third lower molar eruption.

P600

Camouflage Therapy in an Class II Patient with Extraction of Maxillary First Premolars

Hatice Ademoglu, M. Hakan Türkkahraman

Department of Orthodontics, Suleyman Demirel University, Isparta, Turkey

Aim: To show the results of orthodontic treatment of skeletal and dental class II malocclusion in an adult patient.

Subject and methods: A 17 year old female with an unpleasant dental aesthetics, increased overjet and minimum crowding in the maxillary and mandibular arch. Pretreatment examination showed that she was in the permanent dentition stage, the molar relationship was full cusp class II on the right side and half cusp class II on the left side, the maxillary and mandibular incisors were proclined, overjet was 9 mm and overbite was 1 mm. Treatment started with extraction of the maxillary first premolars to allow space for the reduction of the overjet, upper and lower fixed appliances were used. Extra-oral traction was used as a part of treatment to reinforce the posterior anchorage. The total orthodontic treatment time was 28 months.

Results: At the end of treatment an optimum functional occlusion, aesthetic smile and facial profile was achieved.

Conclusion: In adult patients who have a moderate skeletal class II malocclusion camouflage therapy is commonly used and satisfactory aesthetic and functional treatment outcomes are achieved.

P601

Prevalence of White Spots in First Molars of Orthodontic Patients

Celjana Toti[1], Dorjan Hysi[1], Etleva Qeli[1], Almiro Gurakuqi[3], Elizana Petrela[2]

[1]Faculty of Dental Medicine, University of Medical science, Tirana, Albania, [2]Faculty of Public Health, University of Medical Science, Tirane, Albania, [3]Dental Clinic Toti Gurakuqi

Aim: The aim of the study was to evaluate the prevalence and distribution of white spots in first molars in patients after debonding compared with the patients in need for orthodontic treatment.
Methods and materials: Sample size n = 24 patients scheduled for fixed orthodontic treatment were selected as control group (A) and n = 22 patients finished 2 year fixed orthodontic treatment were selected as study group (B). The same GIC cement was used to fix molar bands. The age distribution was 12–18 years old. Written permission received from the parents was part of the dental chart. The buccal surfaces of the first molars in each quadrant were examined for the presence of white spots in both groups.

Hi-square statistical test was used to analyze the differences between groups.
Results: The number of white spots in group A was 10 (10.4%) and in group B was 15 (17%) with a statistically difference between them ($p = 0.041$). The distribution of white spots for group A was 4 (8.3%) on maxillary molars and 6 (12.5%) on mandibulary molars without any differences ($p = 0.063$). The distribution of white spots for group B was 6 (13.6%) on maxillary molars and 9 (20%) on mandibulary molars, with a statistically difference between them ($p = 0.039$).
Conclusion: The results showed a significant higher prevalence of white spots in group B which emphasizes the influence of orthodontic appliances in increasing white spots. The number of white spots was higher in mandibular molars than in maxillary molars.

P602
A Cephalometric and Study Model Evaluation of Class II Div 1 Patients with Different Facial Types
Arun S. Urala
Dept. of Orthodontics & Dentofacial Orthopaedics, Manipal College of Dental Sciences, Manipal, Manipal University, Manipal – 576104, Karnataka, India

Aim or purpose: The aim was to test the hypothesis whether a change in the sagittal position and the transverse dimension of the dental arches in Class II division 1 patients varied according to the facial type.
Materials and methods: Lateral cephalograms of 111 Class II division 1 patients were divided into 3 groups (hypodivergent, normodivergent and hyperdivergent). The inter-canine and molar widths were measured on study models using a digital caliper (Mitutoyo, Japan). The mean of all parameters were compared using ANOVA followed by post-hoc test.
Results: A statistically significant difference ($p < 0.001$) was noted in the mean Pog-Na Pp of the hyperdivergent group and mean SNA and SNB angles between the groups.
Conclusion: The sagittal component was the only factor that varied between the facial types. There was no difference in the transverse dimension between the groups.

P603
Evaluation of Face on Third Dimension: Pal 3D Cephalometric Analysis
İlhan Metin Dağsuyu
Department of Orthodontics, Eskisehir Osmangazi University, Eskisehir, Turkey.

Introduction: Orthodontics treatment planning is an effort of to understand and to solve the dento-facial problems. Development of imaging technologies serves the oppurtunity of to evaluate real three dimensional anatomical structures on third dimension, virtually. Pal 3D is a new cephalometric analysis system based on multiplanar assessments of hard and soft tissues on cranio-facial reconstructions.
Case: In this report, diagnostic capabilities of the comprehensive dento-facial analysis system including specialized landmarks, reference planes and measurement parameters were presented with different clinical studies.

P604
Orthodontic Treatment of Maxillary Deficiency of Cleft Lip and Palata Patient at Pubertal Stage: Case Report
Alev Aksoy
Department of Orthodontics, Süleyman Demirel University, Isparta, Turkey

Aim: Moderate to severe occlusal discrepancies and Dentofacial Deformities in adolescents usually require combined orthodontic treatment and Orthognathic Surgery to obtain optimal, stable, functional and esthetic results. Therefore Slow Maxillary Expansion is suggested for the Cleft Lip and Palate Patients before orthodontic treatment. The aim of this study is to present the treatment of a 12 years-old female patient by slow maxillar expansion by removable appliance with Bertoni screw in the middle followed by fixed appliances.
Subject and methods: The 12-year old female has applied to our clinic due to aesthetic and feeding problems. According to the clinical and radiographic evaluation of the patient, maxillary transverse and saggital deficiencies were inspected. The molar relationship was Class I and there were no canine relationship, no overbite and negative overjet. The patient was skeletally Class III. The treatment plan was to perform slow maxillary expansion combined with fixed orthodontic treatment.
Results: The treatment duration was 36 months and at the end of the treatment wide maxillary satisfactory dental relationships were achieved.
Conclusion: Functional occlusion along with aesthetic smile was obtained with slow maxillary expansion and orthodontic treatment in the mouth of a girl at pubertal age with maxilary deficiency Class III skeletal deficiency.

P605
Cleidocranial Dysplasia: A Case Report
Mihri Amasyalı
Department of Orthodontics, Military Hospital, Kütahya, Turkey

Introduction: Cleidocranial dysplasia (CCD) is a skeletal dysplasia characterized by delayed closure of the cranial sutures, hypoplastic or aplastic clavicles, and multiple dental abnormalities. The most prominent clinical findings are abnormally large, wide-open fontanels at birth that may remain open throughout life; mid-face hypoplasia; abnormal dentition, including delayed eruption of

secondary dentition, failure to shed the primary teeth, supernumerary teeth with dental crowding, and malocclusion.
Case: A 20 years old male patient was referred to our clinic because of his missing teeth. Patient's height was 148 cm and in the physical examination it was determined that he had long neck and narrow and low shoulders. The patient was able to join his both shoulders in front of the body depending on the aplasia of the clavicula. The patient mentioned that his father and little sister had the same orthopedic problems. Extraoral examination showed brachiocephalic head and face, low nasal bridge, wide and prominent forehead. The bones of the midface were too small leading to an appearance like prognathism. Intraoral and radiographic evaluation revealed persistent deciduous teeth and 16 of the permanent teeth were impacted. Some of the impacted teeth were still at the germ stage.
Conclusion: The clinical findings of CCD are often undiagnosed although it is present at birth. It will be diagnosed later in life by incidental findings by physicians or dentists. Thus a multidisciplinary approach can help the patient in proper mastication and esthetics and therefore fulfilling the functional need of the patients.

P606
The Three-Dimensional Evaluation of Nasal and Pharyngeal Airway after LeFort-I Maxillary Distraction
Sıla Mermut Gökçe[1], Serkan Görgülü[1], Ümit Karaçaylı[2], Hasan Suat Gökçe[3]
[1]Department of Orthodontics, Gulhane Military Medical Academy, Ankara, Turkey, [2]Department of Maxillofacial Surgery, Gulhane Military Medical Academy, Ankara, Turkey, [3]Medical Design and Manufacturing Center, Gulhane Military Medical Academy, Ankara, Turkey

Aim: Distraction osteogenesis (DO) is a method of enhancing bony deficiencies of the hypoplastic maxilla. In the study, it was aimed to evaluate the skeletal, dental, oropharyngeal airway and nasal passage volume changes that occur after LeFort-I maxillary DO (LeFort-I MDO).
Materials and methods: The LeFort-I MDO group consisted of seven male patients (mean age: 25.5 years) with severe skeletal Class-III anomalies related to maxillary retrognathie, excessive increased negative overjet (mean: 11.43 mm) with anterior and/or posterior cross bite. Lateral cephalograms, photographs, dental casts and computed tomography were obtained and analyzed at presurgery and more than 6 months (mean:7.1 months) postsurgery. All CT records were transferred to the computer with the software SimPlant (Materialise, Belgium) to obtain the three-dimensional virtual models. On virtual models, maxillary complex, nasal cavity and pharyngeal areas were segmented separately due to the comparison the changes before and after the LeFort-I MDO.
Results: After the LeFort-I MDO, the maxilla was repositioned anteriorly average 9.5 mm (7.5–15.1 mm) on the sagittal direction parallel to the base of the cranium. As a result of the maxillary advancement, the mean increases of the volume of the nasal cavity (mean:3636 mm3) and the volume of the pharyngeal area (mean:2010 mm3) were statistically significant compared to the preoperative volumes ($p = 0.018$).
Conclusion: Orthognathic surgery is performed to alter the shape of the jaws to improve dental occlusion stability, improve temporomandibular joint function, open the oropharyngeal airway, and improve the patient's facial proportions. In all patients, LeFort-I MDO created a significant increase in nasal and pharyngeal passage volume.

P607
Management of Impacted Central Incisors In Pediatric Patients: Three Years Follow-ups
Barhan Pekel[1], Ferit Bayram[2], Ali Menteş[1]
[1]Department of Pediatric Dentistry, Marmara University, Istanbul, Turkey, [2]Department of Oral and Maxillofacial Surgery, Marmara University, Istanbul, Turkey

Aim: The aim of this presentation was to evaluate treatment outcomeof three pediatric male patients with impacted central incisors due to supernumerary teeth and their 3 years follow-ups.
Case: Case1: After clinical intraoral examination of O.A. (10 years) in Department of Pediatric Dentistry, Marmara University, Istanbul, a non-exfoliated primary maxillary central incisor was diagnosed. X-ray revealed supernumerary tooth as an obstruction for the eruption of his permanent successor. Following surgery, impacted tooth was bonded with an orthodontic button and treatment was followed 7 months with forced eruption appliance. The correct occlusion succeeded in a total of 11 months. Case2: Clinical and radiographical examination U.D. (8 years) revealed impacted maxillary central incisor due to odontoma. After surgical extraction and orthodontic forced eruption, proper alignment was recorded at 8 months. Case3: B.G. (10 years) was diagnosed with a supernumerary tooth in maxillary anterior region preventing eruption of maxillary permanent central incisor. Similar surgical and orthodontic procedures were followed. Eruption was seen in 3 months and completed in 8 months. All Patients were followed up to 3 years without any additional treatment.
Conclusion: This report demonstrated importance of early diagnosis of impacted teeth in pediatric patients. Early treatment of impacted teeth could be achieved by surgical extraction and forced eruption in less than 12 months and it reduced the extent of surgery, orthodontic and/or prosthodontic treatments and possible complications in later life. The behavior management of pediatric patients by a pediatric dentist had a significant impact for the surgical extraction under local anesthesia and long-term patient cooperation.

Theme: Preventive Dentistry: Periodontology

P608
IL-17 (H161R) and IL-23R (R381Q) Polymorphisms in a Turkish Population with Periodontitis
Hatice Ebru Olgun Erdemir[1], Meltem Hendek[1], Derya Beyza Sayın[2]
[1]Department of Periodontology, Kirikkale University, Kirikkale, Turkey, [2]Department of Medical Biology and Genetics, Kirikkale University, Kirikkale, Turkey

Aim: The aim of the study was to evaluate Histidine161Arginine (H161R) polymorphism of IL-17F gene and Arginine381Glycine (R381Q) polymorphism of IL-23R gene in patients with different periodontal disease and the associations of these polymorphisms with periodontal clinical parameters.
Methods and Materials: Ninety periodontal healthy, 90 patients with chronic periodontitis and 57 patients with aggressive periodontitis were included to the study. After all clinical periodontal measurements including probing depth (PD), clinical attachment level (CAL), plaque index (PI) and gingival index (GI) had been recorded, initial periodontal therapy including scaling and root planing, oral hygiene motivation were performed. Before the treatment, DNA was isolated from venous blood samples from each patients and genotype analysis were made for single nucleotide polymorphism.
Conclusion: The comparison of allelic, genotypic frequency of the IL-17F Histidine161Arginine (H161R) ve IL-23R Arginine381Glycine (R381Q) polymorphisms revealed no significant differences between the periodontal healthy and overall group with periodontitis. In conclusion, it was suggested that there was no association between the IL-17F (H161R) and IL-23R (R381Q) gene polymorphisms and patients with periodontal disease in Turkish population.

P609

Correlations between the Periodontal Modifications and the Oxidative Status on Periodontal Disease Patients

Martu Ioana, Luchian Ionut, Goriuc Ancuta, Foia Liliana, Martu Silvia
Gr.T. Popa Medicine and Pharmacy University, Iasi, Romania

The purpose of the study: Our study was centered on the comparative research of enzymatic and non-enzymatic oxidative status mediators in the crevicular fluid on chronic and aggressive periodontitis patients, compared to periodontally healthy subjects.
Methods: The study was conducted on 42 patients. They were divided in three study groups: chronic periodontitis subjects, aggressive periodontitis patients and periodontally healthy subjects. On marginal periodontitis patients, associated or not with systemic diseases, we initially collected gingival crevicular fluid and saliva samples and we evaluated the following enzymatic stress markers for all the three groups of subjects: superoxide dismutase, glutathione peroxidase, malondialdehyde, using the gingival crevicular fluid (GCF) as biologic material.
Results: The statistical analysis for the malondialdehyde in the control group, aggressive periodontitis group and chronic periodontits group shows significant differences between the groups.
Conclusions: The present study revealed significant statistic differences between most of the oxidative stress parameters analysed in the GCF, specially in the aggressive periodontitis group, less in the chronic periodontitis group compared to the control group.

P610

Periodontal Alteration and Correlation with the Plasmatic Levels of Lipides

Surdu Macovei Amelia, Martu Ioana, Foia Liliana, Rudnic Ioana, Martu Silvia
Gr.T. Popa Medicine and Pharmacy University, Department of Periodontology, Iasi, Romania

Scope of the study: evaluation of the extent of periodontal alteration, correlated with the plasmatic levels of cholesterol and of the metabolization time of plasmatic lipides.
Methods: The patients forming the experimental group were recruited sequentially, along 6 months, among those having addressed the private dental office for routine examinations. The experimental group included 39 patients affected with periodontal diseases, while the control group – 40 patients with ages between 50 and 60 years. There followed measurement of the ŕ jeun plasmatic lipids and of glucose concentrations from blood.
Results: The values of plasmatic triglycerides were higher in the patients of the experimental group, comparatively with the subjects of the control one (+39%), yet no difference has been registered for HDL cholesterol, while the mean plasmatic cholesterol levels and the LDL cholesterol levels in subjects suffering from periodontitis were significantly higher, with approximately 8 and 13%, comparatively with the control. The frequency of hypercholesterolemia in the first group of subjects was approximately double vs. the control.
Conclusions: The pathological levels of triglycerides were about 6.5 times more frequent in periodontitis, comparatively with the subjects of the control group, yet no differentce was observed for the HDL cholesterol level.

P611

Periodontal Status as a Risk Factor for Male Infertility

Zainah Mohammed Sambawa[1], Reema Suliman Almusallam[1], Fawzia Haif Alqhtani[1], Manal Fawaz Alnajar[1], Hadeel Fawaz Alnajar[1], Ghousia Sayeed Rahman[2]
[1]Riyadh colleges of dentistry and pharmecy Internship training departmentK.S.A Riyadh, [2]Riyadh colleges of dentistry and pharmecy periodontology department K.S.A Riyadh

Background and aim: An association has been demonstrated previously between periodontal diseases and various systemic conditions including pre term low birth weight babies, coronary heart disease and other systemic diseases. Apossible role of dental infection in male infertility has also been suggested.

aim of the present study is to examine the association between fertility parameter and periodontal status of men attending in vitro fertilization (IVF) clinics.
Material and methods: The study population consisted of 27 men attending Dallah Hospital Infertility Clinic and King khaled hospital for sperm analysis before homologue semen insemination or IVF. The quality of sperm was assessed according to WHO criteria and fertility is classified as either fertile or sub-fertile, according to three main parameters: sperm cell concentration, sperm cell motility and sperm cell morphology. and all results were recorded.

Clinical periodontal parameters recorded were gingival index, plaque index, PD, gingival recession and clinical attachment loss. Were identified as healthy, moderate or severe chronic periodontal disease.
Results: ANOVA multivariate analysis and Yates $\chi 2$ test used for examining a possible association between the tested periodontal and fertility parameters.

Patients were diagnosed as gingivitis (3.7%), moderate periodontitis (81.5%) and severe periodontitis (14.8%). According to semen analysis they were classified as normospermia (25.9%), oligozoospermia (22.2%), azoospermia (51.9%). High number of sites with deep periodontal pocket, CAL and number of missing teeth were significantly associated with sperm submotility.
Conclusions: These findings point to a possible association between male infertility, diminished semen quality and periodontal infections in men attending IVF Clinics.

P612

Relationship between Dental-Periodontal Conditions and Self-Reported Reflux Index: Early Results

Hüseyin Gencay Keçeli[1], Faik Yaylak[2], Hasan Hatipoğlu[3]
[1]*Department of Periodontology, Kirikkale University, Kirikkale, Turkey,* [2]*Department of General Surgery, Dumlupinar University, Kutahya, Turkey,* [3]*Department of Periodontology, Dumlupinar University, Kutahya, Turkey*

Aim: Gastroesophageal Reflux Disease (GERD) and Laryngopharyngeal reflux (LPR) are common community health problems which are known to effect the oral cavity. Subjective assessment of the symptom severity in the patients with GERD and LPR is possible with self "Reflux Symptom Index" (RSI). In this study, the possible relationship between dental/periodontal conditions and RSI scores were evaluated.
Methods: A preliminary prospective cross sectional study was performed with 124 dental outpatients (72 Female and 52 Male; aged between 18 and 62 years). Demographic and clinical variables and reflux symptom index (RSI – a nine item and 45-point scale questionnaire) score were evaluated. Dental and periodontal conditions were evaluated with DMFT index (decayed, missing, filled teeth) and Community Periodontal Index (CPI) scores. The correlation between variables in sub grouped patients and RSI scores (normal: RSI $\leq$ 13, abnormal: RSI > 13) were statistically examined.
Results: RSI subgroups were similar for DMFT and CPI scores ($p < 0.05$). In addition, RSI scores were not correlated with DMFT and CPI scores.
Discussion: Self- reported RSI merits further investigation before a conclusion to be declared to be suitable for the dental and periodontal evaluation of the patients with GERD and LPR.

P613

Prevalence and Serotype Distribution of Aggregatibacter Actinomycetemcomitans in Non-Periodontitis Subjects

Başak Doğan[1], Diane Anthony[2], Sinem Yıldız Çiflikli[1], Jason Chen[2], Jonathan Huang[2], Tanju Kadir[3], Casey Chen[2]
[1]*Department of Periodontology, Faculty of Dentistry, Marmara University, Istanbul, Turkey,* [2]*Division of Periodontology, Diagnostic Sciences and Dental Hygiene, Ostrow School of Dentistry, University of Southern California, Los Angeles, CA, USA,* [3]*Department of Microbiology, Faculty of Dentistry, Marmara University, Istanbul, Turkey*

Aim: To determine the prevalence and serotype distribution of Aggregatibacter actinomycetemcomitans in non-periodontitis subjects.
Materials and methods: Systemically healthy non-periodontitis 94 dental students who had not use of antibiotics within the last 3 months and not received any form of periodontal therapy within the last 6 months were included in the study. Pooled subgingival microbiological samples were collected from each subject with sterile paper points from 4 first molars and 4 central incisors. All samples were tested for the presence of *A. actinomycetemcomitans* through PCR analysis of the 16S rRNA genes in DNA extracted from the samples. *A. actinomycetemcomitans* isolates were serotyped using various genes specific to the different strains of the bacterium. To determine the specific serotype, each DNA sample was subjected to three different PCR assays for serotypes a/e, b/c/f, and d. The study design was approved by the Ethics Committee of Medical Faculty, Marmara University (MAR-YÇ-2009-0064).
Results: Of the 94 samples that were tested, 43 (46%) were positive for *A. actinomycetemcomitans*. Among the 43 *A. actinomycetemcomitans* -positive samples, the serotype was identified only in 31 of the samples. Twenty-five were positive for *A. actinomycetemcomitans* serotype a (81%), 1 for serotype b (3%), 1 for serotype c (3%), and 4 for serotype f (13%), while serotypes d and e were undetectable.
Conclusion: The large percentage of subjects exhibiting *A. actinomycetemcomitans* serotype a suggested a strong association between non-periodontitis Turkish individuals and serotype a.

P614

Interface (Lichenoid) Oral Mucositis

Seda Aycan Altan[1], Vahdi Umut Bengi[1], İbrahim Yavan[2], Işıl Saygun[1]
[1]*Department of Periodontology, Gulhane Military Medical Academy, Ankara, Turkey,* [2]*Department of Pathology, Gulhane Military Medical Academy, Ankara, Turkey*

Background: In literature, several studies have been reported that many systemic disorders shows their symptoms in oral mucosa. They may be manifested pathologically changed structures caused by organic or psychological factors. Early symptoms which occur within the oral cavity may emerge with diseases related to our blood serum levels, gastrointestinal or mental system. Chronic stomatitis is a condition characterized by chronic, painful oral lesions. In this case report we present possible ethylogical factors of oral mucosal manifestations such as interface oral mucositis.
Case: A 28 year old female patient who was suffering from pain and burning sensation of lesional oral mucosa referred to The Department of Periodontology. She had life event psychological stress, her diet was insufficient and these complaints have been increased for 3 months. She has been taken hypothyroid treatment for 3 years. Intraoral examination revealed white reticular lesions under her tongue and desquamative, erythematous areas at her

posterior mandibullar keratinized gingiva. She was periodontally healthy. Histopathology of keratinized gingival lesion revealed lichenoid, eruptive stomatitis as interface mucositis. Biochemical analysis showed decreased B12 vitamin levels. In treatment, her new toothpaste has been changed as a possible contact stomatitis diagnosis and drug administration of vitamin B complex has been recommended. After 2 weeks, all symptoms were dissappeared.
Conclusion: In differential diagnosis, clinicians should consider multiple ethylogical factors such as malnutrition, stress and local factors including toothpaste, oral rinses and gums may have a role in occurance of oral mucosal lesions.

P615
Gingival Health Assessment Using Two Gingival Indices
Ilma Robo[1], Edlira Sadiku[2]
[1]*Department of periodontology, Albaninan University, Tirana, Albania,* [2]*Private Clinic, Tirana, Albania*

Aim: To enable comparison of specific groups of the population, at a certain time, to support the definition and control of risk factors and to evaluate the effectiveness of periodontal treatment, gingival health and its level should be determined as accurately.
Materials and methods: In 10 patients were collected values of the two indexes for mandibular anterior teeth, only vestibular area. Patients were selected that had not lack of teeth in the mandibular anterior area. They were evaluated for both indices: Löe-Silness gingival index and gingival bleeding Mühlerman index, for each individual tooth and for the patient in total.
Results: Both indices were compared between them on each patient. Sensitivity of gingival index was only with a value below the value assessment of gingival bleeding index.
Conclusions: Only experience, care and attention are grounds to take into consideration subjective signs such as edema and gingival color, which are basic elements gingival index assessment. At the initial appearance of inflammation, bleeding is the determining factor and the second sign after the increased gingival fluid. We can not think of mathematical relation between the two indices, but both must be used simultaneously for statistical evaluations of the same patient.

P616
Conventional Versus Laser-Assisted Therapy with Aggressive Periodontitis
Mirjana Popovska[1], Milco Ristovski[2],
Aneta Atanasovska Stojanovska[1], Linda Zendeli Bedzeti[1], Kristina Mitic[1], Vera Radojkova Nikolovska[1], Ana Belazelkovska[1], Svetlana Strezovska[3]
[1]*Department of Oral Pathology and Periodontology, Faculty of Dentistry, University Ss.Kiril and Methodius, Skopje, Macedonia,* [2]*Institute of Pathology, Faculty of Medicine, University Ss.Kiril and Methodius, Skopje, Macedonia,* [3]*Private Dental Clinic, Idadia, Skopje*

Aim: To evaluate tissue response in aggressive periodontitis (AgP) after conventional and conventional supplemented with laser-assisted therapy.
Methods and materials: This study included 50 subjects with AgP, aged 10–24 year, which were divided into two subgroups. First subgroup 25 subjects treated only with conventional therapy (CP) and second subgroup of 25 subjects which were treated with laser assisted therapy (CP-LA). Low-level diode laser (630–670 nm, 1.875 J/cm) was applied, each sextant for 4 min, Scorpion C- 405 7A. The control group consisted of 20 individuals, aged 13–24 years, without signs of periodontal disease. Gingival tissue biopsies were obtained from the controls and from the study group before and after conventional and with laser assisted treatment. Tissue specimens were embedded in paraffin and cryostat procedures were performed.
Results: Subject with AgP revealed heterogeneous inflammatory infiltrate with dense and less dense areas. Mean values for study group before treatment were 39.18 ± 14.02. For the first subgroup mean values ranged 35.92 ± 14.02, and mean values for the second subgroup were 35.01 ± 13.25. Qualitative analysis in study group after conventional witout and with lasser assistene revealed insignificant values of mononuclear and plasma cells and Russell bodies.
Conclusion: Laser application did not induce quantitaive nor qualitative changes in the gingival tissue inflammatory infiltrate in study group. On the basis of our findings we suggest that low level laser assisted therapy does not proof to be efficient in the treatment of aggressive periodontitis.

Key words: aggressive periodontitis, low-level diode laser, gingiva, periodontal therapy.

P617
Free gingival Graft Dimensional Changes in the Anterior Mandible
Emine Çiftçibaşı[1], Cenker Zeki Koyuncuoğlu[2], Ezgi Düzagaç[1], Emrah Genceli[1], Volkan Karabey[1], Serdar Çintan[1]
[1]*Department of Periodontology, Faculty of Dentistry, Istanbul University, Istanbul, Turkey,* [2]*Department of Restorative Dentistry, Faculty of Dentistry, Istanbul Aydin University, Istanbul, Turkey*

Background: There is no absolute minimum amount of attached gingiva required for gingival health to be maintained. However, there are several clinical situations which augmentation with autogenous grafts might be indicated. The aim of this study was to evaluate shrinkage of free gingival graft (FGG) dimensions during the healing period of 3 months and impact of keratinised tissue width gained by FGG on gingival inflammation parameters.
Materials and methods: Thirty localized recessions of Miller Class I to II were treated with FGG in 30 systemically healthy and non-smoker patients. Plaque index (PI), gingival index (GI), probing depth (PD), clinical attachment level (CAL), keratinized tissue (KT), vertical recession (VR), horizontal recession (HR) and FGG dimensions were assessed baseline and 30, 90 days postoperatively.
Results: At 3 months, non-significant alterations of PI, GI, PD and CAL were observed. KT increased significantly from baseline ($p < 0.01$) at days 30, and 90. Horizontal graft shrinkage was not statistically significant compared baseline to 30 days. However, vertical graft reduction was statistically significant at same

time-points. Calculated graft area was significantly reduced during the study period at all time-points compared to the baseline ($p < 0.001$).

Conclusion: FGG procedure is quite practical to get prominent increase of keratinised tissue width. Vertical graft shrinkage seems to affect the clinical outcomes of the FGG procedure.

Theme: Preventive Dentistry: Public Health

P618

Effect of New Disinfectant to Biofilm in Dental-Unit-Water-Line

Masanori Ikeno, Masako Nakano Hasegawa, Ayuko Takao, Toshiko Ozawa, Noriyasu Hosoya, Nobuko Maeda
Tsurumi University School of Dental Medicine

Aim: The antibacterial effect of new disinfectant, a test mixture containing sodium percarbonate, to heterotrophic organisms forming biofilm was evaluated.

Materials and methods: Microplate assay: Test bacterial strains isolated from dental-unit-water were inoculated to R2A broth in each well on a microplate. After 5-day-incubation at room temperature, the wells were washed and treated with the disinfectant. Bacterial survival was evaluated by fluorescent increment of Alamar-Blue, a detector of REDOX activity.

Disinfectant test using a water line tube of a dental unit: A water line tube with biofilm was taken from a dental unit clinically used and cut into 5 mm-fragments. Each of the tube fragments was immersed into the disinfectant and then cultivated for up to 10 days in R2A broth to detect bacterial survivors.

Results and discussion: A 5 min treatment with 3.3% of disinfectant solution was effective to biofilm formed on microplate. However, for disinfection of the tube fragments, this condition seemed to be insufficient for complete killing of the bacteria. No bacterial growth was detected after 30 minures-treatment. Therefore change of treatment time and/or disinfectant concentration should be considered.

Conclusion: The disinfectant was effective to both model biofilms, on microplate and the "native" biofilm formed on the inner surface of a dental unit tube. The optimum condition for disinfection while minimizing the influence to dental unit material should be established.

P619

Oral Health Knowledge and Practice among Pilgrims Visiting Medina

Omar Saeed Bahakam, Hussam Abdullah Al Ofi, Mansor Malik Hakeem
Taibah University, college of dentistry

Introduction: Medina is the second holiest city in the Islamic religion after Mecca. Millions of pilgrims visit the city each year from different parts of the globe for spiritual reasons.

Aims:

1 To determine the oral health knowledge and practice amongst pilgrims visiting Medina.

2 To compare the knowledge and practice amongst the different pilgrims.

Methods: This was a cross sectional descriptive study. The pilgrims were divided into six groups; Saudi Arabia, other Arab countries, Indian subcontinent, Turkey, Iran and Europe and the questionnaire was translated into six languages. The questionnaire was administered by the interviewers directly and no names were recorded. The data was analyzed using the SPSS 15 statistical package.

Results: A total of 600 pilgrims were included in the study; 340 (57%) males and 260 (43%) females and the average age was 36 years old. Of these, 42% reported brushing their teeth twice daily using a toothbrush and toothpaste. Regarding the knowledge about the benefits of fluoride in preventing dental caries, 80% Iranians knew the correct answer. The majority of respondents (70%) reported to visit the dentist only when necessary.

Conclusion: The overall knowledge regarding oral health was acceptable. In general, respondents from developed countries showed a greater level of oral health knowledge compared to the others. Pilgrims from Iran showed the greatest knowledge regarding oral health behavior and practices.

P620

Efficiency of Different Toothpastes for Children in Improving Gingival Health

Tatiana V. Kupets[1], Svetlana K. Matelo[1], Alexander I. Jardetsky[2], Alexander S. Rusak[2]
[1]*WDC Laboratories, Moscow, Russia,* [2]*Belarusian State Medical University, Minsk, Republic of Belarus*

Objectives: Our previous experience shown that school – supervised toothbrushing program is effective for achievement of good oral hygiene in children, however, there are fewer reports on the effectiveness of different toothpastes. The aim of this study was to evaluate oral hygiene and gingival health in 6–7-year old children in 9-month program of supervised toothbrushing with fluoride – containing and fluoride-free toothpastes.

Methods: Ninety-eight children in one school (A) were assigned to brush their teeth with a fluoride – free toothpaste; 110 children in other school (B) – with a F-1000 ppm toothpaste daily in schools under supervision of teachers,

Results: The initial level of OHI-S in "A" was 1.74 + 0.37 SD; in "B" – 1.71 + 0.32 ($p > 0.05$). The mean GI were 0.78 + 0.39 and 0.76 + 0.30 ($p > 0.05$) in "A" and "B" groups correspondly. After 9 months OHI-S was improved by 53% in "A" and by 50% in "B" to levels of 0.82 + 0.20 and 0.86 + 0.36 correspondly ($p < 0.01$). The mean GI had decreased by 40% to level of 0.47 + 0.11 in "A" and by 43% to level of 0.43 + 0.38 in "B" group ($p < 0.01$).

Conclusions: Toothbrushing with fluoride-containing and fluoride-free toothpastes were equally effective in improvement of oral hygiene and gingival health of young school children for the 9-months period of the supervised oral hygiene trial in schools.

P621

Prevalence of Musculoskeletal Disorders among the Czech Dental Practitioners

Zdenka Sustova[1], Martin Kapitan[1], Lenka Hodacova[2]
[1]*Charles University in Prague, Faculty of Medicine in Hradec Kralove, Department of Dentistry,* [2]*Charles University in Prague, Faculty of Medicine in Hradec Kralove, Department of Social Medicine*

Aim: The aim is to present results of the questionnaire survey concerning MSDs conducted among dentists in the Czech Republic.
Methods: Dental practitioners filled in the questionnaires during educational events from November 2010 to September 2011. The questionnaire consisted of three parts. The first part included general information about the respondents, the second part concerned the characteristics of workplace and the last part involved the prevalence of MSDs. Collected data were statistically analysed.
Results: A total of 581 (72.6%) out of 800 questionnaires were returned. A total of 96.9% (n = 557) of respondents stated at least one kind of MSD regardless its intensity in the last 12 months. 30.6% (n = 176) of respondents identified their pain as mild. Middle or strong pain was declared by 66.3% (n = 381) of all respondents; by 69.3% (n = 287) of women and 58.4% (n = 94) of men. This difference between men and women was statistically significant (chi-square test, p = 0.012744). Of the respondents with middle or strong pain 22.6% (n = 86) decreased their work load for MSDs during the last 12 months. Of the dentists with middle or strong pain 86.9% (n = 331) treated themselves by doing exercises, 48.6% (n = 185) by medicaments and 46.7% (n = 178) turned for help to a specialist. The most often MSDs were pain in cervical spine, back and shoulders.
Conclusions: The prevalence of MSDs is quite high among the dentists in the Czech Republic, mainly in women.

P622

Patients' Oral Cancer Awareness and Perceptions of Oral Cancer Screening

Ülkem Aydın
Department of Dentomaxillofacial Radiology, Baskent University, Ankara, Turkey

Aim: To assess dental patients' oral cancer awareness, and attitues towards having a screening with a direct visualization device.
Materials and methods: In this cross-sectional, descriptive study, a questionnaire consisting of 20 questions was administered to 50 dental patients aged eighteen and over. The first part of the questionnaire included questions about the socio-demographic features of the patients; the causes, signs and symptoms, diagnosis and treatment of oral cancer. After informing all the participants about the method, patients who accepted to do so, were examined using the direct visualization device. The second part of the questionnaire included questions on attitues and feelings towards oral cancer screening. Frequency distribution test was used in statistical analysis.
Results: Fourty-four percent of the study participants had never heard of oral cancer. Smoking was the most frequently identified cause and ulceration was the most frequently identified symptom. Only eight percent of the study participants had heard of oral cancer screening with a direct visualization device but they would accept to be scheduled for follow-up (96%) or biopsy (84%) if a suspected lesion is detected.
Conclusion: Patients seem generally unaware of oral cancer and oral cancer screening but attitudes to screening were positive. We need to use this information to initiate public education programs for increasing oral cancer awareness and to facilitate early detection.

P623

Oral Hygiene Status, Awareness and Practices among Almajirs in Maiduguri

Amina Mohammed Ali, Hamman Mohammed Sani, Rabiu Ahmed Sani
Department of Dentistry, University of Maiduguri Teaching Hospital, Maidugri, Nigeria

Aim: To asses the oral hygiene status, awareness and practices among almajiris who constitute a large population of underprivildged children in northern Nigeria; about seven million (Moses. T Aluaigba, Circumventing or Superimposing Poverty on the African child?, Childhood in Africal 2009| Vol.1.No.1.| pp19–24), as no such study has ever been carried out before in Nigeria.
Materials and methods: The study is an analytic observational study carried out over a period of 6 days, between the 6th-11th of February 2012 on a total of two hundred and sixteen (216) almajiris from four (4) randomly selected locations in Maiduguri. Each almajiri was administered a self-administered questionnaire by the researchers which consisted of biodata, demographic data, and sections to asses their oral hygiene status, awareness and practices, and dental examination was carried out. The questionnaire was analized using the standard package for statistical analysis for social sciences software (SPSS).
Results: The level of oral hygiene awareness among almajiris is poor, most of them use chewing sticks to clean their mouths and have poor oral hygiene.
Conclusion: Almajiris constitute a significant population of underpriviledged children in northern Nigeria. Oral health awareness among them is poor because of lack of formal education. They mostly use chewing sticks because they can neither afford nor maintain toothbrushes and toothpastes and as such most of them have poor oral hygiene.

To improve their condition, it is recomended that the government improves asses to dental health services to the underprivildedged. The fight against child destitution should also be improved.

P624

The Role of Salivary Bacteria at Diabetes Management

Ayse Basak Cinar[1], Arzu Beklen[2], İnci Oktay[3], Lone Schou[1]
[1]School of Dentistry, University of Copenhagen, Copenhagen, Denmark, [2]Department of Periodontology, Faculty of Dentistry, Osmangazi University, Eskisehir, Turkey, [3]Oral Public Health Department, Yeditepe Dental Faculty, Yeditepe University, Istanbul, Turkey

Objectives: To assess the correlation between salivary bacteria and diabetes mellitus type2 (DM2) and obesity among patients with DM2.
Methods and materials: Baseline measurements from a prospective intervention study among DM2 patients (n = 186), Istanbul, were studied. The assessed clinical measures were streptococcus mutans, lactobacillus, number of teeth lost (maxilla), HbA1c, HDL, LDL and body-fat proportion. Patients having low number of Streptococcus mutans (<106) and lactobacillus (<106) were coded as "low salivary bacteria = 0". Taking the target levels (HbA1c < 6.5%,

high-density lipoprotein (HDL) >39 mg/dl, and low-density lipoprotein (LDL) <95 mg/dl) as cut-points, respective variables were dichotomized as "favourable" and "unfavourable". Descriptive statistics, frequency distributions, Chi-square tests and Factor analysis were applied.

Results: Most patients had low salivary bacteria (72%). The mean number of teeth-lost was 7.92 ± 6.04. Minority of patients had favourable diabetes-related measures [HbA1c (28%), LDL (30%)] except that a majority of patients reported favourable HDL (77%)]. The percentage of healthy body-fat proportions was low (37%). The patients with low number of salivary bacteria were more likely to keep their teeth (64%, p = 0.004). Those who had teeth-loss "below mean" were more likely to be in healthy body-fat range compared to those with "above mean" teeth loss (p = 0.048). Factor analysis revealed that those with high number of salivary bacteria were more likely to be in unhealthy fat-range and have high HbA1c.

Conclusions: The correlation between salivary bacteria and diabetes-related measures and obesity may underline that dentistry can play a major role in the prevention of further complications of DM2 and obesity by early diagnosis, with the use of salivary bacteria.

P625

Prediabets and type 2 Diabetes in Dental Patients: The Efficiency of Three Different Screening Approach

Rahşan Çevik Akyıl[1], Özkan Miloğlu[2], Nermin Olgun[3], İbrahim Şevki Bayrakdar[2]

[1]Söke Health High School, Adnan Menderes University, Aydın, Turkey, [2]Department of Dento-Maxillofacial Radiology, Faculty of Dentistry, Atatürk University, Erzurum, Turkey, [3]Department of Internal Medicine Nursing, Faculty of Health Science, Acıbadem University, Istanbul, Turkey

Aim: The aim of this study was to determine the prevalence of type 2 diabetes, impaired glucose tolerance (IGT), and impaired fasting glucose (IFG) with using random finger prick plasma glucose (RFPG) test in dental patients, and to compare the results of RFPG with that of Finnish Diabetes Risk Score (FINDRISC) and clinical guideline.

Methods: Six hundred and thousand and forty-four dental patients without diagnosed diabetes, nonpregnant adults, and ≥20 years of age participated to study. The basic screening tool was random finger prick plasma glucose test. This test was performed for each participant. The participants were referred to a physician according to the results of RFPG, or were not. Additional data tools were FINDRISC and clinical guideline developed for the dental patients.

Findings: The prevalence of previously diagnosed diabetes, type 2 diabetes, impaired glucose tolerance (IGT), and impaired fasting glucose (IFG) in dental patients was 8.3, 3, 0.7, and 0.3%, respectively. In regression analyses, age (p < 0.01), a family history of diabetes (p < 0.001), obesity (p < 0.01), and waist circumference (p < 0.001) were determined to be risk factors for type 2 diabetes. The correlation analysis showed that there were significant positive correlation between FINDRISC and clinical guideline (p < 0.001), and were negative correlation between RFPG and the other screening methods (p < 0.001 for each).

Conclusion: Finger prick plasma glucose test (RFPG), FINDRISC, and clinical guideline developed for dental patients were able to identify Type 2 diabetes and prediabetes in dental patients. However, we couldn't conclude that they were completely successful screening methods and they could be useful in dental setting.

P626

Atmospheric Radon Concentration Measurements at New Dental Faculty Buiding in Isparta, Turkey

Mehmet Ertan Kürkçüoğlu[1], Fatih Tozun[1], Işın Kürkçüoğlu[2], Derya Yıldırım[2]

[1]Süleyman Demirel University, Physics Department, Isparta, Turkey, [2]Süleyman Demirel University, Faculty of Dentistry, Isparta, Turkey

Aim: Radon, a radioactive and carcinogenic gas, can accumulate in enclosed spaces. Since inhalation of radon is related to the aetiology of lung cancer, it is important to determine the indoor radon levels in homes and workplaces. The aim of this study was to assess annual equivalent doses taken by the staff due to presence of radon in the new faculty building at University of Süleyman Demirel in Isparta, Turkey.

Materials and methods: 36 E-PERM (Electret Passive Environmental Radon Monitor) devices were placed in couples at different locations including clinics, laboratories, radiology rooms and offices. Atmospheric radon measurements were performed at each location by using short-term E-PERM detectors for approximately 50 h measurement time in February 2013.

Results: The analyses of detectors revealed that radon levels varied between 6 and 229 Bq/m3 and the average concentration at the faculty was found as 58 Bq/m3. The average annual effective dose received in the building was estimated as 0.41 mSv/year.

Conclusions: Within the limitations of this study it was found that, the observed radon levels in the new dental faculty building were lower than 1000 Bq/m3 that is the limit level for working places determined by TAEK (Turkish Atomic Energy Authority). Furthermore, the average dose taken by the dental staff was found to be less than the action levels of ICRP (International Commission on Radiological Protection).

P627

Odontogenic Bacteremia: A Secondary Endpoint in Oral Care and Dental Treatments

Nobuhiro Hanada, Yoshiaki Nomura, Hidenori Yamada, Erika Kakuta, Mayu Miyanohara, Takatoshi Murata, Tomoko Abo, Ayako Okada, Tomokazu Ueda, Hiromi Nomura, Akira Ida, Hiroaki Takeuchi

Tsurumi University School of Dental Medicine

Objectives: To date, a primary endpoint of oral care and dental treatment is restricted within oral region. However, recent evidence indicated that the oral health and diseases affect to general health. So, we are trying to set a secondary endpoint in dentistry.

Methods: We set up a new preventive dentistry, 3DS (Dental Drug Delivery System) dental clinic for outpatiants in our hospital. 3DS treatments were implemented to patients in order to prevent their odontogenic bacteremia.

Results: Evaluation of effect of 3DS treatments on prevention of odontogenic bacteremia were performed by ABI (ankle brachial pressure index) and baPWV. ABI is the ratio of the blood pressure in the lower legs to the blood pressure in the arms. Compared to the arm, lower blood pressure in the leg is an indication of blocked arteries (peripheral vascular disease or PVD). Pulse wave velocity (PWV), which is an index of arterial stiffness, was measured with form PWV/AVI (Colin/Omron, Japan). Arterial stiffness is one of the biggest predictors of coronary heart disease (CHD). We evaluated arterial stiffness by brachial-ankle pulse wave velocity (baPWV).

Conclusion: 3DS is a useful tool to prevent the damage of systemic blood vessel caused by everyday odontogenic bacteremia. A new preventive dentistry, 3DS dental clinic for outpatiants will change the concept of dental office in the world.

Saturday, August 31, 2013

FREE COMMUNICATIONS SESSIONS 47–54

Free Communication Session 47 | B332 | 31.08.2013 | 09:00–11:00

Theme: Preventive Dentistry: Orthodontics

FC289

Reliability of YENangle and MVI as New Sagittal Dysplasia Indicators

Mohammed Hossam Eldeen Elnagar, Safaa Mokhtar Gaballa, Mahmoud Ibrahim Al Shennawy
Department of Orthodontics, Faculty of Dentistry, Tanta University, Tanta, Egypt

Introduction: In orthodontic diagnosis and treatment planning, the evaluation of the anteroposterior jaw relationship is an indispensable step. However, most of the anteroposterior parameters that were introduced have some limitations. The YEN angle and Mount Vernon Index (MVI) were developed as new cephalometric measurements to evaluate the sagittal relationship between the maxilla and mandible more reliably.
Aim of the work: Measure the mean and cut off points of YEN angle and MVI in an Egyptian population sample and to evaluate their reliability.
Materials and methods: Four hundred and fifty cases were selected, for each case a true standardized lateral cephalometric radiograph was done after written consent and approval from the Ethics Committee. These cephalograms were traced and ANB, Wits appraisal, AF-BF distance and Beta angle were measured. The enrolled cases were subdivided based on these parameters into skeletal Class I, II, and III. Then the YEN angle and MVI were measured for each radiograph. The data were collected, tabulated and statically analyzed.
Results: Cases with YEN angle between 119 and 126 degrees and MVI between 4 and 8.5 mm had a Class I skeletal pattern. Cases with a YEN angle <119 degrees and MVI more than 8.5 mm had a skeletal Class II pattern. Those with YEN angle >126 degrees and MVI <4 mm had a skeletal Class III pattern. Both YEN angle and MVI were highly reliable.
Conclusion: The YEN angle and MVI can be added as an extra diagnostic measurements to help in diagnosing the skeletal pattern of the patients.

FC290

Evaluation of the Cleft Lip and Palate Patients in the Southeast Anatolia Region Between 2006 and 2012 Years

Atılım Akkurt, Nursezen Çağatay, Refika Topal Kaya, Orhan Aksoy, Mehmet Irfan Karadede, Seher Gündüz Arslan, Mehmet Doğru
Department of Orthodontics, Dicle University, Diyarbakır, Turkey

Aim: The aim of this study was to evaluate the information forms obtained from the parents of cleft lip and palate patients (CLP) who referred to department of orthodontics between 2006 and 2012.
Material and methods: Material of this study was consisted of information forms obtained from the patients who referred to department of orthodontics between 2006 and 2012. These information forms were included the questions (such as; folic acid usage, consanguineous between parents, smoking etc) both related with the patient and parents. From 273 forms, 173 of them which contained complete information were included in this study. Data obtained from the information forms were evaluated by using "SPSS for Windows Version 15.0". Categorical data were given as numbers and percentages. Pearson's Chi-square statistical test was used for comparison of categorical values.
Results: According to the results, from 173 patients, 97 of them were male and 76 of them were female. Although number of males were higher than females, there were no statistically significant differences between males and females according to the incidence of CLP formation ($p > 0.05$). On the other hand Pearson's Chi-square test was not showed significant differences ($p > 0.05$) related with the type of CLP and parental information.
Conclusion: Comparing the data obtained from the history of CLP and non CLP parents will be helpful with providing more information about the reasons of the CLP formation.

FC291

Face Driven Orthodontics

Khaled Samir Aboulazm
Department of Orthodontic, Pharos University, Alexandria, Egypt

Introduction: Face-driven treatment planning is unique in that the face and the smile are considered as a whole. Tooth movement and facial movement are both projected, resulting in the best overall result for the patient

So What are today patients looking for? What can we, as orthodontists, provide to stand out from the crowd? The answer to both questions is very simple: LIFETIME ESTHETICS IN ADDITION TO FUNCTIONAL ADEQUACY. While optimizing function has always been the goal of orthodontic treatment, today's patients want more than just straight teeth.The emerging paradigm in our field is a global esthetic approach with emphasis on patient-centered interaction that enhances a good occlusion, achieved either solely by orthodontist or in conjunction with a team of cosmetic dentists and prosthodontists.
Conclusions: Advanced modern orthodontic techniques provide solutions to effect an overall facial change, maximize esthetics and merge this with function providing the patients with top notch treatment outcome.

FC292

The Orthodontic Evaluation of Adolescent Celiac Patient

Eren İşman[1], Şamil Hızlı[2], Merve Göymen[1], Sibel Öztürk[2], Tolga Topcuoglu[1], Zehra İleri[3]
[1]*Orthodonti Department of Dentistry, Gaziantep University, Gaziantep, Turkey,* [2]*Pediatric Gastroenterology of Medicine Faculty, Gaziantep University, Gaziantep, Turkey,* [3]*Orthodonti Department of Dentistry, Selçuk University, Konya, Turkey*

Aim: Celiac disease is a common cause of malabsorbtion in infancy and childhood. Because of calcium malabsorbtion it has been accepted that celiac disease is related to skeletal diseases. Since the facial muscle activities have affects on the development of cranio-skeletal structures, the cephalometric values of celiac patients may differ from healthy individuals. The aim of this study is to evaluate the cephalometric radiographs and cast models of celiac patients compared with normal class 1 patient.
Material and methods: Cephalometric measurements of 45 celiac patients were matched with same age and gender Class 1 (ANB: $2 \pm 2°$) 45 patients' outcomes and analyzed. Angular and linear 30 measurements were performed. Radiographs were digitized with Dolphin Imaging Orthodontics Software. Transversal width of each subject was measured on cast models. Statistical analysis were performed using SPSS V.11,5.
Results: IMPA, L1-NB(mm), L1-NB(°), U1-FH, U1-SN values were higher in the test group while Holdaway ratio, U1-L1 values were higher in control group. These outcomes might be due to the low density of the alveolar bone which cannot resist against the forward force of tongue during swallowing. SNA, ANB, Upper Lip-Eline values were higher in test group while Intermolar width, FMA, U1-NA(mm) were higher in control group. These results might be originated from narrow maxillary width of celiac patients causing forwarded location of A point moreover provoking clockwise rotation of the mandible. As a result, celiac patients appear to have different trends in the skeletal pattern and this might be due to low bone mineral density and bone-muscle functions during growth.

FC293

The Replacement of Missing Teeth on Adolescent Patients after Orthodontic Treatment

Edlira Baruti
Departament of Stomatology, American University of Tirana, Tirana, Albania

Aim: The preferred method for replacement of missing teeth on adolescent patients appears to be the implant retained crown following orthodontic treatment. At the end of the orthodontic treatment a temporary replacement may be necessary for several years while waiting for a patient to reach physical maturity.The majority of patients with missing teeth will wear some sort of removable appliance after their orthodontic treatment.
Material and methods: I projected a fixed space maintainer with the replacement teeth attached on it. At the end of the orthodontic treatment the first molar bands has being used to fabricate a passive palatinal bar like a lingual arch do. After the identification of right color and shape of the replacement tooth it have been taken a impression with the passive palatal bar in the mouth. At the laboratory the replacement teeth have been attached to this passive palatinal bar and the appliance have been cemented at the firs molars.
Results: During the function this kind of fixed appliance provided a good distribution of the mastication forces in all the dental arch without pressing at the implant site, a very nice aesthetics, a good hygiene.
Conclusions: After 8 years using experience, I think this appliance can be an excellent treatment to postpone definitive treatment. The orthodontic treatment is being stabilized, the aesthetics have been achieved and the self confidence of the adolescent has not been compromised. Once growth has been completed and the parents are financially ready then implant therapy can be initiated.

FC294

Three Dimensional Mapping of Inter-Radicular Distances and Cortical Bone Thickness in Patients with Different Vertical Facial Dimensions

Mais Medhat Sadek, Noha Ezat Sabet, Islam Tarek Hassan
Department of Orthodontics, Ain Shams University, Cairo, Egypt

Introduction: The purpose of this study was to determine differences in cortical bone thickness and inter-radicular distances in subjects with different vertical facial dimensions using cone beam computed tomography (CBCT). The goal was to provide reference data for clinicians placing mini-implants in subjects with different facial types.
Material and methods: This study was conducted on pre-treatment CBCT scans of 63 subjects (33 women and 30 men), aged between 18 and 30 years old. CBCT-synthesized lateral cephalograms were used to categorize subjects into three groups based on their vertical skeletal pattern. Using iCATVisionTM software, buccal cortical plate thickness (CPT) and inter-radicular distances (IRD) in the maxilla and mandible were measured in the entire tooth bearing region of the jaws at two vertical levels (4 and 7 mm) from the alveolar crest. In addition, palatal CPT and IRD were measured in the maxilla, at the same two vertical levels from the alveolar crest.
Results: Significant group differences were detected with high-angle subjects having significantly narrower cortices at some sites as compared to average- and low-angle subjects. Significant differences in IRD were also found among the three groups.
Conclusions: Cortical bone is thicker in low-angle than in average- or high-angle subjects in few selected sites at the vertical height in which mini-implants are commonly inserted for orthodontic anchorage. Awareness of the significant differences in inter-radicular distances among the three facial types should be considered when placing mini-implants in subjects with varying vertical skeletal pattern.

FC295

Low Level Laser Therapy for Accelerated Orthodontic Tooth Movement

Shahul Hameed Faizee, Ashwin Sudhesh, M. K. Anand, G. Jayakumar, V. K. Shakeel Ahmed, N. R. Krishnaswamy
Department of Orthodontics, Ragas Dental College, The Tamil Nadu Dr.M.G.R. Medical University, Tamil Nadu, India

Aim: Owing to the long duration, orthodontic treatment becomes arduous to patients and so they tend to neglect or discontinue the treatment. Therefore it is obligatory to shorten the treatment duration.

Hence the purpose of this study was to evaluate the effect of Low Level Laser Therapy in accelerating orthodontic tooth movement.

Material and methods: A group of 13 patients with a mean age of 21 ± 4 years were selected for this study. After leveling and aligning canine retraction was initiated on both sides of the maxillary arch using NiTi coil springs delivering 150 g of retraction force. Low level laser therapy was applied around the maxillary canine periapical region on the test side. The other side was deliberated as control.

The rate of tooth movement was evaluated after 2 months. White Light scanning was done on the pre and post dental models to evaluate the exact movement of canine. This study was approved by the Institutional Research Ethics Committee.

Results: The mean tooth movement was 2.76 ± 0.99 mm on the lased side and 1.53 ± 0.57 mm on control side with a significant p value of 0.001. An average increase of 43% in the rate of tooth movement was observed on the lased side.

Conclusion: There was a significant increase in the rate of tooth movement on the lased side compared to the control side.Therefore Low level Laser Therapy could be an innovative break through to enhance orthodontic tooth movement thereby reducing treatment duration.

FC296

Masticatory Efficiency in Subjects with Angle Malloclusion Class II Division 1 and Malocclusion Class II Division 2

Vesna Jankulovska[1], Evdokija Jankulovska[2], Marija Zuzelova[3], Sanja Manchevska[4]
[1]*Department of general dentistry, Private Dental Practice "JANKULOVSKI", Skopje, Macedonia,* [2]*Department of prosthodontics, Faculty of Dentistry, University "St. Kiril and Metodij", Skopje, Macedonia,* [3]*Department of orthodontics, Faculty of Dentistry, University "St. Kiril and Metodij", Skopje, Macedonia,* [4]*Department of physiology, Faculty of Medicine, University "St. Kiril and Metodij", Skopje, Macedonia*

Aim or Purpose: The aim of this study was to evaluate the differences in the masticatory efficiency between subjects with two types of maloclussion: class II – division 1 and class II – division 2, while performing a precise masticatory task.

Material and methods: A sample of 60 subjects (61% male (m), 39% female (f)), at the age from 19 to 33 years, distributed in three individual groups, representing subjects with normal occlusion (control group, n = 20), malocclusion class II/1 (n = 20) and malocclusion class II/2 (n = 20), were tested. The masticatory efficiency was evaluated objectively and precisely, using bilateral electromyography of masseter muscles, during a time-limited masticaton (t = 2 min) of real test-food (walnuts = 2.0 g). Therefore, this neurofisiological method was called electromyomasticatiography.

Results: The masticatory efficiency was determined by these following parameters: the automatic habitual chewing rate (AHcr) and the biopotentials of the masseteric muscles in fisiological resting position of mandible (BMfr). The results for the AHcr showed: 1.20 chewing strikes/s for normal occlusion (m = 1.16, f = 1.22); 1.30 chewing strikes/s for class II/1 (m = 1.36, f = 1.27); 1.27 chewing strikes/s for class II/2 (m = 1.31, f = 1.24), and 0.06 mV; 0.05 mV; 0.1 mV, for the BMfr of the three groups, respectively.

Conclusions: The classification of malocclusion, which was made by Angle, based on the differences in the morphological characteristics, also shows differences in the main function of the masticatory system. In other words, this study proved that there is statistically significant difference in the masticatory efficiency between subjects with normal occlusion, malocclusion class II/1 and malocclusion class II/2.

FC297

Early Preventive Orthodontics and Multidisciplinary Approach in Pediatric Dentistry

Miljana Petrovic Punoševac[1], Slađana Tolic[1], Vesna Barac Furtinger[2]
[1]*Preventive Paediatric Dentistry, Health Care Centre Niš, Serbia,* [2]*Private Practice, Zagreb, Croatia*

Aim: Regarding oral status of the mankind, it can be asserted that there is no person without at least a minor tooth or jaw irregularity.

Preventive orthodontic examinations in the Department of Paediatric Dentistry of the Niš Health Centre relate to educational and consulting work with parents and families on the assumption that parental engagement is one of the key factors in prevention of oral anomalies, gaining thus multidisciplinary dimension.

Methods: Annual oral health checks comprise 15 generations, from birth to the age of 15 years.

Results: Up the 5 years, the stress is placed on early diagnosing, prevention and education with the aim of improving parents' education and attitudes. The most important educational issues are: proper nutrition, implementing oral hygiene, repression of wrong habits and motivating attitudes to dental visits.

From 6th to 11th year, besides prevention, the emphasis is put on therapeutic measures and methods for timely elimination of problems.

Period from 12th to 15th year is nearly utmost time to correct omitted that resulted from personal negligence and noncooperation with dentist. After that, up to 19 years, the treatment is much difficult and slow and the success can be achieved only through extraordinary collaboration of patient and dental team and patient's compliance.

FC298

Does Orthodontic Treatment Improve the Quality of Life?

Md Nazmul Hasan

Department of Orthodontics & Dentofacial Orthopedics, Update Dental College & Hospital, Dhaka, Bangladesh

Introductions: The preventive and the corrective aspect of malocclusion management are not only to improved the occlusal relationship and aesthetics, it also implies greatly to improve the confidence, interpersonal communication skill. The oral-facial region is the area of significant concern of the individuals to draw the most attention during interpersonal interaction; vocal, physical and emotional communication, so malocclusion management should concern to improve these aspects of improvement during and after orthodontic treatment.

Discussions: Now-a-days the numbers of people seeking for orthodontic treatment are increasing, that ranging from minor malocclusion to sever dentofacial deformity. Regardless the age of the patients and the severity of their problem their expectations about improvements in oral function, aesthetic, social acceptance is an important concern for orthodontist or dentist. Combine effort of orthodontist, dentist, dental auxiliaries, patients family member often require to produce significant treatment improvement, in living standard, and to reduce the patient's drop-out rate during follow-up time.

Conclusions: Tropic to be covered in this presentation includes the electronic search review on the contribution patients of improving quality of life by orthodontic treatment. It will also highlight patient's expectations and the possible contributory work-list by orthodontist, dentist, dental auxiliaries, patient parents, family member in general to promote a much better treatment out comes, with some clinical scenario where the combine effort really works.

Free Communication Session 48 | B342 | 31.08.2013 | 09:00–11:00

Theme: Preventive Dentistry: Public Health

FC299

Social Aspects of the Dental Treatment of Patients with Replaced Renal Function

Svetoslav Jivkov Garov[1], Mariya Stoyanova Dencheva[2], Angelina Ilieva Kisselova[2], Tzvetelina Gueorgieva Gueorgieva[3]

[1]*Department of Health Policy and Management, Faculty of Public Health, Medical University, Sofia, Bulgaria,* [2]*Department of Imaging and Oral Diagnostic, Faculty of Dental Medicine, Medical University, Sofia, Bulgaria,* [3]*Department of Conservative Dental Medicine, Faculty of Dental Medicine, Medical University, Sofia, Bulgaria*

The success l of renal transplantation is a combination of efforts of many medical specialists. Dental treatment of focal infection is necessary part of prepare for organ transplantation and following post transplant period.

Purpose: The purpose of the present study is to clarify the need of the methodology applied for dental focal sanitation of medical compromised patients in Faculty of Dental Medicine, Sofia, Bulgaria.

Material and methods: A direct inquiry about the opinion of 146 patients with replaced renal function (n = 70 on hemodialysis and n = 76 renal transplanted) was held. The inquiry includes 13 questions related to dental diagnostic and treatment that was performed under specific methodology in Faculty of Dental Medicine, Sofia, Bulgaria.

It was used the following statistical methods: Descriptive analysis – tables represent the frequency distribution of the studied symptoms divided by groups of research; variation analysis; graphical analysis; single factor dispersion analysis (ANOVA); T – test for significant statistical differences.

Results: The necessity for a more complex study is obvious in order to prevent rejection of transplanted organs because of foci infection within maxillofacial area.

Conclusion: The co-operation and opinion of the patients in a treatment is a paramount importance especially in live saving operations which are for example organ transplantations. Dental medicine is a part of the transplantation team and Bulgaria is apt to flatter itself with the realization of the unique program for dental treatment of patients with a forthcoming and completed organ transplantation.

FC300

Socioeconomic Mobility and Tobacco Consumption Patterns in Fish Industry Workers

Shashidhar Acharya

Department of Public Health Dentistry, Manipal College of Dental Sciences, Manipal University, Manipal, India

Aim or Purpose: The aim of this study was to understand the tobacco consumption patterns and their relationship with life course socio-economic mobility among fish industry workers as this could provide important information in dealing with the tobacco problem in this very vulnerable population.

Material and methods: Socio-economic life course data and information about tobacco habits was collected from 102 fish industry workers. A subject was considered to be upwardly mobile if the family head's educational attainment and the number of earning members increased and the number of children and dependants decreased since childhood in his or her household. Oral examination was also done for malignant/premalignant lesions. Ethical approval was obtained prior to the study. Chi square test was used to compare frequencies and all statistical analysis was done using SPSS (version 16) software.

Results: Of the 102 subjects, 64 regularly consumed tobacco either in smoking or smokeless forms and the common reasons for the habit were the co workers' influence and to keep awake at work. Fourteen subjects had premalignant lesions in the oral cavity and all them were in the buccal mucosa. The frequency of tobacco consumption and the duration of the habit were significantly lower ($p \leq 0.05$) among those whose socioeconomic condition showed an upward mobility since childhood.

Conclusions: A holistic approach consisting of efforts to improve the overall socioeconomic conditions can be more effective than piecemeal solutions in dealing with the tobacco menace.

FC301

Evaluation of Practice of Cross Infection Control for Dental Impressions among Laboratory Technicians and Prosthodontists in KSA

Nabila Ahmed Sedky Abdel Karim
Department of Community and Preventive Dentistry, Qassim University, Qassim, Saudi Arabia

Objectives: To assess the current practice of cross infection control of dental impressions in governmental and private dental labs & prosthodontic clinics of MoH, Al-Qassim, KSA, evaluating how dentists are communicating with lab personnel about impression disinfection, and, detecting awareness about infection control practices in dental laboratories.
Material and methods: Cross-sectional study including self-administered anonymous questionnaires. The sample included 50 dental technicians and 55 dentists in two cities. Technicians and prosthodontists were subjected to questionnaires consisting of 26 and 14 questions, respectively. Forty six questionnaires were completed for technicians and 48 for prosthodontists.
Results: More than 60.00% of technicians knew that impressions have been disinfected and 56.25% of dentists notified technicians that impressions have already been disinfected. About 64.00% of technicians had an agreed protocol between lab and clinic, and 40.74% of prosthodontists notified technicians through notes on impression bags. About 61.00% reported that all technicians in lab were vaccinated for HBV. Only 6.52% of technicians apply all protective precautions when receiving impressions. Fifty percent of the prosthodontists aren't sure that technicians disinfect impressions before pouring. About 65.00% of technicians feel that laboratories are adequately instructed for disinfection techniques of different impression materials and on contrary, 66.67% of prosthodontists didn't feel that.
Conclusion: Moderate communication between dental laboratory technicians and prosthodontists. The majority of dental technicians were vaccinated for HBV. Most dentists didn't pour impressions in their clinics. Lack of communication between prosthodontists and their dental technicians was noticeable. Significant nonconformity of view between dental technicians and prosthodontics was reported.

FC302

Text2Floss an Innovative Option to Improve Oral Health Across Continents

Jack Dillenberg, Tony Hashemian
A.T. Still University – Arizona School of Dentistry & Oral Health, Mesa, AZi, USA

Introduction: Mobile phones are becoming essential to daily life. The popularity and ease of mobile technology has great potential as a source of health information. Texting may be utilized as a tool to engage the public in a cost effective way to promote health education. Text2Floss will bring a new simple and innovative tool to the global community to help communicate with patients. Text messages may help to engage the patient and bridge the gap for education in continuation of care through oral health awareness.
Conclusion: This innovative concept has the potential to be a global initiative to reach people around the world with access to cell phones, including underserved communities. A text could be utilized as a tool to communicate and remind the public of the importance of oral health through oral hygiene, such as brushing and flossing.

FC303

The Dental Caries Experienced on 3–5 Year Old Children Expressed by ICDAS-Index

Blerta Latifi Xhemajli, Agim Begzati, Teuta Ademaj Kutllovci, Aida Namani Rexhepi, Blerta Musliu Krasniqi, Arjana Bytyqi
Department of Pediatric and Preventive Dentistry, University of Pristina, Dentistry School, Pristina, Republic of Kosovo

Introduction: The international epidemiological criteria used by the WHO standard do not register lesions caries in pre cavitation stages, such as white spot lesions. Thus, the progress of non-cavitated caries lesions in populations it is an important evidence of using new indices in a public with new dental profile.
Aim: The aim of the study was to assess the caries experience of young children, using the ICDAS system and to investigate determinants of dental caries.
Methodology: A cross-sectional survey was undertaken in children aged 3–5 year. The survey was carried out in some kindergartens of Pristina-capital city of Kosovo during the January and February of 2013, by one calibrated examiner, on a sample of 193 children using the ICDAS criteria.
Results: Total number of examined teeth and surfaces was: 3860/19.300. The prevalence of dental caries, including enamel and dentinal carious lesions, in primary teeth was 80.8%. Number of caries experienced teeth was confined to 1225 (31.7%). The mean value of carious teeth 6.38 (±4.5). Caries free subjects numbered 37 (19.1%). The most frequent code it was 06-extensive distinct cavity with visible dentin, while 02-distinct visual change in enamel it was rare.
Conclusion: Dental caries has been shown to affect a significant number of children in our country. The decay component predominated, with hardly any restorations or extractions observed. More effective strategies are needed to prevent this high rate of caries in young children.

FC304

Prevention of Cross Contamination in the Area of Infection Control Procedures in Dental Laboratory and Clinic

Mohamed Khaled Ahmed Azzam
Dental Department, King Abdulaziz Medical City, Jeddah, Saudi Arabia

Introduction: This article focuses mainly on the prevention, communication, education and professional development in the area of safety and infection control procedures in dental clinics and laboratories, to assist both dental health providers and technicians to assume proper safety measures and avoiding cross infection to patients and colleagues.

Methodology: Dental clinics, procedures and instruments in the lab. liable to cross contamination were test run using culture sensitivity tests on blood agar and Mc.conkey mediums in addition to swabs on monthly bases as for the following:

1 Clinics and laboratory air environment was tested
2 Alginate impressions, brushes, ragged wheels, pumice and lathes were tested
3 The laboratory better operated as a "Clean Dental Laboratory" not "Standard Dental Laboratory"

Results: Gram -ve pathogens as Klebsiella and fungal infection as well as commensals (staph.albicans) were present. By proper suction system in the clinics and lab. and regular air-conditioning filters cleaning fungal growth was avoided.Virkon 2% as a surface disinfectant and instruments soaked for 24 h were used to eradicate pathogenic and non pathogenic bacteria.Presept half gram tablets diluted in half liter of water sprayed, wrapped and left for 10 min on incoming material to the lab. as impressions, bite blocks, face-bows crowns also eradicated the pathogenic and non pathogenic organisms

Conclusion: The infection control measures should be taken very seriously for all patients and dental personnel for a better and healthier life.

FC305

Tobacco-Use Cessation in Dental Clinics: A Survey of Dentist's Knowledge, Attitude and Practices

Thanveer Kalantharakath, Ajith Krishnan, Pulikt Kalyan
Department of Public Health Dentistry, Sumandeep Vidyapeeth, Vadodara, India

Aim: To assess tobacco-use cessation related knowledge, attitude and practices among practicing dentists.

Material and methods: A cross sectional questionnaire survey was conducted among dental practitioners registered in Indian dental association, Vadodara Branch, India.

All the registered dentists in Indian Dental Association, Vadodara were selected for the survey. A self administered pre-tested close ended questionnaire consisting of questions related to their graduation, number of years in active dental practice, knowledge attitude and practices towards tobacco use and cessation advice to the patients was used. The questionnaire was piloted among 20 clinical practitioners. Only completely filled questionnaires and response from those who are in active practice since the last 5 years were considered for the study.

Results: Out of the 180 completed questionnaires, 129 (71.6%) respondents were graduates and 51 (28.3%) respondents were post graduates. Ninety-three (51.6%) respondents had never undergone any formal training in tobacco cessation. Only 56 (31.1%) respondents strongly agreed that tobacco cessation advice is the responsibility of dental practitioners. Only 92 (51.1%) of the practitioners advice tobacco cessation to their patients.

Conclusion: It is concluded from the results that just over fifty percent of dentists surveyed were cognizant of tobacco cessation methods and incorporated the same in their practice. The need for dentist to acquire knowledge and assume responsibility towards this cause in principle and practice has been strongly felt.

FC306

Can Dental Panoramic Radiography Help Screen Osteoporosis in Postmenopausal Women?

Fırat Selvi[1], Sean Geary[2], Meredith August[3]
[1]*Department of Oral and Maxillofacial Surgery, Istanbul University, Istanbul, Turkey,* [2]*Harvard School of Dental Medicine, Boston, MA, USA,* [3]*Department of Oral and Maxillofacial Surgery, Massachusetts General Hospital, Boston, MA, USA*

Aim: Early detection of osteoporosis is an important public health goal and dentists might play an important role in its diagnosis with dental radiographs having a great potential as a screening tool.

Material and methods: Using a retrospective cohort study design, the authors enrolled a sample composed of female subjects who were ≥50 years of age, who had a dental panoramic radiograph and a bone mineral density (BMD) scan within 2 years of each other between 2006 and 2012. The predictor variables included demographics, average gonial and antegonial angles, mandibular cortical bone integrity (MCBI), periodontal disease status, number of remaining teeth, body mass index (BMI) and bisphosphonate usage. The primary outcome measure was BMD *T*-score (BMDT-sc) as determined by dual emission x-ray absorptiometry.

Results: Descriptive and logistic regression statistics were computed and p-values < 0.05 were considered significant. Sample composed of 274 subjects with a mean age of 64 ± 9.3 years. Average BMDT-sc was -1.59 ± 1.11. Sample's 27.11% were normal (BMDT-sc > -1), 50.92% were osteopenic (BMDT-sc between -1 and -2.5), and 21.98% were osteoporotic (BMDT-sc < -2.5). Of the predictor variables examined, MCBI ($p = 0.019$), age ($p < 0.0001$), BMI ($p < 0.0001$), and bisphosphonate usage ($p = 0.037$) showed significance with a BMD diagnosis of osteopenia/osteoporosis. Other variables didn't demonstrate significance. In a multivariate logistic regression analysis, MCBI didn't demonstrate significance ($p = 0.6$), whereas age and BMI remained significant ($p < 0.0001$).

Conclusions: In conclusion, given MCBI's significance in univariate analysis and biologic plausibility, dentists might use it as a risk assessment tool to recommend a BMD scan for elderly women patients.

FC307

Areca Nut Chewing Among Primary School Children of Karachi, Pakistan

Ambrina Qureshi, Arham Nawaz Chohan
Department of Community Dentistry, Dr. IshratulEbad Khan Institute of Oral Health Sciences, Dow University of Health Sciences, Karachi, Pakistan

Objective: Areca nut chewing is more prevalent in South East part of subcontinent. Objective was to present prevalence and associated factors of this habit among primary school children of Karachi, Pakistan.

Methodology: A sample size of 600 was calculated. Multi stage random sampling was used. Nine out of 18 towns of Karachi were identified and two schools (public and private) from each town

were selected. Only primary school children (grade 1–6) were randomly selected. Areca nut chewing habits were recorded on a structured performa. Data entry was done by using SPSS v 16 where univariate and multivariate analysis were performed.
Results: Mean age of the subjects was 9.5 ± 2.2 years (range = 7–11 years); boys (52%) and girls (48%). Almost 55% (n = 330) children reported of habitually consuming areca nut even though 88% of all schools had imposed restriction on selling of these products within school premises. This was observed more in boys (n = 205) than girls (n = 120). Increased prevalence and associations were found in children of more younger age (p = 0.03) and those belonging to families of low socio-economic (p = 0.01). No associations were found with child habit and parental education (p = 0.15) and similarly to child awareness and habit (p = 0.17).
Conclusion: Despite ban on selling of these products in Karachi business of such harmful tobacco substances still continue and sellers/manufacturers are busy making most of the situation. An initiative approach is recommended for guardians and communities to put off areca nut use.

FC308
Holistic Approach to Preventive Dentistry as Applied in Manisa, Turkey
Can Polat, Nilgün Yaşar Polat, Yıldız Karakuş, Galip Köroğlu, Ziya Tay
Ministry of Health, Public Health Department, Manisa, Turkey

Aim: The present paper focuses on the holistic approach to preventive dentistry as applied in Manisa, Turkey by the Manisa Public Health Department.
Methods: The relevant approach is crafted within the conceptual strategy of WHO-Global goals for oral health 2020 and is based on the functional preventive dentistry principles.

The practical side of this approach is framed by five programmes covering the whole range of target population in the region, namely;

1 Caries prevention through fluoride and fissure sealants application and cariogram
2 Maintaining gingival health
3 Educational tool to promote oral health
4 Oral epidemiology studies
5 Informational database for oral health

Results: By date, a total of 93.000 students were fluoridated via brush-on gel application, fissure sealants have been used for handicapped people, fluoride varnish has been applied to pre-school children, cariogram was applied to freshman students in all high schools.

A GI survey was conducted to reveal the nature of gingival health in the region and adult population mainly in rural areas received proper intervention.

More than150.000 students, teachers and parents were given the opportunity to learn the basic steps to be taken to stay away from caries.

In-depth analysis was conducted on oral epidemiology data periodically collected.

Informational database was introduced for recording and storing the relevant data.

The presentation will also focus on SWOT analysis of the approach-in-question.

Free Communication Session 49 | B343 | 31.08.2013 | 09:00–11:00

Theme: Dental Treatment & Restorative Dentistry: Prosthetics

FC309
Effects of Splint Therapy on Temporomandibular Joint Disorders with Respect to Anxiety and Depression
Müşerref Asuman Akgün[1], Nazlı Zeynep Aktaş[2], Rifat Gözneli[2], Şükran Atamer Şimşek[1], Yasemin Kulak Özkan[2]
[1]Department of Pharmacology, Faculty of Dentistry, Marmara University, Istanbul, Turkey, [2]Department of Prosthodontics, Faculty of Dentistry, Marmara University, Istanbul, Turkey

Aim: The aim of this study was to investigate the effects of the splint therapy on anxiety and depression levels of patients with temporomandibular joint disorders (TMD).
Material and methods: A standardized Research Diagnostic Criteria for TMD (RDC/TMD) assessment was performed on 48 patients. General, dental and TMD history data were taken from the patients. Visual Analog Scale (VAS), Spielberger's State-Trait Anxiety Inventory (STAI) Scales and Beck Depression Inventory (BDI) were used to measure pain levels, anxiety and depression respectively. These measurements were performed before splint therapy and after the first week, first month, third month and sixth month of the splint therapy. Statistical evaluation was performed using SPSS for Windows 18.0 with repeated measures ANOVA and Bonferroni tests. The study was evaluated and approved for scientific and ethical aspects by the Clinical Research Evaluation Committee of Yeditepe University on September 21th, 2010 (reference #49).
Results: Mean VAS levels of the patients were significantly decreased (before: 6.06 ± 2.96; after: 1.71 ± 1.98; $p < 0.05$). The patients' STAI levels were decreased throughout the splint therapy. While the first week's STAI levels were 40.17 ± 9.93; 47.57 ± 9.30, after 6 months the values were decreased to 35.30 ± 9.26; 43.68 ± 8.71. Similar to the data of the STAI, depression levels were also decreased after the splint implementation therapy. Depression levels of the patients were 17.48 ± 9.95; 14.27 ± 7.90, but the most significant decreasing was observed after the third month (12.06 ± 7.96; p = 0.001).
Conclusion: Splint therapy not only reduced the pain, but also seems to have contributed to the improvement of the patient's emotional situation.

FC310
Epidemiological Study of Fixed Prostheses Effects on the Interproximal Space
Dalenda Hadyaoui, Imen Guessmi, Zohra Nouira, Mohamed Barkaoui, Bel Hassen Harzallah, Mounir Cherif
Department of Fixed Prosthodontics, Monastir University, Monastir, Tunisia

Objectives: Being the most exposed site to bacetrial infections, this study aimed to evaluate retrospectively the effects of fixed prostheses on the interproximal space in order to recommend clinical protocols to save as much as possible healthy surronding tissues.
Methods: An observational longitudinal study was carried covering a sample of 84 patients spanning a period of 11 months. The patients presented to the fixed prosthetic dentistry department. Inclusion criteria were:

Healthy patients presenting no known general pathology.

Patients with a conventional fixed prosthesis who showed no periodontal disease.

Results: The results confirm that the overcontour, the non-reconstitution of the contact points and the subgingival status of the prosthetic limit represent the essential causes of dental and periodontal pathologies. On the other hand, the important role of motivation to maintain dento-periodontal health and the prosthetic longevity was confirmed.
Conclusions: The role of the clinician is very important to avoid adverse events. Moreover, the dental laboratory technician must be well trained and have the knowledge necessary to apply good oral hygiene recommendations while manufacturing and faithfully reproduce the exact mouth anatomy. In addition, monitoring is very important to keep the prosthesis and prevent the development of pathologies. The patient's motivation and a strict methodology for evaluation and preparation of the periodontium, execution and registration limits, laboratory technology, may allow the prosthesis longevity. Dentists should pay minute attention to contact points, contour and finish lines to prevent periodontal pathologies.

FC311

Esthetic Outcome Evaluation of Maxillary Anterior Single Tooth Bone Level Implants

Burçin Vanlıoğlu[1], Erkut Kahramanoğlu[1], Yılmaz Umut Aslan[1], Yaşar Özkan[2], Yasemin Kulak Özkan[1]
[1]Department of Prosthodontics, Marmara University, Istanbul, Turkey, [2]Department of Oral and Maxillofacial Surgery, Marmara University, Istanbul, Turkey

Purpose: The aim of this study was to evaluate the treatment outcome of implants in the esthetically demanding regions.
Material and methods: Patients were treated with implant (Straumann Bone Level Implant, Institute Straumann, Basel, Switzerland) supported all ceramic single crowns and followed for 2–4 years. Esthetic parameters were recorded to assess treatment outcomes. Pink esthetic score and white esthetic score (PES/WES) was applied for the objective esthetic outcome assessment of anterior single-tooth implants. The patients' own appreciation were also evaluated by means of questionnaire.
Results: Fifty-five implants were placed in 47 patients. At the recall examinations, all implants were successfully integrated, demonstrating healthy peri-implant soft tissues as documented by standard clinical parameters. Esthetic outcomes confirmed pleasing results overall. The mean total PES was 9.03–0.93 (range: 7–10) at 3 years. The PES parameter facial mucosa curvature (1.69–0.47) had the highest mean values at baseline, whereas the root convexity was the most difficult to satisfy. For the papillary area, mean scores of 1.22–0.42 for the mesial papilla and 1.3–0.46 for the distal papilla at baseline increased to 1.65–0.48, 1.56–0.5 respectively at the last recall. For the total PES, none of the 55 single tooth implants scored <6. For the WES, the mean total was 8.15–1.11 (range: 6–10). Of the 55 implant crowns examined, none of them scored below the threshold of 6. The follow up revealed pleasing esthetic outcomes and stable facial soft tissues with bone level implants.

FC312

Evaluation of Bonding Strength of Repair System on Zirconia Restoration

İsmail Hakkı Uzun, Meral Arslan Malkoç, Nilüfer Tülin Polat, Ayşe Tuba Öğreten
Department of Prosthetic Dentistry, Inonu University, Malatya, Turkey

Objective: The aim of this study was to examine the shear bond strength of repair material after various surface treatments to zirconia restoration.
Material and methods: Two porcelain system (Zirconzahn, Cerabien Zr-Noritake) and two surface treatments were used. A total of 60 specimens were prepared and divided into six groups (n = 10). Then applied with four combinations of two different surface preparation method (air abrasion, Er-YAG Laser) and two porcelain systems; two groups were also bonded without surface treatment as control. Repair material (Cimara Zircon, VOCO, Germany) were applied to the specimens by packing the material into the cylindrical plastic matrices (Ultradent, South Jordan, Utah). After 24 h of storage at 37°C, the shear bond strength (MPa) of the specimens was measured in a universal testing machine. Each specimen was subjected to SBS testing at 1 mm/min crosshead speed. One-way analysis of variance (ANOVA) and Duncan multiple comparison test ($p < 0.05$) were used to analyze the results.
Results: While the Y-TZP-Ctrl had showed the highest SBS ($p < 0.05$), Y-TZP-Las demonstrated the lowest SBS ($p < 0.05$). Also, there is no statistically differences among the Feld-Las, Y-TZP-AA, Feld-AA groups ($p > 0.05$).
Conclusion: Zirconia repair system using can be recommended as manufacturer advice without surface treatment.

FC313

Growth of Microorganisms on Patients with Dentures, In Vivo Study

Leandro E. Feliz[1], Mary Pillier[1], LauraDe Leon[1], Melania Trinidad[2], Manuel Suazo[1]
[1]School of Dentistry/Department of Research, Universidad Iberoamericana, Unibe, [2]Department of Microbiology, Universidad Iberoamericana, Unibe

Aim: The place where microorganisms grow is what is called habitat. In patients with dentures there is a predominance of Lactobacillus, Streptococci and Candida species, which can cause mucosal

lesions, although this tissue has a defense mechanism against microbial attacks. The main purpose of this study is to determine the microbial growth, to assess the level of hygiene applied, and evaluate the behavior of the oral mucosa in patients with dentures.

Methods: Cohort study, sample = 23 cases of all patients that attended the area of Prosthodontics of UNIBE's Dental Clinic, located in Santo Domingo, Dominican Republic, to which dentures were prepared, during the period of January 2010 to December 2011. Microbiological cultures were performed in different media, and the data analyzed in SPSS 19.

Results: In Kruskal–Wallis and Chi Square Test, not significant differences were established between the cultures media used to determine the growth of microorganisms.

The patients with superior dentures had a similar level of microorganisms at 4 and 6 months (Streptococcus, Diplococcus gram neg. and Candida). Roughness factors of dentures and oral hygine promote the proliferation of Candida. An isolated case of Pseudomona in our findings is of concern because of the systemic and oral cavity infections it can cause.

FC314

Impact of Type of Denture on Oral Health Related Quality of Life (OHFQoL)

Işıl Özcan[1], Nazan Z. Alparslan[2]

[1]*Department of Prosthodontics, School of Dentistry, Baskent University, Ankara, Turkey,* [2]*Department of Bioistatistics, Faculty of Medicine, Cukurova University, Adana, Turkey*

Aim or Purpose: The objective of this study to assess if the type of denture has impact on oral health related quality of life (OHL-QoL).

Material and methods: One hundred and seventeen patients aged 35–85 (43.6% male), received at least one complete denture or implant-retained overdenture at Baskent University, Adana Research and Teaching Center (Turkey) were enrolled in this study. All of participants answered the Turkish version Oral Health Impact Profile (OHIP-14 tr) questionnaire for the evaluation of (OHFQoL). Cronbach alpha (α) was used measure internal consistency of the scores. Socio-demographic and prosthetic-related variables were gathered. Descriptive probes and *t* tests were run ($p \leq 0.05$).

Results: The reliability of the summary scores for OHIP- tr 14 was good ($\alpha = 881$). Patients treated with implant retained overdenture recorded significantly higher OHIP total scores compared to those wearing conventional dentures. Differences of sum scores between the groups who had conventional dentures in both jaws and in one jaw only were significant. However no significant differences were found among the implant supported overdenture opposing conventional complete denture and implant supported overdenture opposing to any other prosthetic treatments.

Conclusions: (OHFQoL) in patients implant supported dentures is less impaired than it is in those patients with conventional complete dentures regardless of complete denture antagonist. But the patients receiving conventional complete dentures on both jaws had poorer scores than respondents treated with one jaw only. The use of implants to support complete dentures, brings positive impacts in the (OHFQoL) of Turkish elderly patients.

FC315

Influence of Laser Application on Bond Strength of Fiber Posts

Nesrin Ceren, Pınar Gültekin, Deniz Şen

Department of Prosthodontics, Istanbul University Faculty of Dentistry, Istanbul, Turkey

Purpose: This study evaluated the effect of laser and silane application on the push-out bond strength of glass fiber posts cemented with self-adhesive resin cement.

Material and methods: Forty human maxillary central incisors were sectioned below the cementoenamel junction, and the roots were endodontically prepared to receive a fiber post. The roots were randomly divided into four groups of ten specimens each to test different surface treatments: (Gr 1) Control; no surface treatment; (Gr 2) Er,Cr:YSGG laser (Waterlase) application to root canals; (Gr 3) Silane (Bisco Bis) application to post surface for 60 s; (Gr 4) Er,Cr:YSGG laser+Silane application. The glass fiber posts (DT Light Post) were cemented to prepared root canals with self-adhesive resin cement (C&B Cement). Bonded specimens were cut (1-mm-thick sections) and push-out tests were performed with a universal testing machine at a crosshead speed of 0.5 mm/min. Data were statistically analyzed with one-way ANOVA and Tukey HSD tests ($\alpha = 0.05$). Failure modes were evaluated using a stereomicroscope at original magnification ×40.

Results: Push-out bond strength values of laser and laser+silane treated groups were significantly higher than that of control and only silane treated groups ($p < 0.05$). Laser+silane treated group showed the highest bond strength values whereas control group showed the lowest. Adhesive failure between fiber post and the resin cement was the most frequent type of failure.

Conclusion: Laser treatment to root canals, and silane treatment to fiber post surface following laser application may help to increase the bonding strength of fiber posts.

FC316

Influence of Shade of Resin Cement on Polymerization Shrinkage

Ender Akan

Department of Prosthodontics, Izmir Katip Celebi Uni, Izmir, Turkey

Aim: Resin cements are used for cementation of ceramic restorations. These cements are available in various shades Pigments are used to control the different shades. Marginal microleakage due to polymerization shrinkage is still a problem. In this study, influence of shade of adhesive resin cement on polymerization shrinkage was evaluated.

Material and methods: Five shades of dual-cure composite cement system were used (Clearfil Esthetic Cement, Kuraray). Volumetric shrinkage of five different shades of composite cement was measured by using a video-imaging device (Acu-Vol; Bisco, Inc.). Volumes of different shades of resins were measured before and after polymerization. The percent change in volume was calculated.

Results: Data were analyzed using oneway analysis of variance and post hoc tests. There were statistically significant differences in mean volumetric shrinkage of different shades. The minimum shrinkage percentage was observed in Opaque Yellow shade group (2.62) and maximum shrinkage percentage was observed in Brown shade group (3.96).Different shades of resin cements show various polymerization shrinkage.

FC317

Radiofrequency Heating and Magnetic Field Interactions of fixed Partial Dentures During 3-Tesla Magnetic Resonance Imaging

Simel Ayyildiz[1], Kıvanç Kamburoğlu[2], Cumhur Sipahi[1], Sema Murat[3], Serkan Görgülü[4], Bülent Pişkin[1]

[1]Department of Prosthodontics, Dental Health Sciences Center, Gulhane Military Medical Academy, Ankara, Turkey, [2]Department of Dentomaxillofacial Radiology, Denistry Faculty, Ankara University, Ankara, Turkey, [3]Department of Prosthodontics, Denistry Faculty, Aydın University, İstanbul, Turkey, [4]Department of Orthodontics, Dental Health Sciences Center, Gulhane Military Medical Academy, Ankara, Turkey

Objectives: The aim of the present study was to evaluate the heating and magnetic field interactions of fixed partial dentures fabricated with two commonly used dental alloys and with zirconia in a 3-Tesla (3T) MRI environment and to estimate the safety of these alloys for patients undergoing a 3T MRI examination.
Methods: Thirty-six non-carious freshly extracted human maxillary premolar teeth were embedded in PVC rings and prepared to a standard configuration using a lathe. Three different substructure materials (Co-Cr, Ni-Cr, Zr) were used to fabricate 12 4-retained bridges and 12 crowns. In total, six experimental groups (n = 12) were obtained. Specimens were evaluated at 3T for RF heating and magnetic field interactions. RF heating was evaluated by placing specimens in a cylindrical plastic container filled with isotonic solution and measuring changes in temperature after T1-axial sequencing and after completion of all sequences. Translational attraction and torque values of specimens were also evaluated.
Results: None of the groups exhibited excessive heating (highest temperature change: <1°C), with the maximum increase in temperature observed at the end of the T-1 axial sequence. Moreover, in all groups, only relatively minor magnetic field interactions that would not cause movement in situ were observed.
Conclusions: The study findings indicated that patients with fixed partial dentures (single crown or bridge) fabricated from Co-Cr, Ni-Cr and zirconia substructures may safely undergo MRI at up to 3T.

FC318

Effect of Polymeric Guanidine on Disinfection of Denture Base Material

Aysegul Kurt[1], Gonca Erkose Genc[2], Esra Yıldırım[2], Meltem Uzun[2], Gülbahar Işık Özkol[1]

[1]Department of Prosthodontics, Faculty of Dentistry, Istanbul University, Istanbul, Turkey, [2]Department of Medical Microbiology, Faculty of Medicine, Istanbul University, Istanbul, Turkey

Aim: The aim of the present study was to test the hypothesis that Akacid plus, a novel polymeric compound of the cationic family of disinfectants, would be an alternative method for disinfection of polymethyl methacrylate (PMMA) denture base materials in vitro model.
Material and methods: Heat-polymerizable PMMA denture base material (Meliodent) and four solutions (polymeric guanidine, alkaline peroxide-type disinfection agents, sodium hypochlorite and distillated water) were used. A total of 40 PMMA disc specimens (10 mm diameter × 2 mm thick) were prepared and assigned to four groups. Candida albicans was incubated on Sabouraud dextrose agar (SDA) at 37°C for 48 h. After dilution, a final yeast suspension of approximately $(10^3)^2$ Candida albicans per milliliter was prepared. Ten PMMA disc specimens for each group were placed in a sterile tube containing 2 ml of fungal suspension, incubated at 37°C for 90 min and treated with 1% Akacid plus (5 min), Fittydent (30 min) or 0.5% sodium hypochlorite (10 min) solution. Distillated water (15 min) served as the negative control. Remaining adherent microorganisms were assessed by colony-forming units. Statistically significant differences were determined by Mann–Whitney *U* test.
Results: The disinfection method using 1% Akacid plus significantly decreased adherent microorganisms when compared to the negative control ($p < 0.001$) and Fittydent ($p < 0.01$).
Conclusions: The polymeric guanidine Akacid plus could be used as alternative method for disinfection of PMMA denture base materials.

Free Communication Session 50 | B360 | 31.08.2013 | 09:00–11:00

Theme: Implantology: Oral Surgery

FC319

Horizontal Alveolar Ridge Augmentation Using Standardized Press-Fit Bone Cylinders and Micro-Lag-Screw Fixation: Technical Note and Initial Experience

Philipp Streckbein[1], Christopher Kähling[1], Jan Falco Wilbrand[1], Christoph Yves Malik[1], Heidrun Schaaf[1], Hans Peter Howaldt[1], Roland Streckbein[2]

[1]Department of Cranio-Maxillo-Facial Surgery, Justus-Liebig-University, Gießen, Germany, [2]Institute for Postgraduate Education in Dental Implantology IZI, Limburg, Germany

Introduction: The use of autologous block bone grafts for horizontal alveolar ridge augmentation in dental implantology is a common surgical procedure. Typically, bone grafts are harvested using chisels combined with drills or piezo-surgery instruments and individually molded. The success depends on proper immobilization and accurate fitting between the transplant and recipient site.
Aim: The aim of this presentation is to introduce a new and innovative standardized procedure for harvesting and transferring cylindrical bone grafts using adjusted instruments in horizontally compromised alveolar ridges. It describes the different principal in contrast to other augmentation techniques. Additionally, our initial clinical experience is presented.

Material and methods: Adjusted trephine drills were used to harvest manly cortical, cylindrical transplants from the retro-molar region of the mandible. After preparing the recipient site with accurately fitting grinding drills, the bone grafts were transplanted and immobilized using one micro lag-screw.
Results: The horizontally compromised alveolar ridges were successfully augmented and treated with dental implants. No major complication occurred during transplantation, the healing period, and subsequent implant therapy. One out of twenty-five patients presented with temporary dysesthesia of the inferior alveolar nerve.
Conclusion: The new method presented is a precise and effective treatment option for horizontal alveolar ridge augmentation prior to implant installation.

FC320

Effect of Platelet-Rich Fibrin Application during Implant Surgery: 2 Years Results

Elif Oncu, Yildiz Ozkan, Merve Yilmaz, Emine Elif Alaaddinoglu
Department of Periodontology, Baskent University, Ankara, Turkey

Background: The objective of this study was to evaluate the effects of simultaneous application of Platelet-rich fibrin (PRF) with implant placement to implant success after 2 years of maintenance.
Material and methods: Nineteen patients (12 male and 7 female, 44.2 ± 12.5 years of age) with more than two missing teeth were included in the study. Sixty-four implants were placed to 19 patients. Implants in one quadrant were randomly assigned to test group and PRF was applied in the prepared implant sites immediately before the insertion of implants. Implants in the opposite quadrant served as control group and no additional procedure was performed. Two years after surgical procedure, patients were re-evaluated. Thirty implants (15 tests, 15 controls) of eight patients were evaluated, and pocket depth, bleeding on probing, plaque index and presence of occlusal trauma were recorded. Radiographic bone loss around the implants were determined by measuring the distance between implant shoulder and crest of alveolar bone on both mesial and distal surfaces on panoramic radiographs.
Results: There were no statistically significant differences between control and test groups in terms of pocket depth, bleeding on probing, plaque index and occlusal trauma ($p > 0.05$). According to radiographic bone loss measurements there were no statistically significant differences between two groups ($p = 0.823$).

Simultaneous application of PRF during implant placement didn't demonstrate any negative effect on clinical and radiographic parameters.

FC321

Management of a Giant-Cell Tumor Associated with an Impacted Canine

Radhia Ben Ali, Hajer Hentati, Abdellatif Chokri, Marouene Bel Hadj Hassine, Jamil Selmi
Department of oral medicine oral surgery, Monastir University, Monastir, Tunisia

Aim: Giant-cell tumor of the jaw presents difficulty in diagnosis. It is rare in the head and neck regions and may resemble, clinically and histologically, other types of jaw lesion. However, histologic study may distinguish this lesion from a giant-cell granuloma, an osteogenic sarcoma, and most epulides. Adequate surgical excision with a long-term follow-up is the recommended treatment of choice.
Case presentation: A 12 year-old girl was addressed by his dentist to the department of oral medicine oral surgery of University clinic of dentistry, Monastir for a soft buccal swelling on the right side of the maxilla which is revealed by a routine dental examination.

Intraoral examination revealed a buccal swelling involving the right maxillary canine which is deeply impacted. A panoramic radiograph showed an extensive well-defined radiolucency involving the ectopic impacted canine. According to the clinical and radiography presentations a diagnosis of giant- cell tumor, central giant cell granuloma, dentigerous cyst or any osteolytic tumor were discussed.

The treatment consisted of curettage and surgical excision and conservation of the canine. The histological result was a giant cell tumor.
Results: The results of the parathyroid hormone (PTH) and phosphocalcic assessments were normal. At 20 months postoperatively we obtained spontaneous eruption of the canine in ectopic buccal position. Then an orthodontic treatment has been planned in order to bring the canine to its normal position in the dental arc and to achieve a stable functional occlusion.

FC322

Management of Two Large Radicular Cysts with Enucleation and Orthograde Retreatment

Asuman Eroğlu[1], Selçuk Basa[2]
[1]*Department of Restorative Dentistry, School of Dentistry, Yeni Yuzyil University, Istanbul, Turkey,* [2]*Department of Oral and MaxillofDepartment of Oral and Maxillofacial Surgery, Marmara University, Istanbul, Turkey*

Aim: Radicular cysts are the most frequent cysts affecting the jaws, which are a result of inflammatory process in the periapical tissues. Significant growth is possible and with large lesions surgical enucleation and extraction or decompression are the basic treatment options.
Case: This case reports on the treatment of two radicular cysts localized on the left premolar-molar and right premolar region of the mandibular jaw. A 40 year-old male patient presented with swelling in the left mandibular molar region of 6 weeks duration. The patient gave a history of root canal treatment of left second premolar, left first molar and right first premolar teeth performed 4 years ago. Clinical findings indicated swelling on left premolar-molar region and the teeth were excessively mobile. Conventional radiographic findings revealed two large well defined radiolucency; the larger one involving left first molar and both premolar teeth; the other involving right first premolar teeth with external apical resorption. The axial C.T. sections showed expansive periapical lesion localized in the left molar area with perforation of buccal plates of bone. Surgical enucleation of the cyst and extraction of the involved left first molar and premolar teeth were performed. Orthograde retreatment of right premolar tooth and surgical

enucleation of the cyst was performed, as the patient was desirous to retain his teeth. At the 9-month follow-up appointment the lesions showed considerable resolution and positive osseous regenerative response was observed.
Conclusions: In the present case the result confirms previous reports demonstrating that large radicular cysts can be successfully treated.

Theme: Implantology: Oral Pathology

FC323
Mechanism of Rescue for the Secondary Palate Cleft with Overexpression of Smad2
Husein A. Al Omer[1], Gihan E. H. Gawish[2]
[1]*Prince Abdulrahman Advanced Dental Institute (PAADI), Armed Forces Medical Affairs, Riyadh, Saudi Arabia,* [2]*Medical Biochemistry Department, Faculty of Medicine, Imam University, Riyadh, Saudi Arabia*

Aim: In analyses of non-syndromic cleft palate, a linkage to TGF-β3 has been shown. Signalling of TGF-β is mediated in the cell through Smad2. The goal was to understand the mechanism of palatal fusion in the rescue mice compared to wild-type.
Methods: The heads of embryos at age (E14.5) of rescued, Smad2 overexpression and wild-type models were embedded in paraffin after genotyping and fixation. Serial 7 μm sections were studied for detection of apoptosis and epithelial mesenchymal transition using immunohistochemistry. Images were captured with confocal laser microscope. Activation of Smad2 was studied with phospho-Smad2 antibody, and the level of Smad2 in each embryo normalized with immunoblotting.
Results: TGF-β3 null mice developed a secondary palatal cleft while the TBF-β3 null mice that had also inherited the K14-Smad2 gene had fusion of the secondary palate. The effect of the K14-Smad2 expression was analyzed in the medial edge epithelium of the rescue mice; the MEE had a much higher ratio of cells with cleaved caspase, a marker of apoptosis, than in the control fused palates. The increase in apoptosis was correlated with increased p-Smad2 in the same cells while p-Smad2 in the control mice with normal palatal fusion was not associated with high levels of apoptotic MEE.
Conclusions: Smad2 overexpression might rescue the cleft in the secondary palate of mice by increasing apoptosis of epithelial cells in the middle seam. Thus the mechanism of rescue is not identical to the events that normally occur during palatal fusion

Theme: Implantology: Implantology

FC324
Evaluation of Implant Placement in Extraction Sockets of Periodontally Involved Teeth Using β-Tricalcium Phosphate with Bone Morphogenetic Protein
Yasser Mohamed El Makaky[1,2]
[1]*Assistant Professor Oral medicine, Periodontology, Oral Diagnosis in Taibah University, Madina, Saudi Arabia,* [2]*Lecturer of Oral medicine, Periodontology, Oral Diagnosis & Radiology Department, Faculty of Dentistry, Tanta University, Egypt*

Background: This study aimed to evaluate osseointegration clinically and radiographically around dental implants placed into fresh extraction sockets of periodontally affected teeth using Bone Morphogenetic protein with the ß-tricalcium phosphate.
Methods: A clinical trial was carried out on twenty fresh extraction sockets of periodontally involved teeth in male patients selected with age range from 20 to 45 years, sockets implanted with immediate endosseous implant and grafted with ß-tricalcium phosphate and bone morphogenetic protein. Clinical parameters (Plaque index, Gingival index, width of keratinized mucosa, attachment level and the pink esthetic score) were recorded at 3, 6 and 12 months postoperatively. Radiographic evaluation was done at baseline, 6, 12 months post-surgery
Results: The results demonstrated that, all patients showed an excellent tissue healing response with no adverse complications. Comparison of plaque index, gingival index, width of keratinized mucosa and attachment level at different periods of follow up were not found statistically significant. Radiographic analysis revealed that there was statistically significant differences in the linear distance from the implant shoulder to the first visible alveolar bone contact (BID) and mean value of gray level in the selected region of interest (ROI) at all follow up periods.
Conclusion: Addition of bone morphogenetic protein was advantageous in improving of osseointegration around dental implants in fresh extraction sockets of periodontally affected teeth.

FC325
Predictable Guided Bone Regeneration in the Aesthetic Zone
Dimitrios Zabaras
Higeia Hospital, Athens, Greece

Aim: The aim of the presentation is to compare the rehabilitation of vertical and horizontal bone defects treated with implants with different techniques of Bone regeneration.
Material and methods: Fourteen cases were selected of Guided Bone regeneration dealing with vertical and horizontal defects in severe and very severe cases. Two cases treated vertical defects, four treated horizontal defects. In two cases there is a comparison of bone regeneration with bone block vs. bone chips. In four cases there is the comparison between the use of resorbable and non resorbable membranes with autologous bone graft.Two cases with failed GBR are presented and causes of failure analyzed.
Results: The complete bone fill of a bone defect is related to the proper case selection and the proper selection of bone materials (autologous, allografts, xenografts), membranes (resorbable, non resorbable) and surgical techniques.
Conclusion: Guided bone regeneration is closely associated to implants. It is predictable in most cases but clinical details have to be carefully evaluated and handled.

FC326

Impact of Citric Acid Etching on Biocompatibility and Osseous Organisation of a Natural Bovine Bone Mineral

Daniel Rothamel, Tim Fienitz, Berndsen Kathrin, Arndt Happe, Joachim Zoeller
Department of Oral and Maxillofacial Plastic Surgery, Univeristy of Cologne, Cologne, Germany

Aim: Within the last years it was shown that etching of biomaterials can improve hydrophilicity, cell proliferation and osseointegration. The aim of the present study was to evaluate the influence of superficial etching of a xenogenous bone mineral on cell proliferation and bone regeneration.
Methods: A granular bone substitute material (BSM) (BEGO OSS ® [BO], BEGO Implant Systems, Bremen, Germany) was superficially etched using citric acid (BEGO OSS acid [BOA]). Surface alterations were evaluated using SEM imaging. BO and BOA were incubated with 1 × 10E4 human osteoblast-like cells (SaOs-2). After 2 h, 3 and 7 days, cell proliferation was measured (n = 8) and analyzed for statistical difference. Cell morphology was investigated using SEM (n = 3). In the in-vivo part, BO and BOA granules were used for lateral augmentation of the maxillae of four beagle dogs and covered with a collagen membrane. Healing periods were 3 and 8 weeks (n = 2, respectively).
Results: In-vitro evaluation revealed statistically significant higher cell proliferation after 3 and 7 days on BOA compared to BO ($p < 0.05$, Wilcoxon test). SEM observation presented flat and star-shaped SaOs-2-osteoblasts displaying high numbers of lamellopodia. In vivo, both BSM showed osteoconductive properties and osseous organisation after 8 weeks. Hereby, the interconnection between the newly formed bone and BO seemed to be more accentuated than for BOA.
Conclusion: Within the limits of the present study it was concluded that superficial etching of natural bone minerals using citric acid may support osteoblast-like cell proliferation. Further studies are necessary to specify the impact on bone regeneration.

Theme: Implantology: Oral Surgery

FC327

Effectiveness of Diode Laser in Reducing Postoperative Complications

Cennet Neslihan Eroğlu[1], Serap Keskin Tunç[1], Ersen Bilgili[2], Sadi Elasan[3]
[1]*Department of Oral and Maxillofacial Surgery, Yuzuncu Yıl University, Van, Turkey,* [2]*Department of Oral Diagnosis and Radiology, Yuzuncu Yıl University, Van, Turkey,* [3]*Department of Biostatistics, Yuzuncu Yıl University, Van, Turkey*

Objective: The aim of this study is to find the answer of "What is the effect of diode laser at biostimulation dose on postoperative complications after oral surgery?" question.
Materials and methods: Twenty healthy patients who have bilaterally, symmetrical impacted lower third molars and need surgical removal of these teeth were included the study. The side which was operated on first was allocated randomly as was the "placebo group" or "irradiated group". For irradited group, each patient was given low dose laser-called as biostimulation dose- with continous, 2.75 Watt power density and 940 nm wavelength for 15 s after the operation. For the other side which was named as "control group", no energy was given. Each patient was evaluated preoperatively, 48 h postoperatively and 7th day after operation for the assessment of pain, swelling and trismus. Statistical analysis was based upon the comparison between groups using Wilcoxon test.
Results: Clinically, both groups demonstrated similar results. Furthermore, there was no statistically significant difference between the groups on postoperative complications.
Conclusion: There was no benefit of diode laser therapy on postoperative complications. There is the possibility that efficacy of laser therapy may be dose dependent and that a longer exposure should have been given several times during the postoperative period.

FC328

Efficacy of Taking Buprenorphine Sublingual Tab on Postoperative Analgesia in Mandibular Third Molar Surgery

Bahman Derakhshan[1], Rebecca Menasheof[2], Ebrahim Rahnama[1], Maral Amiri[1]
[1]*Department of Oral and Maxillofacial Surgery, International Campus of Tehran University of Medical Sciences, Tehran, Iran,* [2]*Department of Oral and Maxillofacial Surgery, Qazvin University of Medical Sciences, Qazvin, Iran*

Background: Surgical removal of impacted third molars in one of the most common surgical procedures in dentistry.This procedure needs an effective analgesic to relief the post-operative pain.
Purpose: To assess effect of Buperenorphine sublingual tab on post-operative analgesia after mandibular third molar surgery.
Materials and methods: Forty-six cases were enrolled in this randomized, double blind clinical study and were randomly assigned in to two groups based on the sublingual pearl received. Patients in group 1 received 0.2 mg sublingual Buprenorphine and those in group 2 received placebo.To assess the quality and duration of post-operative analgesia, patients were asked to record their pain experience on VAS (visual analog scale) and NRS (numeric rating scale) every hour for the first 10 h at 12, 24, 36 and 48 h after surgery.In the event of poor pain control, patients were permitted to take escape analgesia (acetaminophen 500 mg).Pain intensity, duration of post-operative analgesia and the number of escape analgesia required were recorded. Patients were questioned about any probable side effects. Student *T*-test and Pearson correlation were used for statistical analysis.
Results: Patients received Buprenorphine experienced significantly less pain during the first 3, 4 and 5 h.These was no significant difference between two groups in duration of post-operative analgesia but the number of escape analgesia used was less in patients received Buprenorphine, according to the present results, there was significant and strong correlation between VAS and NRS scores.
Conclusion: Taking 0.2 mg sublingual Buprenorphine before surgical removal of impacted lower third molar may reduce the postoperative pained the number of required analgesics.

Free Communication Session 51 | B332 | 31.08.2013 | 11:30–12:30

Theme: Dental Treatment & Restorative Dentistry: Prosthetics

FC329

Problems Associated with Thermoplastic Resins for Non-Metal Clasp Removable Partial Dentures

Stavros Yannikakis[1], Nick Polychronakis[2], Alcibiades Zissis[2]
[1]*Department of Dental Technology, Technological Educational Institution of Athens, Athens, Greece,* [2]*Department of Prosthodontics, School of Dentistry, University of Athens, Athens, Greece*

Purpose: To identify problems associated with thermoplastic resins for non-metal clasp removable partial dentures.
Material and methods: Questionnaires were given to twelve dental laboratories with more than 15 employees in Athens, Greece. Two of these labs were specialized in the fabrication of non-metal clasp removable partial dentures made by thermoplastic resins such as polyamide, polycarbonate or polyethylene terephtalate material. The rest ten labs were operating in the wider spectrum of Prosthodontics. The questionnaires supplied were related to problems and after usage repairs of non-metal clasp removable partial dentures made by thermoplastic flexible resins.
Results: The most common need for repair was the loss of an abutment tooth (50%), followed by the need for rebasing due to loss of the fit (20%). Staining, surface roughness, bad odor, tooth debonding were some more drawbacks associated with that kind of prostheses.
Conclusions: Non-metal clasp removable partial dentures made by thermoplastic flexible resins provides patients with improved esthetics and comfort but having the disadvantages of lucking stability-support create bone resorption and forces and moments at the abutment teeth. Moreover staining, surface roughness, bad odor, tooth debonding, are some additional drawbacks. A very careful treatment plan and perhaps metal framework (except clasps) reinforcement is needed in order this kind of prosthesis to be used.

FC330

Prosthetic Treatment Needs of Partially and Completely Edentulous Patients

Sinem Ok, Kübra Yıldız, Burcu Erenler, Coşkun Yıldız, Yasemin Kulak Özkan
Department of Prosthodontics, Marmara University, Istanbul, Turkey

Objective: The aim of this study is to evaluate the removable partial denture and complete denture needs and relationship between prosthodontic treatment, gender, frequency of patients during the period of 2008–2012.
Material and methods: This study was performed on 3453 patients who were applied to the Department of Prosthodontics, Faculty of Dentistry, Marmara University. Gender, prosthodontics treatment were recorded. Thousand three hundred and thirty-seven complete dentures (401 men, 937 women), 2116 partial dentures (852 men, 1264 women) were recorded.
Results: The frequency of complete dentures is %38 of all and rest of them are removable parital dentures. The frequency of RPDs among men is 40%, 60% of women. The frequency of complete dentures among men is 30% and 70% of women. The prosthetic requirement of patients decreases by mean of years. The denture requirements for women are in higher prevalent.
Conclusion: All types of partial dentures and complete dentures are highly prevalent. On the other hand the numbers of dentures decrease in these 5 years long. A higher frequency of partial and complete dentures are highly prevalent in women.

FC331

Prosthodontics Rehabilitation for the Elderly with Severe Tooth Wear

Teh Adilla Mustaza
Centre of Studies for Restorative Dentistry, Faculty of Dentistry, Universiti Teknologi MARA, Shah Alam, Selangor, Malaysia

Aim: Oral rehabilitation of severely worn dentition in geriatric patients requires special consideration to address the ever-increasing restorative challenges presented by the elderly, including erosion, abrasion, demineralization, rampant coronal and root caries, retained roots, recurrent caries (necessitating crowns and other repairs), subgingival caries, salivary dysfunction, disruptive behaviours, poor compliance with preventive care, high plaque levels, financial and other restrictions on care options.
Case: This case report describes the prosthodontics management of an elderly patient who presented with generalised severe tooth wear of his upper and lower teeth. He also had multiple missing teeth, with a deep and complete overbite. A full-mouth rehabilitation using a reorganised approach at an increased occlusal-vertical dimension (OVD) was completed. Restoration of the lower anterior dentition was undertaken using composite build-ups and a resin retained bridge. The upper anterior dentition was severely attrited, thus they were prepared for overdenture abutments. The missing upper and lower posterior dentition was restored with partial dentures. A very good aesthetically-pleasing result was achieved, with the fixed and removable restoration showing natural and harmonious integration with the surrounding dentition. By using the patient's upper anterior endodontically treated roots as overdenture abutments, pathological development of flabby ridges or combination syndrome could be avoided. The upper partial denture was also made with acrylic for possible addition of acrylic teeth in the future (can easily be converted into a complete denture).

FC332

Proximal-Box Dimensions Software for FRC Prosthesis: a Finite Element Analysis

Mahkameh Chegini[1], Niloofar Moharrami[1], Seyyed Mohammad Ebrahim Mousavi Sajjad[1], Sina Mohajeri[2]
[1]*Department of Prosthodontics, Qazvin University of Medical Science, Qazvin, Iran,* [2]*Sharif University of Technology, Tehran, Iran*

Purpose: This study aimed at evaluating the performance of an innovative software, which identifies the ideal dimensions of the

proximal boxes of posterior fiber reinforced composite (FRC) inlay, fixed dental prosthesis (FDP) using finite element analysis (FEA).
Material and methods: Two FRC inlay FDP specimens differentiated by their proximal box dimensions: proximal box software dimensions (PBSD) and the conventional dimensions (CD) were constructed. A 3D scan of the specimens were captured using cone beam computed tomography and by transferring the images to the Abaqus FEA, two 3D finite element models were designed. Then the stress distribution was tested after applying a vertical load of 600 N to the occlusal surface of the pontics.
Results: Based on FEA images the maximum stress detected to be on axiopulpal line angle in the PBSD model and on gingival cavosurface of the CD model. For other locations the stress distribution was found to be equal.
Conclusions: The software processed dimensions offer the optimum moment of inertia, and maximum bounding surface area for the FDP and minimum sound tooth loss of the pontics comparing to CD, which results in more pulp protection and preservation of tooth structure. Comparison of the stress distribution patterns and the maximum stress points between the two models, offers that PBSD leads to more marginal integrity. Based on the factors that have been considered in programing the software and the result of the current study, this software can be suggested as a guidance in preparing FRC inlay FDP proximal boxes.

FC333
Quality of Life Assessment in Patients with Facial Prosthesis
Banu Karayazgan Saraçoğlu[1], Yumushan Gunay[2], Arzu Atay[2]
[1]*Private Practice, Istanbul, Turkey,* [2]*Gulhane Medical Academy, Haydarpasa Training Hospital, Dental Service, Istanbul, Turkey*

Aim: A loss in the face has a functional and psychosocial impact on a patient's life. Self-image constitutes a personality structure that affects mental life and attitude and is a predictor of the general life satisfaction and the quality of life. The aim of this research was to assess mental health status and quality of life of these patients with facial defects.
Material and methods: Seventy-four patients with auricular, orbital, nasal and midfacial defects were examined. General Health Questionnaire and Self-Acceptance Scale were used to assess these patients' mental health and self acceptance before and after the fabrication of their prosthesis. Additionally, all subjects were asked to respond on a VAS scale for the assessment of their defect and current prosthesis.
Results: According to the patients' responses, the implant group reported higher positive ratings when compared with the adhesive group. Gender, age and defect etiology were found to have significant correlation with the general satisfaction of the patients.

There were statistically significant differences in the assessment of mental health and quality of life, depending on the level of self-acceptance. Both the implant and adhesive group rated their prosthetic treatment worthwhile and indicated that they would recommend this treatment to other people.
Conclusions: Implant-retained prostheses provide improved perceptions of quality of retention, ease of placement and removal, compliance and overall treatment satisfaction when compared to adhesive-retained prostheses.

Free Communication Session 52 | B342 | 31.08.2013 | 11:30–12:30

Theme: General Dentistry and Oral Health

FC334
The Effect of Grape Seed Extract on Human Eroded Teeth
Mahkameh Mirkarimi[1], Saeide Sajedi[1], Abbas Delazar[2]
[1]*Department of Pediatric Dentistry, Zahedan University, Zahedan, Iran,* [2]*Department of Pharmacy and Drug Applied Research Center, Tabriz University, Tabriz, Iran*

Aim: The aim of this in vitro study is evaluating the effect of Grape Seed Extract on dental erosion in permanent teeth.
Material and methods: Twenty sound human premolar teeth were selected. Enamel was completely removed by disk. Teeth were sectioned buccolingually and assigned for microhardness and profilometery tests randomly. All the teeth were placed in Cocacola (PH = 2.8) for 5 min and the microhadness and surface roughness were determined in related groups, then teeth were allocated in two groups randomly (n = 10). In group 1 teeth were immersed in GSE (6.5% w/v) for 1 min and in group 2 the same procedure was done for 5 min. The microhardness and surface roughness values were determined again. The results were analyzed by Repeated measured ANOVA test.
Results: The mean ± SD for group 1 before and after intervention were 45.6 ± 2.04 and 47.6 ± 2.44 accordingly and the difference was significant ($p < 0.05$), and in second group there were 50.09 ± 4.9 and 53.63 ± 5.81 accordingly and the difference was statistically significant ($p < 0.05$). There was no significant difference between two groups ($p > 0.05$). Surface roughness values for group 1 were 0.274 ± 0.196 and 0.282 ± 0.085 before and after intervention. In group 2 there were 0.185 ± 0.077 and 0.165 ± 0.066 in sequence and there was not statistically significant differences in each group as well as between two groups.
Conclusions: GSE increased dentin microhardness values in eroded dentin in both one and 5 min duration, and there was not differences between mentioned durations. GSE had no effects on surface roughness in studied groups.

FC335
Effect of Religious Music on Anxiety Level During Dental Extraction
Tantry Maulina[1], Nina Djustiana[2], Muhammad Nurhalim Shahib[3]
[1]*Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, University of Padjadjaran, Bandung, Indonesia,* [2]*Department of Oral Biology, Faculty of Dentistry, University of Padjadjaran, Bandung, Indonesia,* [3]*Professor at Faculty of Medicine, University of Padjadjaran, Bandung, Indonesia*

Aim: The aim of this study is to investigate the effectiveness of religious music in decreasing anxiety level during dental extraction, as dental extraction is one of dental procedures that can

potentially induce dental anxiety that can led to unsucessful procedure

Material and methods: Eighteen subjects aged 19–45 years old, recruited in this study (7 males; 11 females) and divided randomly to one of the following groups: group that listened to classical music (treatment group 1), group that listened to religious music (treatment group 2), and group with no music intervention (control group). All extraction procedures was performed on upper molar region in respect to consistency of difficulty level. Noradrenaline plasma level was used as the indicator of anxiety level and measured by taking blood sample prior to and after the extraction procedure. Statistical Analysis was performed by using ANOVA or Kruskawallis test based on the result of Normality test.

Results: There were no significant differences found between the treatment group 1 compared to control group ($p = 0.22$) and between treatment group 2 compared to control group ($p = 0.32$), despite of the decreased noradrenaline plasma level showed in the treatment groups. There was no significant difference found between treatment group 1 and treatment group 2 ($p = 0.78$) despite of the lower noradrenaline plasma level in group 2 compared to group 1.

Conclusion: Religious music is proven to be effective in decreasing dental anxiety despite of the insignificant results. Nevertheless, further studies are needed.

FC336

Measurement of Anxiety Levels in Dental Patients

Hasan Mehdi Zaidi, M Faizan Syed, Sara Ikram Khan, Kishwer Naz Siddiqui
Department of Oral Surgery, Fatima Jinnah Dental College, Karachi, Pakistan

Introduction: The behavioral sciences have become an increasingly important component of dental education and research. Fear of dentists and dentistry is a common and potentially distressing problem, both for the public and for community dental practitioners. Anxiety can be defined as a state of unpleasantness with an associated fear of danger from within or a learned process of one's own environment Anxiety related to dental treatment is a fairly common phenomenon. It is a problem in dentistry, and a notable factor in the avoidance of dental care.

Objective: Main objective was to measure the anxiety levels of patients coming to a dental OPD/Teaching Hospital by using Norman Corah's Anxiety Scale.

Material and methods: Dental anxiety was estimated using Corah's Dental Anxiety Scale (DAS). A total of 166 patients completed the questionnaire regarding their anxiety level and were included as a part of this study.

Results: Forty-one percent of the patients belonged to age group of 5–24 years, 37% to age group of 25–39 years, 22% belonged to age group of 40–75 years. Mean anxiety score was recorded as 9.26 ± 3.6.

Conclusion: In conclusion an understanding of how anxious patients are when they undergo dental treatment would aid dentists' efforts to improve patient care.

FC337

Do saliva Substitutes Have a Preventive Effect on Enamel Erosion?

Arzu Aykut Yetkiner[1], Annette Wiegand[2], Thomas Attin[2]
[1]*Faculty of Dentistry, Department of Pediatric Dentistry, University of Ege, Izmir, Turkey,* [2]*Clinic for Preventive Dentistry, Periodontology and Cariology, University of Zurich, Zurich, Switzerland*

Objective: To investigate the effect of saliva substitutes on enamel erosion in vitro.

Material and methods: A total of 204 bovine enamel samples were embedded in acrylic resin and allocated to 17 groups ($n = 12$). The specimens were eroded in an artificial mouth (3 days, 6×30 s/day, flow rate: 2 ml/min) using citric acid (pH: 2.5). Immediately after the erosive attacks, saliva substitutes (12 sprays, 3 gels) were applied. Between the erosive cycles, the specimens were rinsed with artificial saliva (flow rate: 0.5 ml/min). A SnCl2/AmF/NaF-containing mouthrinse was used as positive control, water spray served as negative control. Enamel loss was measured profilometrically and the data were analysed using one-way ANOVA followed by Scheffe's post-hoc tests ($p < 0.05$).

Results: Four saliva substitutes increased enamel erosion, probably due to the low pH or the content of citric acid. Several saliva substitutes were able to reduce enamel erosion significantly by 60–90% (in the range of the positive control). The protective potential of these products was in the range of the positive control (reduction of enamel loss to 30% of negative control). The erosion-protective potential of these high-viscous products is probably related to their film-forming properties, leading to a mechanical protection of the surface.

Clinical significance: It can be recommended that patients suffering from xerostomia and at high risk for dental erosion should use high-viscous saliva substitutes, but should avoid saliva substitutes with low pH or containing citric acid.

FC338

The Incidence and Prevalence of Edendulous in Moldavia According with International Status

Magda Ecaterina Antohe[1], Doriana Forna[1], Cristina Gena Dascalu[2], Norina Consuela Forna[1]
[1]*Prosthodontic and Implantology Departement,* [2]*Bistatistics Departement*

The proper rehabilitation of the partially extended edentulous patient should lead to a state of balance between the elements of the stomatognathic system and the therapeutic option selected, for a period of time as long as possible.

Aim: Through the present study we aim at outlining the importance of a general biological perspective on the entire organism, the interrelation between the organism and the stomatognathic system and the necessity of a complex rehabilitation in view of reaching positive and long lasting balance.

Material and methods: Three thousand three hundred and forty individuals from the urban and rural areas of Iasi were evaluated.The modality of evaluation was the correlation of the clinical exam with the data from the specially drafted questionnaire in

view of determining the behavioral pattern regarding the oral health, a sine-qua-non condition for a clear reflection of the oral pathology that is specific to the environment of origin.
Results: With regard to the general condition of the investigated subjects, one can notice a prevalence of a poor general condition in the urban area in proportion of 72.1% as compared to 27.9% in the rural area. The first position in the sphere of general affections is taken by cardiovascular diseases, in both environments, the higher percentage belonging to the urban area.
Conclusions: We need to underline the fact the we need continuity with regard to the prophylaxis of the general and oral condition, the necessity for sanitary education being an essential condition for the increase of the degree of population's health.

Free Communication Session 53 | B343 | 31.08.2013 | 11:30–12:30

Theme: Dental Treatment & Restorative Dentistry: Endodontics

FC339
Dentin Matrix Proteins (DMPs) Enhance Differentiation of BMMSCs via ERK and P38 MAPK Pathways
Guangdong Zhang, Yan Yu, Yujiao Jiang, Lijuan Wang, Jinhua Yu
Institute of Stomatology, Nanjing Medical University, Jiangsu, China

Aim: Dentin, the predominant mineralized tissue of the tooth, comprises an extracellular matrix of collagen and a heterogeneous mixture of non-collagenous components many of which have cellular signaling properties. These properties may be important in signaling stem cell involvement in tissue regeneration following injury and the present study investigates their morphogenic effects on differentiation of Bone Marrow Stromal Stem Cells (BMMSCs) in vitro and in vivo.
Methods: Non-collagenous dentin matrix proteins (DMPs) were isolated from healthy human teeth and their effects on BMMSCs behaviour examined during in vitro culture and after transplantation in vivo with hydroxyapatite-collagen sponge scaffolds. In vitro,
Results: DMPs enhanced alkaline phosphatase activity and mineralization in BMMSC cultures as well as increasing the expression of dentinogenic and osteogenic differentiation markers (including runt-related transcription factor 2, osterix, bone sialoprotein, dentin sialophosphoprotein and osteocalcin) at both transcript and protein levels with 10 μg/ml DMPs being the optimal stimulatory concentration. In vivo, DMPs implanted with a hydroxyapatite (HA) carrier gave rise to deposition of collagen fibrils perpendicular to the implant surface when viewed by polarised light microscopy, an arrangement resembling that of dentin-pulp. In contrast, control HA carrier in the absence of DMPs led to deposition of collagen fibrils parallel to the carrier surface reflecting a more bone-like morphology. Expression of phosphor-ERK/phosphor-P38 in BMMSCs was up-regulated by DMPs and in the presence of the ERK1/2 and p38 specific inhibitors, the differentiation of BMMSCs was inhibited.
Conclusions: These data indicate that DMPs promote the dentinogenic/osteogenic differentiation of BMMSCs via the ERK/p38 MAPK pathways.

FC340
Evaluating of Push-Out Bond Strength Between Composite core Build Up and Fiber-Reinforced Posts After Different Surface Treatments
Hakan Arslan[1], Cagatay Barutcigil[2], Cenk Burak Yılmaz[3], Kadir Tolga Ceyhanlı[4], Hüseyin Sinan Topcuoglu[5]
[1]*Department of Endodontics, Izmir Katip Celebi University, Izmir, Turkey,* [2]*Department of Restorative Dentistry, Akdeniz University, Antalya, Turkey,* [3]*Department of Prosthodontics, Ataturk University, Erzurum, Turkey,* [4]*Department of Endodontics, Karadeniz Technic University, Trabzon, Turkey,* [5]*Department of Endodontics, Erciyes University, Kayseri, Turkey*

Aim: The aim of this study was to evaluate the effect of different surface treatments on bond strength of fiber reinforced post to composite resin core.
Methods: Twenty-five translucent glass fiber posts were divided into five groups according to the surface treatment methods as follows; untreated control group, coated with silicated alumina particles (Co-Jet system, 3M ESPE), surface preparation with Er:YAG laser under three different power settings (of 150, 300 and 450 mJ, at 10 Hz for 60 s with 100 μs duration). Fiber post was built-up a dual cure composite resin core. All specimens were set and sectioned perpendicularly to the long axis of the post with saw. Two discs (2- mm thickness) were obtained from each post/core sample, finally each group consisted ten samples. Push-out tests were performed with a universal testing machine at a cross-head speed of 0.5 mm/min. The MPa values were analyzed with one-way ANOVA and Tukey HSD post-hoc test ($p < 0.05$). Fiber post surface images were obtained with SEM.
Results: The bond strength values range between 14,949 to 23,879 MPa. The lowest value observed in the Er:YAG laser 150 mJ groups. The Er:YAG laser 450 mJ irritation was effected the bond strength significantly ($p < 0.05$). After Co-Jet sandblasting, the bond strength relatively increased (19,184 MPa).
Conclusion: The Er:YAG laser application enhanced the bond strength of fiber reinforced post to composite resin core with regard to power setting as well as Co-Jet sandblasting.

FC341
Efficacy of Photo-Acoustic System on Calcium Hydroxide Removal
Cihan Yıldırım[1], Emrah Karataşlıoğlu[1], Fatma Güller[1], Yeşim Ayla[2], Aslıhan Üşümez[3]
[1]*Department of Endodontics, Gaziantep University, Gaziantep, Turkey,* [2]*Department of Endodontics, Bezmialem Vakif University, Istanbul, Turkey,* [3]*Department of Prosthodontics, Bezmialem Vakif University, Istanbul, Turkey*

Aim: The aim of this study was to evaluate the photo-acoustic efficacy of Er:YAG laser to remove the calcium hydroxide from an artificial standardized groove in the apical root canal.
Methods: Forty eight single rooted maxillary incisors were prepared to size 50 and split longitudinally. In one half of the root, a 4 mm standard groove was prepared on the canal wall. The groove was then filled with a Ca(OH)2 paste. The roots were reassembled and divided into four groups (n = 12). Group 1: syringe

irrigation with saline, Group 2: syringe irrigation with sodium hypochlorite (NaOCl- 3%), Group 3: syringe irrigation with EDTA (17%), Group 4: irradiated with Photon Initiated Photoacoustic Streaming (PIPS) that presupposes an Er:YAG laser. Twenty millilitre irrigants was used in each group for 5 min. The quantity of remaining Ca(OH)2 in the groove was scored and the data analysed with Kruskal–Wallis test.

Results: Our results revealed that removing Ca(OH)2 from artificial standardized groove with different irrigation methods showed no significant differences between groups ($p > 0.05$). None of the techniques used in this study removed the Ca(OH)2 effectively from an artificial standardized groove.

Conclusion: There was no superiority of PIPS on the other methods to remove Ca(OH)2 from artificial standardized groove.

FC342

Obturation with Single Cone ProTaper Universal Gutta Percha and Glass Ionomer on Mesial Drifted Second Molar

Ali Golmoradizadeh

Research Center for Social Determinatates in Health Promotion, Hormozgan University of Medical Sciences, Bandarabbas, Iran

Aim: Supporting the overlying restoration with the least amount of shrinkage and good adaptation to dentin walls, and used as a luting agent for post and core restoration and was found to coat and Protect the apical cone from micro leakage are the characters of Glass ionomer, So we decided to use it in this study.

Case: This is a study case that we save a tooth with root canal treatment in difficulty condition and situation and also use a new method to seal a canal with single cone protaper universal gutta percha and glass-ionomer as sealer. An 18 year old patient complained of severe pain on the tooth#37, Radiograph examination shows; Mesial inclination of tooth#37 towards the crown of tooth #35 was noted and 3rd molar unerupted, treatment plan was root canal treatment and endodontic treatment after wards.in this case we used the pro taper technique and single cone gutta percha and glass ionomer as sealer for obturation.

Results: Final radiograph shows that every four canals are completely seal no void and the canals that properly shaped with protaper files are filled appropriately.

Conclusions: Sealing the gutta percha with Glass-Ionomer Cement gave the clinician the confidence that the obturated canal is protected from possible microleakage coronal to apical.

Free Communication Session 54 | B360 | 31.08.2013 | 11:30–12:30

Theme: Preventive Dentistry: Epidemiology

FC343

Incedence of White Spot Lesion among Patients Treated With Self Ligating and Conventional Brackets

Mehmet Akın, Mucella Tezcan, Zehra Ileri, Faruk Ayhan Basciftci

Department of Orthodontics, Selcuk University, Faculty of Dentistry, Konya, Turkey

Aim: To investigate the incidence of WSL and its relationship with various patient and treatment variables in patients treated with self-ligating and conventional preadjusted edgewise-orthodontic bracket systems.

Material and methods: Two hundred randomly selected patients' records (136 female, 64 male) for self-ligating group and two hundred randomly selected patients' records (108 female, 92 male) for conventional group were examined to determine WSL development. In self-ligating group Damon3MX (Ormco, Glendora, Calif) and in conventional group Equilibrium2 (Dentaurum, Phorzeim, Germany) brackets had been used. Labial surface of 24 teeth on pretreatment and post treatment photographs records were scored with WSL index.

Results: The incidence of patients who developed at least 1 WSL before treatment 19% and after treatment 49% in self-ligating group and 54% in conventional group. Before treatment patients have only mild WSL but after treatment development of severe WSL and cavitation were increased in both groups (Kappa value = 0.263 in self-ligating group and 0.051 in conventional group). Brackets type, age, and hygiene care were significantly associated with new WSL development ($p = 0.008$, $p = 0.004$, $p = 0.013$, respectively). Sex was not associated with WSL development ($p > 0.05$) but incidence of WSL in girls higher than boys.

Conclusion: With only standardized photographic measures, the incidence of WSL in patients treated with comprehensive orthodontics was significantly high. Brackets type and especially hygiene care therapy provided appeared to be effective on development of new WSL. Ligation can be effected on plaque accumulation and thereby new WSL development in conventional brackets system.

FC344

Periodontal Status and Adiposity Status among 12-Year-Old Children in a Population-Based Sample

Colman Mcgrath, Simin Peng, Haiming Wong, Nigel King

The University of Hong Kong, Hong Kong, China

Objective: To investigate the association between periodontal health status and adiposity status among children in a population-based study.

Methods: A random sample of 668 12-year-old school children in Hong Kong SAR, China was recruited. Periodontal status was recorded using the Community Periodontal Index (CPI). Body height, body weight, waist circumference (WC), hip circumference, and triceps skinfold thickness (TRSKF) were performed to assess the adiposity statuses [weight-height ratio (W/H) and body mass index (BMI) for general adiposity; WC and waist-hip ratio (WHR) for central adiposity; and TRSKF for peripheral adiposity]. The relationships between periodontal status and W/H, BMI, WC, WHR, TRSKF were examined in bivariate and regression analyses.

Results: The response rate was 76.9% (n = 514/668). Most (85.0%, n = 437) had an "unhealthy" periodontal status (CPI score >0). Logistic regression analyses identified that WC z-score was associated with "unhealthy" periodontal status in the unadjusted model (OR 1.35, 95% CI 1.03, 1.78, $p = 0.03$) and in the adjusted model (OR 1.33, 95% CI 1.01, 1.76, $p = 0.04$), accounting for tooth brushing habit and socio-demographic factors.

Conclusions: Periodontal status was associated with central adiposity (as assessed by waist circumference) among a population-based sample of 12-year-old children in Hong Kong.

FC345

Prevalence of Tobacco Related Oromucosal Lesions in South Indian Population

Krishna Priya Mallikapuram[1], Srinvas Pachava[2], Devaki Talluri[2], Sivakumar Pydi[2]

[1]*Inderprastha Dental College and Hospital, Gaziabad, Uttar Pradesh, India,* [2]*Sibar Institute of Dental Sciences, Guntur, Andhra Pradesh, India*

Aim: To assess the prevalence of tobacco related oral-mucosal lesions among population of an urban area in a South Indian State and to establish the baseline data.

Material and methods: A cross-sectional study was conducted in an Urban area of South Indian State, Andhra Pradesh on 300 subjects using modified 1980 WHO form. The study period was August to October 2012. Prior Permission was obtained from institutional review board (IRB) and informed consent from the study subjects. Subjects were selected using Stratified Systematic Random sampling technique. The urban area which was selected for the study was stratified into four zones i.e., north, south, east and west.Two wards were selected randomly from each zone. Thirty sevn to 38 subjects from each ward were included in the study using systematic random sample. The kappa coefficient for intra examiner variability is 0.8. Pearson Chi-square test was used to test the significance. SPSS version 19.0 was used for analysis with 0.05 as cut-off level for statistical significance

Results: Prevalence of leukoplakia was more in smokers (31%) than in subjects with chewing habit (5%). Oral Submucous fibrosis was observed in 16% of the subjects with chewing habit and none in smokers. Both leukoplakia (8%) and oral submucous fibrosis (25%) were reported in subjects with combined tobacco and alcohol habit.

Conclusion: Leukoplakia and oral submucous fibrosis were the frequently encountered lesions in tobacco users. The findings from this study can be used to design Case–Control and Cohort studies to further investigate the relation between these habits and oral lesions.

Theme: General Dentistry and Oral Health

FC346

Effective Communication in Daily Dental Practice

Ioulia George Kontopoulou[1], George Ioannis Rozos[2], Grigoris Karimalis[3]

[1]*Private & Public Sector Dental practitioner,* [2]*South Aegean Administration,* [3]*American College of Greece*

Aim and Purpose: Effective Communication is a trend in modern dental practice, particularly in cases where the consent of the patient is needed. Not all dentists are aware of that and many of them tend to underestimate its importance. The aim of this study is to investigate the parameters which determine the level of communication in dental practice.

Material and methods: A questionary was formulated with multiple choice questions and sent via e-mail to dentists in the greater area of Athens, Greece. Answered questionnaires were submitted anonymously to the authors and then were statistically processed.

Results: The importance of communication in the dental practice was found to be dependant on factors such as the age, gender of the dentist, the existence or not of post graduate title, the educational and financial status of the patient, the kind of dental procedure (e.g. aesthetic dentistry, implants etc) and other factors. The majority of dentists lack communicational skills and communicational means. The fiscal and financial stagnation in Greece greatly limits the communicational opportunities of the dentists.

Conclusions: In the modern landscape of scientific dental advances and professional competition, effective communication skills are not a luxury but a rational necessity. Modern technology has more than ever equipped general population with the right to evaluate, in terms of legitimacy, morality and scientific competitiveness of health professionals. Dentists must be prepared and welcome the challenges launched under these circumstances, for the sake of their sustainability into this new era of aimed health care excellence.

FC347

The Relationship between Dental Fear, Dental Anxiety and Back Depression

Tuba Talo Yıldırım[1], Filiz Acun Kaya[2], Tuba Orhan[3], Ersin Uysal[4]

[1]*Department of Periodontology Clinic Diyarbakir Mouth ANF Tooth Health Center, Diyarbakır, Turkey,* [2]*Department of Periodontology Clinic, Dicle University, Diyarbakır, Turkey,* [3]*Diyarbakir Mouth ANF Tooth Health Center, Diyarbakır, Turkey,* [4]*Department of Computer Tech. Programs, Diyarbakir Vocational School, Dicle University, Diyarbakır, Turkey*

Aim: The aim of this study was to evaluate and explore the relationship between the levels of dental anxiety, dental fear and back depression and a number of demographic variables, among patients who applied to the clinics of mouth and tooth health center.

Method and materials: This study is done with 231 patients applied between years of 2011–2012. Patients were asked to complete a questionary consisting of the Dental Anxiety Scale (DAS), Dental Fear Scale (DFS), back depression scale (BDS) and questions about age, gender, marital status. The patients were grouped according to gender, marital status. And divided into six age categories. Statistical analysis was made by parametric tests, one way ANOVA, independent test. Also Pearson correlation analyse was made.

Results: The mean DAS score was 10.59 (SD 3.37) for women, 7.65 (SD 2.42) for males, and DFS score was 53.26 (SD 16.7) for women and, 37.57 (SD13.7) for males. There was statistically significant difference between the mean DAS, DFS scores among age groups ($p < 0.05$). The mean BDS score was 16.34 (SD13.1) for women, 9.13 (SD 8.49) for males. There was statistically significant difference between the mean BDS scores of age groups ($p < 0.05$). There was statistically significant difference between

the mean DAS, DFS ve BDS scores of marital status ($p < 0.05$).Also correlation was found between DAS, DFS and BDS scores.
Conclusion: Acording to our study results, there was correlation between patients general psychological emotion and DAS and DFS. Youngs and women had had higher scores.

POSTERS SESSION 04 (P628–P834)

Theme: Dental Treatment & Restorative Dentistry: Caries

P628
Prevalence and Occurrence of Bilateral Caries in First Permanent Molars in 12 Year Old
Erum Rashid, Ayesha Rashid, Tasneem Hosein, Saqib Rashid, Virsha Naseem Butt, Fahmeena Asghar
Department of Operative Dentistry, Fatima Jinnah Dental College, Karachi, Pakistan

Aim: The objective of this study was to find out the prevalence of bilateral and unilateral caries in mandibular and maxillary 1st permanent molars in 12 years old, and to compare them with reference to gender and age.
Methods: The study was conducted at Fatima Jinnah Dental College over a period of two (02) years. A convenient sampling method was used to select samples. DMFT levels in a total of 220 respondents were examined. A customized questionnaire was used as data collection tool.
Results: The caries found were bilateral. Among the respondents it was found that there was a more frequent occurrence of carious lesions in mandibular 1st molar as compared to maxillary 1st molar.
Discussion: The study proved that there is equal prevalence of carious lesions in both genders.

P629
Microleakage in Resin Composite Restorations after Antimicrobial Pre-Treatments: Effect of KTP Laser, Er-YAG Laser; Chlorhexidine Gluconate and Clearfil Protect Bond
Seyda Herguner Siso[1], Hande Sar Sancakli[2]
[1]*Department of Restorative Dentistry, Faculty of Dentistry, Bezmialem University, Istanbul, Turkey,* [2]*Department of Restorative Dentistry, Faculty of Dentistry, Istanbul University, Capa, Istanbul, Turkey*

Aim: The purpose of this study was to evaluate the effects of antimicrobial pretreatments [KTP laser, Er-YAG laser, 2% chlorhexidine gluconate and Clearfil Protect] on microleakage of Class V composite restorations.
Material and methods: Forty-nine human premolars were selected for cavity pretreatment. After Class V cavity restorations on the buccal and lingual surfaces, the teeth were randomly divided into seven groups

1 Group I-Clearfil SE (control)
2 Group II-KTP laser+Clearfil SE
3 Group III-2% chlorhexidine gluconate+Clearfil SE
4 Group IV-Er-YAG laser+Clearfil SE
5 Group V-Clearfil Protect
6 Group VI- KTP laser+2% chlorhexidine gluconate +Clearfil SE
7 Group VII-Er-YAG laser+2% chlorhexidine gluconate+Clearfil SE

The cavities were restored with resin composite. The teeth were then thermocycled for 500 cycles, dried and sealed with nail varnish, leaving 1 mm around the restorations and immersed in 0.5% basic fuchsin for 24 h. They were then rinsed, dried and sectioned, and microleakage was assessed by dye penetration at the occlusal and gingival surface of the teeth using a stereomicroscope (30×). Mann Whitney *U* Test was used for statistical analyzes.
Results: There were no significant differences among the seven groups at the gingival margins and occlusal margins ($p > 0.05$).Comparing the gingival and occlusal margins in each group, statistically significant differences were found in the control group ($p < 0.05$) and no significant differences were seen in the other gruops ($p > 0.05$)
Conclusions: Microleakage was observed in all groups. The lowest microleakage scores were observed at the occlusal margins of control group. All groups did not show significant differences.

Theme: Dental Treatment & Restorative Dentistry: Endodontics

P630
Effects of White Wine on Dental Erosion
Radmila Arbutina[1], Natasa Trtic[1], Mirko Vranic[2], Aleksandra Djeri[1]
[1]*Department of Stomatology, Medical University, Banjaluka, Bosnia and Herzegovina,* [2]*Dental Centar Vranic, Banjaluka*

Introduction: Dental erosion is the loss of dental hard tissue whose origin is not linked with caries. It is an irreversible loss occurring due to a chemical process not involving bacteria and is not directly associated with mechanical or traumatic factors. Dental erosion occurs when tooth surface comes in direct contact with acidic substances.
Purpose: The purpose of this in vitro study was to assess demineralization of tooth enamel when subjected to white wine.
Material and methods: The materials used in the research included 20 extracted human molars. The first group of samples was dipped in white wine for 60 min and for 24 h, while the second group of samples was dipped in white whine and artificial saliva (Biotene) for 60 min and 24 h. Micromorphological changes were tested by the scanning electron microscope (SEM).
Results: The width of demineralized areas was measured in the gingival third of the tooth crown.
Conclusion: The teeth subjected to 24-h exposures to white wine suffered major enamel damage.

P631
Endodontic Treatment of Teeth with Large Periapical Lesions: Two Cases
Pelin Tüfenkçi[1], Hüda Melike Bayram[2], Aylin Kalaycı[1]
[1]*Department of Endodontics, Ankara University, Ankara, Turkey,* [2]*Department of Endodontics, Gaziosmanpasa University, Tokat, Turkey*

Introduction: The periapical lesion is frequently associated to an inflammatory response of the organism against a long term endodontic infection. Infections of the dental pulp occur as consequence of caries, operative dental procedures and trauma, etc. These infections often cause total pulpal necrosis and subsequently stimulate an immune response in the periapical region. The latter is commonly referred to as a periapical lesion. Radiographically, the classic decription of a lesion is a round or oval, well-circumscribed radiolucent image involving the apex of the infected tooth. This was particularly true if the periapical lesion was suspected to be an apical cyst. In recent years, a greater awareness of the complexities of root canal systems has led to the devolopment of newer techniques, instruments and materials. These developments have greatly enhanced the clinician's abilities. So periapical surgery is not a general indication for all types of lesions. Because of, this differential diagnosis must be clearly made.
Case: In this presentation, two cases with large periapical lesions healing after non-surgical endodontic treatment is reported.

After periapical lesion is diagnosed with clinical and radiographically methods.Convensional root canal therapy planned due to the presence of lesions calcium hidroxide placement is indicated. The patient was recalled 12 months later.

In these cases root canal treatment proved succesful the healing of a large periapical lesion.
Conclusion: Root canal treatment using calcium hydroxide as an antibacterial dressing was successful in healing large cyst-like periapical lesions. This support that even large periapical lesions can respond favourably to non-surgical treatment.

P632

Non-surgical Retreatment of a Maxillary Left Incisor Tooth with a Separated File: A Case Report

Buğra Güler, Taha Özyürek, İsmail Uzun
Department of Endodontics, Ondokuz Mayis University, Samsun, Turkey

Aim: To describe the non-surgical retreatment procedure of a maxillary incisor with a separated file.
Case: A 34-years-old female patient with noncontributory medical history applied to our clinic with the complaint of pain associated with left maxillary incisor. Clinical examination revealed tenderness to percussion and palpation. Radiographical examination revealed inadequate endodontic treatment, a radiolucent lesion surrounding apex, separated endodontic instrument at the coronal third of the root. According to findings tooth was diagnosed as chronic apical periodontitis and non-surgical retreatment was initiated. Following isolation with rubber dam, proper access cavity was prepared. Gates-Glidden drills were used until the coronal end of the seperated file was visible. Application of ultrasonic tip directly against the exposed end of the file with counterclockwise rotation resulted in successful withdrawal of the file. After removing the separated file, working length was determinated with electronic apex locator and confirmed radiographically. Root canal was prepared up to size F5 ProTaper file under copious irrigation with 5.25% sodium hypochlorite then was dressed with calcium hydroxide. One week later tooth was asymptomatic and root canal was obturated with AH Plus and gutta-percha with cold lateral condensation technique. The tooth was restorated with light cure composite resin.
Result: In the 3-months follow-up after completion of root canal treatment, clinical and radiographic examination revealed tooth was asymptomatic and healthy periapical structures.

P633

Three-rooted Mandibular First Molar (Radix Entomolaris): A Case Report

Özgür Soysal Özdemir, İsmail Uzun, Buğra Güler, Taha Özyürek
Departments of Endodontics, Ondokuz Mayis University, Samsun, Turkey

Aim: To present the diagnosis and root canal treatment of mandibular first molar showing anatomic variations with three roots and four canals.
Case: A 25-year-old female patient was referred to our clinic for root canal treatment of mandibular molar due to symptomatic pulpitis. Clinical examination revealed the pulp was vital, the tooth was tender to percussion not to palpation. Radiographic examination revealed profound dentin caries associated with pulp chamber. Following administration of local anesthesia, the tooth was isolated with rubber dam, the caries was removed and endodontic access cavity was prepared. Examination of the pulp chamber floor revealed an extra root canal orifice located distally. Working lengths were determined by electronic apex locator then root canals were biomechanically prepared and dressed with calcium hydroxide. One week later calcium hydroxide removed and %17 EDTA and %5.25 NaOCI were used for final irrigation. Root canals were obturated with AH Plus and gutta-percha by lateral compaction technique and tooth was restorated with amalgam.
Result: In 3-months follow-up clinical and radiographic examination revealed teeth were asymptomatic and healthy periapical structures.

P634

Endodontic Treatment of Incisors with Dens Invaginatus

Elif Kalyoncuoğlu[1], Zeynep Zengin[2], Öznur Özcan[1]
[1]*Faculty of Dentistry, Department of Endodontics, Ondokuz Mayis University, Samsun, Turkey,* [2]*Faculty of Dentistry, Department of Department of Dentomaxillofacial Radiology, Ondokuz Mayis University, Samsun, Turkey*

Aim: To present the endodontic treatment of a mandibular lateral incisor with Type II and maxillar central incisor with Type III dens invaginatus.
Background: Dens invaginatus is a developmental anomaly which occurs as a result of the invagination of the enamel organ.
Case Report 1: A 25-year old man was referred to our clinic with a complaint of spontaneous and severe pain in his lower left lateral incisor. Intraoral examination revealed a morphological alteration in the tooth and it was sensitive to palpation and percussion. Radiological examination showed type II dens invaginatus with an

apical radiolucency. Endodontic treatment was recommended. The root canal obturation was carried out by the gutta-percha and cold lateral condensation technique with root canal sealer, followed by restoration of the tooth. Healing of the lesion with hard tissue formation was confirmed at follow-up.
Case Report 2: A 15-year old woman was referred to our clinic for a routine dental examination. Intraoral examination revealed a morfological alteration in the maxillar left central incisor. Radiological examination showed type III dens invaginatus with an apical radiolucency. Endodontic treatment was recommended. The root canal with dens invaginatus obturation was carried out by the gutta-percha and high temperature injectable technique and the other roots obturation was carried out by the gutta-percha and cold lateral condensation technique, with root canal sealer, followed by restoration of the tooth.
Conclusion: Endodontic treatment was fundamental to the maintenance of the tooth. The treatments were considered successful.

P635
The Efficacy of Diode Laser Disinfection on a Periapical Lesion
Mert Gökay Eroğlu
Department Of Endodontics, Yuzuncu Yıl University, Van, Turkey

Objective: Disinfection of the root canals is very important for the treatment of periapical lesions. Several materials and methods are using for canal disinfection. The using of diode laser is one of them. In this presentation, the role of diode laser in a periapical lesion treatment with good prognosis will be discussed.
Methods: A 27 year old male presented to Department Of Endodontics with a maxillary right lateral incisor that caused moderate pain. The radiographic examination was performed and a periapical lesion was diagnosed The patient's root canal treatment was completed in three clinic visits. Diode laser was used for the disinfection of the root canal during each session. The calcium hydroxide was used only at first visit.
Result: After the treatment protocols, radiographic and clinical follow-up of the patient was performed at 4th, 7th and 12th months. The complete healing of the lesion was observed.
Conclusion: The laser therapy simplifies the root canal sterilization in periapical lesion treatments. Diode laser is a quite good treatment support for the periapical lesions.

P636
Nonsurgical Management of Teeth with Large Periapical Lesions
Faruk Öztekin[1], Özkan Adıgüzel[1], Meryem Bayam[1], Sadullah Kaya[1], Suzan Cangül[2]
[1]*Department of Endodontics, Faculty of Dentistry, Dicle University, Diyarbakır, Türkiye,* [2]*Department of Restorative Dentistry, Faculty of Dentistry, Dicle University, Diyarbakır, Türkiye*

Aim: The aim of this paper is to present the non-surgical endodontic treatment of two cases with large periapical lesions.
Case: The first case was a tooth #36 with periapical lesion of endodontic origin in a 22-year-old female patient, the second case a tooth #45 was affected in a 24 year-old female patient. The canals were gently debrided using K-files in conjunction with 2.5% NaOCl irrigation and 2% chlorhexidine for final flush. Endodontic therapy and placement of intracanal medication with calcium hydroxide were carried out in multiple appointments. The root canals became asymptomatic after employing the same endodontic regimen for four visits. The root canals were obturated by gutta-percha with lateral condensation. The clinical and radiographic examination after 9 months revealed complete periapical healing.
Conclusion: These case reports showed that appropriate diagnosis of periradicular lesion and the treatment of the infected root canal system allowed complete healing of these large lesions without endodontic surgery.

P637
An Unusual Apperarance of Hypercementosis Inside a Radicular Cyst
Husniye Demirturk Kocasarac[1], Evren Sarıyılmaz[2], Peruze Celenk[1], Ugur Mercan[3], Ali Cagın Yucel[2]
[1]*Department of Maxillofacial Radiology, Faculty of Dentistry, Ondokuz Mayis University, Samsun, Turkey,* [2]*Department of Endodontics, Faculty of Dentistry, Ondokuz Mayis University, Samsun, Turkey,* [3]*Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, Ondokuz Mayis University, Samsun, Turkey*

Aim: The aim of this presentation is to report a case of hypercementosis inside a radicular cyst and to give information about the imaging findings.
Introduction: Radicular cysts (RCs) are the most common cystic lesions of the the jaws. Its frequency varies from 7% to 54% of periapical radiolucencies. RCs are usually asymptomatic unless seconder infection occurs. If they reach large size, swelling and mild sensitivity may be noted. Hypercementosis is a nonneoplastic deposition of excessive cementum on the tooth roots. Radiographically, affected tooth demonstrates a thickening or blunting in the root. Occasionally the enlargement may resemble a small cementoblastoma. Hypercementosis associated with radicular cyst is not very common.
Material and methods: An 19-year-old female was referred to our clinic for pain and mobility in her left mandibular anterior teeth. Intraoral examination showed a crown fracture and discoloration in 32. Panoramic and periapical radiographs revealed a periapical radiolucency in 31, 32, 33 and a radiopacity in the root of 32. The teeth were devital. An initial diagnosis of a hypercementosis or cementoma with radicular cyst was made upon clinical and radiological evaluation. Root canal treatments were performed to 31 and 33. Thirty-two was extracted and apical resection was performed to 31 and 33. The microscopic evaluation showed squamous epithelium and toothlike structure.
Results: The microscopic evaluation showed squamous epithelium and toothlike structure. A diagnosis of hypercementosis was made.
Conclusion: Histopathologic examination should be performed to differentiate hypercementosis from cementoblastoma which needs to be removed.

P638

The Efficiencies of Different Techniques in Removal of Calcium Hydroxide Intracanal Medication

Asiye Nur Dinçer, Yakup Üstün, Tuğrul Aslan, Burak Sağsen
Department of Endodontics, Erciyes University, Kayseri, Turkey

Aim: To evaluate the efficiencies of different irrigation protocols and solutions in removal of calcium hydroxide (Ca(OH)2) from the root canals.
Material and methods: Sixty eight human maxillary central incisor teeth were used. All root canals were prepared using the Mtwo Ni-Ti rotary system up to #40/.06 instrument. The canals were filled with Ca(OH)2 paste. Specimens were randomly divided into two control groups (n = 4), six experimental groups (n = 10) according to irrigation protocols. G1: 1% PAA + #40/.06 K-type hand file; G2: 17% EDTA + #40/.06 K-type hand file; G3: 9% Etidronic acid (EA) + #40/.06 K-type hand file; G4: 1% PAA + ultrasonic activation. G5: 17% EDTA + ultrasonic activation; G6: 9% EA + ultrasonic activation. The cleanliness of root canal thirds were evaluated with SEM analysis. Kruskal–Wallis and Tukey post-hoc tests were used for statistical analysis ($p < 0.05$).
Results: At coronal thirds; G4 was superior to G2, G3; and also, G1 was superior to G2, G3 ($p < 0.05$). At middle thirds; G1 and G4 were superior to G2 and G5; and also, G4 was superior to G3 ($p < 0.05$). There were no significant differences among the rest of the experimental groups ($p > 0.05$). The frequencies of Score 0 of PAA groups were higher than the rest of groups at all root thirds.
Conclusions: The success rates of solutions used to remove Ca(OH)2 were PAA, EA, EDTA respectively. PAA showed promising results at all root thirds regardless of the agitation technique used.

P639

Knowledge and Attitudes of Turkish Endodontists on Digital Radiological Imaging

Şebnem Yalçınkaya[1], Yıldız Garip Berker[2], Sertaç Peker[3]
[1]*Department of Dentomaxillofacial Radiology, Faculty of Dentistry, Marmara University, Istanbul, Turkey,* [2]*Department of Endodontics, Faculty of Dentistry, Marmara University, Istanbul, Turkey,* [3]*Department of Pediatric Dentistry, Faculty of Dentistry, Marmara University, Istanbul, Turkey*

Purpose: The aim of this study was to assess the knowledge and attitudes of Turkish endodontists towards digital radiological imaging (DRI).
Methods: During the 11th Congress of Turkish Endodontic Society in 2012 members were asked to fill in a questionnaire concerning their knowledge and practice in recent imaging techniques and a total of 111 questionnaires were available for the analysis. Chi-square test was used for the statistical evaluation.
Results: The mean age of the endodontists participating in this study was 32.74 ± 10.40 with a duration of practice of 10.33 ± 10.36 years (ranged between 1 and 37 years). 76.6% of the endodontists used DRI in their clinics. Of this group, 63.5% claimed that digital systems increased the number of repetitions of film taking. 70.6% of the endodontists preferred phosphor plate system (PPS), ($p = 0.006$). When the reason of not using DRI were evaluated according to "year of graduation", the reason of "being expensive" was found to be statistically significant in the group of graduates over 10 years and 20 years ($p = 0.036$).
Conclusion: Based on the findings of this study, DRI has been used frequently in the assessement of endodontic pathology and treatment process. The rate of use of DRI seems to depend on the advances of dental faculties, since academicians and PhD students in endodontics department were the main groups participating to the questionnaire. Although use of DRI is increasing, a detailed continuing education programme considering the requirements is still needed.

P640

Removal of a Separated File in a Maxillary First Molar: A Case Report

Murat Demiral, Buğra Güler, Taha Özyürek
Department of Endodontics, Ondokuz Mayis University, Samsun, Turkey

Aim: To describe the procedure of removing separated instruments from the root canals of a maxillary first molar.
Case: A 31-years-old female patient with noncontributory medical history applied to our clinic with the complaint of pain in her left maxillary region. Clinical and radiographical examination of left maxillary first molar revealed profound dentin caries associated with pulp chamber and tenderness to percussion. According to findings tooth was diagnosed as symptomatic pulpitis and root canal treatment was initiated. Following administration of the anesthetic solution and isolation with rubber dam, endodontic access cavity was prepared and coronal pulp tissue was removed. Working lenghts were determined by electronic apex locator. During preparation, ProTaper SX rotary file was seperated in disto-buccal root canal at coronal third. Attempts to bypass seperated instrument failed, decision was made to use ultrasonic tips to remove the separated file. Gates-Glidden drills used to reach the coronal end of the seperated file. Application of ultrasonic tip directly against the exposed end of the file with counterclockwise rotation resulted in successful withdrawal of the file.
Results: In the 3-months follow-up after completion of root canal treatment, clinical and radiographic examination revealed tooth was asymptomatic and healthy periapical structures.

P641

Treatment of Noncomplicated Crown Fracture after Dental Trauma with the Technique of Reattachment

Engin Ağaçkıran[1], Özkan Adıgüzel[2], Emre Karaali[1]
[1]*Department of Pediatric Dentistry, Faculty of Dentistry, Dicle University, Diyarbakır, Turkey,* [2]*Department of Endodontics, Faculty of Dentistry, Dicle University, Diyarbakır, Turkey*

Introduction: Crown fractures of the teeth at anterior region is one of the most common injury. The treatment of crown fracture related to trauma is important because of fuctional, phonetic and esthetic reasons. Reattachment technique which menas to restore tooth strucure with it's own tissue; allow a natural appereance to the patients

who bring the original part of the tooth together. In this study it's aimed to treat five patients with reattachmant technique.
Case: Five patients with the age of 8–13 consulted to our clinic after trauma with their own fractured tooth tissue. In the intraoral diagnosis it's determined that no pulp exposure has become. Fractured tissues attached with adhesive agent and composite resin with reattachmant technique.

Any problem was not observed in the interval of 6 months for 1 year control appointments.
Conclusion: We are at the opinion that, reattachmant technique is an ideal treatment at the patient indicated because of esthetic and natural appereance, biologic compliance and time gaining.

P642
Sealing Ability of Mineral Trioxide Aggregate or Biodentine for Furcal Perforation Repair
Kassara Pattamapun, Manot Maholan
Department of Restorative dentistry and periodontology, Chiang Mai University, Chiang Mai, Thailand

Furcal perforation is usually an undesired complication that can occur during endodontic access preparation in multi-rooted teeth. Recently, Biodentine which is an active bio-silicate material has been introduced for dentin substitute wherever dentin is damaged. Inadequate sealing ability of repair materials have affected major changes on poor outcome of repair procedures.
Objective: This study was to compare the sealing ability of MTA and Biodentine for furcal perforation repaired in mandibular molars.
Material and methods: Seventy extracted mandibular molars, which crown and root intact, without cracked or fracture were prepared access cavities. The root were apically resected for three mm from the root apex. Sixty teeth were made artificial furcal perforation and randomly divided into three groups: Group 1 (n = 25) repaired with Biodentine, Group 2 (n = 25) repaired with MTA and Group 3 (n = 10) as positive control group: no repaired. The remaining ten teeth made available as negative control group. Amount of 2% Methylene blue dye solution were load in upper chamber of experimental model. Leakage of penetrated dye through the repair materials was collected into the water in the lower chamber of experimental model. Optical density of leaked Methylene blue dye was measured everyday by using spectrophotometer at 670 nm for 10 days. Student *t*-test were used for Statistical analysis.
Results: The furcal perforation repaired with MTA has been leaked significant less to tracer dye than those repaired with Biodentine ($p < 0.001$).
Conclusion: It was conclude that MTA demonstrated better sealing ability for furcal perforation repair when compared to Biodentine.

P643
Retreatment of Two-Rooted Mandibular Canine: A Case Report
Sevinc Askerbeyli, Selen Küçükkaya
Department of Endodontics, Faculty of Dentistry, Hacettepe University, Ankara, Turkey

Introduction: It is essential to apprehend the morphology of the root canal system and its variatians to accomplish successful endodontic treatment. Anatomic variations and additional root canals can be challenging especially in retreatment cases. Literature indicates the incidence of two-rooted canine as low as 1.7%. This case report represents the successful retreatment of two-rooted mandbular canine.
Methodology: A 30-year-old female patient with pain at mandibular left canine was referred to our clinic. The radiographic examination demonstrated incompletely obturated root canals with two-rooted mandibular canine. The clinical examination revealed severe sensitivity to percussion. The tooth was isolated with rubber-dam. The access cavity was prepared. Root canal filling was removed with solvent and stainless steel K and H files. The working length was estimated with radiographic method. Lingual canal was negotiated with size 08 stainless steel K-files to reach the working length. Conventional cleaning and shaping of both the roots were performed and calcium hydroxide dressing was placed in the canals. The tooth was asymptomatic on the second visit. The dressing was removed and after final preparation of the root canals, obturation was done by lateral condensation technique.
Results: Eight-month follow-up showed a functional tooth with no symptoms clinically, and a healthy area at the apex.
Conclusion: Clinicians should always consider the presence of anatomical variations during endodontic treatment. Despite the low prevalence, variations may occur in the number of roots and root canals of mandibular canines, as demonstrated in this case report.

P644
Treatment of Tooth with Open Apex Using MTA; A Case Report
Sibel Koçak, Nur Bağcı
Department of Endodontics, Faculty of Dentistry, Bulent Ecevit University

Aim: To present a successful root canal obturation of a tooth with open apex using MTA.
Material and methods: A 17-year-old patient refered to our clinic with the complaint of discolored tooth on her left maxillary anterior region. In medical history, the patient stated that she had a history of traumatic injury 10 years ago. During the intraoral examination, a non-vital, discolored tooth (left maxillary central incisor) was determined. In radiographic evaluation, the apex was immature. The root canal was instrumented to remove necrotic pulp and calcium hydroxide was placed as root canal medicament. Calcium hydroxide was changed every 7 days for 2 weeks. In next appointment, the root canal was filled with mineral trioxide aggregate (MTA) and moistured cotton pellet was placed. Access cavity was sealed with temporary filling. In the next appointment, cotton pellet was removed and the root canal access was sealed light cured glass ionomer cement. Then, the tooth was restorated with a composite restoration. The patient was recalled for control after 1, 3, 6 and 8 months.
Results: In clinical examination the tooth was symptom-free and in radiographic assessment, an amount of apexification was observed.

P645

The Use of White Mineral Trioxide Aggregate (MTA) as Intracoronal Barrier Material in Nonvital Tooth Bleaching

Sema Sert[1], Özkan Adıgüzel[2], Faruk Öztekin[2], Meryem Bayam[2], Sadullah Kaya[2], Dalma Gyorgy[3], Mark Botond Szekely[3]
[1]*Faculty of Dentistry, Dicle University, Diyarbakır, Türkiye,* [2]*Department of Endodontics, Faculty of Dentistry, Dicle University, Diyarbakır, Türkiye,* [3]*Faculty of Dentistry, Targu Mureş University, Targu Mureş, Romania*

Introduction: Intracoronal bleaching of teeth may cause external root resorption. The placement of a cervical base material before nonvital bleaching treatment is recommended for preventing cervical resorption after bleaching. The aim of this study was to present the use of White Mineral Trioxide Aggregate (MTA), as isolating barrier to prevent leakage of bleaching agents.
Case: It describes two cases of nonvital bleaching which was performed on a root canal treated, discoloured, maxillary left central and mandibular left lateral incisor. By using white MTA as a barrier, a mixture of sodium perborate and distilled water was used as the bleaching agent. The subsequent follow up visits showed significant improvement in the shade of the bleached teeth even after 12 months, with no external cervical resorption.
Conclusion: Based on our case reports, MTA can be used as a safe intracoronal barrier for nonvital tooth bleaching.

P646

Healing of a Periapical Lesion Following Nonsurgical Endodontic Therapy: A Case Report

Özgür Keskin
Department of Endodontics, Faculty of Dentistry, Ondokuz Mayis University, Samsun, Turkey

Aim: To describe the endodontic treatment of central and lateral incisors which were associated with a periapical lesion.
Case: Twenty-one-year-old female patient applied to Ondokuz Mayıs University Faculty of Dentistry Department of Endodontics complaint with pain. In clinical examination, both central and lateral incisors were slightly sensitive to percussion and palpation without mobility. Three mandibular central and lateral incisior teeth responded negatively to electric pulp test. In radiographic examination revealed that a diffuse area of bone rarefaction involving the apices of these mandibulary incisors. Sinus tract was observed at the apical portion of teeth over soft tissue. These periapical lesions could not be differentially diagnosed as either radicular cysts or apical granulomas based on radiographic evidence alone. Endodontic access was performed with 31, 41and 42 using air motor hand piece with water coolant. Root canal preparation was performed with ProTaper rotary system under copius irrigation with%5.25 NaOCl between file changing. Root canals were filled with resin based root canal paste and gutta percha. Root canal treatment was completed in one visit. After 1 year follow up period, the patient was asymptomatic and the periapical radiolucency reduced considerably with 31, 41, 42.
Conclusion: In this case report; orthograde root canal treatment provided a successful healing of a large periapical lesion in this case. It confirms that large periapical lesions can respond favorably to non-surgical treatment.

P647

Management of a Tooth with Endo-Perio Lesion: Case Report

Fatma Furuncuoğlu, Ali Çağın Yücel, Evren Sarıyılmaz
Department of Endodontics, Faculty of Dentistry, Ondokuz Mayis University, Samsun, Turkey

Aim: To describe treatment of a tooth with endo-perio lesion.
Methods: Sixteen years old male patient applied Ondokuz Mayıs Univercity Faculty of Dentistry Department of Endodontics with complaints of swelling and pain.

After clinical and radiographic examination right mandibular first molar tooth had been diagnosed to have perio-endo lesion and root canal treatment was initiated. Root canal preparation was performed with ProTaper rotary system under copius irrigation with%5.25 NaOCl after each file. CaOH paste was applied as intracanal medication. Then the patient consultated with department of periodontology and periodontal treatment was also applied. Tooth was asymptomatic after a week later. Root canals were filled with resin based root canal paste and gutta percha.
Conclusion: Root canal infection could cause periodontal pocket in some cases. These kind of cases could be easily treated with combination of root canal and periodontal treatment

P648

Long Term Evaluations of In-Office Bleaching Technique of Fluorosed Teeth

Feyza Özdemir Kisacik, Ayse Diljin Kececi, Necdet Adanir
Department of Endodontics, Faculty of Dentistry, Suleyman Demirel University, Isparta, Turkey

Aim: In this study, 4 year follow up of fluorosed teeth treated with in-office bleaching technique was proposed in terms of the pulp vitality, tooth hypersensitivity and patient's satisfaction,
Methods: The 98 fluorosed teeth of 17 patients were bleached averagely in eight sessions using in-office bleaching material containing% 35 H_2O_2. The colored surfaces of the teeth were treated 5 min × 2 in every session. The therapy was terminated after having satisfactory results or when the color change stopped. Pulp vitality, hypersensitivity and satisfaction scores (Visual Analogue Scale (VAS) 0–10) were noted and periapical radiographs were taken to evaluate apical status.
Results: Satisfaction of patients were poor at the baseline (VAS = 0.77) but increased at the end of the treatment (VAS = 9.3). Four years later 12 patients having 50 bleached teeth came to recall visit. Five of the patients requested a new therapy because of the relapse, but the others were satisfied with their teeth. No vitality loss, hypersensitivity or periradicular abnormalities on radiographs were assesed at the end of 4 years.
Discussion: In conclusion, the method used in this study was found satisfactory and successful though the chair time was shorter than recommended, mean VAS score (7.5) of the patients' satisfaction were still high after 4 years and no pulp or periodontium damage were determined in long term evaluations.

P649

Radiological vs. Electronic Endodontic Working Length Determination in Teeth with Open Apices

Birsay Gümrü[1], Bilge Tarçın[2], Sertaç Peker[3], Emre İriboz[4], Dilek Erbay Türkaydın[4], Hesna Sazak Öveçoğlu[4]

[1]Department of Oral and Maxillofacial Radiology, Faculty of Dentistry, Marmara University, Istanbul, Turkey, [2]Department of Restorative Dentistry, Faculty of Dentistry, Marmara University, Istanbul, Turkey, [3]Department of Pedodontics, Faculty of Dentistry, Marmara University, Istanbul, Turkey, [4]Department of Endodontics, Faculty of Dentistry, Marmara University, Istanbul, Turkey

Aim: During root-canal treatment of teeth with open apices, one of the challenges that practitioners face is working length (WL) determination. The aim of this study was to evaluate the accuracy of direct – indirect digital radiography and three electronic apex locators in determining the WL in teeth with open apices.

Material and methods: Thirty extracted single-rooted permanent teeth were used. Following preparation of access cavities, the root-canals were instrumented using #10-140K-files, and the tip of #140K-file was permitted to pass through the apical foramen to a length of 5 mm. Reference length (RL) was determined for each tooth by inserting a #140K-file until the tip was visible at the apical foramen. The radiographic WL was determined using direct (Gendex GXS-700) and indirect (Dürr Vistascan Mini) digital radiographic systems. Teeth were embedded in an alginate model to test apex locators (Raypex 5, Dentaport ZX, iPex II). Measurements obtained with radiographic and electronic methods were compared to RLs. Data were analysed using Kolmogorov-Smirnov, paired sample *t*-test and chi-square test ($p < 0.05$).

Results: Number of accurate measurements obtained with iPex II (n = 9; 30%) was the highest followed by direct digital radiography (n = 3; 10%). None of the electronic measurements was found to be longer than RL, whereas 3 (10%) and 5 (16.7%) of the measurements obtained respectively with direct and indirect digital radiographic systems were longer.

Conclusions: Although iPex II presented the most accurate measurements, none of the methods showed completely reliable results in determining WL in teeth with open apices.

P650

Antibacterial Effects of Gaseous Ozone on Endodontic Pathogens

Lidija Popovska[1], Zaklina Cekovska[2], Vera Stojanovska[1], Sonja Vujasin[3], Vesna Korunoska Stevkovska[1], Vancho Spirov[1]

[1]Faculty of Dentistry, "St. Cyril and Methodius" University in Skopje, Macedonia, [2]Faculty of Medicine, "St. Cyril and Methodius" University in Skopje, Macedonia, [3]Faculty of Dentistry, European University, Macedonia

Objective: Application of ozone gas has been advocated in endodontic therapy mainly for its high level disinfection ability. The aim of this in vitro study was to examine effectiveness of gaseous ozone against endodontic pathogens.

Material and methods: For the purpose of this study 25 canals of extracted single-rooted teeth were prepared to a size 40 master apical file, sterilized and inoculated with suspensions containing vital bacteria (Streptococcus viridans, Peptostreptococcus, Propionibacterium and Neisseria spp.Ozone gas was applied (the ozone delivery system is a portable apparatus with an ozone generator). Teeth were divided into four groups consist of five, according time of exposure: 30, 60 s, 2.5 min and 5 min. Five teeth serve as a positive and negative control groups. Material was taken from each canal, incubated for 24 h at Institute for Microbiology and Parasitology in standard condition and the number of CFU was determined.

Results: Ozone gas over 2.5 min almost completely eliminated the tested bacterial strains. Shorter time exposure only reduced the number of microorganisms.

Conclusion: Ozone therapy present great advance when used at the end of the cleaning and shaping process in root canals. Ozone has antibacterial effect only if is delivered appropriately and in appropriate time exposure.

P651

Endodontic Treatment of Traumatized Teeth: Two Different Case Reports with Long Term Follow Up

Emre Bayram[1], Pelin Tüfenkçi[2], Hüda Melike Bayram[1], Caner Öztürk[3]

[1]Department of Endodontics, Gaziosmanpaşa University, Tokat, Turkey, [2]Department of Endodontics, Ankara University, Ankara, Turkey, [3]Department of Prosthodontics, Ankara University, Ankara, Turkey

Introduction: Extrusion is a form of luxation injury that may result after trauma where the tooth is partially displaced from the socket in an axial direction (Emerich, 2012).

Horizontal root fractures commonly occur at the anterior maxilla, and generally teeth with complete root formation are affected. Root fractures may be located at the coronal, middle, or apical thirds (Er, 2009).

Case: Case1: A 17-year-old man was referred to the Department of Endodontics with chief complaint of trauma on maxillary anterior region. On intraoral examination, it was revealed that right upper central incisor had extruded and tooth was tender to percussion. The immediate treatment of extruded teeth consisted of careful repositioning into alveolar socket and fixation with a semi-rigid splint for 2 weeks.

The tooth was reopened and the calcium hydroxide paste remnants removed after 2 weeks. And root canal was sealed. One years later recall radiograph showed root resorption. The tooth was asymptomatic.

Case 2: A 26-year-old woman was referred to the Department of Endodontics, reporting a history of trauma on the maxillary anterior region. Radiographic examination showed a horizontal root fracture in the middle third of the root of santral incisors. A decision was made to perform nonsurgical endodontic treatment. A calcium hydroxide paste was spun down the root canals. Two weeks later, root canals were sealed.

Two years later recall radiograph showed complete healing and no separated betwen the fragments.

Conclusion: It is possible to keep traumatized teeth in the mouth with nonsurgical endodontic theraphy.

P652

Surgical Removal of Two Separated Endodontic Instruments: A Case Report

İsmail Uzun, Buğra Güler, Taha Özyürek
Department of Endodontics, Ondokuz Mayis University, Samsun, Turkey

Aim: To describe the surgical removal of separated files in a right maxillary lateral incisor tooth.
Case: A 24-years-old female patient reported herein with a separated file in her maxillary right lateral incisor that occurred 2 years ago during endodontic treatment. Clinical examination revealed no pain to palpation and a buccal sinus tract near the root tip of tooth. The tooth was not tender to percussion. Radiographic examination revealed radiolucency surrounding the apex and two different separated endodontic instruments at the middle and apical third of the root. Following administration of the anesthetic solution and isolation with rubber dam, endodontic access cavity was prepared. First separated file removed with a hedström file but during this procedure other instrument migrated beyond the apex. Then root canal was dressed with calcium hydroxide and the access cavity was restorated with temporary filling. At the second appointment a mucoperiosteal flap was elevated and other separated instrument removed surgically. Apex was resected and retrograde preparation was performed with ultrasonic tips and the retrograde filling was made with Intermediate Restorative Material. One week later suture was removed and there was no discomfort. Healing of the surgical site was excellent. Then root canal was obturated with injectable gutta-percha and tooth was restorated with fiber post and light-cured composite resin.
Result: In the 6-months follow-up after completion of root canal treatment, clinical and radiographic examination revealed tooth was asymptomatic and healthy periapical structures.

P653

An Assessment of Antimicrobial Activity of Three Endodontic Sealers: An In Vitro Study

Ebru Özsezer Demiryürek[1], Taha Özyürek[1], Timur Gülhan[2], Cangül Karabulut[1]
[1]*Department of Endodontics, Ondokuz Mayis University, Samsun, Turkey,* [2]*Department of Microbiology, Ondokuz Mayis University, Samsun, Turkey*

Aim: To evaluate the antimicrobial activity of Biodentine, BioAggregate, MTA Angelus by agar diffusion test, using calcium hydroxide as reference for comparison.
Material and methods: *Escherichia coli* (ATCC 25922), *Staphylococcus aureus* (ATCC 29213), *Pseudomonas auroginosa* (ATCC 27853), *Enterococcus faecium* (ATCC 9790), *Enterococcus faecalis* (ATCC 29212), *Candida albicans* (ATCC 10231) strains were used for this study. Agar diffusion test (ADT) was used for determination of antimicrobial activities of MTA Angleus, Biodentine, BioAggregate and calcium hydroxide. The microorganisms were inoculated in Brucella Broth (BB, Sigma, USA) and incubated for 24 h at 37°C individually. After the incubation period, the broth cultures of microorganisms were adjusted to 0.5 McFarland by using McFarland densitometer. Afterwards, 100 µl aliquots of each bacterial suspension except for *C. albicans* were streaked onto the Mueller Hinton Agar (MHA, Oxoid, UK) surface. *C. albicans* strain was streaked onto the Sabouraud Dextrose Agar (SDA, Merck, Darmstadt, Germany). After incubation at 12, 24, 48, 72 h at 37°C, inhibition zones around the sealers were measured with digital caliper. Each test was repeated three times. For analysis of data Univariate analysis of variance and Duncan Post Hoc Test were performed.
Result: In the ADT, inhibition zones were found with all sealers. All of the sealers showed the highest antimicrobial activity in the 24-h interval. All sealer groups showed statistically different antimicrobial activity individually ($p < 0.001$). Antimicrobial activity values were ranged BioAggregate, Biodentine, calcium hydroxide and MTA Angelus respectively.

P654

Management of Immature Permanent Tooth with Pulpal Necrosis: 18-Months Follow-Up

Makbule Bilge Akbulut, Seref Nur Mutlu, Ayce Unverdi Eldeniz
Department of Endodontics, Selcuk University, Konya, Turkey

Introduction: The treatment of immature teeth with open apex and pulpal necrosis is critical due to difficulties in obturation. Apexification with calcium hydroxide is a conventional method in order to achieve apical closure. This case report describes the treatment of immature maxillary left central incisor having pulp necrosis and incomplete apex.
Case: The 12-year old male patient was referred to the endodontic clinic with swelling on the left side of anterior buccal region and a fistula. The patient didn't report a history of trauma but with his history of orthodontic treatment that had started 15 months before. Maxillary left central incisor that had restorated with a big composite restoration was not sensitive to pulp vitality tests. Radiographically maxillary left central incisor exhibited incomplete root formation together with relatively wide root canal. Both central and lateral incisors had large apical radiolucencies. Root canal therapy was performed on lateral incisor by means of chemo-mechanical preparation using K-files and irrigation with 2.5% sodium hypochlorite. A calcium hydroxide paste was applied to the central incisor and changed four times over 12 months. After obtaining complete closure of apical foramina, the root canal was filled by lateral compaction of gutta-percha and a resin-based sealer. An 18-months follow-up revealed normal periapical tissues and the absence of symptoms.
Conclusion: The case presented here supports our knowledge about apical closure induction of calcium hydroxide and its long term success in resolving periapical radiolucency.

P655

CBCT – A Necessary Luxury in the Management of Periapical Lesions

Diana Berechet, Marius Bud, Cristina Toma, Sanda Cimpean, Ada Delean
Department of Conservative Odontology

Aim: Endodontists agree that CBCT is extremely useful in the management of the various periapical pathology and is gradually replacing conventional radiological procedures. The aim of this study is to underline the clinical role of CBCT providing important informations that lead to a correct conduct during endodontic treatment.
Material and methods: Fourteen significant samples from 2010 to 2012 were selected from our personal cases. A preinstalled scanner software was used for image interpretation. The data that we obtained was analyzed with the analyses of variance (ANOVA) test.
Results: In five cases (35.71%) CBCT facilitated the diagnosis between periapical granulomas and periapical cysts, and less than half had endodontic origin. In three cases (21.42%) we were able to identify vertical root fractures. Only one case was confirmed as internal root resorbtion. In six cases of endodontic retreatments (42.85%) CBCT revealed the presence of additional secondary root canals that were not detected with periapical radiographs. We were also able to discover periapical inflammatory lesions before they appeared on periapical x-rays in four cases (28.57%).
Conclusions: The results of the study confirm that clear diagnostic information lead to a better clinical management of the endodontic problems. Therefore, CBCT has proven to be a valuable and irreplaceable instrument in endodontic practice and not a luxury.

Theme: Dental Treatment & Restorative Dentistry: Esthetics

P656
Treatment of Central Tooth Missing With Direct Composite Resin
Ömer Çellik[1], Mehmet Akdoğan[1], Emrullah Bahşi[1], Bayram İnce[1], Mehmet Dallı[2], Ramazan Kara[1], Faruk Öztekin[3]
[1]Department of Restorative Dentistry, Dicle University, Diyarbakır, Turkey, [2]Department of Restorative Dentistry, Katip Çelebi University, İzmir, Turkey, [3]Department of Endodontics, Dicle University, Diyarbakır, Turkey

Aim: Diastema is seen such as anatomical differences in tooth size, to be greater the width of dental arch than the size of tooth. Also tooth loss, unerupted teeth and congenitally absence of teeth can lead to the formation of the diastema. The aim of this case report is to explain the treatment of diastema as a result of the upper right central tooth loss with direct composite resin veneer.
Case presentations: Three patients with diastematas together with the loss of the right maxillary central teeth, were referred to the Dicle University Faculty of Dentistry Department of Restorative Dentistry. In clinical and radiological examination, losing of the right maxillary central teeth were seen in patients at younger ages. Treatment alternatives were explain to patients. Then, the joint decision of the patient and the physician's teeth were restored with composite laminate veneer. With treatment both diastemas closured as well as the loss of central tooth was resolved.
Conclusion: There are different treatment options for diastemas. These treatment options are, direct composite resin veneers, porcelain and composite laminate veneers, orthodontic treatments and prosthodontic treatments. Among these methods direct composite veneers aesthetic, low cost and the most conservative treatment option.

P657
Alternative Restoration Technique of the Damaged Anterior Endodontically Treated Teeth With CAD-CAM And Er,Cr:YSGG Laser
Beyza Ünalan Değirmenci[1], Nuri Murat Ersoy[1], Alperen Değirmenci[2], Murat Aydoğdu[1]
[1]Department of Prostodontics, Yüzüncü Yıl University, Van, Turkey, [2]Department of Restorative Dentistry, Yüzüncü Yıl University, Van, Turkey

Introduction: Endodontically treated damaged anterior teeth present specific challenges for the prosthodontists because of their aesthetic needs and structural defects.Preservation of the tooth structure is very important for their protection of integrity under the occlusal forces and aesthetic demands.Longevity of the restoration depends on the appropriate restoration selection.The advances in the adhesive dentistry, ceramic materials and CAD-CAM technology are advantageous for the alternative endocrown restoration techniques.Also improvement of the Er,Cr:YSGG laser makes some advantages for the removal of caries and gingivectomy of the damaged endodontically treated teeth.
Case: In central and canine teeth cases because of the inadequate retained sound tooth structure and the presence of caries laser application is performed.With laser application gingival recontouring for aesthetic is done and the caries was removed by the laser with protecting the sound tooth structure.The alternative endocrown technique comprises a circumferential butt margin and a central retention cavity inside the pulp chamber and constructs the both the crown and core as a single unit with CAD-CAM. Endocrowns made with the feldspatic porcelain CAD-CAM blocs and cemented at the same session.
Conclusion: Endocrown technique is more conservative than traditional post core restorations.With Er,Cr:YSGG laser and CAD-CAM device the restoration could be done easily and in a more conservative way.And the cases presented prove that these technique could be use in the anterior region safely.

P658
Esthetical Approaches Prepared by Two Different Bridge Bodies
Elif Aybala Oktay[1], Ülkü Özan[2], Akın Alper[3], Bülent Pişkin[1]
[1]Department of Restorative Dentistry and Endodontics, Center for Dental Sciences, Gulhane Military Medical Academy, Ankara, Turkey, [2]Abant İzzet Baysal Faculty of Dentistry Depertmant of Endodontics Bolu, Turkey, [3]Sivas Military Medical Dental Services, Sivas, Turkey

Case: Sixty-year-old male patient, it was determined that there is an extensive mobility and bone loss in tooth no 41 related to chronic periodontitis; and gingival retraction and mobility in the neighboring teeth and for the tooth no 41 removal indication was defined. Also, to recover the esthetical loss related to missing teeth, the patient who lost his tooth no 12 years ago because of tooth decay, in order to restore lateral tooth loss in the upper jaw, it was decided to make an adhesive bridge using a conservative approach. For this purpose, one of the planned adhesive bridge bodies for lower jaw was prepared by his own extracted tooth,

and other planned adhesive bridge body planned for his upper jaw was prepared by strip crown using nanohybrid composite resin. In order to fix the present luxation teeth in the anterior region of the lower jaw, canals were opened in the lingual of the teeth between canin – canin to place polyethylene fiber material and a thin layer of fluid was applied in the lingual surfaces of composite support teeth in the lower jaw and kept waited without polymerized. Then polyethylene fiber was placed through lingual, buried within the fluid composite and a new amount of fluid composite was place on top of it. It was polymerized by LED light. The same procedures for maxillary lateral tooth missing was performed by using strip crown for bridge body and opening canals in palatal region and completed with finishing procedures.

P659

Effects of Staining and Bleaching Procedures on Nano-Hybrid Composite

Derya Merve Halaçoğlu, Kıvanç Yamanel, Saffet Başaran, Duygu Tuncer, Çiğdem Çelik, Neslihan Arhun
Department of Restorative Dentistry, Baskent University, Ankara, Turkey

Purpose: The purpose of this study was to invastigate the effects of three staining solutions and bleaching system on the color change and the surface roughness of a nano-hybrid composite.
Material and methods: Forty disk-shaped specimens of Z550 composite (nano-hybrid, 3M) were prepared. The specimens were then divided into four subgroups (n = 10) and all of the specimens were immersed in three staining solutions (red wine, iced tea and coke) and distilled water (control group) for 7 days.The Office bleaching agent was applied to the surface of the specimens. Color and surface roughness of the specimens were measured at baseline, after staining and bleaching. Data were subjected to analysis of variance for repeated measures among the groups. Multiple comparisons were evaluated by Bonferroni test ($p < 0.05$).
Results: There was no statistically significant differences between tested groups at baseline, after staining and after bleaching regarding surface roughness ($p > 0.05$).The highest ΔE values were obtained in red wine group after staining and bleaching procedures. Discoloration values of red wine group were significantly different from the other staining solutions ($p < 0.05$). Bleaching procedure caused statistically significant color change in only red wine group ($p < 0.05$).
Conclusion: Staining and whitening procedures didn't significantly affect surface roughness values of the nano-hybrid composite. Staining solutions except red wine caused imperceptible discoloration values ($\Delta E < 2$).

P660

Evaluation of Intracoronal Bleaching Effectiveness and Chromatic Stability

Uğur Burak Temel[1], Özge Kam[1], Erdal Eroğlu[2]
[1]*Departmant of Restorative Dentistry, Suleyman Demirel Universty, Isparta, Turkey,* [2]*Departman of Prosthetic Dentistry, Suleyman Demirel Universty, Isparta, Turkey*

Aim: The aim of this study was to evaluate the effectiveness of intracoronal bleaching technique performed with 35% hydrogen peroxide and the chromatic stability after 6 month.
Material and methods: A modified walking bleaching technique involved 35% hydrogen peroxide was used to whiten the discolored one maxillary anterior tooth of 15 patients (age range 30–45). Tooth color was measured baseline (BL), immediately post-bleaching (IP) and 6 months post-bleaching (SP) with a spectrophotometer. The color was determined according to the CIELAB system, which records lightness as L* and chromaticity coordinates as a* and b*. The values obtained from these measurements was statistically evaluated with *t* test match ($p = 0.05$).
Results: The differences in L*, a* and b among the three groups (BL, IP, SP) was statistically significant. The results in the study showed that the modified technique using 35% hydrogen peroxide was effective at intracoronal bleaching treatment. Conversely chromatic stability was not enough in this study.
Conclusion: Along with the bleaching treatment, teeth must also evaluated in terms of impermeability of root canal treatment and microleakage.

P661

Clinical Survival of Indirect Composite Laminate Veneers wıthout Tooth Preparation

Özge Kam, Uğur Burak Temel
Department of Restorative Dentistry, Suleyman Demirel University, Isparta, Turkey

Objective: The aim of this study was to evaluate the clinical performance of indirect composite laminate veneers involving no tooth preparation after 6 month of clinical service.
Material and methods: Laminate veneers were placed on 80 maxillary anterior teeth in 35 patients (age range: 19–45 years) by a single operator following a standardized clinical procedure. The teeth were not subjected to any preparation. Impressions were taken using polyvinyl siloxane impression material. All laminate veneers were fabricated by the same technician using an indirect composite material. A light-cured resin cement was used to lute the restorations. At the 6-month recall, clinical performance was assessed in terms of retention, color match, surface roughness, marginal integrity, marginal discoloration and anatomic form using the modified USPHS criteria.
Results: The retention rate of the veneers was%100. On the basis of the criteria used, a high percentage of the veneers were rated A score. Veneers maintained their esthetic appearence and no evident marginal discoloration was found. All patients were satisfied with the color match of their restoration 6 month after placement.
Conclusion: It was concluded that this technique represent a reliable and effective procedure for conservative treatment of unesthetic anterior teeth and preserves the patients' whole natural tooth substance. Appropriate patient selection, indication, and an attentive clinical procedure are needed to ensure success as well.

P662

Restoration of Single Tooth Loss with Fiber-reinforced Adhesive Bridges: Two Case Reports

Zeynep Öncel Torun[1], Simel Ayyıldız[2], Alper Akgürbüz[3]
[1]*Gülhane Askeri Tıp Akademisi Dişhek. Bil. Mrk.Restoratif Diş Tedavisi ve Endodonti AD,* [2]*Gülhane Askeri Tıp Akademisi Dişhek. Bil. Mrk. Protetik Diş Ted. AD,* [3]*Mevki Asker Hastanesi Protez Kliniği*

Introduction: As an alternative to the traditional restorations in single tooth loss, fiber reinforced adhesive bridges have been developed as more preventive, timesaving and economical method. In this clinical study, there are two case reports with single tooth loss in mandibular molar regions which are restorated with FRC resin bonded adhesive bridges.

Case report: In the first case, a 40-year-old female patient was referred to the clinic in order to eliminate the functional problem occured because of the previously extracted right first molar tooth due to excessive decay. In the second case, a 24-year-old male patient was referred to the clinic for the rehabilitation of his missing left first molar tooth. The patients were informed about the possible treatment options. Thus it was decided to use a polyethylene fiber reinforced adhesive bridge restorations.

Conclusion: Fiber reinforced adhesive bridges are metal free restorations which have high mechanical and esthetic features.Fiber substructure provides hardness and durability under composite resin, thus this hardness and durability combines with the aesthetic and mechanical feature of composite resin. Also, these restorations are easy to repair and any preparation is needed on support teeth. For this reason, fiber reinforced adhesive restorations are alternative treatment options for patients and clinicians.

Theme: Dental Treatment & Restorative Dentistry: Materials

P663

Effect of Cavity Disinfection Systems on Bond Strength to Caries-Affected Dentin

Mehmet Ata Cebe[1], Bora Ozturk[2], Emine Sirin Karaarslan[3]
[1]*Department of Restorative Dentistry, Mustafa Kemal University, Hatay, Turkey,* [2]*Department of Restorative Dentistry, Selcuk University, Konya, Turkey,* [3]*Department of Restorative Dentistry, Gaziantep University, Gaziantep, Turkey*

Objective: The purpose of this study was to evaluate the different cavity disinfection systems on micro-tensile bond strength (μTBS) of two adhesive systems.

Methods: Forty extracted human molar teeth that have proximal carious lesion were used in this study. The teeth were randomly divided into four groups according to cavity disinfection methods: No disinfection (control), Clorhexidine, (Cavity Cleaners), Photo-activated disinfection (PAD) (Fotosan), and Nd:YAG laser (Fidelis Plus III). Then, the groups were divided into two subgroups according to adhesive systems (Adper SE Plus and Clearfil S3 Bond) ($n = 5$). Carious lesions were excavated with Steel Bur techniques. During the caries excavation, a laser fluorescence caries detector (DIAGNOdent) was used to check caries amount. Carious lesions were excavated until the caries detector showed between 11 and 20 laser fluorescence values in the center of lesions. Restored teeth were serially sectioned into beams with a cross-sectional area of approximately 1 mm^2 at the bonded interface and all samples were submitted to micro-tensile bond test. Data were analyzed using with two-way Analysis of Variance, Kruskall–Wallis, Mann–Whitney *U* tests ($p < 0.05$).

Results: Cavity disinfection systems, adhesive systems, and their interaction affected μTBS values statistically ($p < 0.05$). The bond strengths of Nd:YAG, PAD, Clorhexidine, and control group were 17.29 ± 6.26, 25.30 ± 9.01, 26.24 ± 8.05, and 32.47 ± 10.78 MPa, respectively. The highest value was observed in the control+ Adper SE Plus group in the disinfection systems+adhesive groups (37.20 ± 11.65).

Conclusion: In cavity disinfection systems, Nd:YAG laser decreased bond strength of adhesive systems.

P664

New Perspectives in Vital Pulp Therapy

Vesela Stefanova, Vania Lipcheva
Department of Operative Dentistry end Endodontics, Faculty of Dental Medicine, Medical University, Plovdiv, Bulgaria

Introduction: This case presents the advantages of Er:YAG laser for deep caries preparation and tricalcium silicate cement (Biodentine) as a pulp capping material.

Case: A 19 years old male came to the Department of Operative Dentistry and Endodontics. He reported for a pain when drinking cold beverages. Clinical examinations showed a wide carious cavity in the right mandibula second molar. The tooth was not sensitive to percussion. The cold test provoked severe pain. Radiographic examination demonstrated a big coronal hard tissue loss close to the pulp chamber and no data for periodontal apical lesion. Considering the findings the concluding diagnosis was reversible pulpitis.

A written informed patient's consent was obtained.

No local anesthesia was used. The preparation of the caries lesion was done only by Er:YAG dental laser. Carious detector was applied. The top of the pulp chamber became very thinner but there was no macroscopic communication. The irrigation was made by 0.9% NaCl water solution. Only sterile cotton pellets were used for drying. The whole cavity was filled with Biodentine. After 1 week part of the cement was replaced by permanent composite obturaton.

At the 7th, 30th, 90th day and 6th month the tooth was without any clinical symptoms or radiological data for pathological processes.

Conclusion: The combination of the dental laser excavation positives and the biological properties of new tricalcium silicate cement formula can be the key to successful vital pulp therapy. However, this case is the beginning of further clinical and histological studies with longer follow-up periods and larger samples.

P665

Clinical Evaluation of Patients with GS FIBER POST and GRADIA CORE Over a Period of 1–5 Years

Biljana Koseva[1], Gordana Kovacevska[2], Aleksandar Kovacevski[3], Nina Kovachevski[3], Vesna Andreevska[4]

[1]Private practice, D-r Kovacevska, Skopje, R. Macedonia, [2]Faculty of Dental Medicine, Medical University "St. Kiril i Metodij", Clinic for Prosthodontics, PHO Dental Clinical Center Sv. Pantelejmon, Skopje, R. Macedonia, [3]Private practice, Impakta dental, Skopje, R. Macedonia, [4]PHO Dental clinical center Sv. Pantelejmon, Clinic for orthodontics, Skopje, R. Macedonia

Aim or Purpose: The aim of this study is to present clinical evaluation of prosthetic treatment of the frontal teeth in patients with GS fiber post and gradia core over a period of 1–5 years.

Material and methods: This study includes a retrospective clinical evaluation of placement GS fiber post and GS gradia core in the prosthetic rehabilitation of 35 patients with fractured upper frontal tooth. Forty-two GS fiber post and GS gradia core were installed between 2007 and 2012.

Trough this cases we will show you our standing point, protocol and results acquired with GS fiber post and gradia core and ceramic fixed-prosthetic restorations (CFPR).

Results: Clinical evaluation included fracture and mechanical resistance of the restorations and control of soft tissue and aesthetics. Radiologically the absence of radiolucency around the fixtures was checked by the observer.

Conclusions: In our experience we can conclude that the GS fiber post and gradia core are very good method for preprosthetical rehabilitation of fractured upper frontal tooth. These methods were favorable and will contribute in achieving the definitive aesthetics and we recommend these methods as a part of the everyday prosthetic practice.

Since the success rate for the individual fixtures was 100% during the observation period, this study supports the concept that GS fiber post and GS gradia core preprosthetic restorations can successfully be applied to the rehabilitation of patients with fractured toot.

P666

Fracture Resistance of Endodontically Treated Premolars Restored with CAD/CAM Onlay Restorations

Meltem Mert Eren, Benin Dikmen, Günçe Saygı, Taner Yücel, Esra Yıldız

Department of Operative Dentistry, Istanbul University, Istanbul, Turkey

Purpose: The purpose of this in vitro study was to evaluate the fracture resistance of endodontically treated premolars restored with CAD/CAM onlay restorations.

Material and methods: Seventy extracted mandibular first premolars were used in the study. Teeth were divided into four groups: intact teeth (control), MOD onlay with buccal cusp coverage, MOD onlay with buccal cusp coverage + endodontic treatment, MOD onlay with buccal cusp coverage + endodontic treatment + fiber post. Except for the control group, other groups were divided into subgroups according to the restoration material: IPS e.max CAD (Ivoclar Vivadent) and Lava Ultimate (3M ESPE). Each group were submitted to 5000 thermal cycles, embedded in acrylic resin and secured in a universal testing machine respectively. A compressive load was applied until fracture, at a crosshead speed of 0.5 mm/min. Statistical significance among each group was analyzed using 1-way ANOVA and Bonferroni tests.

Results: According to statistical analyses, endodontically treated Lava Ultimate onlays had significantly higher fracture resistance than control group ($p < 0.05$), which also had the lowest resistance average (822.97 ± 345.01 N/mm^2). IPS e.max onlays treated with fiber posts had significantly higher resistance averages than that of endodontically treated groups and control group ($p < 0.05$). Endodontically treated teeth, restored with Lava Ultimate onlays (1380.80 ± 471.69 N/mm^2) showed significantly higher resistance averages than IPS e.max CAD onlays (753.12 ± 224.92 N/mm^2).

Conclusion: If fiber posts are applicated, teeth should be restored with ceramic restorations. Fracture resistance of endodontically treated teeth is dependent on the structures of onlay materials.

P667

Bond Strength of Self-Adhesive Resin Cements vs. One-Step Self-Etching Adhesive System

Elif Pak-Tunç, Begüm Akkayan

Department of Prosthodontics, Istanbul University Faculty of Dentistry, Istanbul, Turkey

Aim: The purpose of this research is to assess the treatment outcome of self-adhesive cements compared to one-step self etching adhesive system.

Material and methods: Forty extracted canine teeth of similar dimensions were selected for the study. Crowns were sectioned at the cemento-enamel junction and endodontically treated. The roots were randomly divided into four groups of ten specimens. Following the post space preparations quartz fiber posts were cemented using three different self-adhesive cements (Groups 1–3) and one-step self etching adhesive followed by the adhesive cement (Group 4) recommended by the manufacturer. After cementation, the roots were embedded into acrylic resin moulds and each root was cut horizontally to produce three 2-mm-thick sections through post-dentin specimens. Push-out tests were performed at a crosshead speed of 0.5 mm/min. Data analysis was made with one-way ANOVA and multiple comparison tests.

Results: No statistically significance difference was observed within the self-adhesive resin cements tested in the study. No statistically significance difference was also found between the self-adhesive resin cements and the one-step self-etching adhesive system used ($p > 0.05$).

Conclusion: The use of self-adhesive resin cements can lead to bond strength values comparable to posts cemented with one-step self etching adhesive system for the cementation of fiber reinforced posts.

P668

Comparative Evaluation for Microleakage Between Glass-Ionomer and Composite Materials

Vera Stojanovska[1], Lidija Popovska[2], Ilijana Muratovska[2], Vera Radojkova Nikolova[2], Elena Stojanovska[3], Vanco Spirov[2]
[1]*University Dental Clinical Centar "St. Pantelejmon", Skopje, Macedonia,* [2]*Faculty of Dentistry–Skopje,* [3]*PzU dent-el*

Aim: To determinate the ultrastuctural adhesive surface between composite fillings in deep cavities.
Material and methods: We used 60 intact non carious permanent human third molars, extracted from orthodontic reasons. All specimens were wet-grounded at an angle approximately at 90°C to the long axis of the booth, in order to obtain flat enamel surface. Then all specimens were wet-grounded into enamel and dentin to provide deep cavity. The specimens were divided into tree groups: the first group (FG) specimens were filled with complete adhesive system: 37% H3PO4, adhesive-Excite and composite-Tetric Ceram. In the second group (SG) we used base of conventional Fuji IX, while in the third group (TG) we used resin modified Fuji II LC. Than the deep cavities were filled with base and complete adhesive system – 37% H3PO4 adhesive-Excite and composite-Tetric Ceram. The specimens were analysed with SEM technique.
Results: In the FG the ultra structural SEM analysis demonstrated that there was no microleakage in the bottom of the cavities between dentin and the complete adhesive system. In the SG our results showed microleakage and adhesive type of separation between the dentin and the adhesive system. On the bottom of the deep cavities in the TG there was partially formed hybrid layer, with low level of penetration of the adhesive resin into the demineralised dentin tubules.
Conclusion: The specimens of filled deep cavities without base showed permanent marginal adaptation in comparison with the specimens where the base was applied

P669

Comparison of Microleakage among Two Conventional Sealants and Sealant with ACP

Onauma Angwaravong[1], Kanyarat Thangsiriamnuay[1], Thipsuda Tadmala[1], Siripak Nirothorn[1], Chutikarn Badkeaw[1], Thidarat Angwarawong[2]
[1]*Department of Pediatric Dentistry, Faculty of Dentistry, Khon Kaen University, Khon Kaen, Thailand,* [2]*Department of Prosthodontics, Faculty of Dentistry, Khon Kaen University, Khon Kaen, Thailand*

Purpose: Inadequacy of adhesion sealants of teeth, which can lead to marginal leakage. The aim of this in-vitro study was to evaluate the median of microleakage in three pit and fissure sealants.
Material and methods: Sealants used in this study were resin-based sealant without fluoride releasing (Concise®), with fluoride releasing (Teethmate F®) and Amorphous calcium phosphate (ACP, Aegis®). Fifty-five permanent maxillary premolars were randomly divided into three groups. Sealant was done in isolated condition and all teeth were thermocycled for 500 cycles between 5 and 55°C. After thermocycling the whole surface of each tooth was coated with nail varnish except for one millimeter around the sealant. The teeth were immersed in 0.5% methylene blue for 24 h and then sectioned buccolingually by precision saw, model ISOMET. The sections were analyzed for microleakage under ×30 magnification of a stereomicroscope. The Median of microleakage were analyzed by the Kruskal–Wall statistic among three groups at 0.05 α level and the Mann–Whitney U statistic between two groups at 0.05/[3 (3-1)] = 0.0083 α level.
Results: Statistical differences in microleakage were found among three materials ($p = 0.079$). When comparison of microleakage between two groups, significant differences was exhibited between sealants with ACP and sealants with fluoride groups ($p = 0.001$). There were no significant differences between sealants with ACP and sealants without fluoride ($p = 0.047$), and also between sealants with and without fluoride ($p = 0.079$) too.
Conclusion: Resin-based sealants with ACP were higher microleakage than resin-based sealants with and without fluoride releasing.

P670

Influence of Adhesive Application Methods on Microleakage of Bonded Amalgam Restorations

Safa Tuncer[1], Mustafa Demirci[1], Neslihan Tekce[1], Ömer Uysal[2]
[1]*Department of Operative Dentistry, Istanbul University, Istanbul, Turkey,* [2]*Department of Biostatistics and Medical Informatics, Bezmialem Vakif University, Istanbul, Turkey*

Aim: To evaluate the microleakage of bonded amalgam restorations using different adhesive materials with different adhesive application techniques.
Material and methods: Class V cavities were prepared on buccal and lingual surfaces of 28 human third molars. Cavities ($n = 7$) were divided into one control and three application groups per adhesive material (Scotchbond Multi-Purpose/3M ESPE; XP Bond/Dentsply) employed, as follows: control group: no adhesive material was applied under amalgam restorations, Group1: (Light cure) adhesive materials were applied in light cure mode; group2: (Chemical cure) adhesive materials were applied in chemical cure mode; group3: (light cure+chemical cure) adhesive materials were applied in light cure mode then adhesive materials were reapplied in chemical cure mode. After adhesive applications amalgam (Dispersalloy/Dentsply) was condensed and carved. After storage for 24 h in distilled water at 37°C, restorations were finished and polished. The teeth were then thermocycled (500 cycle at 5–55°C), and the specimens were examined for microleakage using methylene blue as a marker.
Results: Compared to control group adhesive application methods significantly reduced the microleakage ($p < 0.05$). For Scotchbond Multi-Purpose Group1 showed significantly highest microleakage than the other groups in enamel and dentin margins, however for the XP Bond the same effect was shown in enamel margins ($p < 0.05$). There was no significance between Group2 and Group3 for both dentin adhesives.
Conclusion: Adhesive systems had a significant effect on microleakage of Class V amalgam restorations. The influence of the chemical cure and light cure+chemical cure was significantly greater than only light cure application of adhesive systems.

P671

Fracture Resistance of Teeth Restored with Ready-to-Use Core Build-Ups and Prefabricated Posts

Hasan Alkumru[1], Begüm Akkayan Kesmezacar[2], Elif Pak Tunç[2], Zehra Çekirdek[2]

[1]Department of Prosthodontics, Faculty of Dentistry, Toronto University, Toronto, ON, Canada, [2]Department of Prosthodontics, Faculty of Dentistry, Istanbul University, Istanbul, Turkey

Purpose: To evaluate the preliminary results on the fracture resistance of teeth restored with formerly manufactured, ready-to-use core build-ups and prefabricated posts.

Material and methods: Fifty recently extracted caries-free maxillary canine teeth were selected and decoronated at the cemento-enamel junction. Following endodontic treatment and post space preparations quartz fiber-reinforced posts were cemented to all the root canals and were embedded into acrylic resin molds. The roots were then assigned to five experimental groups (n = 10). Four dental blocks of different composition have been used as core build-up materials and standard cores were individually milled from quartz fiber, resin nanoceramic, feldspathic and leucite-reinforced glass ceramic materials (Groups 1–4). Post heads of each post was cemented to the specially prepared post head space in the core build-up material. In group 5, composite resin cores were directly formed as the control group. All specimens were compressively loaded at 135° angle in a universal testing machine at a crosshead speed of 1 mm/min until fracture. Data obtained were analyzed statistically using ANOVA followed by Tukey HSD multiple comparison tests.

Results: Mean failure loads (Newtons) calculated for groups 1–5 respectively, were 721.2N, 712.5N, 671.8N, 688.7 and 642.6N. No statistically difference was observed among the groups ($p > 0.05$). Fractures that would allow repair of the tooth were observed in all five groups.

Conclusion: The results of this study can be attributed as formerly milled core build-ups could serve as an effective, contemporary and time-saving method for the restoration of endodontically treated teeth restored with prefabricated post and core systems.

P672

Radiopacity of Bulk-Fill Restorative Materials Using Two Digital Radiography Systems

Elif Yasa[1], Bilal Yasa[2], Osman Sami Aglarci[3], Elif Tarim Ertas[4]

[1]Department of Restorative Dentistry, Sifa University, Izmir, Turkey, [2]Department of Restorative Dentistry, Izmir Katip Celebi University, Izmir, Turkey, [3]Department of Oral and Maxillofacial Radiology, Sifa University, Izmir, Turkey, [4]Department of Oral and Maxillofacial Radiology, Izmir Katip Celebi University, Izmir, Turkey

Aim: The aim of the study was to evaluate the radiopacity of bulk-fill restorative materials at different thicknesses using two different digital radiography systems.

Materials and methods: Nine different bulk-fill restorative materials were used: X-tra Base, Tetric N-Ceram, Tetric EvoCeram, SonicFill, X-tra fil, SureFil SDR flow, Quixfil, Equia Fil and Filtek. Three disc-shaped specimens at different thickness (1 mm, 2 mm and 4 mm) from each materials were prepared and slices of enamel and dentin with the same thicknesses were obtain to compare materials. As a control an aluminum step-wedge varying from 0.5 to 10 mm in thickness was used. Three specimens of each material were placed on phosphor plate (PSP) and rvg sensor (RVG) together with the tooth slice and aluminum step-wedge, and then were exposed using dental x-ray unit. The images were analysed using a software program (Adobe Photoshop CS3, USA) to measure the mean gray values (MGV). Five measurements were obtained from each restorative materials, enamel, dentin and step-wedge. MGV were converted to equivalent of aluminum thickness. Data were statistically analyzed using two-way analysis of variance and Mann–Whitney *U* tests. For pairwise comparisons Tukey's test was applied ($p < 0.05$).

Results: All test materials were found to be higher than the aluminum equivalent thickness values both enamel and dentin. Equia Fil presented the lowest radiopacity values among all groups. Radiopacity increases with the increasing thickness of restorative materials. No significant difference was observed between digital radiography systems.

Conclusions: All investigated bulk-fill restorative materials presented an accepted radiopacity evaluating with RVG and PSP.

P673

Inhibitory Effect of Quaternary Ammonium Methacrylates on Dentin Protease Activity

Bebek Serra Oğuz Ahmet[1], Roda Dirihan Şeşeoğulları[2], Bülent Bek[1], David Pashley[3], Arzu Tezvergil Mutluay[2]

[1]Department of Prosthodontics, Faculty of Dentistry, University of Trakya, Edirne, Turkey, [2]University of Turku, Institute of Dentistry, Turku, Finland, [3]College of Dental Medicine, Georgia Health Sciences University, Augusta, GA, USA

Objective: Quaternary ammonium methacrylate (QAM) addition to comonomer blends has been shown to provide anti-microbial and anti-MMP properties. Aim of this study is to determine the inhibitory effects of various concentrations of a QAM-incorporated experimental resins on MMP and cathepsin-mediated dentin protease activity.

Methods: A commercial QAM methacryloyl choline methyl sulfate (MCMS) was added to co-monomer mixtures of TEGDMA (30 wt%), HEMA (10 wt%), and BisGMA (wt% varied) at 0, 5, 10, 15 wt%. Demineralized dentin beams (6 × 2 × 1 mm, n = 10/group) were divided into five groups. After initial dry mass measurements, rehydrated beams were dipped in (1) 5% QAM, (2) 10% QAM, (3) 15% QAM (4) non-QAM control (NQC) for 15 min, followed by a serious of acetone rinsing and water rinsing to remove the resin. Demineralized beams with no pretreatment were used as control (AS). Beams were incubated in calcium-zinc containing incubation media (pH 7, 37°C) for 24 h days. After incubation period dry weight of the beams reassessed and aliquots of the incubation media were analyzed for pyridinoline-crosslink-containing degradation fragment of the C-terminal-telopeptide of type I collagen (ICTP) as a determinant for MMP-mediated degradation and deoxypyridinoline-containing

degradation fragment of C-terminal telopeptide (CTX) as a determinant for cathepsin-mediated degradation using ELISA kits. The data were analyzed using ANOVA, $\alpha = 0.05$.
Results: Mass loss, CTX and ICTP release decreased significantly with the increasing QAM concentrations ($p < 0.05$) after 24 h of incubation. Mass loss ranged between 7% for AS to 3% for (15% QAM).
Conclusion: Higher concentrations of QAM could inhibit MMP or cathepsin-mediated degradation of dentin matrix.

P674
The Effects of Nitride Ceramic Coatings on Dental Alloy
Özlem Çölgeçen[1], Bülent Kesim[2], Şengül Danışman[3], Eyüp Sabri Topal[3]
[1]Department of Prosthodontics, Faculty of Dentistry, Izmir Katip Celebi University, Izmir, Turkey, [2]Department of Prosthodontics, Faculty of Dentistry, Erciyes University, Kayseri, Turkey, [3]Department of Mechanical Engineering, Faculty of Engineering, Erciyes University, Kayseri, Turkey

Aim: The main purpose of this study was to investigate the effects of nitride ceramic coatings on surface hardness and topography of Ni-Cr dental alloy. In addition, an evaluation on the adhesion forces of the nitride coatings to dental alloy was performed.
Methods: A total of 45 disc-shaped specimens were prepared from Ni-Cr alloy and metallurgically polished in order to obtain mirror finish. Specimens were randomly divided into three groups ($n = 15$). One of them was used as the control group. Other groups were coated with TiN and TiAlN by PVD magnetron-sputtering technique. Hardness measurements were performed using nanohardness and microhardness testers. Adhesion forces of the coatings on Ni-Cr alloy were measured by a scratch tester. Experimental data were analyzed statistically with ANOVA. Surface morphology and coating thickness were evaluated by SEM images.
Results: TiN and TiAlN coated specimens were found six to eight times harder than the Ni-Cr alloy ($p < 0.001$). TiN coating was found harder than TiAlN coating, but the difference was not statistically significant ($p > 0.05$). TiAlN coating exhibited significantly higher adhesion forces to dental alloy than TiN coating ($p < 0.001$). SEM analyses showed that both coatings have homogen, smooth and non-cracked surfaces and approximately 2 μm thickness.
Conclusions: Nitride ceramic coatings can be successfully deposited on Ni-Cr alloy and they can be adhered strongly onto the alloy. Therefore, these coatings may be used to improve hardness of Ni-Cr alloy in order to prevent alloy surface from mechanical damage and wear.

P675
Inactivation of Dentin Protease Activity by Photo-Activated Riboflavin
Roda Seseogullari Dirihan[1], Leo Tjäderhane[2], Pekka Vallittu[3], Arzu Tezvergil Mutluay[3]
[1]Finnish Doctoral Program in Oral Sciences, Department of Biomaterials Science, Institute of Dentistry, University of Turku, Turku, Finland, [2]Department of Cariology, Institute of Dentistry, University of Turku, Turku, Finland, [3]Department of Prosthetic Dentistry, Institute of Dentistry, University of Turku, Turku, Finland

Objective: The acid-etching step of the contemporary dental adhesives known to activate endogenous protease activity of dentin, which in part plays an important role in the degradation of hybrid layers. Previous studies suggest the successful use of collagen crosslinkers for inactivation of dentin metalloproteinase activity. Aim of this study is to investigate the effect of riboflavin pretreatment on degradation of dentin collagen by cycteine cathepsins.
Methods: Demineralized dentin beams ($2 \times 1 \times 6$ mm/n = 10/group) were distributed in five groups with regard to their initial dry weight. Each group were subjected to 1% or 5% riboflavin or riboflavin-phosphate under UVA (365 nm, 7 mW/cm^2) for 5 min and then incubated in a simulated body fluid (SBF, 1 ml) for 3 days. The groups with no pretreatment were used as control (CM). Aliquots of media were analyzed for deoxypyridinoline-containing degradation fragment of C-terminal telopeptide (CTX) as a determinant for cathepsin-mediated degradation using ELISA kit (Serum Crosslaps, Immunodiagnostics, UK). Also, dry weight loss of dentin beams was assessed after 3-day incubation. Data were analyzed using ANOVA at $\alpha = 0.05$.
Results: The CM group showed significantly higher dry weight loss compared to pretreatment groups ($p < 0.05$). Similarly, control showed significantly higher CTX (503.44 pg/mg dentin) ($p < 0.05$) release compared to pretreatment groups (range 68–153 pg/mg dentin).
Conclusion: The study showed that both riboflavin and riboflavin-phospate can effectively inhibit cysteine cathepsin-mediated dentin protease activity.
Supported, in part, by grant #8126472 from the Academy of Finland to AT-M (PI).

P676
Temperature Effects on the Rheological Properties of an Elastomeric Impression Material
Ayda Uygur[1], Sule Tugba Ozak[1], Pelin Ozkan[1], Sadullah Uctasli[1], Hasan Alkumru[2]
[1]Department of Prosthodontics, Faculty of Dentistry, Ankara University, Ankara, Turkey, [2]Department of Prosthodontics, Faculty of Dentistry, Toronto University, Toronto, ON, Canada

Goal: Rheological properties are regarded as major influencing factors which influences the accuracy of an impression material. Because temperature may affect properties and the setting kinetics, clinically relevant inferences may not be accurate with studies conducted at room temperature. The purpose of this study was to investigate the effect of temperature increase on the rheological properties and viscoelastic behaviour of a new elastomeric impression material.
Methods: The impression material used in our study is polyvinyl siloxane called AlgiNot (Kerr Corp, Romulus, MI) that is presented as an alternative to alginate for preliminary impressions as

it offers more dimensional stability and reliability. The storage modulus (G') and the loss factor (tanδ) were measured from 30 s after mixing during setting, using a controlled stress rheometer in cone-plate configuration in oscillatory mode. Viscoelastic properties were evaluated by means G' and tanδ from five repeats each at 25°C, 33°C ve 37°C. All data were statistically analyzed.

Results: The temperature studies revealed significant changes in the kinetics of setting, with the setting time decreasing between 25°C and 37°C. The kinetics of the setting reaction increase significantly with temperature for the material as revealed in the time course of the increase of G'. The change of loss factor tanδ during setting varied.

Conclusions: Within the limitations of this study, the polyvinyl siloxane impression material showed temperature sensitivity of the setting kinetics and its rheological properties. The dynamic characterization of dental impression materials is important in the design and selection of suitable materials for clinical applications.

P677

Surface Hardness of Light and Dual Cured Composite Resin Luting Cements

Mine Betül Üçtaşli[1], Şebnem Erol[1], Hasan Necdet Alkumru[2]
[1]*Department of Restorative Dentistry, Gazi University, Ankara, Turkey,* [2]*Department of Prosthodontics, Toronto University, Toronto, ON, Canada*

Objective: The aim of this study was to evaluate the effect of different light irradiation time such as 20 s, 40 s, 60 s on surface hardness of light and dual cured composite resin luting cements beneath 2 mm indirect composite resin restorative material.

Material and methods: For each test group 5 specimens were prepared and Vickers surface hardness measurements were performed on upper and lower surfaces of test specimens with different intervals such as 10 min, 24 h and 1 week after light irradiation. Light cured (NX 3, Nexus) and dual cured (NX 3, Nexus) composite resin luting cements were polymerised 20 s, 40 s and 60 s by LED light curing unit (Elipar FreeLight 2). Additionally, same luting materials were polymerized beneath 2 mm indirect composite resin restorative material (Paradigm MZ 100).

The data were analyzed with three-way ANOVA, *t*-test, and oneway ANOVA.

Results: Light irradiation without indirect composite resin restorative material at 10 min, 24 h and 1 week and at three different irradiation time intervals, Vickers Hardness Number (VHN) of light cure luting cement was higher than dual cure luting cement at both upper and lower surfaces of the test specimens ($p < 0.05$). All tested groups, VHN was increased at 24 h compared with 10 min results ($p < 0.05$). Light irradiation beneath indirect composite resin restorative material at different three irradiation time intervals for both luting cements VHN was decreased ($p < 0.05$).

Conclusion: VHN decreased under indirect composite resin restorative material curiously at lower surfaces for both luting cements.

P678

Evaluation of Vickers Hardness and Depth of Cure of Different Bulk Fill Composites after Aging

Murat Ünal[1], Koray Soygun[2], Ali Özer[3], Evrem Gülnahar[2], Giray Bolayır[2]
[1]*Department of Pediatric Dentistry, Cumhuriyet University, Sivas, Turkey,* [2]*Department of Prosthodontics, Cumhuriyet University, Sivas, Turkey,* [3]*Faculty of Engineering, Cumhuriyet University, Sivas, Turkey*

Aim: This study was examined the surface microhardness of three kind of bulk fill composites (Surefil SDR flow, Tetric Evo Ceram, Xtra base).

Material and methods: Ten specimens of 2, 4 mm thickness and 4 mm diameter of each bulk fill composite were polymerized using a halogen light and a blue light-emitted diode. Microhardness evaluation was performed at the top and bottom surfaces for each specimen using a Vickers microhardness tester. Furthermore, morphologies of the polished top surfaces of bulk fill composites were observed using scaning electron microscopy (SEM).

Results: The bottom surface measurements were evaluated, except for the Voco 2 mm thickness example polymerized with LED and halogen groups, no significant difference was found in all the composite groups ($p > 0.05$). Tetric composite group showed the highest microhardness values. The statistical evaluation taking into account the thickness of the composite samples, the top surface microhardness values found statistically significant difference between 2 mm and 4 mm thicknesses of the Voco composite samples ($p < 0.05$). In the other composite groups, these values were not found to be significant differences ($p > 0.05$).

P679

Effect of Different Tooth Preparation Timings of Tooth Preparation on the Coronal Microleakage of Fiber Post

Wei Wu[1], Honglai Jin[2], Lili Yang[1]
[1]*Department of stomatology,Zhoupu Hospital,Shanghai,China,* [2]*Department of stomatology, 9th People's Hospital, Shanghai, China*

Objective: The vibration of high speed handpiece during tooth preparation may have adverse effect on the continuous force of the bonding interfaces among the cement, dentin, and post core. To find the effect of different tooth preparation timings on the coronal microleakage of fiber post to provide evidence for the clinical operation.

Methods: The extracted mandibular premolars were divided into two groups, and they were prepared immediately and 24 h after the cements mixed. All roots were then dyed. The teeth were observed under stereoscopic microscope and the dyeing scores were also recorded.

Results: There is significant difference on the coronal microleakage of tooth preparation timings. Group of prepared after 24 h got the lower scores.

Conclusion: It is more conducive to the post-core bond after 24 h tooth prepared.

P680

Dental Filling Materials Can Cause Oxidative DNA Damage

Mehmet Yıldız[1], Hamit Hakan Alp[2], Pınar Gül[1], Nuri Bakan[3]
[1]*Department of Restorative Dentistry, Faculty of Dentistry, Atatürk University, Erzurum, Turkey,* [2]*Department of Biochemistry, Faculty of Medicine, Yüzüncü Yıl University, Van, Turkey,* [3]*Department of Biochemistry, Faculty of Medicine, Atatürk University, Erzurum, Turkey*

Objective: The purpose of this study is to examine the effects of two restorative materials [composite (Filtek Z250™, 3M ESPE, St Paul, MN, USA) and amalgam (Cavex Avalloy, Cavex, Holland)] and substances secreted by them to the oral environment on lipid peroxidation and DNA oxidation after they pass to the blood circulation.

Material and methods: Blood samples of 41 patients were obtained before the application of these restorative substances (19 amalgams and 22 composites) and 24 h after this application. In these samples to determine oxidative DNA damage the ratio of 8-hidroxideoxyguanine/deoxyguanine (8-OHdG/dG) was measured and to define lipid peroxidation the malondialdehyde (MDA) level was measured. Statistical analysis was performed in SPSS 16.0. For analyze of the variables, Wilcoxon signed rank test was used and $p < 0.05$ was referred as significant statistically.

Results: While no statistical significance was observed before and after amalgam filling application ($n = 19$) in the name of DNA oxidation (1.26 ± 0.16, 1.38 ± 0.46 respectively), MDA concentration was significant statistically (5.64 ± 2.53 μM, 9.78 ± 3.50 μM respectively, $p < 0.001$). In composite application, a significant difference was observed before and after application in DNA oxidation (1.28 ± 0.23, 1.46 ± 0.31, respectively, $p < 0.05$). On the other hand, even though an increase was seen in MDA concentrations no statistical significance occurred (6.59 ± 3.37 μM, 7.94 ± 5.24 μM respectively). No relationship between the mass of filling substances and secreted contents was determined.

Conclusions: In the light of these results, we could say that Hg which secreted from amalgam increased the lipid peroxidation and BisGMA and TEGDMA which secreted from composite increased DNA oxidation.

P681

Microhardness of Resin Cements Polymerized Through Different Shade Composite Discs

Mügem Aslı Gürel[1], Fehime Alkan[2], Hacer Deniz Arısu[2], Hüma Ömürlü[2]
[1]*Department of Endodontics, Gazi University, Ankara, Turkey,* [2]*Department of Restorative Dentistry, Faculty of Dentistry, Gazi University, Ankara, Turkey*

Aim: The aim of this study was to evaluate the degree of conversion and microhardness of different resin cements that polymerized through different shade composite discs with QTH and LED curing units after 1 and 24 h.

Material and methods: Two different shades of composite discs; light (Clearfil majesty esthetic (XL), Kuraray, Japan) and dark (Clearfil majesty esthetic (C3), Kuraray, Japan) were prepared with metallic molds of 1 mm in depth and 5 mm in diameter. Three different resin cements (Panavia F, Kuraray; SA Cement, Kuraray; PermaFlo DC, Ultradent) were placed in metallic molds of 1 mm in depth and 5 mm in diameter and polymerized through the prepared composite discs with QTH and LED curing units. The resin cement specimens were stored at 37°C in dark for 1 and 24 h. Vicker's hardness measurements were performed. A 100 g load was applied to samples with a dwell time of 10 s. Three indentations were made on upper and lower surface of each specimen. A bottom to top Vicker's Hardness Number (VHN) ratio was determined. The data was statistically analysed by ANOVA and Tukey HSD test.

Conclusion: There were significant differences between resin cements ($p < 0.05$). Degree of conversion of resin cements polymerized through XL shade was significantly higher than resin cements polymerized through C3 shade ($p < 0.05$). There was no significant difference between the light curing units.

P682

Radiopacity of Compomer Restorative Materials Using Digital Radiography

Birsay Gümrü[1], Bilge Tarçın[2], Sertaç Peker[3]
[1]*Department of Oral and Maxillofacial Radiology, Faculty of Dentistry, Marmara University, Istanbul, Turkey,* [2]*Department of Restorative Dentistry, Faculty of Dentistry, Marmara University, Istanbul, Turkey,* [3]*Department of Pedodontics, Faculty of Dentistry, Marmara University, Istanbul, Turkey*

Aim: The aim of this study was to evaluate the radiopacity of different compomer restorative materials using a digital imaging system.

Material and methods: Ten standard disk specimens (5 mm diameter, 1 mm thickness) were prepared from each of the following restorative materials: eight different colours of Twinky Star (Voco), two different colours of Twinky Star Flow (Voco), Dyract Flow (Dentsply), Dyract XP (Dentsply), Glassiosite (Voco), Compoglass F (Ivoclar Vivadent) ($n = 140$). Radiographs of the specimens were taken together with tooth slices and an aluminum (Al) stepwedge calibrated in millimetres (1–15 mm, 1-mm increments) as reference using Dürr Vistascan Mini digital imaging system. For the radiographic exposures, a storage phosphor plate (size 4; 5.7×7.6 cm) and a dental x-ray unit at 70 kVp and 7 mA were used. The object-to-focus distance was 30 cm, and the exposure time was 0.2 s. The grey values of the test materials were measured digitally using the histogram function of the system's own software (DBSWIN 5.2.0) and compared with the stepwedge to find the equivalent thickness. Data were analysed with significance levels set at $p < 0.05$.

Results: Compoglass F showed the highest radiopacity value among the materials tested, whereas two different colours of Twinky Star Flow showed the lowest. All tested materials had radiopacity values greater than the radiopacity of dentin and higher than 1 mm thickness of Al.

Conclusions: All of the compomer materials evaluated met the minimum radiopacity standard recommended by the International Organization for Standardization and the American Standards/American Dental Association.

P683

Low-Shrinkage Composites: Microleakage and Marginal Adaptation

Hamidreza Alimoradi, Mohadese Azarsina
Inernational Branch of Shahid Beheshty, Tehran, Iran

Introduction and aim: Silorane-based composite is a novel low-shrinking material produced in attempts to reduce problems associated with polymerization shrinkage of methacrylate-based composite resins. Silorane is obtained from the reaction of oxirane and siloxane molecules. Oxirane is a monomer with ring-opening polymerization, which causes lower amount of polymerization shrinkage than conventional methacrylate-based resin matrix. The siloxane backbone gives hydrophobicity to this resin-based material. Methacrylate-based composites have average polymerization shrinkage of 1.5–6 vol%, whereas silorane-based composite has an average shrinkage of 0.9 vol%.
Material and methods: For this resarch we used online database and search engines as Pubmed, wiely, and articles from 2000 to 2013 have been considered.
Result: Silorane exhibited significantly decreased microleakage and increased marginal adoption compared with any other composite (RBC).
Conclusion: Although all of the restorative systems had microleakage, silorane technology showed less microleakage comparableto clinically successful methacrylate-based composite. This will improve the clinical performance and extend the composite durability.

P684

Dental Amalgam Waste Management by Dentists in East Africa

Bernina Kyale Kisumbi[1], Loice W. Gathece[2], Lucina Nyanjama Koyio[3], Jane Gachambi Wamai[4]
[1]*Department of Conservative and Prosthetic Dentistry, University of Nairobi, Nairobi, Kenya,* [2]*Department of PeriodontologyCommunity and Preventive Dentistry, University of Nairobi, Nairobi, Kenya,* [3]*Ministry of Public Health and Sanitation, Nairobi, Kenya,* [4]*Ministry of Medical Services, Nairobi, Kenya*

Aim: The aim of the study was to evaluate the current practices of dental amalgam waste management by dentists.
Material and methods: All the 1028 dentists who were registered with the regulatory bodies in the three selected countries Kenya (565), Uganda (300) and Tanzania (189) constituted the sample. Authority to conduct the study was obtained by United Nations Environmental Programme from the respective Ministries of Environment in the three countries. Questionnaires were administered using on line web-based Survey Monkey software. Respondents were followed up with multiple reminders. Data was exported and analysed using SPSS.
Results: A total 188 dentists logged into the web but only of 68 dentists completed the questionnaire, males 41 (60.3%), females 19 (27.9%), with 45, 5 and 15 being from Kenya, Uganda and Tanzania respectively. Majority 63 (92.6%) used dental amalgam, 95.6% knew measures of minimizing amalgam waste, however 22 (32.4%) used bulk elemental mercury and alloy powder, 46 (67.6%) discarded waste amalgam with sharps, hazardous and general and waste and only 18 (26.5%) immersed waste amalgam in sealed containers, No dentist reported knowledge of a recycler in the region and only 19 (27.9%) planned to install separators.
Conclusion: Most dentists were aware of methods of minimising waste and a minority handled contact and non-contact waste appropriately, however majority did not handle waste according to best management practices.

Theme: Dental Treatment & Restorative Dentistry: Pedodontics

P685

Interleukin-1β and VEGF Levels in Gingival Crevicular Fluid in Children with Epilepsy

Gülsüm Duruk[1], Taşkın Gürbüz[1], Hülya Aksoy[2]
[1]*Department of Pediatric Dentistry, Faculty of Dentistry, Ataturk University, Erzurum, Turkey,* [2]*Department of Biochemistry, Faculty of Medicine, Ataturk University, Erzurum, Turkey*

Background: Interleukin-1β (IL-1β), a proinflammatory cytokine, and vascular endothelial growth factor (VEGF), an angiogenesis cytokine, levels in gingival crevicular fluid (GCF) are affected by some systemic diseases. The aim of this study to evaluate the IL-1β and VEGF levels in GCF in epilepsy children.
Material and methods: Twenty-four epilepsy children in free seizure period and 20 healthy children were evaluated. Gingival index (GI), plaque index (PI), probing depth (PD), clinic attachment level (CAL) were measured. GCF was collected by periopapers and its volume was measured with the Periotron 8000. GCF IL-1β and VEGF concentrations were analyzed in Biochemistry Laboratory and measured by ELISA method.
Results: Total amounts of IL-1β and VEGF in GCF in epilepsy patients were significantly higher compared with healthy children ($p < 0.0001$). Clinic parameters, that were GI, PI, PD and GCF volume in epilepsy cases were significantly higher than healthy children. CAL were <2 mm for all children. When the patients were divided into groups according to the drug used, there was not any significant differences in GCF IL-1β and VEGF levels among drug groups. According to these results it may be suggested that in epilepsy patients needs optimal oral care.

P686

The Configuration of Teeth with Complete Structual Integrity Which Have Shape Anomaly with Resin Based Composite Restorations: Five Case Reports

Engin Ağaçkıran[1], Özkan Adıgüzel[2], Emre Karaali[1], Rasim Mustafaoğlu[3]
[1]*Department of Pediatric Dentistry, Faculty of Dentistry, Dicle University, Diyarbakır, Turkey,* [2]*Department of Endodontics, Faculty of Dentistry, Dicle University, Diyarbakır, Turkey,* [3]*Department of Prosthesis, Faculty of Dentistry, Dicle University, Diyarbakır, Turkey*

Introduction: The congenital or acquired anomalies like common decays at anterior teeth, diastema, cross-bites, hypoplasia, flourosis may cause esthetic problems.

Case: In this study, it's aimed to eliminate the esthetical complains of five patients at the age of 12–16 with conservative treatments. Some changings were made at location of the teeth with preperation but at some of the patients, changings were made without preparation. Than teeth restored with composite material. Controls were made at the intervals of 6 months for 1 year and any significant colour changins or restoration fractures were not determined.
Conclusion: We are of the opinion that at the esthetic problems caused of dental size-shape anomaly may be restored with composite restorations rapidly, economic and effective.

P687

Camouflage Treatment at the Patient Who Have Dental Discoloration Because of Different Reasons: Five Case Reports

Engin Ağaçkıran[1], Özkan Adıgüzel[2], Emre Karaali[1]
[1]*Department of Pediatric Dentistry, Faculty of Dentistry, Dicle University, Diyarbakır, Turkey,* [2]*Department of Endodontics, Faculty of Dentistry, Dicle University, Diyarbakır, Turkey*

Introduction: Dental discoloration may occur because of dental hypoplasia, flourosis, amelogenesis imperfecta, dentinogenesis imperfecta, devitalisation. In this study it's aimed to treat the dental discoloration of five different patients with conservative treatments.
Case: Patients at the age of 12 and 16 were consulted to our clinics with esthetical concern. After the intraoral examination, it's decided to camouflage the discoloration with composite material. Two of the patients have discoloration because of endodontic treatment and three of the patients have discoloration because of flourosis and hypoplasia. Neither vital nor nonvital bleaching technique were used. Teeth were prepared and restored with composite restorations at one session. Patients were seen in the interval of 2 months for 1 year and no complains were observed.
Conclusion: We are at the opinion of camouflaging these teeth with composite restorations without prosthodontic treatments.

P688

Oral Rehabilitation of 4 and 5-Year-Old Two Lactose Intolerant Patients

Engin Ağaçkıran[1], Özkan Adıgüzel[2], Emre Karaali[1], Mehmet Ünal[1]
[1]*Department of Pediatric Dentistry, Faculty of Dentistry, Dicle University, Diyarbakır, Turkey,* [2]*Department of Endodontics, Faculty of Dentistry, Dicle University, Diyarbakır, Turkey*

Introduction: The effect of diet is an important factor that affect dental caries. In our study main purpose is to perform the treatments of two patient have lactose intolerance. As a result of the medical history of patients, it has been reported that the medical treatment for lactose intolerance therapy continued.
Case: Case 1: A 4-year-old female was referred to our clinic because of dental pain. Intraoral examination revealed that all of the teeth except for primary incisor and primary canine are carious. The restorative treatment of carious teeth were performed. Follow-up was decided for upper primary teeth.

Case 2: A 5-year-old patient was referred to our clinic with the complain of dental caries. The intraoral examination revealed that all of the primary molar teeth are carious. The conservative treatment of carious teeth were performed.
Conclusion: To be aware of relation between diet and dental caries is an important part of treatment. We believe that, lactose intolerated patients have high-risk for dental caries and this situation should not be ignored.

P689

Rehabilitations of Dental Tissue Defects and Pulp Pathology Noticed While Orthodontic Treatment

Engin Ağaçkıran[1], Özkan Adıgüzel[2], Emre Karaali[1]
[1]*Department of Pediatric Dentistry, Faculty of Dentistry, Dicle University, Diyarbakır, Turkey,* [2]*Department of Endodontics, Faculty of Dentistry, Dicle University, Diyarbakır, Turkey*

Introduction: Many variance may become while orthodontic treatment at periodontal and tooth tissue. These variances may cause many problems. In this study it's aimed to make the treatments of two patients with problems of dental hard tissue or pulp pathology.
Case: Two patiens at the age of 14 male and 16 female consulted to our clinic with the complain of dental pain while orthodontic treatment. Intraoral and radiographic diagnosis were made and it's detected at one of the patient abscess formation caused by pulp pathology and at the other one dental tissue destruction. The endodontic and restorative treatments were performed. After performing the endodontic and restorative treatments, in the interval of 3 months for 1 year, no symptoms were observed.
Conclusion: We are at the opinion that, it's important to diagnose and treat the pulp pathology and dental destruction while orthodontic treatment.

P690

Oral Health Status of Children in Pediatric Dentistry Clinics, Istanbul

Melis Araz[1], Yeliz Guven[1], Sermin Dicle Ulug Cansız[1], Aykut Kanat[2], Oya Aktoren[1]
[1]*Department of Pediatric Dentistry, Faculty of Dentistry, Istanbul University, Istanbul, Turkey,* [2]*Post-Graduate Student, Faculty of Dentistry, Istanbul University, Istanbul, Turkey*

Aim: The objective of this study was to assess the oral and dental health status of 2–6 years old children attended to the Clinics of Department of Paediatric Dentistry, Istanbul University, Istanbul.
Methods: A random sample of 100 children aged 2–6 years (52 boys, 48 girls) visited the Dept. of Pediatric Dentistry, Istanbul University in 2012 were evaluated for caries indices (dft, dfs), plaque index (PI); and oral health attitudes, feeding practices were also assessed by a questionnaire.The findings were analyzed statistically by chi-square test (NCSS 2007&PASS 2008 Statistical Software).
Results: The caries prevalance was determined as 99%; the mean dft, dfs, PI were determined as 8.17, 17.85, 1.03; the mean dft,

dfs, and PI in boys and girls were found as 8.24, 17.09, 0.92; 8.09, 18.67, 1.14, respectively. No significant difference ($p > 0.05$) was determined between gender and dft indexes. dfs index of girls was found higher ($p < 0.05$) than boys. No significant difference ($p > 0.05$) was determined between PI of girls and boys. A significant decrease ($p < 0.05$) was obtained in dft and dfs indexes as educational status of mothers has increased. Toothbrushing frequencies were found as: >2/day (27%), <2/day (63%), no brushing (10%); not visiting the dentist before (48%);%'s of feeding practices duration:breastfeeding: >1 year (74%), <1 year (22%), no-breastfeeding (4%); bottle feeding >1 year (%60); consumption of sugary foods >1/day (74%), acidic drinks >1/day (26%).
Conclusions: The very poor oral health findings obtained in children attended to Istanbul University Pediatric Dentistry Clinics have revealed that the preventive approaches for early childhood caries should be emphasized in the population.

P691

Assessment of Odontogenic Infections in Pediatric Patients

Dicle Sermin Ulug Cansiz[1], Yeliz Guven[1], Melis Araz[1], Sinem Aydin[2], Oya Aktoren[1]
[1]Department of Pediatric Dentistry, Faculty of Dentistry, Istanbul University, Istanbul, Turkey, [2]Undergraduate Student, Faculty of Dentistry, Istanbul University, Istanbul, Turkey

Aim: The aim of this study was to evaluate the characteristics of odontogenic infections which have great importance in oral and general health of children.
Methods: The characteristics of oral and maxillofacial odontogenic infections diagnosed during the initial examinations of 150 pediatric patients aged 3–15 years old (84 girls, 66 boys) in the Clinics of Department of Pediatric Dentistry, Istanbul University, Turkey, were assessed in this study.
Results: The mean age of study group was 7.12 + 2.6 years. Systemic health problems were reported for 21 (14%) patients. The great majority of cases were diagnosed with intraoral abscess (85.33%) and 22 patients with extraoral abscess (14.66%). The focus of infection was mandibular in 84 patients (56%) and maxillary in 66 patients (44%). The mandibular second primary molar was the most commonly infected tooth (43.04%) and six patients (4%) had infection in more than one site. The most frequent cause was pulp necrosis due to caries (92%). Pain was reported by 99 patients (66%); other signs and symptoms recorded were lymphadenopathy (24.66%), high fever (10%) and trismus (6%). The management included extraction in 72 patients (48%), and endodontic treatment in 71 patients (47.33%).
Conclusions: The data has emphasizes the comprehensive caries prevention and management strategies in populations.

P692

Bulk-Fill Flowable Composite Liner for Pulpotomized Primary Teeth

Kenan Cantekin, Hüsnüye Gümüs
Department of Pediatric Dentistry, Faculty of Dentistry, Erciyes University, Kayseri, Turkey

Objective: The present study determined whether primary molar pulpotomies showed equal in vitro and clinical success when restored with sandwich restoration with a bulk-fill flowable composite (BFRBC) liner vs. a stainless steel crown (SSC) restoration.
Methods: Sixty extracted human primary second molars with proximo-occlusal cavities were selected for in vitro test. The specimens were randomly divided into three groups ($n = 20$) and restored with sandwich restoration with a BFRBC liner, composite (RBC) restoration and SSC. In addition, sixty teeth were selected from 20 children and each child had at least three primary molars (first and/or second primary molar) requiring pulpotomy. The patients were recalled for clinical and radiographic evaluation at approximately 6- and 12-month intervals.
Results: The SSC restoration had significantly higher microleakage than the others. Although there was a significant difference between the RBC and the SSC ($p = 0.02$), the differences between the BFRBC and the RBC, as well as between the BFRBC and the SSC, were not statistically significant level, at the 12-month radiographic evaluation ($p = 0.33$ and $p = 0.11$, respectively).
Conclusion: The use of BFRBC in resin-based composite restoration appears to be a successful component in the final restoration of pulpotomized primary molars.

P693

A Conservative Approach for Treating Cysts Blocking Eruption in Children: Eight Case Reports

Murat Cortcu[1], Enes Özkan[2], İsmail Şener[2], Bilal Özmen[3], Nursel Arıcı[4]
[1]Deparment of Pediatric Dentistry, 19 May University, Samsun, Turkey, [2]Deparment of Oral and Maxillofacial Surgery, 19 May University, Samsun, Turkey, [3]Samsun Oral Health Center, Samsun, Turkey, [4]Department of Orthodontics, 19 May University, Samsun, Turkey

Introduction: Radicular and dentigerous cysts are the common types of cystic lesions occurring in jaws, and account for approximately 50% and 25% of the jaw cysts respectively. Several treatment options include complete enucleation and marsupialization. If preservation of the displaced teeth is desirable, and in a young patient where the lesion is isolated, marsupialization of the cystic lesions of the jaws is the technique that relieves the pressure within the cystic lesion and causes some decrease in size of the lesion. Thus the optimal treatment option for the dentigerous cysts in the children is marsupialization because of the mixed dentition.
Case: Totally eight child patients came for a dental check-up to Department of Pediatric Dentistry, 19 May University. We diagnosed lesions in those patient by intraoral and radiographic identification. Dentigerous cysts were found in six patients and radicular cysts were found in two patients. All patients were treated with marsupialization in Department of Oral and Maxillofacial Surgery. In some patients, we used dental shutter which made from acrylic resin to provide tunnel for a long time without spontaneous closing. After mean 12 months of following, spontaneous eruptions of displaced tooth, fully healing of bone and reliefing of all semptom relating to lesions were noticed.
Conclusion: In conclusions, marsupialization expecially using dental shutter might be the first treatment option for conservative management of dentigerous and radicular cyst in children with mixed dentition.

P694

Clinical Indivators of Dental Caries and Periodontal Status Children with Obestiy

Münevver Çoruh, Tevfik Demirci, Taşkın Gürbüz
Pediatric Dentstry, Ataturk Universty, Erzurum, Turkey

Background: The aim of the present study was to evaluate the oral hygiene status and dental treatment requirements in children with obesity.
Methods: The present study was conducted on 60 obese children (38 girls and 22 boys) and 60 (33 girls and 27 boys) normal-weight controls, for this analysis, only children aged between 7 and 16 years were considered. The dental and physical examinations of the under standard light, using a plane buccal mirror, a dental probe and air drying to evaluate caries experience and to record the periodontal health of each child. Dental caries was assesed by trained and calibrated dentists using a visual-tactile method with standardized equipment. Statistical analysis was performed using chi-square test, Fisher exact test and ANOVA.
Results: The number of decayed and missing teeth were lower in the obese group when compared with control group ($p > 0.05$).The degree of abrasion and periodontal indexes were significantly different in obese group, compared to the control group ($p < 0.05$). The obese children were more likely to have plaque index and gingival index than control groupe. Investigated regarding salivary parameters, oral clinical parameters. Compared with controls, children with obesity had higher simulated salivary secretion rate ($p > 0.05$) and gingival inflamation were observed in children with obesity.

P695

Treatment of an Abnormally Erupted Maxillary Central Incisor: A Case Report

Özge Özmekik, Gülcan Şahin Ünsal, Işın Ulukapı
Department of Pedodontics, İstanbul University, İstanbul, Turkey

Introduction: The treatment of abnormally erupted maxillary permanent incisors, are challenging because of their importance to facial esthetics. These failures can be caused by crowding, arch space loss, trauma, presence of superrnumerary teeth etc. Studies have shown that teeth which fail to erupt in their normal position need to be orthodontically aligned into their normal physiologic position. The treatment of an abnormally erupted tooth will depend on its state, position, and presence of enough space in the dental arch to accommodate.
Case: We report a case of a 12-year-old female with an abnormally erupted right upper central incisor. Brackets were placed on the upper arch to eliminate the arch space loss.Then according to the treatment plan, forced eruption was needed.But, after the elimination of the arch space loss with nitinol coil spring, the tooth moved spontaneously into its proper position in the dental arch in 5 months.
Conclusion: At 1-year follow–up the right central incisor responded normally to percussion and mobility and sensivity testing with normal width of attached gingiva.

P696

Clinical Comparison between "Fiber Reinforced Composite-Loop" and "Band-Loop" Space Maintainers

Gülcan Ünsal, Özge Özmekik, Gülhan Koyuncuoğlu, Gamze Aren, Işın Ulukapı
Department of Pedodontics, Istanbul Universty Faculty of Dentistry, Istanbul, Turkey

Introduction: The aim of this study was to evaluate the clinical performance of "Fiber Reinforced Composite (FRC)-Loop" and "Band-Loop" space maintainers.
Methods: Fiften children (aged 4–7 years) volunteered for the study; all of them had premature loss of primary first molars or primary second molars in two quadrants. FRC-loop space maintainer was attached to the tooth using restorative composite resin in one quadrant and band-loop space maintainer was cemented with glass ionomer cement in the other quadrant. Patients were checked in 1, 3 and 6 months intervals for clinical success of two different type of space maintainers.
Conclusions: Though there was no statistically significant difference between two space maintainer types, the FRC-loop seems to be a clinically acceptable, useful and cheaper alternative to band loop space maintainer.

P697

Maxillary Sinus Pneumatization after Maxillary First Molar Extractions in Children

Sinem Kuru[1], Mustafa Mert Acıkgoz[2], Feyza Nur Gorken[1], Goksen Ikikarakayali[1], Arzu Pinar Erdem[1], Penbe Cagatay[4], Tamer Lutfi Erdem[3], Gulsum Ak[2], Elif Sepet[1]
[1]Department of Pedodontics, Istanbul University, Istanbul, Turkey, [2]Department of Oral and Maxillofacial Surgery, Istanbul University, Istanbul, Turkey, [3]Department of Oral and Maxillofacial Radiology, Istanbul University, Istanbul, Turkey, [4]Department of Biostatistics and Medical Informatics, Istanbul University, Istanbul, Turkey

Aim: The aim of this study was to identify and measure maxillary sinus pneumatization after maxillary first molar extractions using fixed reference lines on panoramic radiographs in children.
Material and methods: Sixty-three panoramic radiographs were used to measure superoinferior differences of the sinus floor position in dentate sites in comparison with contralateral edentulous sites. Radiographs obtained at least 6 months after tooth extraction were included in the study. All measurements were performed using an interorbital line and two zygomatic process lines as reference lines. Correlations between the amount of sinus expansion and age, sex, the duration after extraction were evaluated by statistical analysis (SPSS 21.0).
Results: Patients included in the study (38 boys, 25 girls) ranged in age from 11 to 17 years with a mean age of 13.1 ± 1.64. The average time after tooth extraction was 7.84 ± 1.68 months. The amount of sinus expansion after tooth extraction was 0.571 mm. The measured sinus expansions in edentulous sites in comparison to dentate sites were statistically significant ($p < 0.001$). There was

statistically significant difference between the amount of maxillary sinus expansion and the time intervals after extractions ($p < 0.001$). The largest sinus expansions detected in patients with extractions over 6 months ($p < 0.001$).

Conclusions: The results of this study revealed sinus pneumatization after maxillary first molar extraction. The amount of sinus expansion can be considered as negligible but the clinician should be aware of the increased probability for sinus pneumatization, possible exposure or perforation in cases of extraction of two or more adjacent posterior teeth.

P698

Development of Permanent Maxillary Canines, Second Premolars and Molars in Early Mixed Dentition

Zülfikar Zahit Çiftçi, Zuhal Kırzıoğlu, Ayşegül Sarıtekin, Ceylan Çağıl Yetiş

Department of Paediatric Dentistry, Suleyman Demirel University, Isparta, Turkey

Aim: It was aimed to compare of the developmental stages of the maxillary permanent canines, second premolars and second molars, for the orientation of the eruption guidance.

Material and methods: Panoramic radiographies of the 428 child patients who had applied our clinic and were between 8 and 10 years-old (9.02 ± 0.78), had no systemical or developmental disorders, had accesible records and whose dental age was compatible with chronological age were examined. On the radiographies, developmental stages of maxillary canines, second premolars and molars were evaluated according to Demirjian's classification. For the statistical analyses, Mann–Whitney *U*-test and correlation analyses were used.

Results: Dental developmental stages of the girls were further in all age groups. This differance is statistically significant for the maxillar canines in all age groups and for the second premolars and molars in only 9-year-old patients ($p < 0.05$). A strong correlation was found between canines ($r = 0.47$), premolar ($r = 0.49$) and molars ($r = 0.36$) development and chronological age ($p < 0.01$). In the 8-year-old patients, while 38% of the canines had completed more than 1/3 of the root formation, <5% of the other teeth had showed the same evolution. For the further ages, maxillary canines' developmental stages were advanced, either.

Conclusions: In all age groups, development levels of maxillary canines was observed further, in comparison with maxillary second premolars and second molars. Consequently, for the ideal occlusion, we can allow canines to erupt earlier than its normal eruption time so that Lee-way space can be protected.

P699

Prader-Willi Syndrome: A Case Report

Aliye Tuğçe Tanyeri[1], Mustafa Özen[2], Mine Koruyucu[1], Erkan Koparır[2], Figen Seymen[1]

[1]*Department of Pedodontics, Faculty of Dentistry, Istanbul University, Istanbul, Turkey,* [2]*Department of Medical Genetics, Cerrahpasa Medical School, Istanbul University, Istanbul, Turkey*

Introduction: Prader-Willi syndrome is a multisystemic neurodevelopmental genetic disorder caused by lack of expression of paternally inherited genes on chromosome 15q11-q13.The prevalence of Prader-Willi syndrome is estimated to be one in 10.000–25.000.It is characterized by severe infantile hypotonia with poor suck and failure to thrive; hypogonadism causing genital hypoplasia and pubertal insufficiency;characteristic facial features; early-childhood onset obesity and hyperphagia; developmental delay/mild intellectual disability; short stature; and a distinctive behavioral phenotype.Abnormal saliva secretion, emotional and behaviour problems, may affect the health status of the oral mucousa and teeth.A case, diagnosed clinically and radiografically as Prader-Willi Syndrome was evaluated.

Case report: A 7-year-old male patient diagnosed as Prader-Willi syndrome presented with neuromotor-development delay, mild mental retardation, speech defect, hyperphagia, hypogonadism and growth hormone deficiency.The physical examination revealed as strabismus, narrow bifrontal diameter with almond-shaped eyes, small nose down-turned corners of the mouth, small penis, obesity, small hands and feet.Oral findings are high pain threshold, low salivary flow, dry mouth, dental caries.Margins of gums are bleeding because of dry mouth and dry oral mucosa.The patient was well-adaptable and his caries are restored with amalgam, GIC and composite resins.

Conclusion: Prader-Willi syndrome is a multisystemic rare syndrome that effects the oral and systemic health and this manifestations should be exacted multidisciplinary treatment including both medical science and dentistry.It is very important to protect the maximum oral hygiene and to inform patient's family.

P700

The Problems Encountered During the Dental Treatments of a Patient with Congenital İchthyosis

Merve Kurun, İrem Can, Nuran Özalp

Department of Pediatric Dentistry, Ankara University, Istanbul, Turkey

Introduction: The ichthyoses are a family of genetic disorder diseases characterized clinically by xerosis, scaling, keratosis pilaris and dry, thickened skin. It is a dermatological disorder which causes fish-like scales on the skin's surface. Ichthyosis has many sub-variaties which may develop at birth (congenital ichthyosis) or after birth (vulgar ichthyosis). There has been 36 types of ichthyosis and 10 clinical entities according to a recent consensus conferance. The patients with ichthyosis is tend to enfections and they have bilateral lower and upper eyelid ectropion. The aim of this case report was to present a 8-year-old patient who had congenital ichthyosis.

Case: The main complaint of the patient was pain and she referred to our clinic. Extra oral examination showed that her skin was thickined, scaling and dry. Her lower eyelids were ectropic and she had been under observation of an ophtalmologist. We also observed angular cheilitis, cracks and ulserations on the corner of her mouth. Intra oral examination showed Molar- Incisor Hypomineralization. The oral mucosa was normal but there was limited mouth opening. The oral hygiene of the patient was not good

enough so we planed restorative treatments and extractions for providing patient's optimal oral hygiene.
Conclusion: One of the points to take into account is to behave in a naturel way to these patients and not to make them feel that they are extraordinary. In this case, problems and therapeutic approaches of a child with ichthyosis during her dental treatments were presented.

P701
Clinical Success Rate of Resin Based Fissure Sealants: One Year Follow-Up
Cengiz Aydınoğlu[1], Pelin Barlak[2], Mine Koruyucu[2], Figen Seymen[2]
[1]*Faculty of Dentistry, Istanbul University, Istanbul, Turkey,* [2]*Department of Pediatric Dentistry, Istanbul University, Istanbul, Turkey*

Aim: The aim of this study was to evaluate clinical success rate of resin based fissure sealants terms of retention, marginal adaptation, caries recurrence and cracking.
Methods: Children with at least one pair of caries-free permanent first molars with deep pits and fissures were included in the study. The children who have a high risk for dental caries were selected. Resin based fissure sealant 3M™ ESPE™ Clinpro™ was applied to the 322 fissures of the first permanent molars in 100 children (by 3rd year undergraduate dental students). The ages of children ranged from 7–13. Twelve months after the application children were recalled for examination. Recall examinations were carried out by the same dentist. Retention, presence of caries, marginal discoloration, marginal adaptation and cracking were evaluated at 12th month by using Ryge's criteria.
Results: Among evaluated 322 teeth, retention: Alpha 95 (%29.5), Bravo: 143 (%44.4), Charlie 84 (%26); presence of caries: Alpha 274, Bravo 48 (%14.9); marginal discoloration: Alpha 322; marginal adaptation: Alpha 279, Bravo 43 (%13.3); cracking: Alpha 321, Bravo 1 (%0.3).
Conclusion: Dental sealants have been proved to be highly effective in the prevention of pit and fissure caries. The preventive effects of the sealant are maintained only as long as it remains completely intact and bonded in place. This study emphasized that after applying fissure sealants, patients must be recall and sealants must be check at least 6 month period to provide retention and marginal adaptation.

Theme: Dental Treatment & Restorative Dentistry: Periodontics

P702
Gingival Recession Treatment: A Case Report
Sühan Gürbüz, Altan Doğan
Department of Periodontology, Gazi University, Ankara, Turkey

Introduction: Treatment of gingival recession for esthetics and root hypersensitivity by means of muco-gingival flap surgery is a very common approach in clinical practice. The aim of this surgical procedure was treatment of multiple recession defects by using a papilla rotating coronally advanced flap technique (PR-CAF).
Case: In this case, a female 51 years old with a multiple recessions on the teeth 13 (0.5 mm), 12 (0.5 mm), 11 (2 mm), 21 (1 mm), 22 (0.5 mm) and 23 (2 mm) has classified as "1" according to Miller's recession index. The patient who had no interdental soft and hard tissue lost, presented a 1.5 mm keratinized gingival thickness. Marginal root abrasions due to excessive tooth brushing on the teeth of 11, 21, 22, 23 was treated by glass ionomer restorations. After completing the phase 1 therapy, PR-CAF surgery was performed in order to cover the multiple gingival recession.

Initial split thickness incisions on the newly designed papilla was followed by a full thickness elevation of the keratinized gingiva at the corono-apical direction. Releasing periostal incisions were made in order to reposition the flap coronally. The mucogingival flap was sutured on the tips of the de-epitelized papillas. Pre-existing crown restorations on the teeth 13, 12, 11, 21 were removed then new porcelain restorations was built on the related teeth after 2 months postoperatively.
Conclusion: The results of the present study demonstrated that PR-CAF was observed to be effective for the treatment of multiple Miller Type 1 recessions.

P703
The Effects of Non-Surgical Periodontal Therapy on TAS, TOS and IL-6 Levels in GCF of Hyperlipidemic Smokers
Kemal Akdemir[1], İsmet Duran[2]
[1]*Department of Periodontology, Necmettin Erbakan University, Konya, Turkey,* [2]*Deparment of Periodontology, Abant İzzet Baysal University, Bolu, Turkey*

Aim: The aim of this study is to investigate the effect of non-surgical periodontal therapy on clinical parameters, IL-6, TAS, TAS in serum, DOS and serum lipid parameters and to evaluate the effect of smoking on interaction between periodontal disease and hyperlipidemia.
Materials and methods: This study included 28 patients (14 female and 14 male), aged between 42–64 (mean 52.5 ± 10), with no-systemical disease without hyperlipidemia. Patients were divided into two groups; smoking (n = 14) and non-smoking (n = 14). At baseline, cilinical parameters were recorded. GCF and blood samples were obtained from patients for IL-6, TAS, TOS and serum lipid parameters. Following baseline measurements and sampling, non-surgical periodontal treatment was performed to all participants. At clinical measurements and GCF, at 3rd month serum sampling were repeated. GCF and serum IL-6, TAS and TOS levels were determined by ELISA method and analyzed by using with "t-test" and "univariate variance analyze".
Results: After non-surgical periodontal therapy all clinical parameters were significantly decreased. There were significantly differences between S(+) and S(−) groups at 1st and 3rd month ($p < 0.05$). GCF and serum IL-6 and TOS levels decreased, TAS level were increased after therapy in S(+) and S(−) groups. But there were significant differences between groups ($p > 0.05$). TC and LDL levels were decreased significantly but HDL level wasn't increased significantly in S(+) and S(−) groups. There were no significant differences between S(+) and S(−) groups after non-surgical periodontal treatment on serum lipid parameters.

Conclusion: Within the limits of this study; the effect of smoking on hyperlipidemic patients treated with non-surgical periodontal therapy may be limited without clinical parameters.

P704

The Retrograd Treatment of Persistent Periapical Lesion Using MTA and Allograft: 3 Years Follow-up

Yasemin Özdemir[1], Pınar Gümüş[2], Dilşah Çoğulu[3]
[1]*Private Practice, Izmir, Turkey,* [2]*Department of periodontology, Ege University, Izmir, Turkey,* [3]*Department of Pediatric Dentistry, Ege University, Izmir, Turkey*

Introduction: The aim of this case report is to present the treatment of an apical cyst due to previously untreated crown-fractured maxillary permanent incisors in an 11-year-old patient.
Case: The patient suffered from pain and swelling referred to our clinic. She reported an injury occurred 2 years ago. The clinical examination revealed an untreated crown fracture and discoloration on the upper right first incisor and a fistula on vestibular mucosa. The radiographical examination revealed a large lesion with open apex. Periapical surgery performed after 1-year a unsuccessful intercanal $Ca(OH)_2$ treatment. Full-thickness flap was elevated and granulation tissue was removed. MTA was used as retrograd root canal filling material and an allograft together with collagen membrane was applied to the cyst cavity. Root canal was obturated with gutta perka and canal sealer 1 week after surgery. After 3-year follow-up the teeth was asymptomatic and the healing of apical are- a was perfect.
Conclusion: Regenerative periapical surgery without shorten the root length can be used successfully in young patients.

P705

The Recovering of Root Surface with Free Gingival Graft-One Case

Tuba Talo Yıldırım[1], Filiz Acun Kaya[2], Esma Baran[1], Zülfiye Doğan[3]
[1]*Department of Periodontology Clinic, Diyarbakir Mouth and Tooth Health Center, Diyarbakir, Turkey,* [2]*Department of Periodontology Clinic, Dicle University, Diyarbakir, Turkey,* [3]*Diyarbakir Mouth and Tooth Health Center, Diyarbakir, Turkey*

Introduction: Gingival recession may be defined as the migration of the gingival margin to apical region. Gingival recessions which cause functional and aesthetic problems in patients take place among the important issues in periodontology. For this reason esthetic problems are solved during the attached gingiva is increased via closing denuded root surfaces with various mucogingival operations.
Case: A 23 years old woman patient applied to our clinic suffering from gingival recession and over sensibility. A type II gingival recession and insufficient ceratinised gingival band was diagnosed by the intraoral examination. Initial periodontal treatment was performed after oral hygiene motivation. After all an epithelial greft operation was performed to cover the denuded roots and enlarged the ceratinised gingival margin. The aim of this presentation is to reflect the patients mucogingival surgery results.

P706

Acute Necrotizing Ulcerative Gingivitis- Three Cases

Tuba Talo Yıldırım[1], Filiz Acun Kaya[2], Zülfiye Doğan[3], Diyadin Doğan[3]
[1]*Department of Periodontology Clinic, Diyarbakir Mouth and Tooth Health Center, Diyarbakir, Turkey,* [2]*Department of Periodontology Clinic, Dicle University, Diyarbakir, Turkey,* [3]*Diyarbakir Mouth and Tooth Health Center, Diyarbakir, Turkey*

Introduction: Acute necrotizing ulserative gingivitis (ANUG) is a microbial disease of gingiva in the contexs of an impaired host response. It is a rare, specific, infectious gingival disease that seen among young patients. Emotional stress, smoking, unsuitable oral hygenie, local trauma and especially HIV infection can be predisposing factors. It is characterized by the death and sloughing of gingival tissue and present with characteristic signs and symptoms.
Case: Of 18, 20 and 25 years old three male patient applied to the …….Mouth and tooth health center with complains of halitosis, periodontal pain and gingival bleeding. Debridement was done to patients with hydrogen peroxide under local anaesthesia. At first visit, detartrage is done as possible. At the end of first visit patients were motivated for good oral hygiene. Patients called for everyday at first week to repeat the initial treatment. Patients were recomended to use oral rinse including cholorhexidine and use sistemic metronidazole. We advised not to smoke and avoid salty, hot, acidic foods and alcohol. After 2 weeks patients called for control. Patients was improved and completely recovered after 2 weeks. As the acute symptoms lost routine periodontal treatments went on.

Patient is at maintenance phase and routine controls are still performed.

P707

Pemphigus Vulgaris- One Case

Tuba Talo Yildirim[1], Filiz Acun Kaya[2], Esma Baran[1], Tuba Orhan[3]
[1]*Department of Periodontology Clinic, Diyarbakir Mouth and Tooth Health Center, Diyarbakir, Turkey,* [2]*Department of Periodontology Clinic, Dicle University, Turkey,* [3]*Diyarbakir Mouth and Tooth Health Center, Diyarbakir, Turkey*

Introduction: Pemphigus vulgaris diseases are a group of autoimmune bullous disorders that produce cutaneous and mucous membranes blisters. Pemphigus vulgaris is the most common of the pemphigus diseases which also include pemphigus foliaceous, pemphigus vegetants and pemphigus erythematosus. Most cases of pemphigus vulgaris are idiopathic. In approximately 60% of patients with pemphigus vulgaris, the oral lesions are the first sign of the disease and may herald the dermatologic involvement by a year or more. Virtually any region of the oral cavity can be involved, but multiple lesions of developing at sites of irritation or trauma. Oral lesions of pemphigus vulgaris are confined less often to the gingival tissues.

Case: A 55 years old male patient applied to clinics of periodontology at ….. mouth and tooth health center with lessions in his mouth. Lessions were detected on palate, tongue and cheek by the clinical examination. Initial periodontal treatment was performed with motivation of good oral hygiene. After patient was referred to a dermatologist, pemfigus vulgaris diagnosed by biopsy inspection. First medication was high dose steroid Meanwhile the steroid dose decreased under dermatologist control. During the steroid treatment patient was periodontal controls were performed by constant intervals.
Conclusion: At the end of first year patient's lessions were totally lost. Patient is at maintenance phase and routine controls are still performed.

P708

Microbiological Examinations in Treatment of Periodontal Disease

Carmen Defta[1], Mihaela Raescu[2], Marian Vladimir Constantinescu[1]
[1]*Faculty of Dentistry, University of Medicine and Pharmacy "Carol Davila", Bucharest, Romania,* [2]*Faculty of Dentistry, University of "Titu Maiorescu", Bucharest, Romania*

Aim: The study aims to explore and highlight the microbial flora in different clinical forms of periodontal disease by Gram stained smear technique, available to the dentist.
Materials and methods: Pathological samples were collected under sterile conditions from patients examined clinically and Gram stained smears were performed, which allowed assessment of tinctured morphological aspect, and of the flora relationship between G (+) and G (−). In parallel, the germs were cultivated aerobically and anaerobically from pathological samples, followed by smears made on culture, which allowed relationship orientation between the type of flora isolated and the clinical form of the disease.
Results: Research was conducted on 44 adults, urban and rural, 25 women (56.81%) (44 average age) and 19 men (43.19%) (50.4 average age). Of 156 isolated stems from 44 patients, a rate of 80.7% is anaerobic flora Gram (+) and (−). The study confirms approximately the same germs recorded in the literature for each clinical entity.
Conclusions: The study emphasizes the role of microbiological examination by Gram stained smear technique in predicting the disease status depending on the type of germs existent on the smear. Through successive smears one can appreciate the dynamic of the evolutionary process, which is really useful to the medical practitioner in developing a suitable treatment scheme for periodontal diseases, depending on the bacterial species peculiarities involved, with the view to optimize the medical care. This simple and accessible method aimed to monitor the effects of treatment subject to the characteristics of the bacterial species involved.

P709

Combined Periodontal and Orthodontic Treatment in a Patient with Papillon-Lefèvre-Syndrome

Nezahat Arzu Kayar[1], Nilgün Özlem Alptekin[2], Mehmet Çoşkun[3]
[1]*Department of Periodontology, The Ministry Health of Turkey, Oral and Dental Health Center, Antalya, Türkiye,* [2]*Department of Periodontology, Faculty of Dentistry, Selcuk University, Campus, Konya, Türkiye,* [3]*Department of Dentistry, Faculty of Medicine, Fatih University, İstanbul, Türkiye*

Introduction: Papillon-Lefèvre syndrome (PLS) is an autosomal recessive disorder characterized by skin lesions, which includes palmar-plantar hyperkeratosis and hyperhidrosis with severe periodontal destruction involving both the primary and the permanent dentitions.
Case: A 6-year-old boy diagnosed with PLS presented with aggressive periodontal destruction of his primary permanent dentitions. Scaling and root planing were performed with simultaneous administration of oral 15 mg/kg amoxicillin and 10 mg/kg metronidazol three times daily and 0.12% chlorhexidine hydrochloride two times daily. Periodontally hopeless deciduous teeth were extracted. Protective and preventive orthodontic therapy was performed with a removable appliance. At the age 8 years, the permanent teeth have normal gingiva and crevice depths.
Conclusion: This 2-year follow-up case report suggests that an early diagnosis and the multidisciplinary treatments of PLS can lead to the stabilization of the periodontal health.

P710

Periodontal Approach in Treatment of Inflammatory Gingival Overgrowth: Case Report

Buket Kılınç, Mihtikar Gürsel
Department of Periodontology

Introduction: Gingival enlargements are a common clinical finding and most represent a reactive hyperplasia as a direct result of plaque related inflammatory gingival disease. Chronic inflammatory gingival enlargement is caused by prolonged exposure to oral biofilm and factors which are favourable for the accumulation of oral biofilm. Proliferative overgrowth of the gingival tissue makes it more difficult for patients to maintain oral hygiene.
Case: This report describes the initial periodontal treatment and gingivoplasty operation for mandibular anterior region of inflammatory gingival overgrowth in a 18 years old patient who had gingivitis. The patient applied to Selcuk University Faculty of Dentistry Periodontology department because of gingival swelling, spontaneous bleeding, difficulty in chewing and and poor appearance. After intraoral and periodontal examination oral hygiene instructions were given. Scaling and root planning were performed for two sessions. One mouth after phase 1 initial periodontal therapy, the patients were reassessed. Only gingivoplasti operation was applied for aesthetic appearance. One year after periodontal treatment, healthy gingiva was seen and gingival enlargement was not abserved.
Conclusion: In conclusion, in this report initial periodontal treatment resulted in significant improvement in clinical parameters,

function and aesthetics. Plaque-induced inflammatory hyperplasia should resolve with debridement of plaque and calculus and improved oral hygiene, especially when the gingival tissue is edematous.

P711

Periodontal Plastic Surgery for Treatment of Postorthodontic Gingival Recession: Three Cases

Gülşah Tatar, Nilgün Özlem Alptekin, Sema Sezgin Hakki, Tamer Ataoğlu

Department of Periodontology, Selcuk University, Konya, Turkey

Introduction: One of the etiological factors of gingival recession may be active orthodontic treatment and/or retention phase. There are several possible ways how orthodontic therapy can cause to gingival recessions. The movement of teeth toward outside of the labial or lingual alveolar bone plate could result in thinning of the alveolar plate or even dehiscence formation.

Case: In this case series, we present periodontal plastic surgical treatment of three cases. Patients' complaints were gingival recession, root sensitivity and aesthetic problem in maxillary anterior region 5–10 years after orthodontic treatment. All defects were classified as Miller I. Gingival recession depth and width, keratinized and attached gingival thickness and width were measured and recorded. Coronally positioned flap, double-papilla flap and envelope flap in combination with subepithelial connective tissue graft (SCTG) were applied. Early postoperative period was uneventful for all cases. Two years after surgeries, we observed increased keratinized tissue width and thickness and 100% root coverage. In addition, patients have been satisfied with aesthetic results.

Conclusion: In conclusion, applications of the appropriate flap techniques in combination with SCTG to treat postorthodontic gingival recessions provide satisfactory results for both patient and clinician. But we know that implementation of controlled orthodontic forces, compliance with periodontal care and proper oral hygiene can minimize the occurrence of this kind of gingival recessions.

P712

Treatment of A Traumatic Tooth Extraction Defect

Hikmet Gamsız Işık[1], Ali Çekici[1], Ülkü Başer[1], Burçin Karataşlı[2], Funda Yalçın[1]

[1]*Department of Periodontology, Faculty of Dentistry, Istanbul University, Istanbul, Turkey,* [2]*Department of Prosthetics, Faculty of Dentistry, Istanbul University, Istanbul, Turkey*

Introduction: Hard and soft tissue defects following tooth extraction in the esthetic zone remains a therapeutic challenge. This challenge is greater if the tooth extraction was performed under traumatic conditions. In some cases soft and/or hard tissue augmentation is necessary to achieve the ideal esthetic outcome.

Aim: The aim of this case report is to present the treatment process of a patient with soft and hard tissue defect due to traumatic extraction of left maxillary central incisor by performing hard tissue augmentation, implant placement and implant supported crown prothesis.

Case Presentation: A 27 year old female patient was referred to the Istanbul University Faculty of Dentistry Department of Periodontology clinic for esthetic rehabilition of her left maxillary central incisor. Medical and dental history of the patient revealed that the defect in the anterior maxilla was formed due to traumatic extraction. The vertical and horizontal ridge tissue augmentation was performed for obtaining an adequate anchorage of implant and better esthetic results. An adhesive provisional Maryland bridge was placed for esthetic reasons and soft tissue support. Nine months after augmentation surgery implant was placed. Six months after implantation prosthetic treatment was performed.

Conclusion: Defects following tooth extraction can cause physical and esthetic problems especially in the esthetic zone. These problems are more intense if the extraction is performed traumatically. In this case report, we have demonstrated a successful treatment of soft and hard tissue defect formed after traumatic extraction in the esthetic zone.

P713

Laser-Assisted Periodontal Plastic Surgery in Two Cicatricial Pemphigoid Patients: One Year Follow-Up

Şadiye Coşkuner[1], Recep Dursun[2], Kübra Alan[1], Sema Sezgin Hakkı[1]

[1]*Department of Periodontology, Selcuk University, Konya, Turkey,* [2]*Department of Dermatology, Faculty of Medicine, Baskent University, Konya, Turkey*

Aim: Cicatricial Pemphigoid (CP) is a rare, blistering disease, characterized by severe, erosive lesions of the skin and mucous membranes. CP patients have difficulties while practicing oral hygine because of the vesiculo-bullous lesions in oral cavity and these lesions reduce the quality of their life. This report presents diode laser application for deepening the vestibule sulcus in two CP patients who have inadequate attached gingiva and vestibular depth.

Method: Two white females (50 and 52 years old) were referred to the Department of Periodontology, Faculty of Dentistry, Selcuk University with complaint of ulcerated gingiva and pain. After histological and immunofluorescense staining of gingival biopsies, they were diagnosed as CP. The first phase of treatment included oral hygiene instructions, scaling and root planning and dietetic suggestions. Systemic corticosteroid was prescribed by dermatologist of the patients. After patients' lesions were alleviated, vestibule sulcus deepening surgery performed in mandibular anterior and left maxillar posterior region using 940 nm diode laser with 5 Watt output power, 0.05 ms pulse length and 0.20 ms pulse interval (average power; 1 Watt) parameters.

Results: The surgical procedure was well tolerated by patients and no postoperative complication was noted. At the end of the 1 year after laser application, increased attached gingiva and vestibular sulcus depth were observed.

Conclusion: Oral care and regular dental visits are important for supportive periodontal treatment in CP patients. We suggest that diode laser application for vestibule sulcus deepening is safe and predictable treatment modality for cicatricial pemphigoid patients.

P714

Morphohistological Evaluation of Modifications Generated by Conventional and Non-conventional Surgical Techniques in Periodontal Tissues

Ionut Luchian[1], Ioana Martu[1], Anca Sava[2], Silvia Martu[1]
[1]*Department of Periodontology, Faculty of Dental Medicine, Gr. T. Popa University of Medicine and Pharmacy, Iasi, Romania,*
[2]*Department of Anatomy, Faculty of Dental Medicine, Gr. T. Popa University of Medicine and Pharmacy, Iasi, Romania*

Introduction: Non-conventional surgical techniques represent a highly used alternative by dentists due to their minimally invasive character. Laser assisted technologies are avant-garde techniques, used by many dentists, having many application in periodontology.
Aim of the study: To identify eventual morphohistological differences on microscopic samples obtained through classical chirurgical technique and through non-conventional (laser-assisted) one.
Materials and methods: Using the classical technique gingivectomies were made on a pig jaw, extracting 10 tissue samples of comparable sizes. Similarly, in the opposite quadrant gingivectomies were made using a diode laser with a wave-length of 940 nm, selecting again 10 tissue samples. The samples selected have been conserved in a fixing solution and histological samples were done which were later analyzed in a pathology laboratory.
Results and discussion: Tissue evaluation showed signs of evident differences between the conventional and non-conventional techniques. The laser assisted surgery procedures took less time than the conventional ones. Among the obvious clinical advantages of laser assisted interventions we can note less/diminished bleeding, absence of edemas, increased patient comfort (due to less pain generated by the operation) and fast healing (due to accentuated tissue regeneration).
Conclusions: We can state that laser-assisted technologies can be an extremely helpful aid in future periodontal therapies, recommended in case of periodontal surgeries due to their minimally invasive character, minor histological damage, easy to learn and fast technique.

P715

Treatment of Denture Stomatitis: A Case Report

Muhsin Özdem, İsmet Duran
Department of Periodontology, Faculty of Dentistry, Abant İzzet Baysal University, Bolu, Turkey

Introduction: Denture-related stomatitis is an inflammatory process of the mucosa caused by a complete or partial removable dental appliance or usually typically a denture. "Denture stomatitis" is a mild chronic erythematous lesions, usually seen after middle age as erythema limited to the area beneath an upper denture, with the presence of the denture as the only common aetiologic factor to these situations (Newton's Type II stage). This lesions may show different clinical patterns, and are more frequently found in the upper jaw, especially on the palate. Although denture stomatitis is frequently asymptomatic, sometimes patients may complain of halitosis, bleeding, burning sensation and swelling in the involved area, xerostomia, or taste alterations. The aetiology is considered multifactorial, but denture,especially when worn during the night, represents the major causative factor. Among the aetiological factors that should be considered are prosthetic factors, infectious factors, predisposing factors (Systemic and local factors).
Case: In this case report the diagnosis and treatment of denture stomatitis was presented a 38 years old man patient.

Theme: Dental Treatment & Restorative Dentistry: Prosthetics

P716

Clinical Follow-up of Edentulous Patient with Stress-Induced Bruxism: Case Report

Ali Balık, Ebru Demet Çifter, Meltem Özdemir Karataş, Şirin Kıyıcı, Erkan Sancaklı, Emrah Baca
Department of Prosthodontics, Istanbul University, Istanbul, Turkey

Aim: Bruxism is a nonfunctional and usually subconscious action of grinding and clenching of the teeth. Emotional Stress usually accompanies bruxism. In this presentation 2 years follow-up of an edentulous patient suffering from chronic pain due to stress-induced bruxism is revealed.
Case: Sixty-six years old edentulous male patient applied to Istanbul University Faculty of Dentistry seeking for treatment of chronic myofascial pain. Intra-oral and extra-oral examinations were performed according to Research Diagnostic Criteria for Temporomandibular Disorders (RDC/TMD). Patient self reported bruxism was seen to be in correlation with increased emotional stress. Vertical dimension loss and moderate to high pain scores of palpation according to RDC/TMD was recorded. Subsequent to stabilization splint treatment and supportive treatment protocols, prosthetic rehabilitation is completed and patient was followed at 3 months intervals thereafter.
Conclusion: Treatment success requires long term follow-up and a long treatment period in patients with chronic bruxism. Multidisciplinary approach is essential for those patients suffering from stress-related bruxism and psychologists should get involved in the team in order to reach satisfying treatment results.

P717

Delayed Eruption of Permanent Teeth with Maxillary and Mandibular Overdentures

Selen Ergin, Gülbahar Işık Özkol
Department of Prosthodonti, İstanbul University, Istanbul, Turkey

Introduction: This case report describes management of teeth eruption by using overdentures and definitive prosthetic rehabilitation by removable partial dentures with precision attachments for a young patient.
Case: A 16 years old adolescent presented at Istanbul University Dental Faculty for decayed teeth and pain. After the clinical and radiographic examination 4 unerupted teeth (17, 27, 37 and 47) and several decayed teeth were diagnosed. The treatment plan included teeth extraction, endodontic treatment and prosthetic rehabilitation. By the time extractions and restorative treatments

were completed, root supported maxillary and mandibular overdentures were fabricated for erupting of second molars for both jaws. The case was followed up for a period of 2 years every month. During the follow-up appointments the prosthesis were modified as the adolescent grew and as the permanent teeth erupted into the oral cavity. The dentures were trimmed from the areas of erupting teeth to facilitate their eruption. After the period of 2 years, eruption of teeth was completed. Removable partial dentures with precision attachments were made for permanent maxillary and mandibular prosthesis.

P718

Clinical Outcome of Zirconia-Based Fixed Restorations

Sebnem Begum Turker[1], Hasan Necdet Alkumru[2], Muhammed Abdullah Keleş[1]
[1]*Department of Prosthodontics, Marmara University, Istanbul, Turkey,* [2]*Department of Prosthodontıcs, Toronto University, Toronto, ON, Canada*

Aim: The aim of this study was to evaluate the clinical outcome of zirconia based fixed restorations (Lava CAD/CAM system, 3M ESPE, Germany) after 5 years, between 2008 and March 2013.
Materials and methods: A total of 18 patients, 16 women and two men, mean age 52 and 40.5 respectively, were treated with zirconia based fixed partial dentures during 5 years period. A total of 111 abutment teeth (63 single crown (37 maxillary anterior, 14 maxillary posterior and 12 mandibular posterior) and 17 fixed partial dentures (6 three units, 6 four units, 1 five units, 2 six units and 1 seven units) with 48 abutment teeth (18 anterior and 30 posterior) were restored. Seventy restorations were luted with RelyX Unicem self-adhesive resin cement and forty-one's with glass ionomer cement. All the patients were called for control examination but, five of them did not respond. The mean restoration time were 38.55 months (range 13 to 60 months). The rate of success was assessed by clinical and radiographical examination.
Results: No framework fracture was observed among 92 restorations. Four failures were occurred: two veneer porcelain chipping at 5th months in service, one debonding at 29th months and one lost restoration at 13th months due to severe local periodontal problem of abutment tooth. No secondary caries, but few local periodontal inflammation were observed. Both of luting cements were found clinically successful.
Conclusion: Zirconia based fixed restorations exhibits satisfactory clinical outcome for a mean 38.55 months of follow- up period.

P719

Fracture Strength of Zirconium Resin Bonded Fixed Partial Dentures

Şebnem Begüm Türker[1], Gamze Mandalı[2], Işıl Damla Sener[1], Sinan Kocaman[1], Hasan Necdet Alkumru[3]
[1]*Department of Prosthodontics, Marmara University, Istanbul, Turkey,* [2]*Directorate of Provincial Private Administration Hospital for Oral and Dental Health, Okmeydanı, Istanbul, Turkey,* [3]*Department of Prosthodontics, Toronto University, Toronto, ON, Canada*

Aim: Evaluation the influence of luting agents on the fracture strength of zirconium resin-bonded fixed partial dentures (ZRBFPDs).
Materials and methods: Forty human right and left mandibular lateral incisors were embedded in acrylic resin as located on the mandibular dental arch. Supragingival chamfer finish line 0.5 mm and proximal chamfer finish line 1 mm in dept, ending 1 mm above the cemento-enamel junction were prepared to the lingual surfaces of abutment teeth. The impression of each cast was made with a silicon impression material. Twenty zirconium substructures (Lava 3M ESPE, Germany) were fabricated to replace missing two mandibular central incisors. The intaglio surface of the ZRBFPD was air borne particle abraded with 110-mm aluminum oxide particles. Ten specimens were cemented with Automix and the other ten with Clearfill resin cement (n:10). Prior to the testing all bonded specimens were stored in distilled water at 37°C for 24 h. The specimens were subjected to fracture strength tests in a universal testing machine. The debonding and fracture loads were measured. Results were analyzed statistically with Spearman's rho correlation test and the data obtained was evaluated by Mann Whitney U test. The level of statistical significance was set at $p < .05$.
Results: Any statistical difference was found between debonding and fracture loads for the tested resin cements ($p = 0.880$ and $p = 0.880$ respectively). Mean debonding and fracture loads for Automix and Clearfill were 682.60, 873.20 and 643.50, 985.30 N respectively.
Conclusion: Zirconium resin-bonded fixed partial dentures could be cemented safely with Automix and Clearfill resin cement.

P720

Fracture Strength of Fiber – Reinforced Composite Fixed Partial Denture with Empress II Pontic

Hasan Necdet Alkumru[1], Sebnem Begum Turker[2], Gamze Mandalı[3], Işıl Damla Sener[2]
[1]*Department of Prosthodontics, Toronto University, Toronto, ON, Canada,* [2]*Department of Prosthodontics, Marmara University, Istanbul, Turkey,* [3]*Directorate of Provincial Private Administration Hospital for Oral and Dental Health, Okmeydanı, Istanbul, Turkey*

Aim: In vitro evaluation of the shear bond strength of fiber-reinforced composite fixed partial denture with Empress II pontic constructed with polyethylene and glass fiber.
Materials and methods: Forty human left maxillary central and right lateral incisors were embedded in acrylic resin as located on the maxillary dental arch. Palatal groove, 2 mm in depth and 1 mm length, was prepared to the palatinal surface of the abutments. An impression of each cast was made with a silicon impression material. Twenty right central Empress II (IPS Empress System, Ivoclar, Vivadent) pontics were fabricated with a same palatinal groove. The pontics were placed between central and lateral incisors. The polyethylene fiber ribbons (Construct; Kerr, Orange, California), and glass fibers (EverStick (StickTech, Turku, Finland)) were placed along the grooves of the Empress II crown's (n:10). Teeth-pontic

and fiber combination were luted with resin cement (Ivoclar, Vivadent). Prior the shear bond test all bonded specimens were stored in distilled water at 37°C for 24 h. The teeth were subjected to a compressive load in a universal test machine. Results were analyzed statistically with Spearman's rho correlation test and the data obtained was evaluated by Mann Whitney U test. The level of statistical significance was set at $p < 0.05$.

Results: Statistically significant difference was observed for glass fiber ($p = 0.041$). The mean fracture loads were 392.5 and 650 N for polyethylene fiber and glass fiber respectively.

Conclusion: Glass fiber was more resistance than the polyethylene fiber when used in fiber reinforced composite fixed partial denture.

P721

Oral Rehabilitation of Patient with Anadontia

Zeliha Selin Sırık, Gülbahar Işık Özkol
Department of Prosthesis, Istanbul University, Istanbul, Turkey

Introduction: Congenitally malformations or genetic defects can result in both soft and hard tissue loss and effect young patients' functional and social confidence. Patients with anadontia or hypodontia often need complex multidisciplinary treatment. The goal of the treatment must include improving aesthetic appearance, speech and masticatory function. The options for a definitive rehabilitation plan may be fixed, removable or implant supported prosthesis. However some constrains can prevent the choosing most desirable reconstruction.

Case: This clinical report describes the treatment provided to a young patient who presented with anadontia at both maxilla and mandible anterior segment and hard tissue defect at premaxilla. Before prosthetic rehabilitation, maxillary anterior alveolar crest was reconstructed. The reconstruction of the alveolar ridge was applied by augmentation of particulate bone which were collected from the anterior torus of the maxilla and the surgical reconstruction completed by destruction of anterior segment of this jaw. After surgical procedure, prosthetic rehabilitation was completed with tooth supported removable partial prosthesis with custom made bar. By applying prosthetic rehabilitation the chewing functions and physical appearance were reformed. During 8 year clinical follow up period no complication has been occurred. The patient's functional and social confidence improved significantly.

P722

Prosthetic Treatment of Non-Syndromic Oligodontia: A Case Report

Müjde Sevimay, Ceyda Akın
Department of Prosthodontics, Selcuk University, Konya, Turkey

Introduction: Oligodontia is the agenesis of six or more teeth, excluding third molars. Genetic factors play an important role in oligodontia which can ocur as an isolated finding or as part of a syndrome. Characteristic dental symptoms are a reduced number of teeth, a reduction in tooth size, anomalies of tooth form and delayed eruption. The absence of teeth in patients can cause aesthetic, functional and psychological problems, particularly if the anterior region is involved.

Case: This case report describes the prosthetic treatment approach toward a patient 19 years of age with non-syndromic oligodontia, with absence of 10 permanent teeth. Genetic counseling revealed non-syndromic autosomal-recessive-linked oligodontia. The objectives of the treatment was prosthetic restoration of the missing teeth and provision of occlusion with full-mouth zirconia restorations after increasing occlusal vertical dimension by 2 mm.

P723

Color Stability of Condansable Composites Polymerized with Halogen Light Unit

Hakkı Cenker Küçükeşmen[1], Adil Nalçacı[2], Semih Berksun[3], Çiğdem Küçükeşmen[4]
[1]Department of Prosthetic Dentistry, Faculty of Dentistry, Süleyman Demirel University, Isparta, Turkey, [2]Department of Restorative Dentistry, Faculty of Dentistry, Ankara University, Ankara, Turkey, [3]Department of Prosthetic Dentistry, Faculty of Dentistry, Ankara University, Ankara, Turkey, [4]Department of Pediatric Dentistry, Faculty of Dentistry, Süleyman Demirel University, Isparta, Turkey

Aim: Color changes may be observed in composite restorations because of several physical factors in oral cavity for example water or drinks, and aim of this study was to examine the color stability of condansable composite samples immersed in deionised water after polymerizing with a conventional halogen light unit.

Materials and methods: In the study, a posterior condansable composite resin (Solitaire-2, Heraeus-Kulzer/Germany) was used. Color of composite was selected as "A2" owing to its high light permeability. Composite material were placed in teflon molds (sizes: 7 mm diameter × 1 mm high) and surfaces were flattened with a glass plate. Light power intensity of a conventional halogen light unit was controlled with a radiometer device (Hilux, Benlioğlu/Turkey) before polymerization of samples. Then, samples were polymerized for 40 s with light unit (Hilux 200, Benlioğlu/Turkey) (light power: 450 mW/cm2) according to the manufacturer's recommendations. Color changes of samples were measured with a colorimeter device (Colorimeter CR-321, Minolta/Japan) according to "CIE-L*a*b* color system". Measurements were performed at three different times during storing of samples in deionised water as; "1-initial time, 2-after 1 week, 3-after 1 month". Data were determined with Duncan Comparison Test ($p < 0.05$).

Conclusion: Statistically more color changes were observed at the group of "after 1 month" than the other groups ($p < 0.05$). It was reached the conclusion that, the color changes in composites are possible depending on time as a result of exposure to water or other liquids in oral cavity. However, this opinion should be supported by new other studies.

P724

Repeatability in Instrumental Shade-Matching

Erdal Eroğlu[1], Pelin Balcı Özat[1], İlkin Tuncel[2], Kıvanç Utku Ulusoy[1]
[1]Department of Prosthodontics, Süleyman Demirel University, Isparta, Turkey, [2]Department of Prosthodontics, University of Bezm-i Alem, İstanbul, Turkey

Objective: The aim of this study was to evaluate the results of dentists' shade-matching procedure which is utilized by a dental spectrophotometer, in terms of repeatability.
Materials and methods: This study was conducted with 54 volunteer dentists at Süleyman Demirel University Faculty of Dentistry. The study was approved by the Süleyman Demirel University Ethical Committee. Each volunteer provided written informed consent. The study was performed in a dental clinic specially prepared for this procedure, with a stabilized dental unit, and standardized environmental illumination. Shade-matching procedure was conducted on one of the volunteers' maxillary left central incisor. A dental spectrophotometer (Vita-EasyShade, Vita – Germany) was used for the shade-matching procedure. The participants were asked to match the shade of the designated tooth by using the dental spectrophotometer for two consequent days. Buccal 1/3 middle portion of the tooth was defined as target area. To eliminate individual failures of the dentists, a maxillary essix template with a hole coinciding to the buccal 1/3 middle portion of the tooth was prepared. Participant dentists were asked to repeat the same instrumental shade-matching procedure with the template "on".

Matching the same shade in consequent measurements was defined as a "success" and recorded as "1", while any inconsistency was defined as a "failure" and recorded as "0". The chi-square test was used for statistical analyses ($p < 0.05$).
Results: Repeatability scores of the shade-matching procedures by a dental spectrophotometer was found as 33.3% without the template ($p = 0.01$), and 56.9% with the template ($p = 0.327$).

P725
Aesthetic Recovery with Adhesive FPD's Using Bondable Reinforcement Ribbon and Extracted Teeth
Hasan Murat Aydoğdu, Beyza Ünalan Değirmenci, Nuri Murat Ersoy
Department of Prosthodontics, Yüzüncü Yıl University, Van, Turkey

An intact denture with loss of single anterior tooth represents a major issue of aesthetics. When a single anterior tooth is lost by periodontal reasons its replacement with fixed partial denture (FPD) can be mostly unsatisfactory for patient's aesthetics demans. For this reason, adhesive FPD's manifactured by using patient's own extracted teeth are employed to recover the patient's natural aesthetics. Moreover this procedure can be done in a single visit with a minimal invasive approach. The bondable reinforcement ribbon (Ribbond®) is a widely used material in adhesive FDP'S. Ribbond based single-visit FPD is a cost-effective solution which provides strength, durability and immediate convenience. This case report presents the replacement of single anterior teeth which are lost because of periodontal disease with adhesive FPD'S in two different cases. Writers suggest that as a fast, economical and durable solution to single anterior tooth loss similar restorations should be encouraged.

P726
Comparison of Metal Ceramic Bond after Recasting and Laser Sintering
Esra Kul, Lütfü İhsan Aladağ, Zeynep Yeşil Duymuş
Department of Prosthodontics, Atatürk University, Erzurum, Turkey

Statement of problem: Recasting may change the chemical composition and microstructure of alloys and thus have an effect on porcelain bond strength.
Purpose: The purpose of this study was to evaluate the effect of recasting on metal ceramic bond strength for one base metal and one noble alloys and to compare with laser-sintered Co-Cr alloy using methodology in ANSI/ADA Specification No. 38.
Material and methods: Dental porcelain was applied on two cast (Co-Cr, palladium-silver) and one laser-sintered (Co-Cr) base metal alloy.12 specimens were prepared for each group for bond strength comparison. Alloys were cast into metal strips ($25 \times 3 \times 0.5$ mm), using torch melting. Vita VM 13 porcelain with overall dimensions of $8 \times 3 \times 1.1$ mm was centrally applied on each strip. The specimens in the first casting group used 100% fresh alloy and served as control. Metal ceramic specimens were also prepared after each alloy was melted a second and third time. No new metal was added for the second and third casting. Results from 3-point-flexure test compared. Statistical comparisons were made using the Kruskal-Wallis test.
Results: There were no significant differences among the three alloys after the first casting. The flexure strength was not significantly different ($p > 0.05$) from that for the cast Co–Cr metal–ceramic specimens and the laser-sintered Co–Cr metal–ceramic specimens.
Conclusions: All three alloys had adequate porcelain bond strength. The new laser-sintering technique for Co–Cr alloy appears promising for dental applications, but additional studies are needed before its acceptance into dental laboratory practice.

P727
A Multidisciplinary Esthetic Approach of a Patient with Deficient Maxillary Alveolar Bone: A Case Report
Hamiyet Akça[1], Hatice Ebru Olgun Erdemir[2]
[1]*Department of Prosthetic Dentistry, Kırıkkale University, Kırıkkale, Turkey,* [2]*Department of Periodontology, Kırıkkale University, Kırıkkale, Turkey*

Case: The 25 year old patient has applied for the decementation problem in her restoration. Clinical examinations showed that the adjacent teeth (13, 21) of the anterior fixed prosthesis were not in appropriate crown length and appropriate geometrical shape for the retention. Considering the age of the patient, following block graft application implant insertion was planned in order not to have the same problem. Thus, the supplementary aim was the treatment of maxillary alveolar bone resorption. Block graft application was planned after the observation of insufficient alveolar bone from computerized tomography examinations. Block graft dismantled from the patient's mandibular symphysis region was

fixed into the vestibular surface by screws. The surrounding area of the block graft was filled with allograft and covered with collagen membrane. The sutures were taken out after the 10th day and controlled monthly for the following 6 months. After the radiographic examination, two implants were placed on alveolar partial edentulous area. By means of using provisional restoration, papillae formation was completed. Also hyaluronic acid was injected related area for papillae formation. After using temporary acrylic restoration, metal supported porcelain restoration has been finished as a final restoration.

Conclusion: By this approach of therapy, the retention complaint of the patient was diminished.

P728

Laser Sintered Non-Precious Double Crowns Supported Overdenture- A Case Report

Gizem Nur Bağrıvatan, Altuğ Çilingir, Gülsen Bayraktar
Department of Prosthodontics, Faculty of Dentistry, Istanbul University, Istanbul, Turkey

Introduction: The clinical use of removable partial denture is influenced by the concept of connecting remaining teeth and removable prostheses. An appropriate retainer for successful restoration is selected after considering the number and alignment of natural teeth, the periodontal condition of remaining teeth, and patient's esthetic demands and financial limitations. Double crowns have proved to be an effective means of retaining removable partial dentures. The double crown system retains dentures more effectively than conventional clasp-retained removable partial dentures and also shows more favorable transmission of occlusal loading to the axis of abutment teeth. The indication for double crowns is a partially dentate arch with existing of few remaining teeth.

Case Report: A 57-year-old female patient presented to Istanbul University, School of Dentistry, Department of Prosthodontics, with functional and aesthetic concerns. The periodontal conditions of the remaining teeth revealed moderate scores. Three anterior teeth (11,12,21) are restored with double crown laser sintered cobalt-chromium alloy crowns and double crowns retained with a removable complete denture. Opposite arch restorated with a removable partial denture.

Conclusion: Non–precious double crowns can be a treatment choice when used with accurate methods such as laser sintered because of their well adaptation and less price. Patient satisfaction, sufficient retantion and stabilization are obtained with this method. Double crown-retained removable dental prostheses on teeth seem to be a promising treatment option for patients with a strongly reduced dentition.

P729

Primary Failure of Fixed Metal-Prostheses among Albanian Population

Entela Fuga[1], Emona Anastasi[2]
[1]*Safir Dental, Office in Tirana, Rr. Naim Frasheri, Nr 59. Albania,* [2]*Department of Stomatology, Albania University, Tirana, Albania*

Aim: The aim of this study was to investigate primary failure during the preprosthetic and prosthetic treatment and shortly after the treatment, i.e. till 30 months afterwards.

Materials and methods: Primary failures related to fixed metal ceramic bridge prostheses made by Albanian dentists. Out of 60 patients treated during 2009–2013 randomized (31 woman and 29 men). Mean age was 40 years (range 26–65 years). Altogether was 65 fixed bridges. Single crowns were not included in our study. Data concerning preprosthetic treatment, the preparation phase and 3 years after follow-up examination after the completion of the treatment were collected from the patient files.

Results: During preprosthetic endodontic treatment of the fixed bridges in 2009–2013, in preparation of the abutment teeth there were nine pulp perforation of which therapy was successful in two cases, but in six cases of these endodontic treatment was carried out. Marginal fidelity was unsatisfactory in 13% of the bridges and gingival bleeding and pockets of 4–6 mm were noted in 27% and 12 of cases, respectively. Two percent of the subjects had caries in the abutments, result of marginal leakage, notice minimum 1 year lead to dissolved sealant of the pontics.

Conclusions: During the treatment phase the most usual primary complications and failures related to fixed bridges occur during preprosthetic endodontic treatment of abutment teeth. The previous restoration of the prepared tooth did not have any marked effect on the prognosis of fixed metal-ceramic bridges, comparing a composite resin restoration with screw post and a one-piece dowel crown.

P730

Analysis of Traumatic Ulcerations Following Delivery of Complete Dentures

Canan Bural, Melahat Çelik, Hakan Bilhan, Gülsen Bayraktar
Departement of Prosthodontics, Istanbul University, Istanbul, Turkey

Aim: The frequency and location of traumatic ulcerations following delivery of complete dentures (CD) was evaluated in this study.

Materials and methods: Twenty-four female (mean age: 57.12 ± 11.37 years) and 26 male (59.38 ± 11.17 years) patients receiving CD were evaluated for traumatic ulcerations on the next day. The location, mucosal depth (epidermal or dermal), the reasons and the mucosal soreness severity index (MSSI) of the ulcerations were recorded. Data were statistically analyzed by using Kruskal-Wallis and Chi-square tests ($p \leq 0.05$).

Results: The majority of the traumatic ulcerations were observed in the mandible compared to maxillae. The most frequent location for the mandible was the lingual sulcus (28.8%) ($X2 = 46.712$, $p = 0.0001$) and the tubers for maxillae (42.1%) ($X2 = 9.158$, $p = 0.05$), respectively. The most frequent reasons for the were the over-extended mandibular denture borders (52.1%) ($X2 = 255.973$, $p = 0.000$) and the maxillary undercut areas (42.1%) ($X2 = 6.895$, $p > 0.05$). The majority of the lesions were epidermal (68.5%) and Type 4 according to the MSSI (55.6%).

Conclusion: The findings of this clinical study indicate that denture borders and undercut areas of CD should be carefully checked and

adjusted at the denture delivery appointment. Particular attention should be given to the mandibular denture border molding during impression taking as well as fabrication.

P731

The Effect of Different Mucosa Thickness on Stress Distribution of Two Different Implant-Supported Overdenture Designs under Bilaterally Loading

Özgün Yusuf Özyılmaz, Filiz Aykent
Deparment of Prosthodontic, Selcuk University, Konya, Turkey

Objective: The aim of this study was to evaluate the effect of different mucosa thickness on the stress distrubition of two implant-retained mandibular overdenture designs under bilaterally loading using photoelastic stress analysis method.
Materials and methods: Six photoelastic models of an edentulous mandibular were fabricated with solitary two implants (4.0 × 11 mm) which were placed in the canine regions. The attachment systems studied were ball and locator stud attachments. Both ball and locator attachment groups that mucosa assumed three characteristics of thickness (1 mm-1 mm, 1 mm-2 mm, 1 mm-4 mm). In all models, implants were placed parallel to each other and to the midline. Static vertical force of 135 N was applied bilaterally to the central fossa of the first molars. Models were positioned in the field of circular polariscope to observe the distribution of isochromatic fringes around the implants and interimplant areas under loading. The stress fringes were monitored and recorded photographically.
Results: Ball attachment groups produced higher stress values than locator groups in all test models. Both attachment designs produced the lowest stress values in stimulated 1 mm-1 mm mucosa thickness model. Ball attachment caused the highest stress in stimulated 1 mm-4 mm mucosa thickness model. Locator groups showed the most equitable stress distribution in all groups.
Conclusion: In this situation, presence of different mucosa thickness between the implants choice of locator attachment may provide uniform stress distribution.

P732

Polyethylene Fiber-Reinforced Resin Bonded Bridges Prepared with Two Different Methods: Four Case Reports

Ebru Sümer, Yalçın Değer
Department of Prosthodontics, Faculty of Dentistry, Dicle University, Diyarbakır, Turkey

For missing anterior permanent tooth, different prosthetic treatment options can be considered including resin-bonded bridge with a metal substructure, conventional 3-unit fixed partial denture, removable partial denture or implant supported single crown. Direct and indirect fiber reinforced resin bonded fixed partial dentures are minimally invasive, esthetic and economic metal free tooth replacement. Other advantages include saving of time, elimination of second visit, ease of application, absence of metal allergy, ease of cleaning, naturalness of feel and allowing to repair. Providing restoration almost without tooth preparation is the most important advantage of these restorations.

These four case reports describe clinical cases which fiber reinforced resin bonded bridges were fabricated according to the direct or indirect tecnique for replacement of missing tooth. Patients with one missing tooth at the anterior region were treated with direct fiber-reinforced fixed partial dentures in the anterior region.

In two cases, a polyethylene fiber reinforced resin-bonded bridge was fabricated according to the direct technique for the replacement of missing tooth. In other two cases, all composite resin pontic was prepared extraorally according to patient's impressions. Than, fiber-reinforced resin bonded bridge prepared using polyethylene fiber material.

The advantages and proactively allowing to rehabilitation of other prosthesis options used indicates that these types of restorations may be a viable treatment option.

P733

Treatment of Mandibular Resection Patient with Implant Retained Hybrid Prosthesis

Subutay Han Altıntaş[1], Serdar Kılıç[1], Ezher Hamza Dayısoylu[2], Nuray Altıntaş[3]
[1]*Department of Prosthodontics, Faculty of Dentistry, Karadeniz Technical University, Trabzon, Turkey,* [2]*Private Practice, Baskent University Hospital, Konya, Turkey,* [3]*Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, Karadeniz Technical University, Trabzon, Turkey*

Introduction: Segmental resection of the mandible may compromise orofacial function and often lead to patients psychological disorders. Facial asymmetry and esthetic deformity are frequent consequences of such process, which may also include deviation and intrusion of the mandible, motor and sensory disorders, abnormal intermaxillary relations and malocclusion. The aim of this case report was to present the prosthetic rehabilitation of mandibula which has bone and soft tissue loss after mandibular resection and immediate reconstruction plate fixation with implant supported hybrid denture and maxilla with precision attachment partial denture.
Case: A 48 years old woman exhibits mandibular defects due to the process of mandibular resection and immediately reconstruction plate fixation. Patient also presents facial asymmetry and esthetic deformity with deviation and intrusion of mandible, abnormal intermaxillary relation. Treatment plan is to placed four dental implants in anterior mandible and to establish implant retained fixed hybrid denture in mandible and precision attachment partial denture in maxilla. In 6 months follow up period no problem has occured associated with dental implants and prosthesis.
Conclusion: Dental hybrid dentures are relevant treatment option for ensure the maintenance of reconstruction plate fixation and mandibular defect area. This case shows that maxillary precision attachment denture and mandibulary implant-supported dental hybrid prosthesis rehabilitation positively influence oral functions. The final result indicates an improvement of the local anatomy, with functional and esthetic optimization owing to the dental hybrid prosthesis in patients exhibited mandible defect.

P734

Correcting Thick and High Attached Labial Frenulum Using Diode Laser

Önjen Tak
Department of Prosthodontics, University of Kocaeli, Kocaeli, Turkey

Introduction: A high maxillary labial frenulum attachment can be a major causative factor for denture midline fractures and/or decrease in retention. To overcome these problems, the frenulum should be modified or removed surgically. The use of lasers for frenectomy has been proposed as having many advantages such as hemostasis, minimal postoperative pain, no suturing and faster healing response. The aim of this case report was to examine the effectiveness of diode laser in frenectomy and evaluate the outcome of the surgical and prosthetic treatments.
Case: Under local anesthesia an 810 nm diode laser with a 400 micron fiber was used in contact mode at a 3.5 W output power with continuous and controlled movement to remove maxillary labial frenulum. Neither carbonization nor any bleeding at the operation site was observed. No suturing and analgesic was required for the patient.

The control examinations at 1–7 days, and 3 weeks postoperatively showed that the healing process was running a normal course and was uneventful, painless and without scarring, edemas and any other signs of infection in the tissues; whereas other alternative procedures have to be accompanied by administration of antibiotics and analgesics to minimize postoperative infection and pain. Starting after 3 weeks of the frenectomy, prosthetic rehabilitation was finished within 2 weeks. The follow-up after 6 months confirmed that the frenectomy and prosthetic rehabilitation were totally successful.
Conclusion: Laser therapy for soft tissue correction would conclude with more successful results and higher patient satisfactions compared with conventional surgical procedures especially for patients with systemic diseases.

P735

Evaluating Mechanical Properties of A New Modified Polyurethane Elastomer In Maxillofacial Prosthesis

Aslihan Koroglu[1], Cem Kurtoglu[1], Orhun Ekren[1], Yurdanur Sanli Ucar[1], Iskender Yilgor[2], Emel Yilgor[2], Cagla Kosak[2]
[1]Department of Prosthodontics, University of Cukurova, Adana, Turkey, [2]Department of Chemistry College of Arts and Sciences, University of Koc, Istanbul, Turkey

Aim: Lining the facial prosthesis with polyurethane liner (P) is recommended by the authors. However it is very difficult to have strong adhesion between polyurethane and maxillofacial silicone elastomer. For this reason modified polyurethane elastomers (MP) were manufactured. By using MP adhesion with silicone elastomer became acceptable. The aim of this study is to test and compare the mechanical properties of MP.
Material and methods: A total of 60 test specimens were prepared from P and MP for tear and tensile test. Fifteen test specimens were prepared for tensile test as a dumbbell-shaped and tear test for as a "pants leg" shaped for each materials. Test specimens subjected to tensile and tear test with a universal testing machine with a crosshead speed of 500 and 55 mm/min respectively. Tear strength, tensile strength, elongation percentage were calculated automatically by the software. The data were analyzed using T-test. ($p < 0.05$).
Results: There were no statistically significant differences ($p < 0.05$) for tensile strength ($p = 13.79 \pm 2.94$ N/mm, $MP = 14.9 \pm 4.65$ N/mm), tear strength ($p = 4.85 \pm 0.35$ N/mm, $MP = 4.52 \pm 0.69$ N/mm) for each materials. There were statistically significant differences for percent elongation (%E) and percentage of plastic deformation among the materials. Percent elongation (%E) of MP (258.6 ± 68) were higher than P (179 ± 33.1). Percentage of plastic deformation of MP (0.93 ± 0.27) were lower than P (21.21 ± 5.9).
Conclusions: Within the limitations of this study it can be concluded that mechanical properties of MP better than P. MP can be used as a liner in maxillofacial prosthesis.

P736

Five-Year Survival of 3 Unit Fiber-Reinfoced Composite Fixed Partial Dentures with Different Pontic Materials

Kıvanç Utku Ulusoy[1], Erdal Eroğlu[1], Aykut Önol[1], Mustafa Murat Mutluay[2], Arzu Tezvergil Mutluay[2]
[1]Department of Prosthodontics, Suleyman Demirel University, Isparta, Turkey, [2]Adhesive Dentistry Research Group, University of Turku, Turku, Finland

Objectives: The purpose of this clinical study was to evaluate the long-term outcome of 3-unit anterior fixed partial dentures (FPDs) made of fiber-reinforced resin composite (FRC) with different pontic materials, and to identify factors influencing the survival rate.
Materials and methods: Eighty-six patients (54 females, 32 males) Suleyman demirel University dentistry faculty of Department of prosthodontics were treated with 100 three-unit anterior FRC FPDs. Fivety five of them is in indirect and 45 of them is direct. The patients' ages ranged from 19 to 56.5 years, with a mean age of 40.7 years. All FPDs replaced one missing tooth, which could be the first or second incisor, and two adjacent abutment teeth were used for retention. No cantilever bridges were involved. Seventy four patients received one FPD, 12 patients received two FPDs.
Results: Porcelain and acrylic materials can bu used as a pontic of fixed partial dentures (FPDs) made of fiber-reinforced resin composite (FRC). Fracture of the framework and delamination are the most prevalent failure modes at both designs.

P737

Facial Shield Used for Prevention during Sports: Case Report

Seda Cengiz, Gaye Sevimli, M. Selçuk Oruç
Department of Prosthodontics, Faculty of Dentistry, Bülent Ecevit University, Zonguldak, Turkey

Introduction: Dental injuries, followed by facial fractures, are the most common orofacial injury sustained during participation in sporting events. The fabrication of mouth guards, helmets and face mask or facial shields are very important to decrease the number and

severity of dental injuries. This case report describes the fabrication of facial shield that is used for protecting nose during sport activities.
Case: Two patients, who have nose surgery 2 months ago, applied to our clinic to protect their noses from sports trauma. Because of the nose surgery, this area must be protected against all impact during sports. The procedure requires a facial moulage, facial model, custom facial shield made of polymethylmethacrilate fitted with soft lining material and binding the facial shield with the orthodontic elasticated strips. This simple procedure is applicable for athletes who participate in many contact sports. The shield was tried on the patient to ensure proper coverage of the desired facial areas. The patients were followed up after their basketball match without any complaints.
Conclusion: Dentists play the key role in the prevention and treatment of sports-related dental and orofacial injuries, and can optimize fit and comfort rehabilitation with the custom-made protector. Dental, oral, facial and cranial injuries can be reduced by the use mouthguards and faceguards.

P738

The Custom Abutment of a Maxiller Premolar Metal Fused Porcelain Restoration

Gizem Özcan
Department of Prosthetic Dentistry, Ankara University, Ankara, Turkey

Case: In this case report the 41 year-old female patient with an osteointegrated implant on left first maxiller premolar came to our clinic, 4 months after surgery. The implant was inserted nearly angled to 45°. The angled abutments produced by the implant firm were only angled to 25°. We obliged to do "custom abutment". The impression was taken by an impression post with polyeter impression material (Impregum Penta H Duosoft Polieter). The 25° angled abutment was prepared and a retention groove was made to the palatinal surface of the abutment. Then a wax sample was prepared and a custom abutment was cast from Crom-Nikel material angled to 45°. The metal fused porcelain crown was prepared. The final restoration was cemented conventionally.

P739

Antibacterial Activity of Dental Luting Agents: Direct Contact Test

Müge Önder[1], Ayçe Ünverdi Eldeniz[2], Serhan Akman[1]
[1]*Department of Prosthodonics, Faculty of Dentistry, Selcuk University, Konya, Turkey,* [2]*Department of Endodontics, Faculty of Dentistry, Selcuk University, Konya, Turkey*

Aim: Luting cements used in dentistry for cementation of different materials and their physical, chemical and antibacterial properties are very important. The aim of this in vitro study was to evaluate different manufacturers' resin, phosphate, polycarboxylate and glass ionomer cements antibacterial activity using Direct Contact Test (DCT).
Materials and methods: Direct contact test method, *Streptococcus mutans*, *Streptococcus salivarius*, *Candida albicans* micro-organisms prepared for the four different cements. The materials were tested immediately after application to the microtiter wells (fresh samples) and after setting for 3 days (set samples), a total of 24 groups. Luting cements 96- well cell culture dish to be 2 mm in height. Cement samples prepared with a solution of 1 h direct contact with bacteria is provided. Using a spectrophotometer at intervals of 1 h, 24 h for the solution of bacteria was measured 550 nm optical density.
Results: In all groups fresh samples DCT results are better than old samples DCT results.
Conclusion: Phosphate cements were found more potent bacterial growth inhibitors when their fresh with DCT.

P740

Rehabilitation of Patient with Cleft Lip and Palate: Case Report

Hakkı Çelebi[1], Ahmet Büyükerkmen[2], Kerem Atamözlü[2], Serhan Akman[1], Yaşar Bedii Göyenç[2]
[1]*Department of Prosthodontics, Selçuk University, Konya, Turkey,* [2]*Department of Orthodontics, Selçuk University, Konya, Turkey*

Introduction: Cleft lip and palate is congenital deformity cause by abnormal facial development during gestation. In most of the patients with cleft lip and palate have narrow maxilla. The aim of this treatment was to enlarge maxillar bone with RME apparatus, subsequent to orthodontic treatment; laminate veneer restorations performed to closure of diastema and satisfy patient's aesthetic expectations.
Case: Twenty-one-year-old female patient came to our clinic with complaint of aesthetic, functional and nutritional problems by reason of oro-nasal communication. Detailed medical anamnesis were obtained the patient had cleft lip and palate surgery when she was 3-year-old. In extraoral examination, the patient had scared lip. In intraoral examination, unilateral cleft palate, bilateral cross bite related to maxillary transversal deficiency and rotatory-complicated teeth in maxillary anterior region were seen. In temporomandibular joint examination, the patient hadn't any complaint or pain. Her mouth openness and muscles were normal.
Conclusion: And with our treatment, the patient's aesthetic, functional and nutritional problems were solved.

P741

Biomechanical Considerations of Affected Teeth by Periodontal Disease in Fixed Prosthesis

Nicoleta Ioanid, Cornelia Brezulianu
Department of Fixed Prosthetics, University of Medicine and Pharmacy Iasi, Iasi, Romania

Objectives: Real biomechanical value of the teeth supporting a fixed prosthesis depends, to a large extent, on their implantation, namely of their effective periodontal surface. To identify the relationship between reduction of the effective periodontal surface and length loss of the periodontal attachment.
Materials and methods: The average values for total lateral root area were determined using a software for measuring polygonal surfaces - UTHSC Image Tool 3.0. Also, it was necessary to deter-

mine the average values for root length (using test t Student, ANOVA). Those determinations were made on 140 extracted permanent teeth. Using simple regression from the tests General Linear Models (program Statistic 6.0) we identified a linear function, y = b0 + b1x, upon which we established a correlation between periodontal effective surface variation (y) and intraalveolar bone root length (x), for each tooth with periodontal disease. Let b0 and b1 be intercept and slope, respectively.

Results: Simulating the same level of periodontal attachment (e.g. 7 mm) has shown that, in case of monoradicular teeth, the periodontal (desmodontal) functional surface resulted was greater as tooth root increased (e.g. 38.19% for the upper central incisor vs. 50.54% for maxillary canine). In case of multirooted teeth, the desmodontal functional areas were almost equal (e.g. 45.84% on upper M1 vs. 44.36% on mandibular M1).

Conclusions: The longer the root, the better the implantation (i.e. the larger periodontal support for a fixed prosthesis). Also, by comparison, pluriradicular teeth have a more pronounced decrease of desmodontal area, for the same periodontal recession.

P742

Inlay Retained Dental Bridges with Using CAD-CAM Technology

Gözde Amansız, Dilek Enhoş
Departmant of Prosthodontics, İzmir Katip Çelebi University, İzmir, Turkey

Introduction: In recent decades, patient requests for aesthetics and biosafety has been increased the desire for inlay-retained fixed partial dentures (FPDs), to minimize loss of dental hard tissue, in addition new fabrication systems combined with a computer-assisted fabrication systems (CAD/CAM) are becoming very popular and suitable. The aim of this study is providing one chair time treathment to the patient and making minimal preperation on tooth structures. Design and fabrication of the ceramic inlays are performed using machine set at the chairside in the dental treathments. There are advantages to using CAD/CAM: new materials are safe, aesthetically pleasing and durable; increased efficiency in laboratory processing; quick fabrication of the restoration; and quality control of restorations such as fit, mechanical durability and predictability.

Case: In this study only one tooth was missing and abutment teeth had composite restorations. Patient had good oral hygiene and no signs of periodontal diseases. Filling materials are taken out and inlay cavities are prepeared without removing vital dental hard tissue.

All restorations were constructed as three-unit end-to-end FPDs. Cerec Sirona Blocks "40 size" were used. After milling block 3 units FPB was made. By using panavıa resin cement restoration was cemented at same day. Resin cement provides bonding strenght of restoration to the tooth surfaces.

Conclusion: At the end of this study it can be told; by using CAD-CAM devices it is easy to create best fitting marjins and aesthetic restorations at one chair time more over inlay retained bridges provides minimally prepared design and keeps tooth vital structures.

P743

Assessment of Hygiene Habits and Attitudes among Removable Denture Wearers

Umut Cakan[1], Hüseyin Emir Yüzbaşıoğlu[1], Hanefi Kurt[1], Haluk Barış Kara[1], Rana Turunç[1], Aslıhan Akbulut[2], Kader Cesur Aydın[2]
[1]*Department of Prosthodontics, Istanbul Medipol University, Istanbul, Turkey,* [2]*Department of Oral Diagnosis and Radiology, Istanbul Medipol University, Istanbul, Turkey*

Purpose: To determine denture cleaning habits and attitudes of removable partial denture wearers as well as conducting the social status of the studied population sample.

Methods: A total of 150 removable partial denture wearers, who sought treatment at Istanbul Medipol University, School of Dentistry were involved in this study. Ethical approval was sought and granted. All patients were interviewed using a structured questionnaire, related to age, sex, educational status, general health, overnight denture wearing, cleaning tools, materials, frequency and ever being informed about removable denture hygiene maintenance. Possible statistical relationships among some of questioned items were analysed by descriptive statistics.

Results: Majority of the patients had poor educational level and reported that they had not been informed about the denture hygiene methods by their dentists. Brushing either with or without toothpaste was the most frequent method used to clean dentures where soaking in denture cleansers revealed as a less preferred method. More than half of the patients reported that they brush their remaining teeth once a day and get informed about dental health by dentists and by media.

Conclusion: Most of the patients in this study did not clean their dentures properly and should be thoroughly informed and instructed, concerning denture hygiene methods and denture removal overnight.

P744

Oral Rehabilitation of A Patient with Broken Dolder-Bar and Unretentive Prosthesis in The Edentulous Mandibula: A Clinical Report

Işıl Karaokutan[1], Seçkin Karaokutan[2]
[1]*Department of Prosthodonty, Selcuk University, Konya, Turkey,* [2]*Department of Dentistry, Medicana Hospital, Konya, Turkey*

Introduction: Implant supported removable prosthesis have been used over 30 years. For renewing the old prosthesis it's important to know implants brand names.

Case: This clinical report describes the rehabilitation of a 80 years old patient with two implants at canine region and a broken dolder-bar in mandibula. She doesn't know implants brand names and in this situation patient's gingiva covered the implant surfaces which is then treated periodontically and broken dolder-bar and prosthesis renewed with hader bar and without using implant level impression.

P745

Bacterial Adhesion of *Staphlococcus epidermidis* on Polyamide and Polymethylmethacrylate Denture Base Resins

Hatice Ağan[1], Gülay Kansu[1], Semiha Özkan[2]
[1]*Department of Prosthodontics, Ankara University, Ankara, Turkey,* [2]*Department of Microbiology, Faculty of Pharmacy, Gazi University, Ankara, Turkey*

Objective: The aim of this study was to examine the adhesion of *Staphylococcus epidermidis* on different types of denture base materials before and after thermocycling process. Nylon was introduced in 1950's as a flexible denture base material, proving to be entirely unsatisfactory owing to its poor ability to resist oral conditions Modified polyamide denture base materials have become available with improved physical and chemical aspects. *Staphylococcus epidermidis* is an important pathogen in immunocompromised patients.
Materials and methods: In order to produce comperable smooth surface, fourteen specimens from each materials (diameter 10 mm and thickness 2 mm) were prepared against glass from four polyamide (T-crystal, Deflex, Valplast, Bre-flex) and one PMMA (Meliodent) denture base materials After manufacturing, half of the specimens selected randomly were subjected to 10,000 thermocycles with a dwell time of 30 sec, between 5 to 55°C. A frozen preculture of the strain *S. epidermidis* were transferred onto an agar plate and incubated at 37°C for 48 h. A single colony was incubated with sterile Mueller Hinton Brothat 37°C for 24 h, and subsequently kept at 4°C. Cells were harvested by centrifugation, washed twice with phosphate buffered saline and resuspended in the same buffer the optical density of the bacteria suspension was adjusted to 0.3 at 550 nm. Then the specimens were placed into suspension at 37°C for 48 h. Quantification of bacteria was observed as colony forming unit. Statistical analysis were done by Wilcoxon signed rank test and Bonferroni Adjustments ($p < 0.005$).
Results: There is statistically significant differences between test materials, and test groups.

Theme: General Dentistry and Oral Health

P746

e-viDENT: European Dentists make Evidence-Based Decisions [EU Life Long Learning 2011-1-TR1-LE004-24232-1]

Katleen Vandamme[1], Cansu Alpaslan[2], Gőkhan Alpaslan[2], Heikki Murtomaa[3], Ignace Naert[1], Gregor Slavicek[4], Jorma Virtanen[3], Nermin Yamalik[5]
[1]*Department of Oral Health Sciences & Dental Clinic, KU Leuven & University Hospitals Leuven, Leuven, Belgium,* [2]*Faculty of Dentistry, Gazi University, Ankara, Turkey,* [3]*University of Helsinki, Helsinki, Finland,* [4]*Steinbeis University, Berlin, Germany,* [5]*Turkish Dental Association, Turkey*

Aim: There is a need to increase knowledge and skills of dental practitioners for evidence-based dentistry (EBD) practicing. The aim of the e-viDENT project (EU Life Long Learning; 2011–2013) was to raise the dentists' awareness of EBD thinking and acting, and offer them a simple tool to search and appraise the level of evidence of scientific literature.
Materials and methods: The project kick-off meeting took place in Ankara (TK) in 11/2011, where the participating partners presented the current status and obstacles of EBD in their countries. A road map was established, with meetings in Berlin-GE (06/2012), Helsinki-FN (09/2012), Leuven-BE (02/2013) and Stuttgart-GE (05/2013). The current tools of EBD were evaluated and ranked, where after search strategies were set-up, based on the PICO question. Tools, for daily use, were established for a 5/30/60 min EBD-decision making process. The entire project will be documented as e-book with interactive content and video material in 07/2013.
Results: The forthcoming e-book deals with (i) Introduction of basic concepts of EBD; (ii) Overview of study types in dental research; (iii) Evidence-based literature e-sources (iv) Implementation of EBD in the under/post-graduate education; and (v) examples of EBD thinking and acting. Pilot studies to validate the effectiveness of the e-book are ongoing.
Conclusion: An e-tool will soon become available for dentists to learn, master and apply the techniques of appropriate selection and critical appraisal of scientific literature, and making decisions for their patients accordingly. The academia has responsibility in mentoring the dental providers to justify their actions by best scientific evidence available.

P747

Oral Health Status and Related Factors in A Group of Dental Patients

Ayşe Gülşahı[1], Çiğdem Çelik[2], Bulem Yüzügüllü[3]
[1]*Department of Dentomaxillofacial Radiology, Baskent University, Ankara, Turkey,* [2]*Department of Conservative Dentistry, Baskent University, Ankara, Turkey,* [3]*Department of Prosthodontics, Baskent University, Ankara, Turkey*

Objective: To investigate the relation between oral health status and, oral health behavior and sociodemographic factors in a group of dental patients.
Materials and methods: The data were collected from 500 patients, aged between 13–71 years. Oral health behaviour was assessed with questionnaire. Oral health status was assessed both clinical and radiologic examination. The radiologic examination included a panoramic radiograph and periapical radiographs when seen necessary. Oral health status was evaluated using the World Health Organization caries diagnostic criteria for decayed, missing and filled teeth (DMFT). A multiple lineer regression analysis was conducted to relation with DMFT index.
Results: Of the patients, 185 (37%) were male and 315 (63%) were female. The mean age of the study population was 32.97 ± 13.11 years. The mean age for visiting a dentist for the first time was 13.82 ± 8.43 years. The average DMFT score was 8.01 ± 5.64. As age increased, DMFT score was increased as well ($p < 0.001$). While education level was increased, missing tooth was decreased ($p < 0.001$); but filling tooth was increased ($p < 0.001$). Other sociodemographic factors and oral health behaviour were not related to oral health status.
Conclusion: According to the results, age and education level was significant predictor for oral health status in this study population.

P748

Unicystic Mural Ameloblastom in Infant: A Case Report

Ahmet Hüseyin Acar[1], Ümit Yolcu[1], Fatih Asutay[1], Ebru Çakır[2]
[1]*Department of Oral and Maxillofacial Surgery, İnönü University, Malatya, Turkey,* [2]*Department of Pathology, İnönü University, Malatya, Turkey*

Introduction: The ameloblastoma originates from odontogenic ectodermal epithelium with differentiation in to ameloblasts. Ameloblastoma is a benign odontogenic tumour, which often shows aggressive growth and a high recurrence rate after conservative surgical treatment. Unicystic ameloblastoma is considered to be a less aggressive form of ameloblastoma. Conservative surgical treatment is thought to be adequate for the majority of cases.
Case: In this case report; a 1.5-year-old boy referred to our clinic with the complaint of collapse in his symphysis region. Radiographic examination revealed an uniloculer radiolucency in this region. The lesion was enucleated totally, two teeth germ extracted under general anesthesia and was diagnosed as unicystic mural type ameloblastoma by histopathological examination. After the surgery, complete healing was obtained clinically and radiographically.
Conclusion: No sign of recurrence was seen during the follow-up period of 2.5 years. To the our knowledge, this is the youngest case ameloblastoma in the english literature.

P749

Salivary Flow and Buffering Capacity in Patients with Cardiovascular Diseases

Roberto Paulo Correia De Araújo, Danilo Barral Araújo, Delano Oliveira Souza, Sandra Maria Ferraz Mello
Institute of Health Sciences - Federal University of Bahia, Salvador, Brazil

Background: Cardiovascular diseases are the main cause of death in many countries. There has been widespread discussion on the influence of medications that could alter salivary flow.
Objective: This study aimed to identify the influence of medications used by cardiac patients, prior to heart surgery, on their salivary flow and pH.
Methodology: The study included 70 adult patients with heart disease. Investigation of their socioeconomic profile, baseline heart diseases, medications used and evaluation of pH and salivary flow were performed.
Results: The mean age was 50 years and 52.9% of the patients were males. Among the heart diseases, 52.9% were valve diseases, while 35.8% were individuals with coronary artery disease (CAD). Hypertension was present in 58.5% and diabetes in 22.8%. Platelet antiaggregants, statins, hypoglycemic agents and especially beta-blockers were the major drugs shown to be responsible for reduced saliva flow, while the buffering capacity of saliva was considered normal.
Conclusion: There was a positive relationship between decreased salivary flow and the use of medications, especially beta-blockers, whereas the saliva-buffering capacity was normal. Such patients require rigorous oral hygiene including thorough brushing, the use of dental floss and antiseptic mouthwashes, and shorter intervals between tooth cleanings. The use of artificial saliva, when flow reduction is confirmed, has been shown to be an appropriate therapeutic method for controlling these symptoms, in addition to certain drugs that facilitate the recovery of normal salivary flow.

P750

Surgical and Dental Treatment of Extra-oral Fistula: Two Case Reports

Kemal Mehmet Tümer[1], Nihat Akbulut[1], Levent Gürbüzler[2], İsmail Özkocak[3], Kader Bayram Kaplan[5], Fatma Aytac[4]
[1]*Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, Gaziosmanpasa University, Tokat, Turkey,* [2]*Department of Ear, Nose and Throat, Faculty of Medicine, Gaziosmanpasa University, Tokat, Turkey,* [3]*Department of Endodontics, Faculty of Dentistry, Gaziosmanpasa University, Tokat, Turkey,* [4]*Department of Restorative Dentistry, Faculty of Dentistry, Gaziosmanpasa University, Tokat, Turkey,* [5]*Department of Ear, Nose and Throat, State Hospital, Tokat, Turkey*

Introduction: Dental infections are common lesion in the mouth and many of them are localised and are treated by dentist. Odontogenic infections can be disseminated along the circumambient structure, such as alveolar bone and soft tissues. In case it isn't treated completely, a sinus with an external opening, which named oro-cutaneous fistula, can be comprised on the face.
Case1: A 32-year-old female patient who had small seropurulent discharging lesion located anterior mandibular region with 2 months history was presented to Gaziosmanpasa University, Faculty of Dentistry. The surrounding skin appearance was normal. According to the intraoral examination, there were full mouth bridges and the radiographs confirmed that there was apical radiolucent lesion around the lower incisor teeth and left canine. Furthermore, failed root canal treatments observed. Teeth were retreated by endodontist and apical resection operation was performed. At the same time the resection of oro-cutaneous lesion was reconstructed extra-orally by surgeons.
Case 2: A 13-year-old female patient who had small submental oro-cutaneous lesion with 3 week history was presented Gaziosmanpasa University, Faculty of Dentistry. The surrounding skin appearance and intraoral examination was normal. There was apical infection around the lower incisor teeth in radiographic examination. The root canal treatment and the surgical treatment of patient was carried out by the same team as mentioned above.
Conclusion: Early diagnosis of the underlying dental infection is essential and surgical reconstruction of discharging lesion with dental treatment and oral surgery is also important for recurrence of the lesion.

P751

Dental Patient, Drugs and Dental Treatment – Corticosteroids

Panagiota Dokou[1], Eleni Dadiotou Ntokou[1], Athanasios Spiliotopoulos[2], Eleftherios Ntokos[3]
[1]*Private Practice,* [2]*"Korgialenio-Benakio EES" General Hospital of Athens,* [3]*"Tzaneio" General Hospital of Piraeus*

Aim: Corticosteroids are synthetic versions of cortisone, a hormone produced by the adrenal glands, and are widely considered «miracle» drugs, capable of restoring health and save the lives of people suffering from a wide range of serious diseases.
Materials and methods: Corticosteroids suppress the immune system and inflammation, preventing the progress of numerous diseases. On the other hand, their often observed side effects can be just as serious as the diseases. Over the past years, corticosteroids have been also found to be responsible for a series of adverse effects in the oral cavity such as osteonecrosis of the jaws and metallic taste. Furthermore, increase of risk of jaw osteonecrosis can be observed in cases of simultaneous intake of corticosteroids and other drugs such as bisphosphonates or other immunosuppressive drugs.
Results: In dentistry corticosteroids are widely used in various specialties. In stomatology local application of corticosteroids is considered to be the primary therapeutic approach in treatment of oral ulcers, whereas more severe cases demand parenteral administration. Parenteral administration of specific drugs is also recommended in the treatment of various autoimmune diseases that exhibit manifestations in the oral cavity, as well as other inflammatory diseases.
Conclusions: Despite the positive effect of corticosteroids on the systemic health, the administration of such drugs should be made with caution due to the often observed side effects. Close monitoring is also recommended as osteoporosis, increase of blood sugar and blood pressure, weight gain, fissures in the skin, cataract etc. may occur during treatment.

P752

Ethical Evaluation of Informed Consent at The Dentistry of A Public Hospital

Engin Kurt
Department of Deontology, Gulhane Military Medical Faculty, Ankara, Turkey

Purpose: At the implementation stage, a status assessment is conducted about receiving the informed consents of the patients at the dentistry clinic and some courses of actions are proposed about the issues, those are required to be developed.
Materials and methods: This research has been conducted by reaching 90.9% (60 personnel) of the whole dentists at a public hospital. A questionnaire containing 34 items was implemented. The relations of the total scale points of each part with the individual variables were investigated and the data was evaluated by using SPSS 15.0 statistics program.
Result: According to the results of the questionnaire implemented: 36.7% of the participants stated that they received the ethical training during the dentistry education; related to the ethical and legal issues 51.7% of the participants stated that s/he needs to have more information; 68.3% of the participants found their knowledge on the "informed consent" as partially adequate; 38.3% of the participants stated that the information should be delivered to the patient orally by the physicians and by using the written brochures; 71.7% of the participants stated that the informed consent of the patient should be received with a document signed by the patient and the physicians. It is proposed for the physicians that, they should be cautious at the stage of receiving informed consent and should inform the patient through all aspects for more confident implementation of dentistry practice.

P753

Halitosis and Related Factors in Patients with Chronic Renal Failure

Şehrazat Evirgen Şençalış[1], Ayşe Gülşahı[2], Bengi Öztaş[3], Yasemin Çetinel[4]
[1]Dental Clinic, İzmir Medical Park Hospital, İzmir, Turkey, [2]Oral and Maxillofacial Radiology, Başkent University, Ankara, Turkey, [3]Oral and Maxillofacial Radiology, Ankara University, Ankara, Turkey, [4]Faculty of Medicine, Başkent University, Ankara, Turkey

Objective: To analyse the relation between the VSC levels (especially dimethyl sufid level), and organoleptic measurement and blood urea nitrogen levels (BUN) of a group of patients with Chronic renal failure (CRF).
Materials and methods: A total of 50 patients with CRF and together with 28 healthy subjects was included the study. One trained examiner performed halitosis measurements prior to and after hemodialysis. To determine the halitosis both organoleptic measurements and VSC measurements by using a portable gas chromatography were performed. Statistical analyses was performed by using Mann-Whitney U test, Wilcoxon signed ranks test and chi square test.
Results: While no significant difference observed between the hydrogen sulfide and methyl mercaptan levels of the CRF patients and controls before HD ($p > 0.05$); dimethyl sulfide levels were significantly higher in the CRF patients than controls ($p < 0.05$). Compared with before and after HD, there were statistically significant decreases in hydrogen sulfide, methyl mercaptan and dimethyl sulfide levels of the CRF patients ($p < 0.01$). Prior to HD, organoleptic measurement levels were not correlated with hydrogen sulfide and dimethyl sulfide levels; but methyl mercaptan level was significantly correlated with organoleptic measurement ($p < 0.05$). After the HD, organoleptic measurement levels were not correlated with hydrogen sulfide, dimethyl sulfide and methyl mercaptan levels ($p > 0.05$). BUN levels were not correlated with hydrogen sulfide, dimethyl sulfide and methyl mercaptan levels neither prior to nor after HD ($p > 0.05$).
Conclusion: Hemodialysis may play an important role in decreasing the level of halitosis cronic renal failure patients.

P754

Patients' Knowledge of the Relation of Dental Health and Systemic Diseases

Hande Sancaklı[1], Günçe Saygı[1], Nurhan İnan[1], Sevda Özel[2], Uğur Erdemir[1], Taner Yücel[1], Esra Yıldız[1]
[1]Department of Operative Dentistry, Faculty of Dentistry, University of Istanbul, Istanbul, Turkey, [2]Department of Biostatistics and Medical Informatics, Faculty of Medicine, University of Istanbul, Istanbul, Turkey

Objectives: The objective of the study was to assess the patients' knowledge about oral health and dental caries associated with systemic diseases, habits and nutritional factors.

Materials and methods: A 20-item cross-sectional questionnaire was delivered to 600 patients, who were treated at Istanbul University Department of Operative Dentistry clinic. Patients who agreed to answer the detailed questionnaire were participated in the study. All of the questionnaires were carried out as interviews by two dentists. Only fully completed questionnaires were evaluated by SPSS 21.0, and the significance of association between variables were analyzed using chi-square tests.
Results: Of the 600 patients, ages ranging from 18 to 80 years, 59% were females and 41% were males. According to the data obtained, 79.5% of the patients had systemic diseases, smoking/alcohol habits. Compared with the others, smoking 49% was the most frequent habit among patients. Forty six percent of the patients had their diseases under control, and 61% of them had never been directed to a dentist by their physicians. As a result, there was a significant difference between patients thinking that systemic diseases show specific oral symptoms, and patients perceiving systemic disease as a reason for their oral problems ($p < 0.001$). Only 3.5% of participants answered all of the questions correctly when the knowledge of cariogenic nutrition was evaluated. In conclusion, showing a high prevalence of systemic diseases, patients had inadequate knowledge of the relationship between oral and general health.

P755

Cytotoxicity of the Polyalthia Evecta on Human Primary Osteoblast Cells

Thidarat Angwarawong[1], Piboon Ngaonee[2], Uthaiwan Arayatrakoollikit[2], Poramaporn Klanrit[2], Dusadee Homdee[2], Bungorn Sripanidkulchai[3], Nattida Weerapreeyakul[3], Ponlatham Chaiyarit[2]
[1]Department of Prosthodontics, Faculty of Dentistry, Khon Kaen University, Khon Kaen, Thailand, [2]Research Group of Chronic Inflammatory Oral Diseases and Systemic Disease Associated with Oral Health, Faculty of Dentistry, Khon Kaen University, Khon Kaen, Thailand, [3]Center for Research and Development of Herbal Health Product, Faculty of Pharmaceutical Sciences, Khon Kaen University, Khon Kaen, Thailand

Purpose: *Polyalthia evecta* (*P. evecta*) (Pierre) Finet & Gagnep has been used for Thai traditionally herbal medicine as a galactagogue and a carminative. It has been reported that 50% ethanol-water extraction of *P. evecta* showed the antioxidant activity and antimutagenicity. Moreover, it has been shown anticancer effect on human hepatoma cell line (HepG2). However the effect of *P. evecta* on osteoblast cells is yet unknown. Thus, the aim of the this study was to evaluate the cytotoxic activity of *P. evecta* on human primary osteoblast cells.
Materials and methods: The bark of *P. evecta* was extracted by 50% ethanol-water and freeze-dried method. Human primary osteoblast cells were treated with *P. evecta* at concentrations of 31.25, 62.5, 125, 250, 500 and 1000 μg/ml. Cytotoxicity was determined by MTT assay at 24 h incubation.
Results: The result showed that *P. evecta* treatment had no effect on cytotoxicity. Additionally, human primary osteoblast cells, which treated with *P. evecta*, especially ranging from 31.25–250 μg/ml, had cell proliferation higher than that of the control group.
Conclusions: This study demonstrated that *P. evecta* did not affect on cytotoxic activity of human primary osteoblast cells. Furthermore, *P. evecta* promoted cell proliferation. This result was the fundamental data for the further study for the effect of *P. evecta* on osteoblast cells in other aspects such as bone formation and anti-inflammation.

P756

Knowledge and Awareness about needle stick injuries among dental students and staff - An Institutional study

Prashanti Eachempati, Sumanth Nagraj Kumbargere
Faculty of Dentistry, Melaka Manipal Medical College, Melaka, Malaysia

Aim/Objective: To ascertain knowledge and awareness of dental students and staff regarding needle stick injuries (NSI) before and after awareness lectures on NSI and post exposure prophylaxis (PEP).
Methods: A Cross sectional survey was conducted among the consenting dental students of 3rd, 4th years, and staff at Faculty of Dentistry, Melaka Manipal Medical College, Melaka, Malaysia. Pre-tested questionnaires were administered to 70 students, 10 staff and 10 para dental staff before and after a series of awareness lectures on NSI and PEP.
Results: The response rate of the survey was 100%. The areas covered in the questionnaire were regarding the diseases transmitted by NSI's, risk of transmission, high risk fluids, first aid measures to be taken after NSI, PEP administration, necessity to monitor patients HIV/Hepatitis status, and whom to contact in case of NSI. The overall awareness before the lectures was rated to be 59.5% among the 3rd year students, 63% among the 4th year students and 67.5% among the staff. After the awareness lectures, a significant increase in the knowledge and awareness was found among the 3rd years, 4th years and staff with 85.7%, 91.5% and 93.2% respectively.
Conclusion: Overall knowledge and awareness of dental students and staff regarding various aspects of needle stick injuries improved significantly following awareness lectures. This implies that more awareness programmes need to be organised to improve the knowledge among various health care professionals.

P757

Masticatory Process - The Effect of Diabetes in Function of Stomatognathic System

Tânia De Freitas Borges[1], Simone Cecílio Hallak Regalo[1], Marcelo Palinkas[1], Marisa Semprini[1], Mariana Zeitune[1], Richard Honorato Oliveira[1], Paulo Batista Vasconcelos[1], Luiz Gustavo Sousa[1], Wilson Mestriner Jr[2], Selma Siéssere[1]
[1]Departament of Morphology, Stomatology and Physiology of the Ribeirão Preto Dental School, University of São Paulo, Ribeirão Preto, Brazil, [2]Departament of Pediatric Clinics, Preventive and Social Dentistry, Faculty of Dentistry of Ribeirão Preto Dental School, University of São Paulo, Ribeirão Preto, Brazil

Aim: The objective of this study was to analyze the electromyographic activity of masseter and temporalis muscles, right and left.
Methods: Sixteen subjects 23–59 years, divided into two groups: Group I (diabetic) and Group II (control) during habitual chewing of different foods. The subjects were matched for each subject was nasal breathers. The masticatory process was assessed through electromyographic signal (Myosystem – BR3.5 – DataHominis Ltda – Brazil) with differential active electrodes (silver bars 10 mm apart, 10 mm long, 20 × gain, input impedance 10 G< and 130 dB common mode rejection ratio). Surface differential active electrodes were placed on the skin on both masseter and temporalis muscles. The signals were digitally filtered using a bandpass filter of 10–500 Hz in the data processing. The data were obtained during habitual chewing of peanuts and raisins (5 g each), for 20 s.
Results: The average EMG were tabulated and subjected to statistical analysis using t-test (SPSS 19.0). It was found that individuals with diabetes had the lowest averages for the two chews, with a significance level of 5% ($p < 0.05$), but the activation pattern of the masseter and temporalis muscles were similar to the control group, with masseter more active than the temporalis, especially during mastication of hard food (peanuts).
Conclusion: It was concluded that diabetes caused alterations in muscle fibers request during the masticatory process, highlighting the need for health professionals to be aware of this change in the stomatognathic system of individuals with this chronic degenerative disease.

P758

Chewing Prevents Stress-Induced Heart Failure in Rats

So Koizumi[1], Susumu Minamisawa[3], Shinjiro Miyake[1], Kenichi Sasaguri[1], Yumie Ono[2]
[1]*Department of Craniofacial Growth & Development Dentistry, Kanagawa Dental College, Yokosuka, Japan,* [2]*Health Science and Medical Engineering Lab, School of Science and Technology, Meiji University, Kanagawa, Japan,* [3]*Department of Cell Physiology, the Jikei University School of Medicine, Tokyo, Japan*

Aim: It is now well established that stress causes autonomic imbalance to promote cardiovascular diseases. We investigated whether chewing during stress acts as an active coping strategy to prevent stress-induced heart failure in the right ventricle (RV) hypertrophy rat model.
Materials and methods: We induced pulmonary hypertension and RV hypertrophy in male SD rats by intraperitoneally administering a single dose of monocrotaline (MCT, 60 mg/kg). The rats were divided into three groups of: (i) no stress group (M), (ii) stress group (MS), and (iii) MS with chewing group (MC). The survival rate of all rats was followed up for 6 weeks after the MCT injection, at which their heart and lung tissues were harvested. Rats in the MS and MC groups were subjected to 1 h of immobilization stress twice a week from 3 weeks after the MCT injection. Rats in MC groups were allowed to chew a wooden stick during the immobilization stress. We used the ratio between RV weight and the weight of the left ventricle and interventricular septum (RV/LV+S) as the index of RV hypertrophy.
Results: Chewing significantly reduced stress-induced increase of lung weight (M: 2598 ± 236 mg, n = 10; MS: 3597 ± 373 mg, n = 7; MC: 2568 ± 177 mg, n = 8; $p < 0.05$) and RV/LV+S ratio (M: 0.54 ± 0.05%, MS: 0.60 ± 0.06%, MC: 0.58 ± 0.06%). Chewing also improved the survival rate (M: 50%, MS: 35%, MC: 40%).
Conclusion: The results suggest that chewing under stressful condition might relieve stress-induced lung remodeling and progressive heart failure.

P759

Dentists' Knowledge on the Oral Manifestations of Systemic Diseases

Uğur Erdemir[1], Nurhan İnan[1], Günçe Saygı[1], Sevda Özel[2], Taner Yücel[1], Esra Yıldız[1]
[1]*Department Operative Dentistry, Faculty of Dentistry, University of Istanbul,* [2]*Department of Biostatistic and Medical Informatics, University of Istanbul of Medicine*

Objectives: This study aims to identify, compare and analyze the knowledge and opinions of dentists regarding oral manifestations of systemic diseases.
Materials and methods: An 18 items in a cross-sectional survey were used in investigation of demographic attributes, dental practice characteristics, knowledge of oral manifestations and opinions of dentists and were delivered to 466 dentists all over Istanbul. Only fully completed questionnaires were used in the data analysis. Descriptive statistics were analyzed by using chi-square tests.
Results: Of the 466 dentists, ages ranging from 21 to 52 years, 53% were females and 47% were males. According to collected data, 99% of the dentists reported that systemic diseases manifest themselves by certain oral manifestations. Compared to the other systemic diseases, dentists reported that diabetes had specific oral manifestations (100%) and only 19.4% of them thought that cardio-vascular disease had specific oral manifestations. At the same time about 99.6% of the dentists declared that early detection of abnormal oral manifestations can be helpful in early diagnosis of underlying diseases. On the other hand 90.8% of the dentists mentioned that team-work treatments side by side with physicians must be planned to achieve the optimum benefits.
Conclusion: In conclusion the dentist's knowledge about oral manifestations are insufficient to fulfill the questionnaire so educational programmes about diagnosing oral symptoms of systemic diseases should be supported by dental associations.

P760

Incisor the Early Loss of Primary Teeth Due To Oral Bad Habit: Case Report

Salih Doğan, Kenan Cantekin, Serap Avcı
Department of Pediatric Dentistry, Faculty of Dentistry, Erciyes University, Kayseri, Turkey

Introduction: Early loss of primary teeth in children is usually associated with systemic diseases or aggressive periodontitis other than dental caries. This systemic diseases include hypophosphatasia, leukocyte adhesion deficiency, neutropenia, Papillon-Lefévre syndrome and Langerhans' cell histiocytosis. Early loss of primary

teeth in children with bad oral habits that frequently encountered in routine clinical examination is a quite rare and atypical case. The aim of this case report is to present an unprecedented case which include loss of primary teeth due to biting foreign objects.
Case Report: Clinical examination of a 2-year-old male patient's parents without a systemic disease admitted to our clinic with complaint of lack of teeth it was observed that teeth numbers 81,82,83 were not in the month and in radiographic examination only tooth germ number 82 was observed in that area. According to the anemnesis there was no traumatical injury at that region but as a result of a bad habbit about biting foreign objects and pull them out rapidly.
Result: In children bad oral habits seem so frequently but due to this situation tooth loss is so rare. To determine bad oral habits in children at early stages is so important for not only to prevent the developmental defects of face and occlusion and also to avoid early tooth loss because of chronic trauma.

P761

Effects of Solar-Powered TiO2 Semiconductor on Oral Biofilm

Takenori Sato, Kiyoko Watanabe, Hidefumi Kumada, Nobushiro Hamada
Department of Infection Control, Division of Microbiology, Kanagawa Dental University, Yokosuka, Japan

Aim: The formation of bacterial biofilm on tooth surfaces brings about caries and periodontitis, one of the most common oral diseases of human. Biofilm removal by toothbrush plays a crucial role in the prevention of caries and periodontitis. However, there have been no reports on biofilm removal ability of an electric toothbrush with solar-powered titanium dioxide (TiO2) semiconductor. In this study, we investigated effects of solar-powered TiO2 semiconductor on oral biofilm.
Materials and methods: *Streptococcus mutans* and *Porphyromonas gingivalis* were grown in brain heart infusion broth at 37°C under anaerobic condition. The cover glasses were coated by bacteria (108 CFU/ml) and cultivated anaerobically at 37°C for 18 h. After incubation, solar-powered TiO2 toothbrush was placed on the covered glasses and brushed for 1 min under illuminating with a blacklight at a distance of 7 cm. After mechanical brushing, the cover glasses were stained with 1% crystal violet (CV) for 10 s at room temperature. Biofilm removal ability was evaluated from the absorbance of CV stained solution containing removed biofilm at 492 πm in a spectrophotometer.
Results: The electric toothbrush with solar-powered TiO2 semiconductor, bacterial removal rate of *S. mutans* was 75.0% and that of *P. gingivalis* was 88.7%. These rates were significantly greater than those of an electric toothbrush without solar-powered TiO2 semiconductor ($p < 0.01$).
Conclusions: In these results, we suggest that photocatalytic property of TiO2 and electric current of solar battery contribute the reduction of bacterial biofilm and promote the prevention of caries and periodontitis.

P762

Atypical Intra Oral Findings of a Child with Burkitt's Lymphoma: A Case Report

Salih Doğan, Mustafa Aydınbelge, Kevser Kolçakoğlu
Department of Pediatric Dentistry, Faculty of Dentistry, Erciyes University, Kayseri, Turkey

Introduction: Lymphomas are malignant tumor group arising from cells of lymphoreticular or immune system (B lymphocytes, T lymphocytes and monocytes). In this group of Burkitt's lymphoma (BL) is caused by B-type lymphocytes. The most common oral findings of BL are teeth mobility, toothache, oral neoplasms, gingival hyperplasia, pain and swelling during the jaw opening. In this case report, intra-oral findings and treatment plans of a pediatric patient after chemotherapy for this rarely seen malignancy is described.
Case Report: We learned from the medical history of a 10 years and 4 month-old girl who admitted to dental clinic of our faculty with dental pain, that she was hospitalizated at the faculty of medicine with diagnosis of Burkitt's lymphoma 5 years ago. At the panoramic radiograph, mandibular first molar teeth can't erupt as a result of stopped development and the presence of severe hypoplasia at the right and left second premolar teeth. And at the second mandibular primary molars pulps were completely deleted as a result of the pulp canal obliteration.
Result: Some of common intraoral findings for BL are tooth mobility and supraeruption but in this case we did not encountered them. Eruption and developmental anomalies observed at permanent teeth of patients with BT malignancy at early age, due to involvement of mandible. Especially children at early ages who diagnosed as BT has to be evaluate for dental developmental anomalies and pathological course of the disease has to be described how to cause that anomalies.

P763

Ergonomical Evaluation of Dentists' Working Conditions and Habits

Zuhal Kırzıoğlu, Ceylan Çağıl Yetiş, Çiğdem Küçükeşmen
Department of Paediatric Dentistry, Suleyman Demirel University, Isparta, Turkey

Aim: It was aimed to evaluate dental health care workers' working habits and knowledge level about ergonomical principles, to determine ergonomical risk factors and measures to be taken.
Materials and methods: Totally 215 volunteer, composed of intern dentistry students and dentists working in public hospitals or private dental clinics attended to the study. A questionnaire which is about dental health care workers' knowledge level about ergonomical principles, design of dental equipment used in and working habits was created and after getting ethical approval distributed to the dentists.
Results: Majority of the participants had been working for less than 10 years (82.78%). 19.06% of them had been working for more than 8 h per day and 46.51% had less than 30 min for resting totally. 62.79% of the participators indicated that they are working without an assistant and 96.27% had been using a

non-ergonomical ordinary dentist stool. Eventhough the majority of the participants were young dentists, 98.6% of them hadn't been using new magnification devices (dental loopes, operation microscopes…) and 94.41% hadn't been doing stretching exercises during microbreaks. 56.74% of the participants indicated that they had had an education about ergonomic principles. 90.69% of the participators stated that, their working conditions aren't ergonomical because of most frequent; inadequate resting time (56.13%), excessive work load (50%) and unsuitable environmental conditions (crowd, noise, air pollution…) (45.28%), respectively.

Conclusions: Although, it was seen that dentists' education about ergonomical principles is enough, their unfavourable environmental and working conditions (equipments, time planning…) must be reorganized ergonomically.

P764

Psychosocial Profiles of Patients in Different TMD Diagnostic Subgroups

Irena Mladenovic[1], Slobodan Dodic[2], Ruzica Kozomara[3]
[1]Department of Prosthodonthics, Faculty of Medicine, University of East Sarajevo, Foca, Bosnia and Herzegovina, [2]Department of Prosthodontics, School of Dentistry, University of Belgrade, Belgrade, Serbia, [3]Department of Maxillofacial Surgery, Military Medical Academy, Belgrade, Belgrade, Serbia

Aim: To compare psychosocial characteristics in research diagnostic criteria for temporomandibular disorders (RDC/TMD) diagnostic groups.

Materials and methods: One hundred forty-four consecutive patients (119 females, age range 18–36 years) diagnosed to have at least one of RDC/TMD Axis I diagnoses were recruited from subjects referred for TMD treatment from January 2011 to December 2012. Depression, somatization, and chronic pain grade were evaluated according to RDC/TMD Axis II scoring protocol. Data were subjected to Kruskal–Wallis and Mann–Whitney tests at a significance level of.05.

Results: According to our results, patients diagnosed with myofascial pain had higher depression and somatization scores comparing to patients with arthralgia ($p = 0.046$, $p = 0.018$, respectively). Patients with disc displacement reported significantly lower levels of chronic pain and related disability than patients with myofascial pain and arthralgia ($p < 0.001$, $p = 0.017$, respectively).

Conclusions: The results suggest that patients with various clinical TMD diagnoses may differ in psychosocial profiles. Psychological distress experienced by patients with myofascial pain is higher than in patients with arthralgia. Patients diagnosed to have pain-related TMD diagnoses are characterized by higher level of chronic pain and related disability.

P765

Delayed Eruption of Primary and Permanent Teeth

Derya Yıldırım, Ayşe Aydoğmuş, Esin Bozdemir, Özlem Görmez, Mukadder Orhan
Department of Dentomaxillofacial Radiology, Suleyman Demirel University, Isparta, Turkey

Aim: The aim of this presentation was to discuss possible causes and the terminology of tooth eruption problems.

Materials and methods: Clinical findings, periapical, panoramic and cone beam computed tomography imaging examinations of patients with delayed primary or permanent tooth eruption were evaluated. Possible causes of delayed tooth eruption was determined.

Results: Possible causes of delayed tooth eruption were determined as odontogenic cysts and tumors like dentigerous cysts, odontomas; supernumerary teeth; ankylosis; premature loss of primary tooth; lack of resorption of deciduous tooth; positional deviations and systemic disease like hypothyroidism.

Conclusion: The clinicians should be aware of possible causes of delayed tooth eruption in order to prevent retarded and difficult treatment procedures.

Theme: Implantology: Implantology

P766

Gender–Based Prevalence of Peri-Implant Disease

Christoph Arnhart[1], Gabriella Dvorak[1], Alexandra Kautzky Willer[2], Christian Ulm[1], Corinna Bruckmann[3], Rudolf Seemann[4]
[1]Division of Oral Surgery, University Clinic of Dentistry Vienna, Vienna, Austria, [2]Gender Medicine Unit, Medical University of Vienna, Vienna, Austria, [3]Division of Periodontology, University Clinic of Dentistry Vienna, Vienna, Austria, [4]Department of Craniofacial and Maxillofacial Surgery, Medical University of Vienna, Austria

Background: The objective of this study was to evaluate sexual dimorphism in peri-implant disease.

Materials and methods: Out of 433 patients, 234 women and 85 men were matched according to patient and implant characteristics. Effects of gender and confounding factors were tested in a binomial frailty model. Mean age in women was 61 ± 12.7 and 59 ± 13.1 in men. The mean loading time was 6.9 ± 4.5 for women and 6.8 ± 5.6 for men.

Results: The 313 patients had been treated with 1461 implants. Mean marginal bone loss did not significantly differ between genders. Early loss was higher in men ($p = 0.01$) while late implant failure occurred significantly less in men ($p < 0.05$). Also men had a lower prevalence of peri-implantitis ($p < 0.01$). A moderately rough ($p < 0.01$) and rough surface ($p < 0.01$), plaque ($p < 0.01$) and smoking ($p < 0.05$) are risk indicators for late implant failure. Smoking and periodontitis are risk indicators for peri-implantitis ($p < 0.05$) in both genders. Other risk indicators for peri-implant disease differ between genders.

Conclusion: Gender has an influence on peri-implant disease and risk indicators differ between men and women.

P767

Bone Augmentation with Allograft Block in Esthetic Site: Case Report

Bahattin Alper Gultekın[1], Ali Sirali[2], Serdar Yalcin[1]
[1]*Department of Oral Implantology, Faculty of Dentistry, Istanbul University,* [2]*Department of Periodontology, Faculty of Dentistry, Bezmialem Vakif University*

Purpose: The purpose of this study was to show the usage of cancellous allograft bone block (CABB) for alveolar ridge augmentation of the maxilla in preparation for dental reconstruction with endosseous implants, as an effective alternative to harvesting and grafting autogenous bone from intra- or extra-oral donor sites.
Materials and methods: The case presented clinically demonstrates the usage of CABB in the augmentation of a severe maxillary atrophy in local anesthesia, and the outpatient treatment with implants insertion and prosthetic restoration.
Results: Clinical outcome is shown with good volumetric and morphological reconstruction of the alveolar ridge in cone beam computerized tomography. Excellent graft integration and bleeding newly formed bone was seen at 4 months after operation, when fixation screws were removed and implant placement procedure was performed.
Conclusion: The usage of CABB in major preprosthetic surgery may be an acceptable therapeutic alternative to the autogenous block graft for its success rate as graft material.

P768

Treatment of Early Bone Loss around A Dental Implant with Demineralized Bone Graft and Plasma Rich Fibrin: A Case Report

Vahdi Umut Bengi[1], Mehmet Vehbi Bal[1], Işıl Saygun[1], Özgür Öztürk[2]
[1]*Department of Periodontology, Gulhane Military Medical Academy, Ankara, Turkey,* [2]*Department of Prosthodontics, Gulhane Military Medical Academy, Ankara, Turkey*

Background: Peri-implantitis can be defined as an inflammatory lesion around dental implant tissues with bone loss. Peri-implantitis can become before and after the loading of the implants with prosthetic restorations. In the treatment of peri-implant defects bone regenerative procedures have been applied with successful results. Platelet rich fibrin (PRF) have been presented as an membrane like material in the treatment of bone defect. This clinical report presents the possible reason for early bone loss around dental implants and the treatment of peri-implantitis with demineralized bone graft and PRF.
Case: At a 31 year old male patient with dental implant on tooth numbered 15# that applied 3 months ago, a radioluceny around the implant had noticed in control radiography. Intraoral examination revealed slightly mucosal changes in color and there was a clear alvelar crestal bone loss at periapical radiography. In treatment, flep opened, bone defect area cleaned with mechanical debridman and filled with demineralized bone greft material and covered with PRFs. Three months later new bone regeneration observed at periapical radiography, after 1 year, intra-oral examination revealed an established healthy peri-implant soft tissue with no bleeding or no bone loss at periapical radiography.
Conclusion: Dental implants should be followed frequently for the risk of early bone loss. Peri-implantitis can be succesfully treated with demineralized bone graft and plasma rich fibrin as a membrane at bone regeneration procedures.

P769

Removal of a Fractured Abutment Screw: A Clinical Report

Neşet Volkan Asar[1], Süleyman Bozkaya[2]
[1]*Department of Prosthodontics, School of Dentistry, Gazi University, Ankara, Turkey,* [2]*Department of Oral and Maxillofacial Surgery, School of Dentistry, Gazi University, Ankara, Turkey*

Introduction: Although high success rates have been reported related to implant supported prostheses, unfortunately clinicians and patients still can encounter mechanical complications that are not uncommon. These complications can be observed as veneering material fracture, prosthetic screw loosening, prosthetic screw fracture, implant fracture or framework fracture. Retaining and abutment screw loosenings/fractures are one of the most common technical problems.
Case: A 62-year-old male patient, whose upper right posterior edentulous site restored with a cantilever bridge supported by two implants, had a fractured abutment screw in an anterior implant body. Although attempts were made to remove the fractured fragment by dental explorer and periodontal probe, they were useless. This clinical report presents the removal of fractured abutment screw fragment using an implant service set.

P770

Successful Treatment of a Patient with Reparative Giant Cell Granuloma: 5 year Follow-Up

Ali Çekici, Ülkü Başer, Funda Yalçın, Gulden Işık, Utku Onan
Department of Periodontology, Istanbul University, Istanbul, Turkey

Background: Reparative giant cell granuloma (RGCG) is usually a asymptomatic benign lesion of the attached gingiva or the periosteum of the alveolar ridge. The etiology of PCGC is not clearly described. Some investigators mentioned that trauma can be a reason for the development of lesions. Extensive lesions usually cause esthetic problems due to the excision of the lesion, root exposure and in some cases tooth loss.
Aim: The aim is this case report is to treat the defect caused by reparative giant cell granuloma with surgical and prosthetic procedures functionally and esthetically.
Case Presentation: A female patient was referred to Istanbul University Faculty of Dentistry Department of Periodontology clinic with gingival enlargement around her right maxillary central incisor. Following initial periodontal treatment, the enlargement was resected and the effected tooth was extracted. According to pathological examination it was diagnosed as reparative giant cell granuloma. After waiting for 7 weeks, the defect site was augmented

by using autogenous bone from the ramus, and collagen membrane. Nine months after surgery an implant was placed to the augmented site. Six months after implantation, prosthetic treatment was performed. Patient was controlled at 2 months, 1 and 2 years after prosthetic treatment was finished.

Conclusion: Reparative giant cell granuloma can cause large defects causing physical esthetic problems. These problems are more intense if the esthetic zone is affected. In this case report, we have demonstrated a successful treatment of a RGCG without any recurrence for 5 years.

P771

Evaluation of Dental Implant's Success and Survival Rate in A Private Practice: A Retrospective Case Series

Goncagül Akkuş Özgüneş[1], Aslı Yetgin Yazar[2]
[1]*Department of Prosthodontics, İstanbul Aydın University, Istanbul, Turkey,* [2]*Private Practice, Istanbul, Turkey*

Aim: The aim of this study is to evaluate success and survival rate of three different brands of implants. Three hundred and thirty-one implants placed and loaded according to conventional procedures in a private practice.

Materials and methods: One-hundred and fifty healthy adult patients scheduled for implant-supported restorations were included in the study. One Seventy nine final fixed prosthesis supported by 331 implants (184 ITI, Straumann AG, Basel, Switzerland; 42 BioHorizons, Atlanta, GA and 103 Zimmer Dental Implant, Carlsbad, CA, USA) were placed according to conventionel procedure. All patients were treated according to two stages prothocol. All implants were incorporated in a prosthetic restoration. Probing was only performed when clinical signs of inflammation were present and then evaluated with intra-oral radiographic examination. The survival and success rates of the implant-supported prosthesis were evaluated following 1 year of loading.

Results: Three years after implant placement, no fixtures were removed because of loosening. One implant was lost 3 months after cementation of prostetic restoration. In two different patients three implants, 1 in maxilla and 2 in posterior mandible were lost before prosthetic loading during impression taking prothocol. No other prosthetic complications occurred, giving a 98.79% cumulative survival rate.

Conclusions: Dental implants placed according to two-stage procedure in patients in a private practice showed excellent 3-year results. This may be a result of multidisciplinary approach of surgeon and prosthodontist, paying attention to organized recall sessions to keep oral hygene, parafunction and other patient oriented factors under control. Long-term follow-up data is needed to confirm these results.

P772

Evaluation of the Stress on Attachments of Mandibular Two-Implant Overdenture

Serhat Ramoglu, Sevcan Kurtulmus Yilmaz, Oguz Ozan
Department of Prosthodontics, Near East University, Nicosia, TRNC

Aim: The aim of this study is to evaluate the effect of implant locations on the stress around the two different attachment systems in mandibular two-implant overdentures.

Materials and methods: The data obtained from Visible Human Project were modified with the use of VRMESH and Rhinoceros 4.0 software to establish a 3D mandible model with 2 mm cortical bone covering the trabecular bone and 2 mm mucosae. Three Dimentional models (totally 6 models) of mandibular two-implant overdenture were designed according to different implant locations [lateral-lateral (LL), lateral-canine (LC), lateral-second premolar (LP)] and attachment systems [ball (BA), locator (LA)]. Foodstuff was used for occlusal loading (100N) and to simulate different biting configurations, foodstuff was positioned on incisors (anterior) and between the second premolar and first molar (posterior) bilaterally. The finite element analysis was performed by ALGOR FEMPRO software and von Misses stresses on attachments were evaluated.

Conclusion: For symmetric configuration (LL), there was more von Misses stress on BA compared to LA when foodstuff was positioned posteriorly. For asymmetric configurations (LC and LP), when the implantin the asymmetric side was positioned more posteriorly, von Misses stresses increased on both BA and LA of the implant positioned in the opposite side. In LC configuration, on BA higher von Misses stresses detected when compared to LA, whereas in LP configuration the higher stresses determined on LA when foodstuff was positioned posteriorly. In LL and LP configurations, LA showed lower stresses, which should lead the clinician to choose the appropriate attachment system according to the individual clinical situation.

P773

Fiber Reinforced Acetal Resins in Creating the Implant Abutment

Gurien Demiraqi[1], Eriola Noçka[2], Rozarka Budina[3]
[1]*Department of Dentistry, Faculty of Medical Sciences, Albanian University, Tirana, Albania,* [2]*Dental Clinic Demiraqi Dental, Tirana, Albania,* [3]*Department of Dentistry, Faculty of Medical Sciences, State University of Tirana, Tirana, Albania*

Acetal resins used in dentistry for many years, represent several advantages but also difficulties due to the need of special equipment in order to use them. Their use in creating an implant abutment has opened a new field of use for these materials.

Aim: The use of acetal resins in implant abutment combines high aesthetics with ease of use and high elastic memory. They also have a high resistance to abrasion, excellent tensile and shock strength, high elastic memory, low thermal conductance and rigidity. They also are neither allergenic nor toxic. The new prefabricated abutments that can be prepared, allow ease of use in dental clinic, thus providing both rapidity and precision, since it reduces impression taking imprecisions and laboratory phases. The so called Plastic Steel, the new fiber reinforced acetal resin represents a better flection resistance than before.

Materials and methods: Several cases of edentulia are presented where the TMI True Max Implant was used. These implants are in the anterior and posterior region and different types of acetal resin abutments were used. They were tested for at least 2–5 years looking for structural changes and possible problems.

Results: The gathered results are represented visually in the presentation.

Conclusions: The acetal resins represent good capacities in reconstructing the implant abutment. They represent ease of use, high esthetics achievement, reduced working time and are relatively cheap. The fiber reinforced acetal resin makes in our opinion one of the best solution for the implant abutments.

P774

Prosthetic Restorations using CBCT and Implant Procedures

Grigore Lazarescu[1], Marian Vladimir Constantinescu[2], Michael Gross[2], Adrian Mihail V Nistor[3]
[1]University Titu Maiorescu Bucuresti, Faculty of Dentistry, [2]Private Practice, [3]University Dunarea de Jos Galati, Faculty of Dentistry

Aim: Prosthetic restorations are, in many clinical situations, very difficult due to different axis of implants. The authors present their experience in the prediction of architecture of the fixed and removable prostheses. Preprostethic implant imaging using CBCT allow to observe the surgical site and its relationship to the planned restorations.
Materials and methods: Thirty-two patients who where diagnosed with multiple edentations caused by various factors (decays, periodontal disease, trauma, etc.). For everyone was realized a surgical guide according to surgical protocol and finally to prosthetic plan. The titanium surgical guide was produced by the 3D model using CBCT. Surgical procedure was planned and realized using surgical guide tooth-supported (21 patients) or mucosa supported (11 patients). In 12 cases was necessary bone addition to correct bone loss caused by pathological origin or to add in the sinus floor elevation. One hundred and six implants were introduced using surgical guide under local anesthesia.
Results: Immediate results using surgical guide are excellent only if are respected the surgical plan and adequate protocol. In three cases was necessary to re-suture the surgical wound caused by local conditions of oral flaps. Failure of implants was observed only in four cases due to inadequate bone quality.
Conclusions: Implant surgical procedures using prefabricated surgical guide are improved only if we use an adequate protocol both in planning and in the accurate technique.

P775

Screw-Cement Retained Implant Restorations in One Rigid Fixed Partial Denture

Burcu Batak[1], Funda Akaltan[1], Timur Songür[2]
[1]Department of Prosthodontics, Ankara University, Ankara, Turkey, [2]Department of Oral and Maxillofacial Surgery, Turgut Özal University, Ankara, Turkey

Introduction: In implant therapy, the debate between screw -vs. cement -retained implant prosthesis has long been discussed. Making the right decision to select the ideal prosthesis for each case, implant position, interocclusal space, advantages and disadvantages must be considered.
Case: A 50 year-old female patient referred to our clinic at Ankara University, Faculty of Dentistry for her dental treatment. We decided to rehabilitate the patient with maxillary full mouth metal-ceramic fixed partial dentures using implants for edentulous areas (14, 17, 22, 24, 26). Limited interocclusal space inflict us to plan screw retained implant restorations. However, because of unfavorable position of lateral incisor (22) implant, we had to use angled abutment. Screw retained implants necessitate ideal inclination, so we had to plan to use cemented abutment for the implant number 22 together with screw retained abutments for the implants number 24 and 26 in a five unit bridge. Occlusal adjustements were made to eliminate excursion stresses on the implant number 22 and canine pontic area. Lateral excursion contacts were tired to make with most of the premolar and the molar teeth for the working side. For esthetic expectations we made conventional metal ceramic restorations for maxillar anterior incisors (11, 12, 13, 21) too.
Conclusion: In this case, patient was satisfied about esthetics and function. Clinic and radiographic controls were made at 6 months and 1 year intervals. No complication was observed.

P776

Influence of Chitosan Coating to Titanium on HGF-1 Cells Attachment and Proliferation in Vitro

Ulku Tugba Kalyoncuoglu[1], Pembegul Uyar[2], Serap Gungor Geridonmez[3], Bengi Yilmaz[4], Zafer Evis[5], Gulay Kansu[1]
[1]Department of Prosthodontics, Faculty of Dentistry, Ankara University, Ankara, Turkey, [2]Department of Biology, Selcuk University, Konya, Turkey, [3]Department of Mechanical Engineering, Yuzuncu Yıl University, Van, Turkey, [4]Department of Biomedical Engineering, Middle East Technical University, Ankara, Turkey, [5]Department of Engineering Sciences, Middle East Technical University, Ankara, Turkey

Aim: The aim of this study was to evaluate the biocompatibility and the influence on the HGF-1 attachment of chitosan on titanium surfaces.
Materials and methods: Three groups were prepared (n = 3). These were unprocessed, chitosan coated and aged after chitosan coated. In order to define the chemical composition of the surfaces, SEM linked EDS device was aimed for usage. The presence of phases and bonds was characterized by XRD and FTIR spectroscopy. Biocompatibility was evaluated by MTT cell viability assay. HGF-1 cells were selected as model to recognize fibroblastic cell attachment and proliferation. Statistical significance was determined by one-way ANOVA with Bonferroni correction.
Results: According to the analysis, presence of C, H and O elements in the SEM linked-EDS device indicated that coating processes was successful, although chitosan was not observed in XRD measurement at chitosan coated titanium and chitosan coated and aged samples. In addititon of these results, FTIR patterns showed the presence of characteristic bands of chitosan on the titanium surfaces. On the other hand, it was concluded that aging process decreased the amount and efficacy of chitosan. Fibroblastic cell attachment and proliferation of HGF-1 cells were enhanced with chitosan coated surfaces significantly.

Conclusion: Chitosan is one of the popular coating material for biomedical sciences. According to results of this study, it can be concluded that chitosan coating is effective for titanium surfaces biologically.

P777

Removal and Replacement of Fractured Zirconia Abutment, Case Report

Othman Abdulrahim Wali
Department of Periodontology and Implant, Ibn Sina Dental College, Jeddah, Saudi Arabia

Case: A 58-year-old male patient presented with fractured upper left central incisor cervically in a very strange way, two oblique lines meet coronally. Tooth was treated for endodontic and prosthdontic, a temporary crown. But, tooth could not withstand those treatments, So, Patient was advised to extract and replaced by implant with immediate non-functional loading. Later, Zirconia abutment was inserted and porcelain crown with Zirconia base was cemented. Two years later, patient came with fallen down crown for cementation, unfortunately, He bit on very hard subject resulted in fractured Zirconia abutment close to its base. To remove the abutment, I use orthodontic wire to engage the base of abutment to remove it. New final impression and new crown has been delivered.
Conclusion: Patient satisfaction is really high.

Theme: Implantology: Oral Medicine

P778

The Prognostic Concept:"Thick vs. Thin Gingival Tissue" in the Implantology

Tanja Dejanoska, Metodija Simonovski
Dental International-Prof Dr. Dejanoski, Skopje, Macedonia

Introduction: In a respect of a fact for the essential role of the actual concept: "thick vs. thin gingival tissue as a key determinant in the tissue response to disease and restorative treatment", as well as, the possible periodontal bioprotective influence of the functional width of the attached gingiva.
Case: We have formed the aim of our clinical study- to determine the restorative effect in treated patients with detected thick or thin gingival tissue irrespective of the employed implantology technique; using different standard clinical indicative parameters. At the end of the 24 months clinical observation period, the obtained clinical findings showed that there is a correlation between the thick (voluminous) gingival tissue (almost always followed by functional zone of attached gingiva) and the implantology reconstructive treatment response, in comparison with the group of treated patients with verified thin gingiva, followed very often by unsatisfactory width of attached gingiva, bone alveolar dehiscence or fenestration, whose direct consequence was expressed (peri-implantitis) inflammation, bone resorption and early implant disintegration, suggesting the use of the prognostic concept as a crucial determinant in the implantology restorative treatment planning.

Theme: Implantology: Oral Pathology

P779

Reduced Expression of Smad4, a TGF-β Signaling Molecule, Correlates with Tumor Progression in the Oral Mucosa

Mahdi Pazouki
Department of Oral and Maxillofacial Pathology, Faculty of Dentistry, Mashhad University of Medical Sciences, Mashhad, Iran

Aim: Transforming growth factor-β (TGF-β) acts as a tumor/metastasis suppressor in tumorigenesis. The objective of the present study was to compare the expression of Smad4, a signaling molecule of the TGF-β pathway, among normal oral mucosa, oral dysplastic epithelium and different grades of oral squamous cell carcinoma (OSCC).
Methods: A total of one hundred formalin-fixed paraffin-embedded tissue specimens were retrieved for this retrospective study. The samples comprised 20 normal mucosa, 20 dysplastic mucosa, 20 cases of OSCC (grade I), 20 cases of OSCC (grade II) and 20 cases of OSCC (grade III). We assayed Smad4 by performing immunohistochemistry using a mouse monoclonal anti-Smad4 antibody. Immunostained sections were evaluated by two investigators.
Results: Reduced Smad4 expression was significantly observed from normal mucosa to OSCC III.
Conclusions: The data suggest that decreased expression of Smad4, may be important in oral epithelial tumor progression.

Theme: Implantology: Oral Surgery

P780

The Incidence of Tuberosity Fracture after Complicated Erupted Third Molar Extraction

Ali Abu Hantash[1], Alaa Shuibat[2]
[1]*Oral Surgery Department, Ankara University, Ankara, Turkey,* [2]*Oral Pathology Department, Gazi University, Ankara, Turkey*

Introduction: Maxillary tuberosity fractures during molar teeth extraction can occur in dental practice; however, very few cases are reported and discussed in the literature. The extraction of a tooth requires that the surrounding alveolar bone be expanded to allow an unimpeded pathway for tooth removal. However, in generally the small bone parts are removed with the tooth instead of expanding. Fracture of a large portion of bone in the maxillary tuberosity area is a situation of special concern.
Case: In this study we revised the incidence of fracture of tuberosity after complicated third molars extraction.

P781

Autotransplantation of A Permanent Maxillary Central Incisor Impacted by Compound Odontoma: A Case Report

Elif Peker[1], Süleyman Bozkaya[1], Çağrı Gazioğlu[3], Zeliha Hatipoğlu[2]
[1]*Department of Oral and Maxillofacial Surgery, Gazi University, Ankara, Turkey,* [2]*Department of Pedodontics, Gazi University,*

Ankara, Turkey, [3]Department of Orthodontics, Gazi University, Ankara, Turkey

Introduction: The maxillary incisors are the most prominent teeth in an individual's smile, they are also the teeth that are on maximum display during speech in most individuals and the normal eruption, position and morphology of these teeth are crucial to facial esthetics and phonetics. Impaction of maxillary permanent incisors occurs in 0.2–1% of the population. Eruption failure may occur if pathological obstructions, such as supernumerary teeth, odontomas, cysts, develop in the eruptive path of the incisor.
Case: The present report describes the surgical management of a case in which a maxillary central incisor was impacted because of an odontoma and successful autotransplantation of the teeth in a 13 year-old boy. A maxillary incisor (21) was transplanted into the alveolar sockets of the deciduous central and lateral incisor (61, 62) after extraction of the teeth and excision of the odontoma. Autotransplanted tooth is stabilized by orthodontic braces for 6 weeks and root canal treatment was done by then. After 1 year, clinical and radiographic examination revealed satisfactory outcome with no signs or symptoms suggestive of pathology.
Conclusion: In conclusion; autogenous tooth transplantation, even after complete root formation of the donor tooth, may be considered as a practical treatment alternative to conventional prosthetic rehabilitation or implant treatment. A high success rate can be achieved if the cases are selected and treated properly also should be considered the treatment of choice in the growing child.

P782

Head and Neck Cancer Effects on Masticatory Muscles

Carla Moreto Santos[1], André Maia Dante[1], João Lellis[1], Moara De Rossi[1], Helio Massaioshy Tanimoto[2], Marisa Semprini[1], Simone Hallak Regalo[1]
[1]Department of Morphology, University of Sao Paulo, Ribeirao Preto, Brazil, [2]Department of Head and Neck Cancer, Hospital of Cancer, Barretos, Brazil

Introduction: In front of the eight million new cancer cases that occurs today worldwide of which 212.000 are initiated on mouth, is necessary to study more influences of head and neck cancer disease on mastication.
Aim: The aim of this clinical study was to evaluate the electrical activity of masticatory muscles of patients with head and neck cancer and compare this data with healthy person.
Methods: The experimental group consisted of 35 patients (mean age 45 years) with head and neck cancer diagnostic. The control group consisted of 35 healthy subjects paired with experimental group according to age, gender and oral situation. The electromyographic (sEMG) activity of masseter and temporalis muscles was carried out at situations: rest, protrusion, right and left laterality, opening and closing mouth, parafilm clenching and chewing. Inter-group comparisons were made using independent sample t-test. Significance level was set at $p < 0.05$.
Results: There are statistic differences between groups in all postural activities tested (rest sig. value = 0.13, protrusion sig. value = 0.14, right and left laterality sig. value = 0.006 and 0.22). On dynamic situations evaluated like opening and closing mouth, parafilm chewing and clenching was not verified statistic differences comparing groups.
Conclusions: The presence of head and neck cancer lesion can affect the maintenance of rest and postural position of mandible. People with head and neck cancer has a poor EMG activity during maintenance of mandibular postural position when compared to people that don't has this disease.

P783

Radiation Therapy to the Head and Oral Health (Case Report)

Vesna Georgi Korunoska Stevkovska[1], Lidija Popovska[2], Biljana Kapusevska[1], Jadranka Bundevska[1], Maja Pop Stefanova Trposka[3]
[1]Department of Prosthodontics, Faculty of Dentistry, University St. Kiril and Metodij, Skopje, Macedonia, [2]Department of Cariology and Endontology, Faculty of Dentistry, University St. Kiril and Metodij, Skopje, Macedonia, [3]Department of Orthodontics, Faculty of Dentistry, University St. Kiril and Metodij, Skpoje, Macedonia

Introduction: Radiation caries is often consequence of radiation therapy to cancer of the head or neck. Also after radiation the full function and flow of the salivary glands does generally not fully return.
Case: Our patient came to us for careful dental examination after his radiation therapy because of worsened situation in his mouth. He had two bridges on the left and right side in the lower jaw, with dry mouth and many new developed caries lesions. The teeth with questionable prognosis were extracted and teeth with caries restored. We made circular bridge in the upper jaw and a few crowns in the lower jaw. After 3 years the patient came with extensive caries lesions on the teeth in the lower jaw, which start at the line of the gum and strangulate the teeth. The abutment teeth under the bridges were with periodontal disease and they must be extracted. So we treated the teeth and made new crowns and the partial denture in the lower jaw. Our patient has not take fluoride protection, so we recommended him daily fluoride treatments for the rest of his live.

P784

Peripheral Giant Cell Granuloma around Dental Implant: A Clinical Report

Süleyman Bozkaya[1], Neşet Volkan Asar[2], Emre Barış[3]
[1]Department of Oral and Maxillofacial Surgery, School of Dentistry, Gazi University, Ankara, Turkey, [2]Department of Prosthodontics, School of Dentistry, Gazi University, Ankara, Turkey, [3]Department of Pathology, School of Dentistry, Gazi University, Ankara, Turkey

Purpose: The purpose of this clinical report is to present the clinical management of peripheral giant cell granuloma (PCGG) around an implant, which was related to excess cement remnants.
Materials and methods: The patient who had complained about the gingival mass in the right maxillary posterior area referred to oral surgery clinic. Intra-oral examination demonstrated bleeding

localized lesion at the gingival mucosa around previously placed implant. Peri-apical x-rays revealed excess cement remnants at the level of abutment-fixture connection with no accompanying significant bone loss. The lesion was excised totally and the excess cement was removed. Histopathology confirms the diagnosis of PGCG. Patient was scheduled for regular visits in order to follow the healing of the soft tissue.
Results: One-year after surgery, uneventful healing of the patient with no recurrence was observed.
Conclusion: Clinicians should remove residual excess cements thoroughly while cementing implant supported crowns or bridges in order to prevent the possibility of the occurence of peri-implant complications such as PCGG.

P785
Large Parakeratinized Odontogenic Keratocysts: Report of Three Cases
Eda Kaya[1], Gizem Gülgezen[1], Deniz Başaran[1], Bilgin Öner[1], Fatma Canan Alatlı[2]
[1]*Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, Istanbul University, Istanbul, Turkey,* [2]*Department of Tumor Pathology, Istanbul University, Institute of Oncology, Istanbul, Turkey*

Aim: The aim of this study is to present clinical and radiological features and the surgical managements of three patients with odontogenic keratocyst.
Introduction: Odontogenic keratocyst is a developmental cyst that was first described by Philipsen (1956). In the 2005 WHO classification of head and neck tumors, OKC was reclassified and renamed to Keratocystic Odontogenic Tumor (KCOT). WHO defined it as a benign uni/multicystic, intraosseous tumor of odontogenic origin, with a characteristic lining of parakeratinized stratified squamous epithelium and potential for aggressive infiltrative behavior. The peak prevalence is seen in patients in the second or third decades. The cyst characteristically grows within the medullary spaces of the bone in an anteroposterior direction and may reach a large size without causing obvious expansion of the jaw clinically. Treatments are generally classified as conservative and aggressive. Conservative treatment includes simple enucleation, with or without curettage, or marsupialization. Aggressive treatment generally includes peripheral ostectomy, chemical curettage with Carnoy's solution, cryotherapy or electrocautery and resection.
Case: In this study we present the treatments of three cases with large parakeratinized odontogenic keratocysts. First case is a 56-year-old male patient with a painful swelling, second case is a 17-year-old male patient without any complain and the third case is 62-year-old male patient with expansion in vestibular compact bone.
Conclusion: If the treatment is made by marsupialization (as in our first case) follow up periods become very significant.

P786
Effect of Local Anesthesia on Trigeminal Somatosensory-Evoked Magnetic Fields
Takero Otsuka[1], Haruka Dan[2], Ippeita Dan[2], Miwako Sase[3], Naruo Okada[3], Toshifumi Sano[2], Kenichi Sasaguri[1], Yoshinori Jinbu[3], Mikio Kusama[3]
[1]*Department of Craniofacial Growth and Development Dentistry, Kanagawa Dental University, Yokosuka, Japan,* [2]*Department of Functional Brain Science Laboratory, Jichi Medical University, Shimotsuke, Japan,* [3]*Department of Oral and Maxillofacial Surgery, Jichi Medical University, Shimotsuke, Japan*

Objectives: Inferior alveolar nerve injuries are associated with a high incidence of dental treatment such a lower third molar extraction, dental implant placement, orthognathic surgery etc. However, objective assessment of inferior alveolar nerve injuries is absolutely imperative for knowing severity of impairment and prognosis. The aim of this study was to evaluate the severity of inferior alveolar nerve injuries via focus on brain activity of somatosensory cortex.
Methods: Ten healthy volunteers participated in this study. We have made temporally inferior alveolar nerve paralysis by injecting a local anesthetic to unilateral mental foramen. Using magnetoencephalography (MEG), we examined for cortical responses to somatosensory evoked field (SEF) from the lower lip both anesthetic side and unaffected side in each subject.
Results: On the unaffected side, the SEF was observed within the primary somatosensory cortex (SI). The peak latency was about 20 ms at stimulus side. In contrast, on the anesthetic side, the SEF was not observed within the SI.
Conclusions: These results suggest that we can assess the inferior alveolar nerve injuries objectively by using an MEG.

P787
Managment of Denti Gerous Cyst at Patience with Mix Denticion- Case Report
Feriale Perjuci Perjuci, Resmije Ademi, Ali Gashi, Zana Agani, Jehona Ahmedi
Deparment of Oral Surgery, University Dental Clinical Center of Kosova

Denti gerous cysts is a bone lesion that develops adjacent of unerupted or impacted developed tooth crown, which sacus is attached on the cervical part of the tooth. At children with mix dentition this kind of pathology is common adjacent of mandibullary premolars. There are different treatments of denti gerous cyst.
Aim: In this case report is presented sponateous eruption of second mandibullar premolar after removement of cystic lesion at the boy of 9 years old, despite the dislocation of the involved tooth until the bases of the mandibula.
Treatment: Under local anesthesi a cystic sacus has been removed, while conserving the involved tooth. With jodophorm gaze wound kept open. Hystopathologic analises has confirmed the diagnoze: Denti gerous cysts. Eruption of tooth and bone regeneration has been monitored with periodic radiography and after 16 months

mandibullary second premolar has erupted completely in the dental arch, without orthodontic traction.
Conclusion: Removal of Denti gerous cysts while conserving the involved tooth allows the spontaneous eruption, even then when tooth is deeply dislocated. This modality of treatment of denti gerous cysts with mixed dentition is very advantageous and ethic because it saves vital structures and allows tooth eruption.

P788
Incidents of Dry Socket during the Post War Period in Kosova
Vjosa Hamiti Krasniqi[1], Zana Bajrami Agani[1], Aida Rexhepi[2], Mergime Loxha[3], Jehona Ahmedi[1]
[1]*Department of Oral Surgery,* [2]*Department of Pedodontics,* [3]*Department of Maxillodacial Surgery*

Background: Dry socket is a postoperative complication that occurs after adental extraction and has been defined as an inflammation of the alveolus.
Aim: The objective of this study was to determine the prevalence, and risk factors of dry socket that accured during period after war period 1999–2004 in Kosova.
Methods and materials: The evidence that is held in the UCCK, Departmen of Oral Surgery in Prishtina has been analyzed throughout the postwar period to determine the frequency of dry socket;

We analyzed: (i) the percentage of dry socket from the number of all extractions (ii) the percentage of dry socket after extraction of the third molars (iii) the distribution of these two rates by gender and age.
Results: During 1999–2004 were registered 16,297 dental extraction. The average for dry socket in this period was 0.85%. From 201 cases of dry socket, 62.2% were female, while 37.8% male. There was significant difference by sex (Chitesti = 11.95, $p < 0.01$), therefore we can conclude that dry socket was more frequent in females than in males. The largest number of patients with dry socket were 20–29 years age, 42.8% of all cases. In our clinical from 201 cases,4% dry socket were dry socket of the molar teeth of third maxillar molar. With Chi test we have significant statistical correlation ($p < 0.05$).
Conclusion: Based on these results the average for dry socket in this period was 0.85%. therefore we can conclude that dry socket is in normal margins compared the literature.

P789
Case Reports of Two Unusual Tonsiloliths with CBCT Findings
Oğuzhan Altun, Numan Dedeoğlu, Esma Karapınar Umar
Department of Mouth, Tooth and Jaw Radiology, Faculty of Dentistry, Inonu University, Malatya, Turkey

Introduction: Tonsiloliths are precipitation of calcium salts in tonsillar crypts that are packed with bacterial and organic debris. They are seen single, multiple, unilateral or bilateral. Using the CBCT two cases of unilateral tonsiloliths detected as bilateral tonsilloliths on panoramic image is presented this report.
Case-1: A 38 year-old woman was referred to our clinic complaint of mild moderate pain of left mandible. A panoramic radiography findings revealed that bilateral slight radiopaque image located on the right and left in the midst of ramus mandible. A CBCT scan was taken to determine exact anatomical location of radiopaque lesion. There was a 5.6- 4.2- 4.2 mm diameter hiperdens calcified mass in the left tonsile region. Our diagnosis is a tonsilolith for this case according to history of the patient and CBCT images.
Case-2: A 26 year-old woman was referred to our clinic complaint of slightly pain of mandible. A panoramic radiography findings revealed that bilateral radiopaque image located on the right and left ramus mandible. A CBCT scan was taken to determine exact anatomical location of radiopaque lesion. There was a 6.6- 4.1- 5.4 mm diameter hiperdens calcified mass in the left tonsile region. Our diagnosis is a tonsilolith for this case according to history of the patient and CBCT images.
Conclusion: Cone-beam computed tomography is a great diagnostic tool for to detect and to differentiate superimposition images from actual calcifitations of tonsils.

P790
Paranasal Sinuses Abnormalities on Cone-Beam Computed Tomography
Esin Bozdemir, Özlem Görmez, Derya Yıldırım, Ayşe Aydoğmuş
Department of Dentomaxillofacial Radiology, Faculty of Dentistry, Suleyman Demirel University, Isparta, Turkey

Aim: The aim of this study was to investigate paranasal sinus abnormalities detected on cone-beam computed tomography (CBCT) in an adult population.
Materials and methods: Three hundred fifty-three consecutive CBCT scans that were obtained at Suleyman Demirel University, Faculty of Dentistry, Dentomaxillofacial Radiology Department between November 2011 and April 2013 were retrospectively inspected for abnormalities in the paranasal sinuses by three observers. Examinations of categorical parameters according to prevalence's were analyzed using descriptive statistics, chi-square tests.
Results: The age of patients ranged from 18 to 85 years old (mean 41.27 ± 16.76). There were 172 (48.7%) female and 181 (51.3%) male. Mucosal thickening, mucous retention cyst, sinusitis, antrolith, oroantral fistula, periostitis, foreign body, tooth, odontogenic cysts, tumours, osteoma and hypoplasia were observed. The most frequent abnormality was mucosal thickening in maxillary (48.7%), sphenoid (14.7%) and ethmoid (73.4%) sinuses.
Conclusions: Cone-beam computed tomography is a preferable imaging method for evaluation of paranasal sinuses. Dentomaxillofacial radiologists should examine the whole volume of CBCT images not to miss paranasal sinus abnormalities.

P791

Central Giant Cell Granuloma of Maxilla: Case Report

Merve Çakır[1], Alper Ceylan[2], Süleyman Bozkaya[1], Sabri Uslu[2], Berrin Işık[3]

[1]Department of Oral and Maxillofacial Surgery, Gazi University, Ankara, Turkey, [2]Department of Otolaryngology, Gazi University, Ankara, Turkey, [3]Department of Anesthesiology and Reanimation, Gazi University, Ankara, Turkey

Introduction: The central giant cell granuloma (CGCG) is an uncommon benign jaw lesion, described as an intraosseous hemorrhage, which's triggered by trauma or inflammation. It can be seen both in maxilla and mandible but it is more common in the mandible. The CGCG can occur at any age but it is most commonly seen before the age 30, especially children and young adults. There are surgical and non-surgical conservative treatment protocols for CGCG. It has been traditionally treated by surgery, but surgical therapy can lead to loss of teeth and dental germs in young patients. Recurrence rate of CGCG is high.

Case: A 5-year-old girl presented to our clinic with a swelling in the anterior maxilla. Clinical examination revealed a swelling in the right anterior maxilla. Panoramic radiography revealed a well-defined radiolucent lesion involving permanent central and lateral teeth germs, extending from midline to the primary canine and nasal floor. A diagnosis of CGCG was made with incisional biopsy. In this case, intralesional steroid injection was performed in the lesion for 6 weeks under sedation because of patient's age and localization of the lesion. Therefore the treatment was failed; enucleation of the lesion was performed under general anesthesia. During the surgery, permanent teeth germs were preserved.

Conclusion: The patient's follow-up continues for 7 year and no recurrence has seen, her teeth erupted in normal position.

P792

Soft and Hard Tissue Augmentation in the Esthetic Zone: A Case Report

Barış Güncü[1], Ceyda K. Dursun[2], Erhan Dursun[2]

[1]Private Practice in Prosthodontics, [2]Department of Periodontology, Faculty of Dentistry, Hacettepe University

Aim: Surgical reconstruction of three dimensional soft and hard tissue defects in the esthetic zone usually requires both soft and hard tissue augmentation. Soft tissue parameters are important factors affecting the clinical outcomes in bone grafting procedures. The aim of this case report was to present the treatment of a defect after extraction of a tooth having Miller type 3 gingival recession in the esthetic zone by connective tissue graft (CTG) and symphysis block grafting procedure prior to single implant placement.

Materials and methods: A 46-year-old woman presented with a Miller type 3 gingival recession at right first incisor tooth. At the time of extraction CTG + laterally positioning flap procedure were performed to augment the soft tissue prior to bone grafting. After 6 weeks form the soft tissue surgery the symphsis block graft was harvested and shaped to fit the defect and stabilized with fixation screw.

Results: After 6 months, the bone graft was successfully incorporated into the host tissue without complications and effectively expanded the ridge from 1 to 6 mm. A 3.5 × 9 mm implant was placed in the previously augmented site. After additional 3 months, second stage surgery was done and the implant was restored with cemented single-tooth prosthesis. The patient was satisfied with the functional and esthetic results of the therapy and no marginal bone loss was denoted after 2 years follow-up.

Conclusion: This clinical case describes a successful technique which includes both soft and hard tissue reconstruction in the esthetic zone.

Theme: Preventive Dentistry: Caries

P793

Enamel Demineralization Following Orthodontic Treatment

Efka Nikola Zabokova Bilbilova, Ana Sotir Sotirovska Ivkovska, Zlatko Mihail Georgiev, Olga Ratko Kokoceva Ivanovska

Department of Pediatric and Preventive Dentistry, Faculty of Dentistry, "Ss Cyril and Methodius" University, Skopje, Macedonia

Aim: The aim of this study was to evaluate the in vitro effects of a fluoride topical agent in reducing enamel demineralization around orthodontic braces.

Materials and methods: On a 40 teeth sample (premolars) extracted for orthodontic reasons, brackets were bonded with Fuji Ortho LC. The teeth were divided into two groups of 20 teeth (experimental and control). The first, experimental group included the tooth samples that were treated with Fluorogal (0.05% F), every day for 1 min in the period of 6 months. The teeth were stored in artificial saliva for a period of 6 months. After that, the samples were prepared with the sputter technique in vacuum evaporator, for a SEM analysis (JEOL JSM 5300).

Results: The results showed: that the prevention of dental caries is highest with passing the daily low dose of fluoride, which leads to a small but significant increase of strengthening the concentration of fluoride in the oral cavity. Examination of enamel surfaces adjacent to orthodontic brackets revealed calcium fluoride-like material (CaF2) deposition as a reaction product of topical fluoride application.

Conclusion: Topical application of fluoride on enamel adjacent to orthodontic accessories, incorporated as a routine clinical preventive procedure, is a simple measure of great significance. It is strongly recommended for decreasing the risk of enamel demineralization during orthodontic treatment.

P794

Salivary Parameters and Their Relations with Dental Caries

Meltem Bakkal[1], Betul Kargul[1], Sahza Hatibovic Kofman[2], Timucin Ari[2], Walter Luiz Siqueira[3]

[1]Department of Pediatric Dentistry, Dental School, Marmara University, Istanbul, Turkey, [2]Department of Pediatric Dentistry, Schulich Medicine and Dentistry, Western University, London, Ontario, ON, Canada, [3]Department of Oral Biochemistry, Schulich Medicine and Dentistry, Western University, London, Ontario, ON, Canada

Aim: To evaluate possible different salivary parameters in whole saliva such as flow rate, salivary pH, the concentrations of calcium, phosphate and total protein in caries-free children and caries active children which were characterized by ICDAS II index.
Materials and methods: The Research Human Ethics Board of Western University was approved for 10 caries-free and 8 caries-active subjects. After measuring the salivary flow rate and salivary pH, calcium determination was carried out with QuantiChrom-TM Calcium Assay Kit, (BioAssay Systems, Hayward, CA, USA). Phosphate determination was performed by Gee-Deitz method. Bicinchoninic acid protein assay kit (Pierce Chemical, Rockford, IL, USA) was uesd to determine the total protein concentration.
Results: The breast feeding period of 18 children (46.8 ± 9.5 months) were not found statistically significant on the presence of active lesions. However, the frequency of teeth brushing ($p = 0.034$) and daily snacks ($p = 0.04$) were statistically significant. The average of saliva flow rates and mean pH values were found 0.359 ± 0.20(ml/min), 7.15 ± 0.15 in caries-free group and 0.455 ± 0.24(ml/min), 7.035 ± 0.38 in caries-active group respectively. The slight differences on the concentrations of Ca, phosphate and total protein in caries free children compared to caries active children were not found statistically significant ($p \geq 0.05$). On the other hand, an increase in the salivary flow rate was observed among both the groups with a decreased protein concentration indicating an inverse relationship due to protein dilution levels in saliva.
Conclusion: At this time, we are attempting to establish a standard baseline of whole saliva for future studies. Further studies on salivary research need to be effected to understand and compare biological characteristics in children population.

P795

Effect of CPP/ACP and Fluoride on Inhition of Enamel Demineralization

Uğur Erdemir[1], Hande Sar Sancakli[1], Evren Oztas[2], Sevda Ozel[3], Muyesser Sarac[2], Taner Yucel[1], Esra Yıldız[1]
[1]Department of Operative Dentistry, Faculty of Dentistry, Istanbul University, Istanbul, Turkey, [2]Department of Orthodontics, Faculty of Dentistry, Istanbul University, Istanbul, Turkey, [3]Department of Biostatistics and Medical Informatics, Faculty of Medicine, Istanbul University, Istanbul, Turkey

Aim: To evaluate the effect of casein phosphopeptid amorphous calcium phosphate (CPP/ACP) containing tooth-mousse and fluoride containing mouth-rinse as a prophylactic measure to inhibit enamel demineralization during fixed orthodontic treatment by evaluating with laser fluorescence in vivo.
Materials and methods: Thirty volunteers (aged 14–22) planned for fixed orthodontic treatment without any skeletal disorders were recruited for this investigator-blinded in vivo study. Subjects planned for fixed orthodontic treatment with no active caries were randomly assigned to three groups including CPP/ACP containing tooth mousse (3 min/day), fluoride containing mouth-rinse application (twice a day) and a control group without any additional application. All participants were instructed to use standard fluoride toothpaste (1450 ppm NaF) and informed about their basic oral hygiene routines. Buccal bracket-bonded enamel surfaces were measured by laser fluorescence device (DIAGNOdent; Kavo) by two calibrated independent examiners at the baseline, 3, 6, 12 months and after 24 months. LF changes between the groups were analyzed by Friedman Variance Analysis Test while Kruskal Wallis test revealed the changes due to time intervals.
Results: Statistically significant LF changes were found within all the time periods ($p < 0.001$) while CPP/ACP containing tooth-mousse exhibited the most inhibitory effect against enamel demineralization with significantly less LF reading values ($p < 0.001$) when compared to fluoride mouth rinse. CPP/ACP containing tooth-mousse seemed more efficient than fluoride containing mouth rinse however both of them are recommended to inhibit possible enamel demineralization during orthodontic treatment.

P796

The Antibacterial Effect of Oral Mouth Washes on *Streptococcus mutans* Species

Milena Radunovic[1], Natasa Nikolic Jakoba[2], Dusan Pavlica[1]
[1]Department of Microbiology and Immunology, School of Dental Medicine, University of Belgrade, Belgrade, Serbia, [2]Department of Periodontology and Oral Medicine, School of Dental Medicine, University of Belgrade, Belgrade, Serbia

Introduction: *Streptococcus mutans* is the species with the biggest cariogenic potential. There are many commercially available oral antiseptics that are recommended as a supplement in the prevention of caries and periodontitis. They contain different substances that have an antimicrobial effect. The choice of antiseptic is often a problem for both patient and therapist.
Aim: The aim of this study is to determine effect of some mouthwashes on cariogenic bacterial species *S. mutans*.
Materials and methods: The testing was done using diffuse technique. The *S. mutans* strains used was isolated from saliva on TYC-SB agar in anaerobic conditions. The obtained bacteria were inoculated on TYC-SB agar and disks of filter paper soaked with mouthwashes were placed on that surface. Twelve independent measures were done for each mouthwash. After 48 h of incubation on 37°C in anaerobic conditions, the diameter of the growth inhibition zone of bacterial colonies was measured. The values used for comparison were the mean values with one standard deviation. The homogeneity of the results was confirmed by calculating the coefficient of variation.
Results: The coefficient of variation of the diameters showed that all results were homogeneous. The mean values of the diameter of of the growth inhibition zones for different mouthwashes were the following: Curasept 220® (14.41 ± 0.02), PerioAid 0.12® (13.42 ± 0.02), Lacalut® (11 ± 0.01), Vitis® (7.83 ± 0.08), Colgate Plax® (7.58 ± 0.03), Active oxygen® and Gengigel® (0).
Conclusion: This study showed that Curasept has the greatest anticariogenic potential and that active oxygen and Gengigel had no antibacterial effect on the cariogenic species *S. mutans*.

Theme: Preventive Dentistry: Epidemiology

P797

Periodontal Health Status, Dental Caries and Risk Habits among Malaysian Indigenous Group

Nor Himazian Mohamed[1], Zamros Yuzaidi Mohd Yusof[2], Lily Azura Shuoib[3], Siti Adibah Othman[3]
[1]Department of General Dental Practice and Oral & Maxillofacial Imaging, Faculty of Dentistry, University of Malaya, Kuala Lumpur, Malaysia, [2]Department of Community Dentistry, Faculty of Dentistry, University of Malaya, Kuala Lumpur, Malaysia, [3]Department of Children Dentistry and Orthodontics, Faculty of Dentistry, University Of Malaya, Kuala Lumpur, Malaysia

Aim: To evaluate the common risk habits among Malaysian indigenous group (so called "orang asli") with the prevalence of periodontal diseases and dental caries in a few settlements in Malaysia.
Materials and methods: The study population comprised of 378 indigenous subjects residing in a few settlements in states of Pahang and Johor, Malaysia. Data were collected through an oral examination and a questionnaire interview. Periodontal status was assessed using Community Periodontal Index (CPI) and DMFT were noted according to WHO recommendation. Information on sociodemographic, betel quid chewing and smoking habits were obtained.
Results: Most of the orang asli had periodontal problem with 42.1% had gingivitis and 52.9% had periodontitis. Among them only 5% had healthy periodontal status. The mean DMFT was 8.61 with mean decay (DT), Missing (MT) and filled (FT) were 3.53, 4.06 and 1.01 respectively. The main risk habits practiced by them are betel quid chewing and smoking. 14.3% of them were chewing betel quid and smoking, while 13.0% and 20.2% were either had betel quid or smoking respectively.
Conclusion: The prevalence of periodontal problems was relatively very high as compared to the prevalence of the decay. Practicing risk habits such as betel quid chewing and smoking are the main contributors for the poor periodontal health.

P798

Tracking Investigation of Dental Caries among 156 3 Years Old Children in Shanghai Suburb for 3 Years

Qin Du, Yueling Li
Shanghai J iading District Dental Hospital

Objective: To investigate the incidence trend and feature of dental caries among 3 years old children in Jiading district, and to provide the first hand data for the prevention and treatment of caries.
Methods: Longitudinal study was used, and 156 3 years old children were investigated for 3 years, randomly selected from a preschool in Jiading District meanwhile, question-and-answer survey based on paper were also used for their parents. SPSS 14.0 software package was used for statistical analysis.
Results: The annually prevalence of dental caries among the subjects were 61.54%, 70.51%, 75.64%, while dmft were 2.99, 3.81, 4.51. The prevalence of dental caries and dmft increased with the ages increasing. There was significant difference in prevalence of dental caries and alse in dmft every year ($p < 0.05$). There was no significant difference between boys and girls ($p > 0.05$). The investigation showed that with more times of daily teeth brushing, the prevalence of dental caries decreased significantly.
Conclusions: The dental caries among the children in Jiading District were serious, and the prevalence of dental caries increased with the growing ages. It was indicated that more prevention and treatment for dental caries should be strengthen.

P799

Dental Trauma and Mouthguard Usage among Soccer Players in Izmir, Turkey

Arzu Aykut Yetkiner, Ilhan Uzel, Nazan Ersin, Fahinur Ertuğrul, Özant Önçağ
Department of Pediatric Dentistry, Ege University, Izmir, Turkey

Aim: The risk of athletes getting dental injuries while playing sports is very high and can be minimized by the use of mouthguards. The aim of this study was to determine the occurrence of dental injuries and the level of knowledge about dental trauma and mouthguards in professional Turkish soccer players.
Materials and methods: The present study is based on data obtained from personal and direct interviews through questionnaires concerning the question of dental trauma and the usage of mouthguards answered by 343 professional soccer players with an average age of 15.11 ± 1.9 years.
Results: Among the respondents, 10.2% of the players reported the occurrence of some type of dental injury while training, including avulsions (5.7%) and dental fractures (80%) being the most prevalent. After dental trauma, only two players were treated immediately. When the players were questioned about tooth avulsion, 18.4% answered that replantation of the avulsed tooth is possible and 20.1% said that it is possible to obtain success if the replantation is done immediately after the trauma. Regarding mouthguard use, a total of 212 players (61.8%) did not know about mouthguards and only one (0.3%) reported using a mouthguard. Among the players, 31.5% responded that a mouthguard was not necessary. In addition, dental staff are not a part of teams' medical and health staff. It was possible to conclude that dental injuries are common during professional soccer trainings and that there is a lack of information amongst players with regards to mouthguards and prevention of dental trauma.

P800

Dental Status Investigation of Identical Twins

Vesela Stefanova, Sukri Mahmud
Department of Operative Dentistry and Endodontics, Faculty of Dental Medicine, Medical University, Plovdiv, Bulgaria

Dental genetics as a part of medical genetics is developing fast because of the fact that tissues and organs in maxillo- facial area are accessible, visible, it is easy to be measured and clinically and functionally investigated.
Aim: To study and compare the dental status of identical twins.

Materials and methods: Thirty pairs of identical twins at the age of 11–55 have been investigated at the Department of Operative Dentistry and Endodontics, Faculty of Dental Medicine, Medical University- Plovdiv, Bulgaria in the period April-December 2012. An original questionnaire with patients' history and clinical observations has been filled in. Collected data is analyzed by statistical software SPSS 13.0.
Results: 56.6 percents of the investigated twins are males and 43.3 percents are females. The mean age of the group is 26.6 years. The average twins' pair living together period is 20.8 years. Mean DMFT index for the first born twins is 40.9 and for the second born is 38.1. The average frequency of oral hygiene per day for the first group is 1.86 and for the second is 1.93.
Conclusions: The identical twins are not only a medical phenomenon. This study reveals the tight relationship between the genetic disposition and the dental status of the pairs. Further investigations in the context of dental medicine practice are needed.

P801
Students' Reasons for Choosing Dentistry and Dental Students' Views on Postgraduate Education
Ayşegül Sarıtekin, Zuhal Kırzıoğlu, Seda Özkul
Department of Paediatric Dentistry, Suleyman Demirel University, Isparta, Turkey

Aim: Purpose of the study is researching dentistry students' reason for choosing dentistry and the views on postgraduate education before and after determining dental expertise exam.
Materials and methods: Totaly 364 students (Group 1; 2008–2009 years 162 students and Group 2; 2012–2013 years 202 students) questionnaire evaluated. Group 1–2 divided into two subgroups A and B according to clinical internship and determined opinions the reasons for choosing dentistry, questions about the area of expertise they prefer. Results of the questionnaires evaluated by t-test and chi-square test.
Results: Factors for choosing dentistry are as following: wish to helping people, professional reputation and high business warranty, adequate financial gain and between these factors are significantly different. However, the rate of who choose dentistry willingnessly (19.7%) was less as a result of university exam (38.7%). Compared to gender, boys trust their hand skills more than girls ($p = 0.004$), and they want to be independent in working environment ($p = 0.001$). Students of 40.6% preferred universities that near the place of residence. There is a significant ratio between the number of students who want to postgraduate education in Group-2 (89.1%) and the Group 1 (71.0%). Comparing the ratio of desire of postgraduate education Group 1A (83.3%) and Group 1B (60%) first one is higher, and for Group 2A (86.6%) and 2B (90.4%) this ratio is contrary.
Conclusion: Postgraduate education preferences is increased by the beginning of clinical internship and dental expertise exam. Consequently, dentistry is a trade section protects its reputitation, highly preferred at graduate/postgraduate dental education.

P802
Ectopic Eruption of First Permanent Molars in a Turkish Subpopulation
Adem Kuşgöz[1], Sadettin Kayıpmaz[2], Mehmet Bayram[3], İlkay Yalçın[1], Seval Bayrak[2]
[1]Department of Paediatric Dentistry, Karadeniz Technical University, Trabzon, Turkey, [2]Department of Oral Diagnosis and Radiology, Karadeniz Technical University, Trabzon, Turkey, [3]Department of Orthodontics, Karadeniz Technical University, Trabzon, Turkey

Aim: The purpose of this research was to investigate the prevalence of ectopic eruption of first permanent molars in a Turkish subpopulation.
Materials and methods: The radiographic data of 1591 healthy children, from 5 to 10 years old, was retrospectively examined. A method was designed to evaluate the ectopic eruption of the first permanent molars and the amount of pathologic resorption of the second primary molars. Data were analyzed using Pearson chi-squared test to determine potential significant differences between variables.
Results: Of the 67 children in the sample, 94 first permanent molars were found to have ectopic eruption. The prevalence of ectopic eruption of first permanent molars in subjects was 4.2%. Although the prevalence of ectopic eruption was found to be higher in males than in females, the difference was not statistically significant ($\chi^2 = 0.448$, $p = 0.577$). Ectopic eruption was observed in 52 maxillary (55.3%) and 42 mandibular first permanent molar teeth (44.7%). There was no statistically significant difference between the maxilla and mandible ($\chi^2 = 2.128$, $p = 0.144$). The most observed pathologic resorption in the second primary molars (60/94; 63.8%) was determined as Grade I (mild-limited resorption to cementum or with minimum dentin penetration). In conclusion, the prevalence of ectopic eruption of first permanent molars was 4.2% in Turkish subpopulation. Early diagnosis of the ectopic first permanent molars is important to prevent the premature loss of second primary molar and the resulting malocclusion.

Theme: Preventive Dentistry: Orthodontics

P803
Effect of Ozone Application on Bond Strength of Orthodontic Brackets
Ozer Alkan[1], Burcu Oktay Coven[1], Betul Ozcopur[2], Fatih Kazanci[1], Gurcan Eskitascioglu[3]
[1]Department of Orthodontics, Yuzuncu Yil University, Van, Turkey, [2]Department of Endodontics, Yuzuncu Yil University, Van, Turkey, [3]Department of Prosthodontics, Yuzuncu Yil University, Van, Turkey

Objective: The aim of this in vitro study is to investigate the effects of gaseous ozone, prophylactic paste and pumice applied before bonding on bond strength of orthodontic brackets.
Materials and methods: Sixty extracted permanent canines were collected and cleaned by distilled water. All samples were placed in 10% NaOCl and stored in refrigerator (8°C) until required.

The including criterias were: no caries, no enamel cracks and no previous chemical reactions.

The teeth were placed in 20 × 10 × 10 mm polymethilmetacrylic blocks (Meliodent, Heraeus Kulzer). The blocks were randomly divided into three equal groups and received the following treatments: Group I: Cleaned with pumice +%37 orthophosporic acid + bonding (3M Unitek Transbond XT); Group II: Prophylactic paste (Sultan TOPEX) +%37 orthophosporic acid + bonding (3M Unitek Transbond XT); Group III: Gaseous ozone (Biozonix, Germany) application +%37 orthophosporic acid + bonding (3M Unitek Transbond XT).

All sample's shear bond strengths were determined using an universal testing machine. An analysis of variance (ANOVA) was used to determine whether there were significant differences between the groups.

Results: Group III (ozone application before bonding) showed the highest bond strength. Group II showed less bond strength than Group III and higher than Group I.

Conclusion: According the results of this in-vitro study, it was shown that gaseous ozone application before bonding increases the bond strength of orthodontic brackets. It can be a better idea to apply gaseous ozone before bonding to prevent bracket loss during the orthodontic treatment.

P804

The Evaluation of the Effects of Bionator and Forsus FRD EZ2 Appliances on the Dentofacial Region

Pamir Meriç[1], M. İrfan Karadede[1], Fundagül Bilgiç[2]
[1]*Department of Orthodontics, Dicle University, Diyarbakir, Turkey,* [2]*Department of Orthodontics, Mustafa Kemal University, Hatay, Turkey*

Aim: The aim of the present study was to evaluate the effects of Bionator and Forsus FRD EZ2 appliances on the dentofacial region.

Materials and methods: Our study has three groups. Bionator group (n = 10), Forsus FRD EZ2 group (n = 10) and Control group (n = 10). All patients were Class II div 1 malocclusion with mandibular retrognathia and low angle growth pattern. Patients were at the peak pubertal growth period. In the treatment groups, cephalometric images were taken at the start of appliance usage and after 6 months. No treatment is given to the control group and cephalometric images were taken at the start and 6 months after the first image. Intragroup differences were evaluated with SPSS 15.0 statistical analysis software.

Results: Cephalometric data revealed that both of the appliances increased sagittal growth of the mandible, proclination of the lower incisors, mesialisation of the lower molars.

P805

Dental Age in Patients with Turner's Syndrome

Cvetanka Bajraktarova Mishevska[1], Mirjana Kocova[2], Emilija Bajraktarova Valjakova[3]
[1]*Department of Orthodontics, Faculty of Dentistry, "Ss. Cyril and Methodius" University -Skopje, Skopje, Macedonia,* [2]*Pediatric Clinic, Medical Faculty, "Ss. Cyril and Methodius" University -Skopje, Skopje, Macedonia,* [3]*Department of Prosthetics, Faculty of Dentistry, "Ss. Cyril and Methodius" University -Skopje, Skopje, Macedonia*

Aim: Dental maturity, expressed as dental age, is one of the common indices for age estimation. Tooth formation is widely used to assess maturity and to predict age.

The aim of this investigation was to assess the dental age in a group of patients with Turner's syndrome using Demirjian's method.

Materials and methods: The material comprised 50 Turner Syndrome patients aged 9.2–18 years. Only twenty-one panoramic radiographs of girls aged 9.2–15.3 years were evaluated using Demirjian's method. The other patients were not included in the calculation because their chronologic age exceeded the age at which all teeth have normally completed root development. The dental age was scored on all seven left mandibular teeth by one examiner. Dental age was compared to chronological age by using a paired t-test.

Results: A significant difference ($p < 0.001$) was found between chronological age and dental age. The dental maturity of the Turner patients was 1 year advanced compared with the children in Demirjian's sample. The mean difference between dental and chronologic ages varied from 0.2 to 2.59 years.

Conclusion: The findings in this research can be explained by the fact that shorter roots occurred in all Turner patients leads to advanced maturity by earlier finished root formation. Age estimation plays an important role in orthodontics. Such information aids in diagnosis and treatment planning.

P806

Effects of Casein Phosphopeptide Amorphous Calcium Phosphate (CPP-ACP) and Sodium Fluoride Mouth Rinse on Enamel Demineralization Adjacent to Elastomeric vs. Metal Ligated Brackets

Evren Öztaş[1], Hande Sar Sancaklı[2], Ugur Erdemir[2], Esra Yıldız[2], Taner Yücel[2], Müyesser Sarac[1], Sevin Erol[1], Şerife Kıran[1], Sevda Özel[3]
[1]*Department of Orthodontics, Faculty of Dentistry, Istanbul University, Istanbul, Turkey,* [2]*Department of Operative Dentistry, Faculty of Dentistry, Istanbul University, Istanbul, Turkey,* [3]*Department of Public Health, Faculty of Medicine, Istanbul University, Istanbul, Turkey*

Objective: To investigate the effects of casein phosphopeptide amorphous calcium phosphate (CPP-ACP) and sodium fluoride mouth rinse on enamel demineralization adjacent to fixed elastomeric or metal ligated orthodontic brackets using laser fluorescence in vivo.

Materials and methods: Twenty-four healthy adolescents (14–22 years) undergoing orthodontic treatment were randomly divided into two experimentals and a control group consisting of two subgroups each according to ligation type of the brackets. The control groups used only fluoride toothpaste (1400 ppm) for oral hygiene maintenance twice a day while the fluoride groups were instructed to use 0.005% sodium fluoride rinse and the

CPP-ACP groups to use GC tooth mousse once a day in addition to fluoride toothpaste. Measurements were performed from 4 selected sites around the brackets for each tooth by laser fluorescence device at baseline, 3, 6, 12 and 24 months from the baseline. The changes between the groups were analyzed by Friedman variance analysis test while Kruskal Wallis test revealed the changes due to time interval.
Results: There were no statistically significant intragroup differences with either ligation method compared with the baseline ($p > 0.05$). The CPP/ACP and fluoride rinse groups developed less laser fluorence differences then the control groups ($p < 0.01$).
Conclusion: The use of CPP-ACP and fluoride rinse can be more beneficial than fluoride tooth paste alone for prevention of enamel decalcification adjacent to fixed orthodontic appliances. The type of ligation has no effect on the development of decalcification.

P807

The Relationship between Orthodontic Treatment Need and Dental Caries

Cahide Ağlarcı[1], Elif Yaşa[3], Osman Sami Ağlarcı[2], Bilge Nur[4]
[1]Department of Orthodontics, Sifa University, Izmir, Turkey, [2]Department of Maxillofacial Radiology, Sifa University, Izmir, Turkey, [3]Department of Restorative Dentistry, Sifa University, Izmir, Turkey, [4]Department of Pediatric Dentistry, Sifa University, Izmir, Turkey

Aim: The aim of this study was to evaluate the relationship between orthodontic treatment need and dental caries in 11–14-year old children in Izmir/Turkey.
Materials and methods: A one hundred and sixty-five 11–14-year old children (105 female, 60 male) in Izmir were included in this study. One experienced orthodontist recorded the orthodontic treatment need by using dental aesthetic (DAI) and two experienced clinicians performed and decayed, missing, filled teeth (DMFT) indices. Spearman's rank correlation coefficients were used to measure the association between variables.
Results: The mean of DAI score ± standard deviation was 24.24 ± 7.12. Although 66.7% of the children had DAI scores of Grade 1 (<26) which were classified as not requiring orthodontic treatment, 17% of the children had DAI scores of Grade 2 (between 26 and 30) indicating definite malocclusion and elective treatment. As a total 27 children need orthodontic treatment (14 of them Grade 3 and the others Grade 4). The mean and standard deviation of DMFT index was 2.2 ± 1.95. According to DMFT index, 29.1% of the children shown no caries risk, 46.7% had moderate caries risk and 24.2% had high caries risk. No significant correlation was observed between DAI and DMFT scores ($r = 0.006$, $p < 0.939$).
Conclusions: Within the limitation of this study, a correlation was not found between the severity of malocclusion and dental caries. Studies with larger sample are needed to investigate the relationship between orthodontic treatment need and dental caries for adolescents.

P808

The Evaluation of the Effects of Bionator Appliance on Airway Volume in Mandibular Retrognathia Patients with Computed Tomography

Pamir Meriç[1], M. İrfan Karadede[1], Fundagül Bilgiç[2]
[1]Department of Orthodontics, Dicle University, Diyarbakir, Turkey, [2]Department of Orthodontics, Mustafa Kemal University, Hatay, Turkey

Aim: The aim of the present study was to evaluate the effects of Bionator appliance on airway volume with CBCT.
Materials and methods: Our study has two groups. Bionator group ($n = 10$) and Airway control group ($n = 10$). All patients were Class II div 1 malocclusion with mandibular retrognathia and low angle growth pattern. Patients were at the peak pubertal growth period. CBCT images were taken at the start of study and after 6 months of appliance usage. No treatment is given to the airway control group. Intragroup differences were evaluated with SPSS 15.0 statistical analysis program.
Results: Statistically significant differences were found between Bionator and Control group. Airway volume was affected positively by Bionator treatment.

P809

The Orthodontic Approach to the Congenital Deficiency of Maxillary Lateral Incisor

Mehmet Kaplan, Berk Özoğul, Sıla Mermut Gökçe, Serkan Görgülü, Hakan Dağ
Department of Orthodontics, Gulhane Military Medical Academy, Ankara, Turkey

Introduction: Agenesis of lateral maxillary tooth, lack of wisdom tooth and lower incisor teeth are the most common congenital deficiencies. Lack of maxillary lateral tooth creates a serious aesthetic problem for the smile and also leeds to psychological problems. In these cases, a multidisciplinary approach is neccessary to provide an aesthetic and psychological solution. Those approaches often include orthodontic or prosthetic interventions. The first approach can be the mesialisation of the posterior group tooth for the fulfillment of the lateral tooth space. In this type of approach canine tooth is given lateral shape with the use of stripping. The second approach can be the use of lateral implants or bridges, but this approach would be much more prostetic solution.
Case: In this case report, a 17-year-old female patient with unilateral agenesis of upper lateral teeth is treated by the mesialization of posterior tooth group by the use of mini-screws. The duration for posterior mesialization was 6 months and the total treatment time was 14 months. After the mesialisation of canine teeth for space closure, lateral form was given to the canine to provide an aesthetic result.
Conclusion: As a conclusion, mini-screw was successfully used for en masse mesialisation of posterior tooth.

P810

The Observation of Indıvıduals' Mandıbular Volume with Ectodermal Dysplasia by Three Dimensional Computer Tomography Method

Didem Nalbantgil, Beyza Karadede
Departmant of Orthodontics, Yeditepe University, Istanbul, Turkey

Aim: In this research project, it is aimed to observe the mandibular volume of the ones with anhydrotic ectodermal dysplasia, by the three dimensional computer tomography method and to compare these findings with the normal individuals.
Materials and methods: The test group consists of seven people with the ectodermal dysplasia, and the control group consists of seven people with skeletal class I. Three dimensional computer tomography is taken from both the test group with the ectodermal dysplasia and the control group.
Results: At the end of the statistical analysis, which is applied among the metric measurements that are by using the method of three dimensional computer tomography, no difference is found in the dimensions of the mandibular volume of the ectodermal dysplasia compared to the control group.

P811

The Evaluation of Salivary Total Oxidant-Antioxidant Status and DNA Damage of Children Undergoing Fixed Orthodontic Therapy

Cigdem Guler[1], Ebubekir Toy[2], Firat Ozturk[2], Dilek Gunes[1], Aysun Bay Karabulut[3], Onder Otlu[3]
[1]Department of Pediatric Dentistry, Faculty of Dentistry, Inonu University, Malatya, Turkey, [2]Department of Orthodontics, Faculty of Dentistry, Inonu University, Malatya, Turkey, [3]Department of Biochemistry, Faculty of Medicine, Inonu University, Malatya, Turkey

Aim: To determine the relationship among salivary levels of total oxidant status (TOS), total antioxidant status (TAS) and 8-Hydroxy-2'-deoxyguanosine (8-OHdG) of children undergoing fixed orthodontic therapy.
Materials and methods: Thirty healthy children (mean age 13.72 $\pm$ 1.7 years) were randomly divided into three groups of 10. For standardization, same brand brackets, tubes and arch wires (Dentaurum, Germany) was used and attachments were bonded to all teeth in both arches using three different orthodontic light cure composites, Transbond XT (3M Unitek, USA), Kurasper F (Kuraray Europe, Germany) and GrenGloo (Ormco Corporation, USA), The level of salivary TOS, TAS and 8-OHdG were collected three times, before treatment (T1), 1 month (T2) and 3 months (T3) after appliance placement. All data were analyzed statistically using Wilcoxon and Kruskal-Wallis tests.
Results: There were no statistically significant differences in the salivary levels of TOS, TAS and 8-OHdG within same time periods among three different orthodontic composites ($p > 0.05$). The levels of TAS in all composite groups decreased over time. These decreases were found statistically significant in Kurasper F and GrenGloo at T1-T3 and T2-T3 time points ($p < 0.05$). The levels of 8-OHdG in all composite groups decreased between T1 and T2 ($p < 0.05$). However, the levels of 8-OHdG in all composite groups increased from T2 to T3. These differences of levels of 8-OHdG were statistically significant in Kurasper F and GrenGloo applied groups ($p < 0.05$).
Conclusions: Fixed orthodontic appliances bonded with tested composites did not increase cytotoxicity markers in saliva. Orthodontic treatment has no cytotoxic effect on children in evaluated time period.

P812

Interdisciplinary Treatment Correction of Previous Treatment Diagnose and Planning Mistakes and their Consequences-Case Report

Vesna Andreevska[1], Nina Kovachevski[2], Gordana Kovacevska[3]
[1]PHO Dental clinical center Sv. Pantelejmon, Clinic for orthodontics, Skopje, Macedonia, [2]Private practice Impacta Dental, Skopje, Macedonia, [3]Faculty of dentistry, PHO Dental clinical center Sv. Pantelejmon, Clinic for prosthodontics, Skopje, Macedonia

Aim or Purpose: The aim of this study is to show interdisciplinary treatment correction of previous treatment diagnose and planning mistakes and their consequences. Trough this case we will show you our standing point and results acquired with adequate correction with fixed orthodontic treatment, conservative and fixed-prosthetic restorations (FPR).
Materials and methods: Patient, J.G. age 38 came in our clinic 2011, for quick correction of the consequences of mistaken previous treatment diagnoses and planning. After the clinical examination, anamnesis and radiographic analyses we established presence of hipodontia 12, 22 tooth, impaction of 23 tooth, early extraction of 33 tooth, extraction of lower posterior teeth, midline shift to the left, non satisfactory smile and aesthetics. The therapy plan consists of orthodontic fixed appliance in first phase, conservative restorations in second phase and prosthodontic treatment in third phase.
Results: The results obtained confirm that the main reason for the mistakes of diagnosis and treatment planning is wrong extraction of teeth. In 1 year period with fixed appliance, conservative reshape of 13 tooth and 24 tooth into lateral incisors, correction of linea mediana, dental bridges in lower posterior parts we have achieved satisfying results and aesthetics.
Conclusion: In our experience we can conclude that the protocol must be valued individually for each patient respecting patient's desires and needs, detail analyses for each case with prediction of possible mistakes. Satisfying results and the satisfying smile of the patient are motivation for the therapeutic team for further interdisciplinary collaboration.

P813

Changes in Oropharyngeal Airway and Respiratory Function Following Class-III Bimaxillary Surgery

Sıla Mermut Gökçe[1], Serkan Görgülü[1], Korhan Gider[1], Ümit Karaçaylı[2], Gökhan Duran[1]
[1]Department of Orthodontics, Gulhane Military Medical Academy, Ankara, Turkey, [2]Department of Maxillofacial Surgery, Gulhane Military Medical Academy, Ankara, Turkey

Objective: To evaluate the cephalometric, oropharyngeal airway volume, respiratory function during sleep and pulmonary functions changes in a severe Class-III patient undergoing bimaxillary orthognatic surgery.
Method: A 19-year-old male patient referred for treatment with complaint inability to incise food and unaesthetic profile. Cephalometric evaluation revealed a significant Class-III skeletal discrepancy (ANB = −15°) with a negative overjet of 17 mm. Maxilla was advanced 10 mm with LeFort-I downfracture, mandible was positioned back 13 mm with BSSO. Cephalometric analyses, pulmonary function tests (PFT), and a 1-night sleep study for full polysomnography (PSG) were performed before and repeated after 6 months to surgery. Simultaneously, volumetric measurements were performed with computed tomography (CT). CT scans were assessed and analyzed using Simplant (Materialise, Belgium) software. Pre- and postoperative pharyngeal airway volumes were compared.
Result: Maxillary advancement and mandibular setback revealed an occlusion with a Class I molar and canine relationship. The overbite and overjet relationships were ideal and facial esthetic appearance was improved as a result of the reduction in the lower third of the face height in accordance with cephalometry. The PSG, PFT and CT alterations indicated an enlargement in oropharyngeal volume, better airflow and improved sleep quality.
Conclusion: A large amount of mandibular setback might inhibit biological adaption and cause sleep-disordered breathing, and it might be better to consider maxillary advance that does not reduce the airway for patients with skeletal Class-III malocclusions. The patient gained an appropriate facial aesthetics and oral function using multidisciplinary approach.

P814

Treatment of Simple Orthodontic Malocculusion by Removable Appliances

Orhan Aksoy, Refika Topal Kaya, Seher Gündüz Arslan, Atılım Akkurt, İhsan Cemal Melek, Emre Naiboğlu
Department of Orthodonti, Dicle University, Diyarbakır, Turkey

Case: In this case report, the treatment of two young individuals, who had simple orthodontic abnormalities and referred to our clinic, with removable appliances was presented. The first case was 20 and second was 17 years old. In intra-oral examination of the first case, it was observed that overjet was 1 mm, overbite was 3.5 mm and class I molar and canine dental relationship. On the upper jaw, 2.4 mm crowding and retruded upper two central teeth were detected. In intra-oral examination of the second case, Class I molar and canine dental relationship, malaligned upper left canine were observed. In the cephalometric evaluation of the two cases, vertical and sagittal values were found to be normal. In both cases, removable appliances, with labiolingual springs were planned for treatment. In the first case, after protrusion of upper central teeth with labiolingual springs, incisors were stripped and they were retracted by narrowing vestibule arch. In the second case, bite opening was provided by adding acrylic on the occlusal and posterior surface of plate to avoid contact of tooth with the lower teeth. By activating the spring beyond incisor, it was protruded.
Conclusion: Existing problems in both patients were treated successfully with a good patient compliance and simple appliances. In both patients, the results were quite satisfactory and stable.

Theme: Preventive Dentistry: Periodontology

P815

The Large Mutations and Aggressive Periodontitis in Identical Twins: A Case Report

Işıl Saygun[1], Uğur Muşabak[2], Mehmet Vehbi Bal[1], Vahdi Umut Bengi[1]
[1]Department of Periodontology, Gulhane Military Medical Academy, Ankara, Turkey, [2]Department of Immunology and Allergy, Gulhane Military Medical Academy, Ankara, Turkey

Aim: Periodontitis is a multifactorial disorder related to several susceptibility factors such as age, gender and genetic. In this report, twin male adolescent one of who had advanced periodontal disease (Twin A) and other had moderate aggressive periodontitis (Twin B) were compared to the view of genetical status.
Materials and methods: Genomic DNA was extracted from EDTA-anticoagulated peripheral blood samples of the patients by using QIA amp DNA Blood Kit according to manufacturer's instruction. The Affymetrix® Cytogenetics Whole-Genome 2.7M Array in combination with the standard Affymetrix protocol was used to detect chromosome aberrations across the entire genome.
Results: In genome analysis of twin A, there were diffuse heterozygote (CN State 1) deletions in multiple chromosome sequences respectively; heterozygote duplication (CN State 3) in chromosome 8 sequences; homozygote duplications in X and Y chromosomes. Remarkable pericentromeric heterozygote (CN State 1) deletions in chromosome 9 sequences were observed. In genome analysis of twin B, there were diffuse heterozygote (CN State 1) deletions in multiple chromosome sequences respectively; heterozygote duplication (CN State 3) in chromosome 6., 8., 11. and 12. sequences; homozygote duplications in X and Y chromosomes. Remarkable pericentromeric heterozygote (CN State 1) deletions in chromosome 9 sequences were observed. The mutation in chromosome 21 sequences of both patient included metaphysic dysplasia together with autoimmune polyendocrinopathy syndrome gene.
Conclusion: Genetic status is a crucial factor influencing of systemic or host response related risk. Identification of genetic factors for aggressive periodontitis is important for preventing the development of periodontal destruction.

P816

The Effects of Ozone on the Local and Systemic IL-1β and IL-10 Levels in Ligature-Induced Periodontitis in Rats

Aysun Akpinar[1], Metin Calisir[2], Omer Poyraz[3], Fahrettin Goze[4], Derya Ozdemir Dogan[5], Vildan Bostanci[1]
[1]Department of Periodontology, Cumhuriyet University, Sivas, Turkey, [2]Department of Periodontology, Adiyaman University, Adiyaman, Turkey, [3]Department of Microbiology, Cumhuriyet University, Sivas, Turkey, [4]Department of Pathology, Cumhuriyet University, Sivas, Turkey, [5]Department of Prothesis, Cumhuriyet University, Sivas, Turkey

Aim: The aim of the present study was to evaluate the effect of ozone on alveolar bone loss in experimental periodontitis in a rat model.
Materials and methods: The study protocol were approved by the Animal Ethics Committee of Cumhuriyet University School of Medicine. Twenty-two male Wistar rats were used in this study.

- Non-ligated (NL) group (n = 6)
- Ligature-only (LO) group (n = 8)
- Ligature + Ozone (LOZ) group (n = 8)

The rats from LOZ and LO groups were placed ligature. In LOZ group, Ozone was applied by gingival probe at a rate of 60 s/each tooth twice a day. On the 15th day, all the animals were sacrificed and the blood samples were taken for serum ELISA analyses. After the mandibles were dissected, the vestibular gingival tissues were taken from each animal to use for the gingival cytokine analyses. The mandibles were defleshed and stained with 1% aqueous methylene blue. The alveolar bone height was measured under a stereomicroscope by recording the distance from the CEJ to the alveolar bone crest. For the histopathological evaluation, osteoclast number, osteoblastic activity and inflammatory cell infiltration were determined. Statistical analysis were performed using the Kruskal–Wallis test.
Results: While Ozone lowered the IL-1β levels, it dwelled the IL-10 levels. The mean alveolar bone loss was reduced by ozone. Furthermore, the number of osteoblasts was increased and the mean osteoclast number and inflammatory cell infiltrate were decreased.
Conclusion: It is probable that ozone may prevent the destruction of alveolar bone loss and gingival inflammation.

P817

Oral Health-Related Quality of Life and Chronic Periodontitis

Olivera Vukotic[1], Smiljka Cicmil[1], Ana Cicmil[1], Jelena Lecic[1], Sasa Cakic[2]
[1]*Department of Periodontology, Faculty of Medicine, University of East Sarajevo, Foca, Bosnia and Herzegovina,* [2]*Department of Periodontology and Oral Medicine, School of Dentistry, University of Belgrade, Belgrade, Serbia*

Aim: To assess oral health-related quality of life using the Oral Impacts on Daily Performance (OIDP) questionnaire in patients with chronic periodontitis.
Materials and methods: Twenty-five patients (13 females, mean age 40.5 ± 6.5) with chronic periodontitis and 25 periodontally healthy controls (12 females, mean age 37.4 ± 5.3) were recruited. All patients underwent a comprehensive periodontal examination and completed self-administered Bosnian version of the OIDP questionnaire. Data analysis used Chi square and Mann-Whitney tests.
Results: A total of 96% patients with chronic periodontitis and 88% periodontally healthy patients confirmed at least one impact in the last 6 months. The periodontitis patients OIDP score was significantly higher than that of healthy controls (16.6 ± 11.1 vs. 6.6 ± 4.8, $p < 0.001$). Oral impacts on speaking, smiling, going out and enjoying the contact of other people were significantly higher in patients with chronic periodontitis.
Conclusion: This study has identified that patient with chronic periodontitis report significantly poorer oral health-related quality of life than periodontally healthy patients.

P818

Gingival Recession Caused by Lip Piercing: Case Report

Zeynep Pınar Keleş, İlker Keskiner
Department of Periodontology, Faculty of Dentistry, Ondokuz Mayis University, Samsun, Turkey

Aim: Gingival recession is the exposure of root surfaces due to apical migration of the gingival tissue margins. Lip piercing is a very rare agent that may produce mechanical trauma to oral tissues and that might be associated with gingival recessions. Two cases with gingival recessions caused by lip piercing in mandibular central incisors were presented.
Case: Two female patients aged 20 and 22 were referred to periodontology department with the complaint of gingival recession in mandibular central incisors. The patients had undergone lip piercing 6 and 9 months earlier. No abrasion on root surface was observed. Piercings seemed to be the main causative agent of the gingival recessions. The patients were advised to remove piercing, however, it was not accepted by both patients. For this reason no attempt was done to cover defects surgically.
Conclusion: The use of lip piercings may be associated with the occurrence of gingival recession in the anterior mandibular region. Dentists should be aware of the increasing number of patients with piercing and to provide appropriate guidance to patients for potential side effects.

P819

Rheumatoid Arthritis as a contributing factor of Marginal Periodontitis

Alexandra Ciuca, Radu Rica, Ana Maria Rica, Andreea Florescu, Delia Stoica, Petra Surlin
Department of Periodontology, University of Dental Medicine, Craiova, Romania

Introduction: Rheumatoid Arthritis (RA) and Marginal Periodontitis (MP) are both inflammatory disease symptoms but with diffrent etiology. Clinical studies have shown a possible interrelation between this two diseases, but neither clinical aspects or common pathogenic mechanisms are not yet known.
Materials and methods: The study participants consisted of 28 patients divided in MP group – patients with Marginal Periodontitis and MP+RA group – patients with Marginal Periodontitis and Rheumatoid Arthritis. Were recorded BOP and CAL and have been achieved statistic tests for comparison the obtained data and their correlation.
Results: Clinical data showed a higher number of periodontal affected teeth in the MP-RA group likewise the increased severity of periodontal injures in this group.
Conclusion: These results suggest the need to extent the clinical studies on a higher number of patients and conducting basic

research to support the interrelation Marginal Periodontitis- Rheumatoid Arthritis.

P820

Efficacy of Diode Laser as an Adjunct to Non-surgical Treatment of Cronic Periodontitis

Hakan Ozdemir[1], Ayse Burcu Altan[2], Hülya Toker[1], Aysun Akpınar[1], Hüseyin Aydın[3]
[1]*Department of Periodontology, Cumhuriyet University, Sivas, Turkey,* [2]*Department of Orthodontics, Kocaeli University, Kocaeli, Turkey,* [3]*Department of Biochemistry, Cumhuriyet University, Sivas, Turkey*

Aim: Periodontitis is a chronic inflammatory disease that affects the supporting structures of teeth, resulting in tooth loss. Smoking increases the level of free radicals in periodontal tissues, which in turn may be responsible for the destruction seen in periodontal diseases. Low-level laser therapy (LLLT) is recommended for its pain-reducing, wound healing promoter and anti-inflammatory effects. The aim of this study is to evaluate the effect of LLLT as an adjunct to non-surgical periodontal therapy of smoking and non-smoking patients with chronic periodontitis.
Materials and methods: The study group comprised 30 patients (15 smokers and 15 nonsmokers) (16 man and 14 women) with a mean age of 38.7 ± 5.5 years (range 22–58 years) with chronic periodontitis. Laser therapy was performed four times to the LLLT group by a clinician, on the baseline, first, second, and third weeks after treatment.

PD, CAL, GI, PI, and BOP were measured. Gingival crevicular fluid (GCF) was collected for assay of Total Oxidant Status (TOS) and Total Antioxidant Status (TAS) levels at baseline and 6 weeks.
Results: A significant decrease in clinical parameters were observed in both groups at 6 week, with a further decrease in the LLLT groups. LLLT groups showed a greater reduction of TOS in GCF, and increased of TAS in GCF at 6 week than the control sites.
Conclusion: The present study showed that associated therapy was suitable for non-surgical periodontal treatment. Furthermore, the results suggest that a LLLT could be a beneficial adjunct to non-surgical treatment of chronic periodontitis.

P821

Expression of MMP9/NGAL in Gingival Crevicular Fluid during Orthodontic Movements

Cristian Arsenie[1], Mihai Greblescu[1], Alexandra Negoescu[1], Anne Marie Rauten[2], Isabela Silosi[3], Petra Surlin[1]
[1]*Department of Periodontology, University of Dental Medicine, Craiova, Romania,* [2]*Department of Orthodontics, University of Dental Medicine, Craiova, Romania,* [3]*Department of Immunology, University of Dental Medicine, Craiova, Romania*

Objectives: In the present study the aim was to measure the levels of Lipocalin (MMP9/NGAL) in gingival crevicular fluid (GCF) at different time points of orthodontic treatment.
Materials and methods: Gingival crevicular fluid samples were collected from 19 young orthodontic patients with maxillary fixed orthodontic appliances. Samples were gathered from a test tooth and also from a control tooth. As a test tooth was chosen a maxillary canine on witch was applied an orthodontic force and as control tooth was chosen an orthodontic free mandibulary canine.
Results: MMP9/NGAL increased from 1 h before activation of orthodontic appliance to a maximum at 72 h, returning to the level before the appliance of the orthodontic force after a week.
Conclusions: The results show a change in time of MMP9/NGAL levels in GCF of patients with orthodontic treatment. To establish the role of MMP9/NGAL in the cascade of mediators during orthodontic movements, require extensive studies that can determine the relationship between the marker and other substances in GCF.

P822

Surgical Approaching of Endodontics Failure Teeth

Demiri D. Amet[1], Mustafai A. Seha[2]
[1]*Clinic for Oral Surgery, School of Dentistry, Faculty of Medical Sciences, State University of Tetova-Macedonia,* [2]*Clinic for Oral Surgery "Oral Estetic Surgery" Tetova-Macedonia*

Aim: The aim of this study is to analyze the difference of success by retreatment with orthograde and retrograde filling method of endodontically failure teeth.
Materials and methods: In a period from 2010 to 2011 year were surgically treated 48 patients (27 males and 17 females) in age from 11 to 68 years old. Forty eight surgically treated teeth with periapical lesions were divided into two groups. First group (control group) was compound from 24 teeth with periapical lesions filled by orthograde way. Second group (study group) was also compound from 24 teeth with periapical lesions filled by retrograde way, because they have intra radicular restorations or metal ceramic crowns.
Results: After 12 months, bay all patients was made X-ray control, and by first group (control group) were evaluated eight cases with complete healing, 10 cases with unfinished healing, four cases with suspect healing, and two failure cases. By second group (study group) were evaluated 14 cases with complete healing, six cases with unfinished healing, four cases with suspect healing. Concerning the postoperative healing of lesions, by X-ray controle there was no statistically significant difference between two groups after 12 months ($p = 0.59$).
Conclusions: From this study, we can conclude that application of a retrograde filling with surgical intervention-apicectomy, could be considered like a minimal invasive procedure, which has positive effect by postoperative clinic results.

P823

Comparative Analyze of Variables of Metal Ceramic Dental Bridges

Sherif I. Shaqiri[1], Kaltrina Sh. Shaqiri[2]
[1]*Clinic for Prosthetic Dentistry, School of Dentistry, Faculty of Medical Sciences, State University of Tetova,* [2]*School of Dentistry, Faculty of Medical Sciences, State University of Tetova*

Aim: Our aim in this study is to:

1. Analyze the odontometric values of pontic elements of occluso-cervical, mezio-distal and vestibulo-oral dimensions:

2. Compare the getting values with homologous values of natural teeth.

3. Determine the difference in per cent of values from our study with values of control group.

Materials and methods: During 2010 and 2011 year, clinically were analysed and measured 455 pontic elements of lateral dental bridges by 151 treated patients from both sex, and in age from 26 to 70 years old. Measurement was made with an instrument for precise measuring (shubler), with precision of 0.1 mm. Like control group were used results from measurement of natural teeth according authors: Lavelle, Lenhossek, Sicher-Tandler and De Yonge-Cohen, realised with same measured precision of variables from 0.1 mm. The statistically significance of results from our study is showed with T-test ($t = 6.75$), and coefficient of probability ($p < 0.01$).

Results: The getting results showed that: Pontic elements in our study are in average for: −23.49% highest than control group −16.13% shorter than control group and −8.82% narrower than control group teeth.

Conclusions: Like conclusion we can say that:

1. The highest of pontic elements of dental bridge increase the resistance and the hardness of bridge with geometric progress.

2. The shorter pontic elements in mesio-distal dimension will influence on defence of dental bridge from deformity and breaking.

3. The narrower pontic elements will increase the hardness of dental bridge in linear manner.

Theme: Preventive Dentistry: Public Health

P824

Masticatory Function and Obesity: A Review

Joana Marques, Anabela Paula, Miguel Marto, Diana Rebelo, Pedro Ambrosio, Manuel Marques Ferreira, Eunice Carrilho
Faculty of Medicine, University of Coimbra, Coimbra, Portugal

Aim: It is already known that masticatory function has an impact on nutrition. Abnormal eating behaviors, such as avoiding hard food, high intake of soft fatty or palatable food, compulsive overeating, eating fast and chewing less are observed in obese subjects. This review aim is to known if there is an alteration of masticatory function in obesity.

Materials and methods: A research in the PubMed and ScienceDirect databases was performed, with the terms "masticatory function" and "obesity" from 2000 to present.

Results: From the research we retrieved 82 papers, from them we select 10 papers according to the purpose of the review.

Conclusions: Actually a very few information are available about masticatory function in obesity. Although there was evidence that a reduced masticatory function can induce nutritional disorders, such as gastrointestinal dysfunctional, in obesity the papers are contradictory, some reported that masticatory function was reduced, others that there is no change in masticatory function. In the actual issue, so as obesity, it is very important to improve our knowledge in this field, a lack of evidence is still present, more randomized trials are needed.

P825

Relationship between the Type of Employment and the Edentulousness of Sri Lankan Women

Dona Indrani Amaratunga[1], Prasad D. Amaratunga[1], Aruna K. Wimalarathna[2]
[1]Faculty of Dental Sciences, University of Peradeniya, Peradeniya, Sri Lanka, [2]Dental Hospital Teaching, Peradeniya, Peradeniya, Sri Lanka

Aim: Principal aim of this study is to find out the relationship between the type of employment and edentulousness of Sri Lankan women.

Materials and methods: A sample of 515 partial and complete edentulous women between 35–55 years of age was selected. They were examined and the general oral health status and missing teeth were recorded. They were given a questioner to find out the Educational standard, employment, income level, number of children and the amount of time available for health related matters. Reasons for extraction of teeth and awareness about the availability of alternative treatments were also recorded.

Results: Out of the total of 515, there were 152 house wives, 137 laborers, 89 teaches, 62 clerical staff, 51 medical personals and 24 other employments. There were 21 complete edentulous, 62 more than 15 teeth missing, 77 more than 10 teeth missing, 210 more than 5 teeth missing and 145 more than 1 tooth missing. A large majority (73%) out of the 83 subjects who had more than 15 teeth missing (including complete edentulous) were House wives and laborers. Unavailability of time despite of being aware of the alternative treatment seems to be the main reason for extractions.

Conclusions: Laborers who work on daily paid basis and house wives who are largely loaded with work at home and looking after children have the highest rate of complete and partial edentulousness in Sri Lankan women.

P826

Evaluation of the Oral Health Data From 6 Elementary Schools

Elif Çakır[1], Figen Yılmaz[1], Ali Osman Soluk[2], Ömer Akçağıl[1], Muzaffer Saraç[1]
[1]Department of Health and Social Services, İstanbul Metropolitan Municipality, [2]Health, İstanbul Health Services and Management, Social Services Industry and Trade Corporation

Introduction: Tooth decay is one of the most common diseases. In order to control this widespread problem, we have to increase conciousness of the protective methods and provide the most appropriate treatment. Oral health problems and tooth decays are especially common among children.

Purpose: To evaluate the oral health data obtained in the examination conducted in six elementary schools in İstanbul, in 2011.

Materials and methods: In 2011, the students in six elementary schools, in six counties of İstanbul received a general health

examination from the mobile health personel of İstanbul Metropolitan Municipality Health Corporation. (General practitioners and nurses) This examination included all the students in the Kindergarten, special education and first through eighth grade. The results were electronically recorded.

Findings: The number of participants was 11,943. Tooth decays were recorded in 49.1% of the examinees (n. 5866), and different oral health problems were recorded in 0.2% (n.30) including bleeding in gums, dental filling, purulence, blacking and tartar. No oral health problems were observed in 50% of the examinees (n. 6047).

Results: Oral health problems were recorded in 49.3% of the 11943 students who were examined, 49.1% of which was tooth decays. The parents of the students with oral problems were informed and encouraged for treatment. As a result of this research, oral health educations provided by İstanbul Metropolitan Municipality Women and Family Health Protection and Education Department became more frequent, in order to increase the conciousness of oral health protection among students and to develope positive behaviour.

P827

Efficacy of Education on Infant Oral Health Care For Parents

Gülçin Bulut

Dental Clinic, Dr. Behçet Uz Children's Hospital, İzmir, Turkey

Aim: The aim of this study is to evaluate the efficacy of infant oral health education programme using a pre-post questionnaire for parents attending at the pediatric clinic of children's hospital.

Methods: Fifty parents (father or mother) who had a baby aged 0–12 months, appointed at the well baby clinic in Dr. Behçet Uz Children's Hospital participated in the study. This study was approved by the local ethics committee of the hospital. Parents completed a questionnaire immediately before and after a 30 min education programme performed as a PowerPoint presentation. The education programme was developed by using the AAPD (American Academy of Pediatric Dentistry) guidelines. The differences in pre and post questionnaires were evaluated. Paired t-test, McNemar, Wilcoxon tests were used for statistical analyses.

Results: A lack of knowledge about infant oral health care was found regarding the proportion of "incorrect" (%25) responses and "I don't know" (%23) responses to the questionnaire before education. Statistically significant increase (%53) was determined in "correct" responses of the questionnaire between "before" and "after" education ($p < 0.01$, $t = -14.423$).

Conclusion: Results of this study indicated that education improved the oral health knowledge of parents caring for their infants and provided anticipatory guidance. Widespread application of education programme is suggested for establishment of dental home care.

P828

The Prevalence of Caries in Preschool Children Expressed by Dmft-Index

Blerta Musliu Krasniqi, Agim Begzati, Blerta Latifi Xhemajli, Teuta Ademi Kutllovci, Fatime Lenjani, Erajeta Deva Kurshumliu

Department of Pediatric and Preventive Dentistry, University of Pristina, Dentistry School, Pristina, Kosovo

Introduction: Dental caries in preschool children represents health and social problem, especially when the treatment rate is very low.

Aim: The purpose of the study is to determine the prevalence of caries among preschool children, expressed by dmft-index.

Methods: In study are involved 478 preschool children of 3–6 age. Preschool children were examined at various kindergartens in Pristina (capital of Kosovo) in period 17.10.2012–14.02.2013. This was a cross-sectional study conducted in randomly selected kindergartens. Dental caries was scored as the number of decayed, missing, or filled primary teeth (dmft), following the recommendations of the World Health Organization. Diagnostic criteria were calibrated, with an inter-examination reliability of kappa index.

Results: Prevalent of caries at the preschool children ($dmft > 0$), was 76%. Mean dmft was 5.97 ± 5.1. There was not significant differences between gender ($p < 0.05$). The prevalent ECC was 19% with dmft of 12.5. Structure of dmft- index shows that: caries teeth include 95%; missing teeth 1.3%; filling teeth 3.36%.

Conclusion: All data assessed at our preschool children, showed the very poor dental health status. Implementation of preventive measures at the earliest age, are necessary.

P829

Smile Healthy to Your Diabetes: Periodontal Disease at Diabetes Management

Bilge Akmenek[1], Ayse BasakCinar[2], Lone Schou[2], InciOktay[3]

[1]*General Dentist, Istanbul, Turkey,* [2]*The Institute of Odontology, University of Copenhagen, Denmark,* [3]*Department of Pedodonty, Yeditepe University Dentistry Faculty, Istanbul, Turkey*

Aim: To assess the correlation between diabetes management and periodontal disease among patients with diabetes type II (DM2).

Materials and methods: The present study is part of a prospective intervention study among DM2 patients (n = 186), Istanbul, Turkey. The data comes from the clinical baseline measurements: [Periodontal Clinical Attachment Loss (CAL), Community Periodontal Need Index (CPI), fasting blood glucose, HbA1c (glycated haemoglobin)]. Total sum of the highest scores for CAL at mesiobuccal (MB) and midbuccal (MIDB) sıtes were taken separately for maxilla and mandible, in line with NHANES studies. Factor analysis and spearman rank correlation were applied.

Results: Mean CAL, for the whole mouth, at MB sites was 3.6 ($\pm$ 1.8) and 3.7 ($\pm$ 1.9) for MIDB. Participants having healthy gums for the whole mouth (CPImax = 0) was 1.1% and 57% had at least bleeding in one sextant or more (CPImax = 1 or 2). Patients with favourable HbA1c (HbA1C < 6.5%) had lower mean CAL at MB sites at the maxilla, mandible and the whole mouth compared to those with unfavourable HbA1c. Participants with unfavourable HbA1c were more likely to have periodontal pockets

(48%, CPImax = 3 or 4) compared to those with favourable HbA1c (24%), (p = 0.007). The two cluster found by Factor analysis; oral health (CAL and CPImax) and diabetes (Fasting Blood Glucose and HbA1C); were highly correlated with each other (rs = 0.83, p = 0.01).

Conclusion: Present findings highlight that periodontal disease contributes to diabetes; there is a need for integration of oral health to the diabetes management, in line with IDF and FDI declaration (2008).

P830

Oral Health Knowledge and Habits of Children under State Protection

Cenker Zeki Koyuncuoğlu[1], Mağrur Kazak[2], Ferda Pamuk[1]
[1]*Department of Periodontology, Faculty of Dentistry, Istanbul Aydin University, Istanbul, Turkey,* [2]*Department of Restorative Dentistry, Faculty of Dentistry, Istanbul Aydin University, Istanbul, Turkey*

Aim: The aim of this study is to evaluate the level of oral health knowledge on causing and preventing of dental caries and bleeding gums and eating habits of children who were under state protection.

Materials and methods: Fivty-five girls that were living in ''Society for the Protection of Children'' in between the age of 12–19 were evaluated according to oral health knowledge and eating habits that were marked by the children on the questionare forms. All datas were statistically analysed by chi square test.

Results: 30.9% (n:17) of the children indicated that they haven't gone to dentists previously. Twenty percent of them were afraid of dentists due to subjective experiences among people. 94.5% (n:52) knew that sugar and sweets can cause dental caries. 78.2% (n:43) were aware of brushing teeth can prevent caries. 63.6% (n:35) were thinking that irregular brushing teeth can cause gingiva bleeding. 98.2% (n:54) were brushing their teeth and 34.5% were brushing in the morning and evening regularly. 72.7% (n:40) were not using dental floss but on the contrary 50.9% (n:28) were using mouthwash. 65.5% (n:36) were not smoking. 52.7% of the children were not satisfied with the the apperance of their teeth. Six girls were stated that they were using antidepressant.

Conclusion: In this study, children who were under state protection know what causes dental caries and bleeding gums. However, oral hygiene habits should be improved.

P831

Electromyography Study during Dental Work in Sitting and Standing Position

Nataša Dragiša Pejcic[1], Vanja Petrovic[1], Ivana Ilic[1], Nadica Miljkovic[2], Milica Jovicic Djuric[2], Dejan Popovic[2], Nemanja Pejcic[2], Mia Rakic[1], Neda Perunovic[1], Marko Barac[2]
[1]*Faculty of Dentistry, University of Belgrade, Belgrade, Serbia,* [2]*Faculty of Electrical Engineering, University of Belgrade, Belgrade, Serbia*

Background: Because of the narrow work area (the mouth), it is very hard for the dentist to find the optimal body posture during their work. Working posture is the highest risk factor for development of musculoskeletal disorders (MSD).

Aim: We studied electromyography (EMG) data during dental work in order to determine differences in muscular work load between standing and sitting position during dental work.

Materials and methods: Ten healthy, right-handed dentists, on postgraduates study were included in the EMG study. The recording electrodes were placed on the left and right sides of back: erector spinae (ES), shoulder: trapezius descedens (T), and neck muscles: sternocleidomastoideus (SCM) and splenius capitis (SC). During the measurements they performed typical dental examination in standing and sitting positions.

Results: Significant difference between muscle activity in two working posture was evident only in SC muscle groups on left (p = 0.032) as well right side of the body (p = 0.049), and in muscle activity of SCM muscle on the left side (p = 0.029).

Conclusions: Sitting is not always better than standing. In standing position, different muscle groups were used, than in sitting position during work. Etiology of MSD is multifactor and long sitting position in combination with static work can be one of the most important etiological factors for development of MSD. Dynamics working environment might be enabled by combining sitting and standing working posture.

P832

Assessment of the Impressive Factors in Treatment Anxiety

Cennet Neslihan Eroğlu[1], Serap Keskin Tunç[1], Mert Gökay Eroğlu[2], Korhan Küçük[3], Hanife Ataoğlu[3]
[1]*Department of Oral And Maxillofacial Surgery, Van, Turkey,* [2]*Department of Endodontics, Van, Turkey,* [3]*Department of Oral And Maxillofacial Surgery, Konya, Turkey*

Objective: The purpose of this study is to compare the patients'-living in two cities (A City:Van, B City: Konya) with different socio-cultural levels- anxiety level when they enrolled for different interventional treatments in individually and as a whole population. Intervention types, gender, medical and treatment backgrounds will be discussed as independent values.

Materials and methods: We conducted a survey of anxiety before the surgical treatments on 200 patients at the Department of Oral and Maxillofacial Surgery participated to the study. The State-Trait Anxiety Inventory (STAI) questionnaires were completed by patients while they were waiting for different interventional treatments at two cities. We evaluated the data with non-parametrical statistic method (Mann–Whitney U Test).

Results: According to the results of statistics, the level of State anxiety was statistically significant (p < 0.01) between two cities; however, it was not significant for the level of Trait anxiety (p > 0.05). Level of dental anxiety in A city was higher than B city. The difference of dental anxiety was found significant for the patients having a dental intervention before. Regardless of the cities they live, it was found that undergoing a psychological therapy, gender and the types of interventions (surgery or extraction) do not have any effect on the level of anxiety.

Conclusion: In conclusion, the socio-cultural difference is an important factor that affects the level of anxiety. On the other

hand, it is found that having dental intervention before is a significant factor that increasing the treatment anxiety.

P833

Effect of Protamine-Hydrolysate Peptides (DMX) in Oral Hygiene

Ujjal K Bhawal[1], Kazumune Arikawa[2], Chieko Taguchi[2], Gen Yano[3], Noboru Kuboyama[4], Ikuo Nasu[2]
[1]Department of Biochemistry and Molecular Biology, Nihon University School of Dentistry at Matsudo, Matsudo, Chiba, Japan, [2]Department of Preventive and Public Oral Health, Nihon University School of Dentistry at Matsudo, Matsudo, Chiba, Japan, [3]Department of Oral Surgery, Nihon University School of Dentistry at Matsudo, Matsudo, Chiba, Japan, [4]Department of Clinical Pharmacology, Nihon University School of Dentistry at Matsudo, Matsudo, Chiba, Japan

Aim: The effect of protamine-hydrolysate peptides (DMX) on oral hygiene was evaluated.
Materials and methods: Eight individuals (mean age: 23.1 ± 1.2 years) and eight individuals (mean age: 41.6 ± 9.5 years) who had no systemic underlying disease and had not been medicated within the past 3 months were selected as the subjects for clinical study. Informed consent was obtained from all patients. DMX was administered 3 times a day during the 7-day treatment period. The correlation between different parameters, i.e. the coated area of the tongue, state of plaque attachment, and state of gingival inflammation, obtained before and after using DMX were compared. The coated area of the tongue was significantly reduced after DMX treatment (Wilcoxon signed-rank test, $p < 0.05$).
Result: The state of gingival inflammation also showed a significant improvement (paired Student's t-test, $p < 0.01$). No significant difference was noted in the state of plaque attachment. Hydrogen sulfate was significantly reduced in breath odor in DMX group (paired Student's t-test, $p < 0.05$).
Conclusion: Our results provide new information on DMX to maintain good oral hygiene and may thus aid in the understanding of oral environment.

P834

Sickle Cell Disease: Strategy to Improve Oral Health in Brazil

Andrea Soares Quirino Da Silva Fonseca[1], Marlene do Carmo Cezini[1], Marcia Pereira Alves Dos Santos[2], Vanessa Maria Souza E Silva[1], Mirella Giongo[1]
[1]Dental school, University Federal of Rio de Janeiro, Rio de Janeiro, Brazil, [2]Ministry of Health of Brazil/School of Dentistry - Federal University of Rio de Janeiro, Rio de Janeiro, Brazil

Aim: Demonstrated training and information strategies for the promotion of oral health of people with Sickle cell disease (SCD). SCD is one of most common hereditary disease in the world and public health problem in Brazil.
Methods: A working group with experts in SCD and Oral Health had drafted a manual addressing: physiopathological and clinical aspects of SCD; oral manifestations in SCD; risk to oral disease of people with SCD; dental approach of people with SCD. The manual was used in the training of undergraduates, graduate students, teachers and technicians dental surgeons of the Single Health System (SUS). In addition, the use of "Manual of Health Education – Self-care in Sickle Cell Disease" as a tool in trainings such multiprofessional skills.
Results: The training conducted between 2009–12 trained about 5500 health professionals over Brazilian territory; with a circulation of 30,000 copies per issue, the Handbook of dental health is in its third edition, also available electronically.
Conclusion: Sickle cell disease has as main need visibility in the country and qualification of the assistance. Multi-professional health care team, including oral health professionals, it is essential to reaching the goal proposed by the national policy of integral care for people with SCD which is to promote longevity with quality of life changing the natural history of SCD in Brazil.

Theme: Dental Treatment & Restorative Dentistry: Endodontics

P835

Microtensile Bond Strength of Root Canal Dentin Treated With Three Different Adhesive Systems and Four Different Fiber-Reinforced Posts

Emine Goncu Basaran, Emrah Ayna, Yalçın Değer, Buket Ayna
Faculty of Dentistry, University of Dicle, Diyarbakır, Turkey

Aim: Recently demand for esthetic restorations increased and non-metal esthetic posts have become popular, made of either high strength ceramics or reinforced resins such as carbon fiber-reinforced resin posts, glass fiber-reinforced resin posts, polyethylene fiber-reinforced posts. Important characteristics of fiber posts include a modulus of elasticity similar to that of dentin and their ability to be cemented using an adhesive technique. Clinically, there has been a wide range of reported failure percentages. Post loosening was reported in 16 of the 23 studies, making it the most commonly reported complication. It has been shown that failure of adhesively luted fiber posts often occurs due to debonding of the post. Many investigations have been conducted concerning improvement of the bond strengths between the post and the root canal dentin, including different pretreatment techniques of the post surface, pretreatment of root canal dentin, or use of different luting agents. Besides, post cementation into a root canal is still a concern, as confirmed by clinically observed failures. The purpose of this study was to evaluate the microtensile bond strenght of three adhesive systems to root canal dentin restored with four adhesively luted fiber-reinforced post systems.
Methods: Thirty-six incisors were divided into four groups (n = 9). Four adhesively luted fiber-reinforced (glass fiber, quartz-glass fiber, zirconia-glass fiber and polyethylene fiber) post systems used in this study. Post spaces were prepared using drills corresponding to each group and each post was adhesively luted with one of three systems: a one-stage self-etch, a two-stage total-etch, and a three-stage total-etch adhesive. Three segments per root apical to the CEJ were obtained by sectioning the root under distilled water coolant with an Isomet saw (Buehler). The sections were 2.0 ± 0.1 mm thick. Each specimen was marked on its coronal

side with an indelible marker, and specimen thickness was measured with digital caliper with an accuracy of 0.001 mm. The sections (total = 108 sections) were stored individually in black film canisters with sterile water. To determine the bond strength, the bonding area of each specimen was calculated, and specimens were attached to a device to test microtensile strength at a crosshead speed of 1 mm/min. Data were analyzed using three-way analysis of variance and the Tukey test ($\alpha = 0.05$).

Results: Statically analysis showed no significant differences between the adhesive systems and fiberreinforced composite resin posts. Otherwise, significant differences were observed among root dentin regions ($p < 0.001$). Also, no interaction was significant. No cohesive fractures within resin cement, fiber-reinforced resin post, or root dentin were identified.

Conclusions: Adhesive systems tested demonstrated reliable bonding when used with fiber-reinforced resin posts.

P836

Microleakage Study of an Experimental Restorative Material Through Radioisotopes

Pedro Daniel Ambrósio[1], Eunice Virgínia Carrilho[1], Margarida Abrantes[2], Maria Filomena Botelho[2], João Casalta Lopes[2], Anabela Paulo[1], Tânia Afonso[1], Carlos Miguel Marto[1], Diana Rebelo[1], Joana Marques[1], Jorge Portugal[3], Manuel Marques Ferreira[1]

[1]Department of Dentistry, Faculty of Medicine of Coimbra's University, Coimbra, Portugal, [2]Faculty of Medicine of Coimbra's University, Coimbra, Portugal, [3]Faculty of Dentistry, University of Lisbon, Lisbon, Portugal

Aim: The purpose of this study was to evaluate the microleakage of the dental restorations using GCP Fill. The null hypothesis was that the type restorative system didn't have influence in what concerns to microleakage.

Methods: Sixty noncarious extracted human molars were cut in two equal halves occlusogingivally and Class 5 cavities were prepared on the buccal or lingual surfaces of each tooth. The specimens were divided randomly in four groups. Two were restored with GCP Fill, while another was restored with FiltekTM Supreme (3M ESPE). The control group wasn't restored. The specimens were stored in distilled water at 37°C for 7 days and after thermocycling 500 cycles between 5 and 55°C with a dwell time of 30 s. The specimens were submersed in a solution of 99mTc-Pertechnetate during 3 h, being the radioactivity then counted.

Results: In order to choose the adequate statistical test both group results were compared. There was not found homogeneity of variances and the Kruskal–Wallis test with multiple comparisons according to Bonferroni correction was chosen. Data analysis showed that there were statistically significant differences between experimental groups and control groups ($p < 0.05$).

Conclusions: Within the limitations of this study, it can be concluded that:

- The GCP Fill and the FiltekTM Supreme XTE do not differ in regard to microleakage.
- This technique proved to be simple, quick and fulfills the objective of a quantitative method in the evaluation of microleakage.

Long-term clinical studies need to be carried out to substantiate the results of this study.

Author index

B

C

E

H

L

P

T

U