

34th Annual Congress **NEW FRONTIERS IN GERODONTOLOGY**

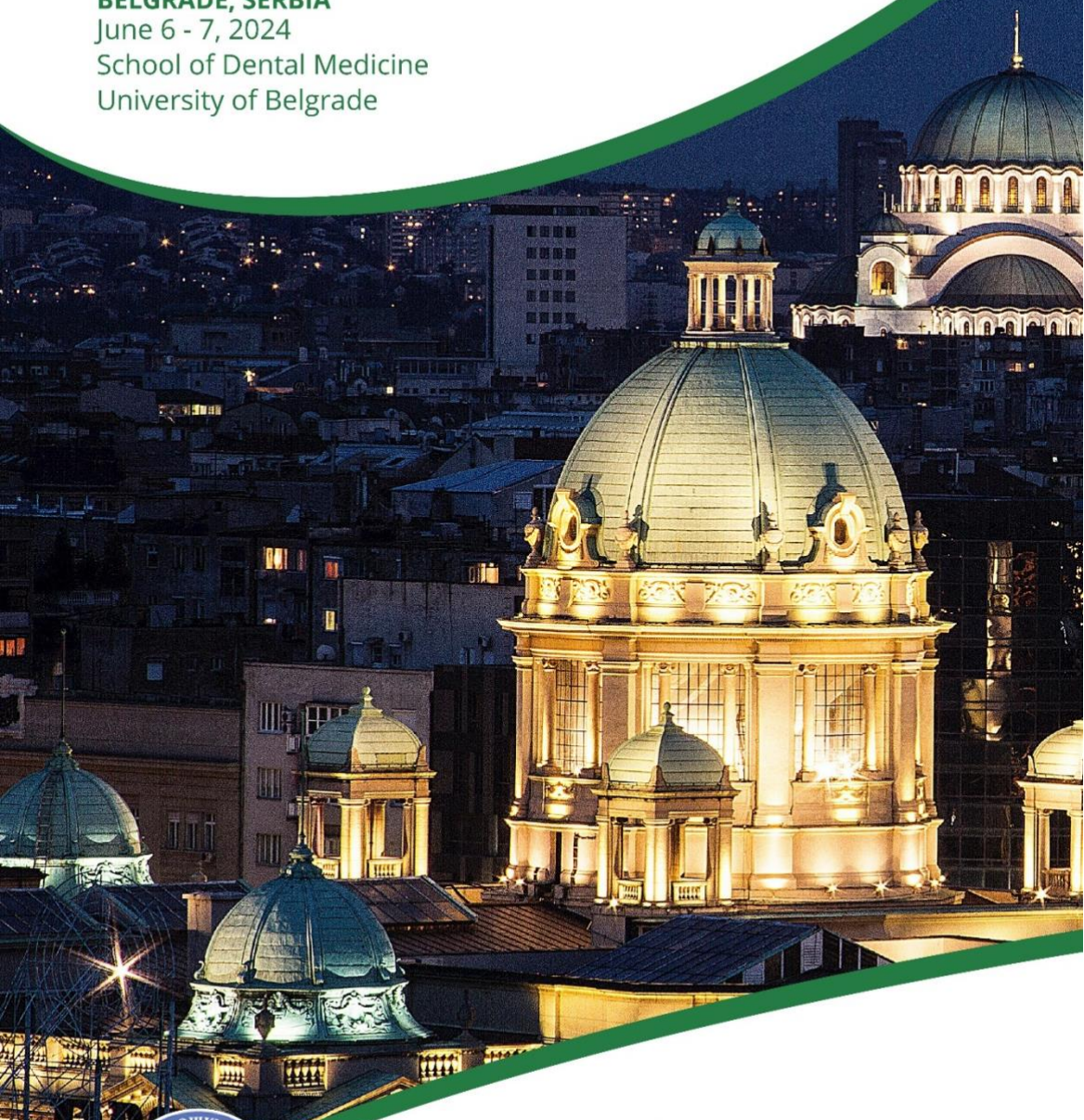
*European
College of
Gerodontology*

BELGRADE, SERBIA

June 6 - 7, 2024

School of Dental Medicine

University of Belgrade



ABSTRACT BOOK

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Welcome letter

Respected and dear colleagues,

It is a great pleasure and honor to invite you to the 34th Annual Congress of European College of Gerodontology (ECG) scheduled to take place on June 6-7, 2024, in the organization of the School of Dental Medicine, University of Belgrade.

The central topic for this year's congress is New frontiers in Gerodontology.

We find ourselves dealing daily with the intricate challenges of providing effective dental care for older adults, stemming from their compromised oral health on the one hand, and insufficient support from the health service on the other. Furthermore, Gerodontology still remains under-acknowledged in numerous regions of Europe as a very important professional and scientific field within dental medicine.

Our objective is therefore, to promote Gerodontology but also to facilitate the exchange of invaluable knowledge and experiences among colleagues. During the conference, we will explore a range of relevant topics, such as the consequences of multimorbidity and polypharmacy on oral health, challenges in endodontics, and therapy for craniomandibular dysfunctions. We will also address the complexities surrounding dental treatment for elderly people suffering from dementia. Our esteemed lecturers will also inform us on innovative methods in the rehabilitation of older adults with subtotal edentulism, managing facial and jaw defects after carcinoma treatment, and assessing masticatory efficiency and oral hypofunction. The conference promises an engaging exploration of the needs of the oral health care services and effective strategies to overcome current shortcomings. We are eager to develop a collaborative environment that fosters the sharing of insights and best practices.

On behalf of the ECG Council and the local Organising and Scientific Committee I look forward to welcoming you in Belgrade.

Sincerely,

Aleksandra Popovac

President of the ECG

Prosthodontics specialist

Associate professor in Clinic for Prosthetic Dentistry, School of Dental Medicine, University of Belgrade

Organizers

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INVITED SPEAKERS

Kazuhiro Hori

*Division of Comprehensive Prosthodontics, Niigata University
Graduate School of Medical and Dental Sciences, Niigata, Japan*

Mastication behaviors in older people

Frailty and oral hypofunction in the older people are often considered important problems. Oral hypofunction may lead to malnutrition due to a decrease in the variety and amount of foods that can be ingested. It has long been said that chewing anything and frequently is the key to good health. However, although many functional assessments such as masticatory function had been performed, few reports investigated the relationship between masticatory behavior such as the number of chews.

However, it is difficult to exactly recognize our own eating behavior; i.e., eating fast or slow and less or more chewing. Additionally, assessing mastication behaviors lacks objectivity because of the lack of devices for measuring mastication behaviors during daily meals. Recently, a simple and accurate mastication measuring device was developed. This device is a wearable ear-hook type device that monitors daily mastication behavior without disturbing the wearer.

Using this device, we reported on the relationship between Japanese people's daily eating behavior and their general condition. Furthermore, the characteristics of chewing behavior in the older adults were analyzed.

In this lecture, I will talk about the relationship between chewing behavior and masticatory efficiency in the older people, and their relationship to the whole body

Jugoslav Ilić

*School of Dental Medicine, University of Belgrade, Belgrade,
Serbia*

Challenges of Restorative and Endodontic Treatment in Elderly Patients

The proportion of the population aged 65 years and over increased during the last decades in majority of European countries. Due to increased concerns of oral health importance, the older patient tends to retain teeth as long as possible. Dental procedures in order to achieve this goal are likely to be compromised in terms of the age-related physiological changes in oral environment as well as pathological effects of mostly caries and periodontal disease. For example, normal anatomic features like common occlusal morphology may disappear and may make creation of the ideal reconstruction difficult. Deposition of secondary dentine and tertiary dentine may result in the almost obliterated pulp chamber and more complex root canal pattern that is challenging to be negotiated. Furthermore, there are a plethora of different systemic conditions in elderly that may modify the way of performing dental interventions. Some of the common disorders are diabetes mellitus, hypertension, myocardial infarction and stroke, osteoporosis, neurodegenerative disorders like Alzheimer's disease, Parkinsonism and dementia, respiratory ailments, osteoporosis and rheumatoid arthritis. Dental professional should bare this in mind when treating patients that belongs to older population.

This lecture aims to consider restorative and endodontic treatment in the older patient bearing in mind the challenges of general health and age changes on the oral structures.

Barbara E. Janssens

*Department of Oral Health Sciences, Gerodontology, ELOHA
(Equal Lifelong Oral Health for All) research group, Ghent
University, Ghent, Belgium*

Health services research in an ageing society

Poor oral health and associated inequalities remain a problem among older populations, and despite the association with improved oral health-related quality of life, the current provision of oral health services is not meeting older populations' oral health needs. Health services research in order to change this, is therefore key and was the incentive for the theme of the last special issue of Gerodontology. The editors of a recently published book on health services research described it as:

A third pillar of health research, complementing life sciences and clinical research, analysing structures, processes and outcomes of health services. It aims to contribute to the improvement of healthcare by addressing challenges in real-world healthcare settings and is centered around the values, needs and interests of people who are (potential) users of healthcare (i.e. individuals and populations).¹

This presentation will focus on the different levels we can address in research to change health services, how to prepare and evaluate the interventions and finally, how we can translate them into policy and practice.

Yuriko Komagamine

Gerodontology and Oral Rehabilitation, Tokyo Medical and Dental University, Tokyo, Japan

Interventions for Oral Hypofunction: Occlusal Force and Oral Dryness

In my presentation, I would like to focus on two aspects of oral hypofunction among the seven diagnostic criteria: occlusal force and oral dryness, and discuss methods to improve them. As oral hypofunction progresses, it inevitably leads to mastication and swallowing disorders, negatively impacting overall bodily health. Therefore, early detection and prompt intervention for oral hypofunction are considered crucial. In the presentation, I would like to introduce two intervention studies that we conducted.

The first intervention study aimed to alleviate oral dryness. This study investigated the effects of training that involves applying vibration to the salivary glands using a machine, rather than manual stimulation. After one month of training, there was a significant increase in saliva secretion and oral moistness. The study suggests that continuous mechanical stimulation to the tissues around the salivary glands may be beneficial for increasing saliva secretion and oral moistness. The second intervention study focused on improving occlusal force^{1,2}. We developed a chewing training gum and conducted a randomized controlled trial over a two-month intervention period among older adults. The results showed a significant increase in maximum occlusal force in the intervention group compared to the control group, suggesting that chewing training with the gum can enhance occlusal force in older adults.

The main goal of these intervention studies is to create a plan to address future oral hypofunction effectively. By doing so, we aim to significantly reduce the prevalence of oral hypofunction, contributing to the extension of healthy longevity.

Anastassia E. Kossioni

Professor of Gerodontology, Dental School of the National and Kapodistrian University of Athens, Athens, Greece. Coordinator of Gerontology at the COST Action PROGRAMMING CA 21122

Health care professionals' education in geriatrics and gerodontology. The activities of the PROGRAMMING COST 21120 Action

In recent decades, a rapid demographic ageing of the population has been recorded worldwide. As longevity is associated with increased morbidity and disability, all healthcare professionals working with older people should be trained in the basic principles of geriatrics and gerontology to promote health and well-being of older people. Moreover, although oral health is closely associated with general health and quality of life, the oral health among older and vulnerable population groups is poor and the access to dental care is limited. Despite the need for well-trained healthcare professionals in geriatrics and gerodontology, the relevant education in many European countries is inadequate and older people in Europe do not have equal access to specialised general and dental health care services.

The COST Action "Promoting Geriatric Medicine in Countries Where it is Still Emerging/ PROGRAMMING" CA 21122 aims to cover this gap. Through five dedicated working groups a) the educational needs of geriatric and gerodontology education among health care professionals will be recorded, b) the content of necessary educational modules will be defined for those working in primary health care, hospitals, and long-term care institutions, c) the appropriate educational methods will be defined, and e) the deliverables will be disseminated to various stakeholders. Furthermore, a dedicated gerodontology group was created aiming to include gerodontology topics in the proposed educational programmes for health care professionals and to promote geriatrics education among dentists.

Vojkan Lazić

*Department of Prosthodontics, School of Dental Medicine,
University of Belgrade, Belgrade, Serbia*

Prosthodontic rehabilitation in tumor patients

Most patients requiring prosthetic facial rehabilitation have undergone tumor ablative surgery for head and neck cancers. Multidisciplinary therapeutic techniques are commonly used in the care of patients with advanced disease of the head and neck, involving a team effort between the head and neck surgeon, maxillofacial prosthodontist, oncologist, radiologist and psychologist to optimize the patient's quality of life. Tumors of the head and neck region can profoundly affect patients' quality of life, as they are constantly reminded of their affliction. These cancers are emotionally debilitating to patients and their families. Correction of such defects goes far beyond aesthetic considerations. Lesions involving facial structures can necessitate prosthetic rehabilitation. Prostheses can be made from a variety of materials, such as polymethyl methacrylate or medical-grade silicone. These prostheses are retained with adhesives, tissue undercuts, or in some cases extraoral osseointegrated implants. Facial and intraoral prostheses can be also connected with magnets. Reconstructive and microvascular surgery remains the treatment of choice for many cancer and trauma patients, although there will always be a need for extraoral maxillofacial prostheses, in which alloplastic materials are substitute for missing biologic structures. Prosthetic replacement of missing facial tissues has several advantages over surgical reconstruction. The process is relatively inexpensive, allows for periodic evaluation and cleaning of the surgical site, and is an alternative to surgery in unsuitable cases. Disadvantages include possible irritation of the tissue site, the need for periodic remakes, and reliance on adhesives or some other form of retention.

Irena Mladenović

*Department of Prosthetic Dentistry, Faculty of Medicine,
University of East Sarajevo, Foča, Bosnia and Herzegovina*

Temporomandibular disorders in the elderly: clinical appearance, risk factors and treatment need

Temporomandibular disorders (TMD) is a collective term that encompasses numerous clinical conditions affecting the masticatory muscles, temporomandibular joint (TMJ), and the adjacent structures. Despite the relatively high prevalence of TMD signs (50-75%) and symptoms (20-33%), only 3-7% of subjects in general population are searching for treatment of TMD. Although the elderly do not represent a risk group for TMD, it has been suggested that the representation by age category is not the same for all types of TMD, with predominance of inflammatory-degenerative joint disorders with increased age. Most of the signs of dysfunction in elderly (TMJ sounds, tender joints and muscles, altered and limited movement, etc.) are found in less or approximately the same percentage as in adults. However, the prevalence of symptoms of dysfunction decreases as the population ages, and the treatment demands among the elderly decreases accordingly. The occurrence of TMD in the elderly has been associated with certain sociodemographic factors, degenerative changes in TMJ, psychosocial disturbances, and impaired sleep quality, while results for tooth loss and/or replacement are ambiguous. Data on the presence of TMD in elderly, associated risk factors, prevention and treatment needs as well as basic guidelines for the use of treatment modalities will be presented.

Frauke Müller

University of Geneva, Geneva, Switzerland

Dilemmas in Oral Healthcare for Demented Patients

Despite a decrease in prevalence in the more educated population strata, the number of demented persons requiring dental care is increasing along with the life expectancy. Dementia syndromes comprise a number of oral health risks, comprising a crave for a sugary diet, poor motor control and swallowing disorders, frequent sucking movements as well as poor denture management. Oral hygiene is often neglected and compliance for help from carers may be absent in the later stages of the disease. Patients with dementia have a higher probability of having caries, periodontal pockets and a poor oral hygiene, compared to their cognitively healthy peers. The clinical and radiological examination, but also the treatment itself may be compromised, leaving demented patients with a higher number of untreated carious lesions. Pain diagnostics is often limited to observational scales, despite an unchanged pain threshold. Treatment planning should not be delayed and preventive measures should be implemented in the early stages of the disease.

Mirko Petrovic

Section of Geriatrics, Department of Internal Medicine and Paediatrics, Ghent University, Ghent, Belgium

Adverse effects of multimorbidity and polypharmacy on oral health in older adults

The global population is rapidly ageing, resulting in a surge in the prevalence of multimorbidity, with an estimated 1.5 billion people aged 65 or older by 2050. This demographic shift has led to a significant rise in polypharmacy, the administration of multiple drugs, particularly among older adults. Owing to age-related changes in pharmacokinetics and pharmacodynamics, this population is at an increased risk of drug-related problems, including drug-drug interactions, medication non-adherence, adverse reactions, and drug duplication.

Common medications for older adults encompass both over the counter and prescription drugs, such as antacids, anticholinergic drugs, antidepressants, antidiabetic medications, antipsychotics, and more. Age-related changes in the body, including those in the oral cavity, alter the pharmacokinetics of medications, impacting saliva quality and quantity. Saliva plays a crucial role in oral health, serving protective and functional purposes.

Increased medication use contributes to hyposalivation, leading to clinical consequences such as receptor blockage, inhibited reflexes, reduced blood flow to salivary glands, and xerostomia. Age-related changes and chronic illnesses further compound the risk of poor oral health in older adults. Complications caused by medication use include altered alveolar bone, caries, dysphagia, gingival enlargement, and various oral lesions.

Given the profound impact of polypharmacy on oral health, there is an urgent need for healthcare practitioners, including dental professionals, to comprehend these implications and devise tailored treatment plans. Prescription and over-the-counter medications, particularly anticholinergic drugs, are associated with side effects that contribute to the decline in oral health. Recognizing and addressing these issues is crucial for optimizing medication use and promoting oral health in the ageing population.

Aleksandra Popovac

*Department of Prosthodontics, School of Dental Medicine,
University of Belgrade, Belgrade, Serbia*

Polyoxy-methylene as contemporary material for telescopic denture in older patients

Older patients tend to keep their teeth, but it is often situation that only a few teeth with good biological value can be used for prosthetic rehabilitation. Then, dilemma arise what solution is the best in terms of comfort, simplicity of production and prophylactic effect. Usually, we take into consideration conventional removable partial denture (RPD), over denture with intra-radicular ball attachments, partial denture with double crowns or some more complex solutions with implant placement. Telescopic denture is one of the most reliable solution because it ensures the axial load of the retention teeth by intimate contact of the parallel surfaces of the outer and inner crown. However, conventional dental alloys don't provide predictable outcome since nonprecious alloys can't provide reliable retention force with conventional casting process, while precious dental alloys increase financial costs. Polyoxy-methylene (POM) is polymer from the acetal material group which exhibits excellent strength, partial flexibility, good detail reproduction and achieves a chemical bond with acrylates.

The lecture presents preliminary results of the clinical study which aimed to explore success of POM as material for outer telescopic crown and RPD framework. Results showed overall good short-term survival and success rate. Retention force, measured with dynamometer, was lower than the values in telescopic crowns from dental alloys. However, the retention force didn't show decrease during time (settling-in phase) which is the case with dental alloys. Subtotal edentulousness in older adults requires individual approach and cost-effective solutions which enable rapid improvement of oral functions. POM is suitable as biocompatible and flexible material which enables RPD with reliable retention. More follow up period is needed to assess prophylactic effect and long-term results in oral health related quality of life.

Ana Pucar

*Department of Oral Medicine and Periodontology, School of
Dental Medicine, University of Belgrade, Belgrade, Serbia*

Adverse effects of drugs – frequently seen oral manifestations in elderly people

The progress of medicine and the pharmaceutical industry brings us the possibility of treating numerous systemic diseases, but with it also an increasing number of elderly patients who take one or more drugs on daily basis. We are faced with the fact that patients are increasingly using drugs that can be bought without a doctor's prescription, but we are also witnessing frequent abuse of drugs.

Manifestations of the unwanted effect of drugs are numerous and diverse, often combined with the sinergetic effect of the drug, microorganisms of the oral microflora and local environmental factors. Chronic therapies can have quite severe side effects that require long-term therapy in several phases and usually involve the replacement of the existing drug, within the framework of possibilities and control of the systemic disease. In clinical practice, we encounter side effects that manifest on the mucous membrane of the mouth and tongue, the supporting apparatus of the teeth, salivary glands, neuropathies, taste disorders, pigmentation, infections and swellings of the orofacial region.

It is becoming increasingly clear that as dentists we must know what drugs patients are taking in the treatment of chronic diseases, what side effects we can expect and how we must modify the planned therapy.

This lecture provides an overview of the most common oral manifestations of adverse effects of drugs in the oral cavity, symptoms and changes that help us in the correct diagnosis as well as the therapeutic possibilities of such complications.

ECG AWARD 2024 FINALISTS

Non-invasive treatment for root caries lesions in older adults with cognitive impairment: Randomized Clinical Trial

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²*Interuniversity Center for Healthy Aging, Consortium of Chilean State Universities, Chile*

Background/Aim. The increasing life expectancy has led to a higher prevalence of root caries and dementia worldwide. Restoring root caries lesions (RCLs) poses a therapeutic challenge due to difficulties in accessing the lesions and in keeping the surface clean and dry, often resulting in restoration failure. The clinical situation is more challenging when patient's behaviors are considered, particularly older individuals with cognitive impairment. Non-invasive therapies based on high-concentration fluorides have emerged as an alternative for treating RCLs. However, there is a lack of evidence regarding their effectiveness in the older population with cognitive impairment. The aim of this randomized controlled trial (RCT) was to compare the effectiveness among 38% Silver Diamine Fluoride (SDF), 5,000 ppm high-fluoride toothpastes or 5% (22,600 ppm) fluoride varnish, on the incidence and inactivation of RCLs in older adults with mild cognitive impairment.

Methods. A two-year double-blinded RCT was carried out with older participants diagnosed with mild cognitive impairment. The sample size was determined using G*Power. The calculation considered an average effect size of 0.3, a 5% error, a statistical power of 80%, and a correlation of 0.8 between the initial and final measurements, considering a 30% loss rate based on a previous study. This resulted in a total sample of 132 individuals, with 44 participants per group. Inclusion criteria were individuals aged 65 years or older from Talca's day centers with regular attendance, medical diagnosis of mild cognitive impairment, having at least 5 teeth in the mouth and one active RCL. Exclusion criteria were older adults with moderate, severe, or dementia-related cognitive impairment, severely dependent and terminal patients and aggressive or alcoholic older adults. The total sample was randomly divided using a simple 1:1:1 assignment procedure, into one of the 3 following study arms: Group 1 (Control): Toothbrushing twice per day with 5,000 ppm fluoride toothpaste. Group 2: 5% fluoride varnish every 3 months + 1,450 ppm fluoride toothpaste. Group 3: Biannual applications of 38% SDF + 1,450 ppm fluoride toothpaste. Descriptive information for participants in each treatment group was compared at baseline and at 24 months. Sociodemographic and oral health variables were presented descriptively. Nyvad criteria for activity were used to assess RCLs. The percentage (%) of activity [(surfaces with active RCLs/total surfaces) *100] was the main outcome, the mean number of active and inactive RCLs were also calculated and reported for each patient. Baseline and follow-up clinical examinations were performed by one calibrated examiner (Kappa=0.81). Variables were compared by treatment in each follow-up period using ANOVA with Bonferroni post-hoc tests. Changes of each treatment over time were calculated using repeated ANOVA. Incidence was categorized as "yes" for those patients who

developed new RCLs, independent of the activity. Pairwise relative risks (RR) were calculated for study groups. Analyses were performed using STATA v18. The study protocol and the informed consent were reviewed and approved by the Ethics Committee of the University of Talca. All participants provided signed informed consent.

Results. A total of 216 participants were initially enrolled in the study, with 35 being excluded when they did not meet the inclusion criteria. After two years of follow-up, there was a 26% attrition of participants for various reasons, resulting in a final sample of 132 participants. At the beginning of the study, there were no significant differences between the 3 groups, except for educational level and the number of surfaces with active RCLs, with 38% SDF group having the highest number of active lesions ($n = 306, 46.4\%$) compared to the other treatment groups. Over the course of the two-year follow-up period, a decrease in % of activity was observed across all 3 groups, although the extent of this reduction varied. The group treated with 5% fluoride varnish exhibited a statistically non-significant reduction trend in % of activity, starting with $6.4 \pm SD 6.6$ at baseline and continuing with $5.1\% \pm SD 8.0$ ($p < 0.25$) after 2 years. The control group treated with 5,000 ppm fluoride toothpaste significantly reduced the % of activity from $5.0\% \pm SD 5.1$ to $1.8\% \pm SD 2.8$ ($p < 0.001$). Likewise, the group treated with 38% SDF experienced the most substantial decrease in % of activity from $10.3\% \pm SD 10.1$ to $0.3\% \pm SD 0.9$ ($p < 0.001$). In terms of incidence, patients from the control group treated with 5,000 ppm fluoride toothpaste showed the lowest incidence of new RCLs over the study timeframe ($n=23, 52.3\%$), compared to 38% SDF ($n=31, 66.0\%$) and fluoride varnish ($n=33, 80.5\%$) groups. Pairwise comparisons revealed a RR for new RCLs of 1.54 [CI: 1.1 – 2.1] for fluoride varnish compared to the 5,000 ppm toothpaste. Similarly, the 38% SDF showed an insignificant RR of 1.26 [CI: 0.9 – 1.8] when tested against the 5,000 ppm fluoride toothpaste group. The 38% SDF group demonstrated a protective effect [RR of 0.82, CI: 0.6 – 1.1] when compared with fluoride varnish; although, not statistically significant.

Conclusion. Non-invasive treatment with 38% SDF resulted more effective than other high concentration fluoride therapies in arresting active RCLs in older people with cognitive impairment. However, using 5,000 ppm fluoride toothpastes seems more.

The association between oral function and nutritional status among nursing home residents: a cross-sectional study

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Background/Aim. Nutritional status is an important parameter of general health among older adults. Malnutrition is frequently recorded in older age and is associated with increased morbidity and mortality, higher risk of sarcopenia and frailty, longer hospital stays and various adverse health outcomes. As it is highly prevalent in long-term care facilities, identifying potential underlying causes in this population group is important. The aim of the present study was to investigate the association between oral function and nutritional status among Greek nursing home residents.

Methods. The study population included residents from five nursing homes in Athens Metropolitan area. The participants' recruitment was conducted according to the following inclusion criteria: a) being nursing home resident, b) absence of severe cognitive or sensory problems making communication with the investigators very difficult, c) being able to speak and understand the Greek language, and d) providing (the residents or their legal guardian) informed consent to participate in the study. The type of study was cross-sectional. The research methodology included oral interviews using structured questionnaires, oral examination, and recordings of handgrip strength and oral function. The interview recorded the participants' sociodemographic characteristics, their length of stay in the nursing home, their medical history and medication intake. Residents' nutritional status was assessed using the full form of Nestlé Nutritional Assessment (MNA®), with higher values indicating better nutritional status. Charlson's Comorbidity Index (CCI) was calculated, and Katz Index was used to assess the level of independence in activities of daily living (ADL). Physical pain intensity was assessed using the Iowa Pain Thermometer. Mini Mental State Examination (MMSE) and Geriatric Depression Scale (GDS), translated and validated in Greek, were used for screening cognitive impairment and depression respectively. Maximum handgrip strength was measured in kg using the Jamar+ digital hand dynamometer. The oral examination included recording of the number of natural teeth, removable dentures' use, and number of posterior and anterior occlusal contacts with both natural and prosthetic teeth. Oral dryness was assessed with the Clinical Oral Dryness Score (CODS) with higher scores indicating higher severity of oral dryness. Repetitive Saliva Swallowing Tests (RSST) measured the number of dry swallows within 30 seconds to assess dysphagia. Oral diadochokinesis was examined by counting the number of monosyllables pa/, ta/ and ka/ produced per second, indicating the motor

function of lips, anterior and posterior region of the tongue respectively, using an automatic counter (Kenkokun Handy, Takei Scientific Instruments Co., Niigata, Japan). Maximum voluntary tongue pressure was measured in kPa with a JMS device (TPM-01, JMS Co., Ltd.) by squeezing a compliant bulb against the hard palate. Masticatory performance was assessed by recording the participants' mixing ability using a two-colour chewing gum (Hue-Check Gum[®], University of Bern, Switzerland) chewed for 50 cycles. The bolus was evaluated visually using the Subjective Assessment Scale (SA) by judging bolus formation and colour mixture with higher SA score indicating better mixing ability. A pilot multiple linear regression analysis was performed in 36 individuals to determine the sample size of the study. Sample size was calculated using the G*Power 3.1 software (Linear multiple regression, effect size $f^2=0.67$, $\alpha=0.05$, power=0.95, number of predictors=14) indicating 54 participants. The study protocol was approved by the National and Kapodistrian University of Athens, School of Dentistry Ethics and Research Committee (502/2022). Data were analysed after their anonymisation. Statistical analyses included descriptive statistics and Kolmogorov-Smirnov tests for estimating normality. Spearman and Pearson correlation coefficients and Student's T-tests were used for bivariate analyses. Independent variables which were statistically significantly associated with MNA were included in a multiple linear regression analysis with backward elimination of nonsignificant predictors (deletion criterion $p>0.10$). The statistical significance level was set to 95%. The analysis was conducted using the statistical software IBM SPSS Statistics (version 27).

Results. The sample consisted of 92 participants, 29 males (31.5%) and 62 females (68.5%) with a mean age of 86.0 (\pm 6.6) years. Their mean length of stay at the nursing home was 33.6 (\pm 53.6) months. The mean score for CCI was 5.5 (\pm 1.2) and the mean number of drug substances was 9.0 (\pm 3.8). A total of 18.5% had at least 20 natural teeth, 41.3% were completely edentulous, while 51.1% were denture wearers. The mean number of occlusal contacts was 7.4 \pm 5.0. The mean value of MNA score was 18.0 (\pm 4.0) with 38% of the participants estimated as malnourished.

The bivariate analyses showed that the MNA score had statistically significant associations with: length of stay in nursing home ($r_s=0.209$, $p=0.046$), CCI ($r_s=-0.270$, $p=0.009$), MMSE score ($r_s=0.336$, $p=0.001$), GDS ($r_s=-0.262$, $p=0.012$), maximum handgrip strength ($r=0.436$, $p<0.001$), Katz Index ($r_s=0.450$, $p<0.001$), number of monosyllables pa/, ta/ and ka/ per second ($r_s=0.238$, $p=0.022$, $r_s=0.242$, $p=0.020$ and $r_2=0.236$, $p=0.024$ respectively), RSST score ($r_s=0.501$, $p<0.001$), maximum tongue pressure ($r=0.523$, $p<0.001$) and SA score after 50 chewing cycles ($r_s=0.430$, $p<0.001$).

The multivariate backward linear regression revealed that females ($\beta=3.397$, 95%CI for $\beta=1.683 - 5.111$, $p<0.001$), higher length of stay ($\beta=0.01$, 95%CI for $\beta=0.0 - 0.022$, $p=0.049$), higher MMSE score ($\beta=0.133$, 95%CI for $\beta=0.031 - 0.235$, $p=0.011$), lower GDS score ($\beta=-0.232$, 95%CI for $\beta=-0.401 - -0.063$, $p=0.008$), greater maximum handgrip strength ($\beta=0.301$, 95%CI for $\beta=0.158 - 0.444$, $p<0.001$), higher RSST score ($\beta=0.663$, 95%CI for $\beta=0.188 - 1.318$, $p=0.007$) and higher SA50 score ($\beta=0.748$, 95%CI for $\beta=0.161 - 1.335$, $p=0.013$) were statistically significantly associated with higher MNA score. Fifty two percent (adjusted R square = 0.521) of the variation in MNA score is accounted for by these variables.

Conclusion. Within the limitations of the present study, poorer swallowing function and lower masticatory performance were among the factors which were independently significantly associated with poorer nutritional status in nursing home residents. Based on these findings, interventions for maintenance or improvement of swallowing function and masticatory performance may have a beneficial effect on nutritional status of frail older people residing in long-term care facilities.

The impact of tooth loss and masticatory muscle thickness to the whole-body sarcopenia: a retrospective computed tomography study

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Background/Aim. Maintenance of the masticatory performance in aging people is essential to provide adequate nutrition and overall health. Many studies demonstrated that low masseter muscle mass in older adults is associated with adverse outcomes in many clinical conditions, such as postoperative complications in oesophageal cancer [1], stroke [2], carotid endarterectomy, and mortality after blunt trauma [3-5]. However, the impact of structural changes of masticatory muscles on sarcopenia is still under investigation. The thickness of the temporalis muscle was recently used as a prognostic marker of sarcopenia in oncology patients [6-8], but the same was not investigated in the general population. Some authors used the cross-sectional area of the masseter and lateral pterygoid muscle to predict sarcopenia [9, 10]. In the recent literature, much more attention has been paid to oral functions in older adults (e.g., tongue pressure, bite force, chewing ability) and their relationship with sarcopenia [11, 12]. Additionally, tooth loss has been confirmed as a risk factor for reduced masticatory muscle mass and function, but there are inconsistent results related to its relationship with sarcopenia [12]. While some authors assessed dentition status by counting the number of missing teeth, others calculated the number of functional tooth units available for biting and chewing. This study analyzed the thickness of all masticatory muscles (the temporalis, masseter, medial pterygoid, and lateral pterygoid) and dentition status in subjects with and without sarcopenia. We hypothesized that (1) masticatory muscle thickness differs significantly between sarcopenia and non-sarcopenia groups, (2) the number of missing teeth (NMT) and functional tooth units (FTU) differs significantly between sarcopenia and non-sarcopenia groups, (3) thickness of each masticatory muscle can be used as an independent predictor of sarcopenia, and (4) both NMT and FTU may independently predict sarcopenia.

Methods. A total of 149 adult participants (59 (39.6%) males and 90 (60.4%) females) were included in the study. Participants were selected among patients referred to computed tomography (CT) examination of the head and neck. Inclusion criteria were a negative history of developmental facial anomalies, acute trauma, and diseases that may cause or accelerate sarcopenia (e.g., malignant tumors and neurodegenerative diseases). Sarcopenia status was estimated on CT by measuring the cross-sectional area of the cervical muscles at the level of the third cervical vertebra and calculating skeletal muscle index (SMI) [13, 14]. Gender- and body-mass index-specific cut-off values of SMI were used to divide participants into sarcopenia and non-sarcopenia groups. The thickness of the temporalis, masseter, medial pterygoid, and lateral pterygoid muscle was measured on reference CT images in millimeters at the midpoint of the muscle and perpendicular to its long

axis. The measurement was made bilaterally, and the mean values were calculated. Dentition status was assessed on CT images by counting NMT and FTU. Statistical analysis was performed using Student's t-test, Mann-Whitney U test, Pearson's correlation analysis, and univariate and multivariate logistic regression analysis (presented as Odds ratio (OR) and p-value). Age, gender, masticatory muscle thickness, NMT, and FTU were set as dependent variables in the regression model, while sarcopenia was an independent variable. The level of significance was set at 0.5.

Results. There were 67 patients (45%) in the sarcopenia group and 82 (55%) in the non-sarcopenia group. Patients from the sarcopenia group had significantly thinner masticatory muscles in comparison to the non-sarcopenia group (temporalis muscle 6.2 ± 1.6 vs. 7.6 ± 1.8 ; masseter 11.1 ± 2.1 vs. 14.5 ± 2.5 ; medial pterygoid 12.9 ± 2.1 vs. 14.5 ± 1.9 ; lateral pterygoid 12.3 ± 1.9 vs. 15.7 ± 1.9 , the p-value for all muscles was <0.001). An average NMT was 10.72 ± 5.2 in the sarcopenia group and 7.52 ± 5.7 in the non-sarcopenia group. The mean value of FTU was 3.6 ± 4.3 in the sarcopenia group vs. 1.73 ± 3.4 in the non-sarcopenia group. Intergroup differences in NMT ($p=0.002$) and FTU ($p=0.001$) were also statistically significant. A significant positive correlation was detected between the thickness of all masticatory muscles, FTU, and CT-assessed SMI, whereas a significant negative correlation was found between NMT and CT-assessed SMI. Thickness of all masticatory muscles showed a significant association with sarcopenia in the univariate logistic regression model (temporal muscle OR=0.618, $p<0.001$; masseter OR=0.513; $p<0.001$; medial pterygoid OR=0.673, $p<0.001$; lateral pterygoid OR=0.652, $p<0.001$). However, in the multivariate logistic regression model, only masseter muscle thickness was confirmed as an independent predictor of sarcopenia (masseter OR=0.533; $p<0.001$). A significant association between NMT, FTU, and sarcopenia was found only in the univariate regression model (NMT OR=1.109, $p<0.001$; FTU OR=0.884, $p=0.008$). Age and gender were predictors in both univariate and multivariate regression models.

Conclusion. Patients with sarcopenia have significantly thinner all masticatory muscles in comparison to patients without sarcopenia. Our results confirmed the association between all masticatory muscles, CT-assessed skeletal muscle index, and whole-body sarcopenia. Dentition status differed significantly between patients with and without sarcopenia, regardless of the assessment method used (NMT or FTU). The masseter muscle is the only one that can be used as an independent predictor of sarcopenia. Although the temporal muscle was successfully used in recent studies to predict sarcopenia in oncology patients, our results did not confirm its prognostic relevance for the general population. Our results indicate that tooth loss coincides with sarcopenia development but cannot be used as an independent predictor.

POSTER PRESENTATIONS

ORIGINAL RESEARCHES - OR

OR - 1

Better care, Brighter smiles: A study on career training in Maltese residential homes

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Background/Aim. Globally, demographic shifts reveal an ageing population. Especially in Malta, where projections predict a decline in the young and a rise in older adults. Consequently, 5.6% of the elderly now reside in Long Term Care facilities, facing increased risk to oral diseases, impacting their overall health. Despite this risk, oral care provision for nursing home residents remains complex, often pushed to the side-lines of care priorities. Recognizing this demand for specially trained oral health care professionals, the study aims to address this gap by emphasizing the necessity of their role. This study aims to emphasize the need for designated oral healthcare workers in residential homes to maintain optimal oral health among older adults. By evaluating the effectiveness of dental training programs for carers, it seeks to elucidate their impact on promoting improved oral health practices. Additionally, the research aims to explore the relationship between carer training and oral health outcomes among elderly residents.

Methods. Two private residential homes were selected. Healthcare professionals providing daily care services were trained and then assessed using a questionnaire at pre-training, post-training, and 6 months. Oral health presentations, workshops, and materials were provided to the intervention group, while the control group received standard presentations. Oral health assessments were conducted on 100 older adult residents per group using the tools OHAT and OHI-S during a 6 - month observation.

Results. This research study presents results obtained during the 6-month study. It will explore the challenges in providing adequate oral care in Maltese residential settings and the potential of designated oral healthcare workers to address these issues.

OR - 2

Osteoporosis of jaw-bones – state of the facts, possibilities and dispossibilities for prosthetic therapy

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Background/Aim. This study presents changes in jaw bones due to non-malignant osteoporosis and suggests the modalities of prosthetic therapy.

Methods. Clinical inspection and palpation as well as 139 accompanied panoramic radiographs of jaw bones were the methods in the analysis of particular osteoporotic changes in maxillary and mandibular bones. Panoramic radiographs were analyzed by optical digital transmission densitometer DT II 05 (England, UK). Substantially, the presence of systemic osteoporosis was established using densitometry of spinal vertebrae (L2-L4) of 139 patients on the basis of T score results.

Results. The results of this study indicated that osteoporosis of the jaws affected a both of maxillary and mandibular bone. Additionally, osteoporosis of the jaws was mostly a part of systemic osteoporosis of the skeleton. The osteoporotic microscopic defects were appeared as rarefactions of trabecular bone primarily, elongated empty spaces between trabecular parts and thin trabecular connections within spongy bone. Macroscopic defects were appeared as intensive reduction of residual ridges-particularly in edentulous regions of the jaws.

Conclusion. The basic principle in the prosthetic therapy of osteoporotic jaw bones is ultimate avoidance of any of significant load to supporting tissues. Manufacturing of removable prosthetic constructions seems to be the priority in comparison to applying of fixed prosthodontic constructions. If removable dentures were the therapy of edentulism of osteoporotic jaws, then relining, as well as rebasing procedures are the precedence at recalls.

OR - 3

Periodontal Disease, Cognitive Disorders, and Depression: Systematic Review and Meta-Analysis

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Background/Aim. A growing body of research suggested that there was a link between poor periodontal health and systemic diseases, particularly with the early development of cognitive disorders, dementia, and depression. This is especially true in cases of changes in diet, malnutrition, loss of muscular endurance, and abnormal systemic inflammatory response¹⁻⁴. Our study aimed to determine the extent of these associations to better target the multi-level healthy aging challenge investigating the impact of periodontal disease on cognitive disorders (cognitive impairment and cognitive decline), dementia, and depression.

Methods. We conducted a comprehensive literature search up to November 2023 using six different electronic databases. Two independent researchers assessed the eligibility of 7,363 records against the inclusion criteria and found only 46 records that met the requirements. The study is registered on PROSPERO (CRD42023485688). We generated random effects pooled estimates and 95% confidence intervals (CI) to evaluate whether periodontal disease increased the risk of the investigated outcomes.

Results. The quality assessment revealed moderate quality of evidence and risk of bias. Periodontal disease was found to be associated with both cognitive disorders (RR: 1.25, 95% CI: 1.11 to 1.40, in the analysis of cross-sectional studies, cognitive impairment; RR: 3.01, 95% CI: 1.52 to 5.95 for longitudinal studies, cognitive decline), and dementia (RR: 1.22, 95% CI: 1.10 to 1.36). However, no significant increased risk of depression among subjects with periodontal disease was found (RR: 1.07, 95% CI: 0.95 to 1.21).

Conclusion. Despite the association with two of the three explored outcomes, the available evidence on periodontal diseases and dementia, cognitive disorders, and depression is controversial due to several limitations. Therefore, further investigations involving validated and standardized tools are required.

OR - 4

Assessment of gingival and periodontal health in institutionalized elderly

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Background/Aim. Changes in the periodontium become more evident with age. The most common form of periodontal disease in older adults is chronic periodontitis. Based on the fact that there is poor scientific data, we set the main goal - to assess the gingival and periodontal health in institutionalized elderly people.

Methods. The research included a total of 75 subjects older than 65 years, institutionalized in long-term care facilities. Each of the subjects was assessed for the presence of dental plaque and calculus using the s-OHI index and the gingival and periodontal status was assessed using the Ramfjord index.

Results. After the analysis of the received data, it was noted that the values related to the s-OHI index for dental plaque is 2.11 ± 0.72 , while for tartar it is 1.98 ± 0.87 (the total value for OHI index in this research is 4.09 ± 1.59). Based on the obtained

value for the Ramfjord index (4.81+/-0.82) it can be noted that most of the subjects have moderately advanced periodontal disease.

Conclusion. Based on the obtained data and subsequent analysis of the results, we can notice that there is a high percentage of institutionalized elderly with unsatisfactory oral hygiene and a high prevalence of periodontal disease (in most cases it is the moderate form of chronic periodontitis).

OR - 5

Prevalence of Risk Factors for Oral Candida Colonization Among Seniors Living in Social Care Homes

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Background/Aim. As the population ages, more elderly reside in social care homes. They are prone to oral candidiasis due to systemic illnesses or prescribed medications. Understanding prevalence and risk factors of oral candidiasis in this population remains limited. The aim of this study was to assess the prevalence of oral candidiasis and risk factors among seniors in nursing homes.

Methods. A pilot cross-sectional study was conducted at the special social care home "Tremtiniu namai" with seniors who met the inclusion criteria, signed an informed consent form and underwent interviews regarding their health status. An oral examination was conducted, and tongue swabs were taken for cytopathological examination. Analysis was performed using SPSS 28.0 with significance level set at $p < 0.05$.

Results. 52 seniors aged from 69 to 100 participated. Women comprised 61.54% (n=32) and men - 38.46% (n=20). *Candida* hyphae were identified in 24 tongue swabs, constituting the (+) *Candida* group ($p=0.579$). Among this group, 20 participants wore removable dentures ($p=0.070$), with denture use averaging 6.5 years ($p=0.040$). Dry mouth was observed in 19 (+) *Candida* participants ($p=0.008$). All seniors within the (+) *Candida* group reported having at least one systemic disease and used xerogenic drugs ($p > 0.05$).

Conclusion. 46.15% of subjects had oral candidiasis ($p=0.579$). Risk factors included dry mouth ($p=0.008$) and period (in years) of denture use ($p=0.040$). No significant links were found with systemic diseases or use of xerogenic drugs.

OR - 6

Analysis of different taste modalities in patients before and after rehabilitation with removable dentures

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Background/Aim. Taste is a complex sense influenced by various factors, with the most significant being: smell, age, general health condition, medications, and certain surgical interventions. This study was conducted to determine whether rehabilitation with removable dentures affects changes in taste intensity, as the number of patients in need of this type of therapeutic modalities is increasing.

Methods. The study involved subjects over 65 years of age seeking prosthetic rehabilitation with removable dentures. After filling the systemic health questionnaire and obtaining written consent, the measurements were conducted in two phases. The taste materials used in this study were solutions of sodium chloride, glucose, citric acid and coffee. The first phase involved assessing the patients' taste before rehabilitation with removable dentures. Measurements began with a clinical test of salivary function to exclude the possibility of xerostomia. In the second part of the study, patients were given 1ml of each solution. Patients were asked to rate the intensity of the taste on a scale from 1 to 10. The second phase involved repeating these measurements after rehabilitation with removable dentures.

Results. Obtained results showed that sense of taste didn't significantly change in patients with acrylic partial dentures, there was a slight decrease in taste perception in patients with total acrylic dentures, while a slight enhancement of taste was registered with patients with cast metal partial dentures.

Conclusion. Based on the obtained results it can be concluded that the type of dentures may affect taste perception, but not to the extent of causing serious taste disorder.

OR - 7

Soluble alpha-Klotho, vascular and inflammatory markers in saliva of elderly dental patients with and without type 2 diabetes mellitus

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Background/Aim. Micro- and macrovascular complications of type 2 diabetes mellitus (T2DM), manifested as salivary glands dysfunction and xerostomia, especially affect elderly patients. Soluble alpha-Klotho (s-Klotho) is a novel cytoprotective and anti-ageing molecule, associated with diabetic vascular complications. Vascular endothelial growth factor (VEGF) and interleukin-6 (IL-6) also serve as vasculopathy and inflammation markers in T2DM. However, whether s-Klotho is present in saliva of elderly patients with/without T2DM is unknown, while data on salivary VEGF and IL-6 in elderly T2DM patients are controversial. Present

study aimed to evaluate s-Klotho, VEGF and IL-6 in unstimulated whole saliva (UWS) of elderly patients with and without T2DM, and determine correlations among these factors, unstimulated whole saliva flow rate (SFR) and xerostomia presence.

Methods. Twenty-four patients, both sexes, aged 71.12 ± 7.62 years, were allocated to group with controlled T2DM (n=12) or nonT2DM (n=12). UWS was collected by spitting method and SFR was calculated. s-Klotho, VEGF and IL-6 concentrations were obtained by ELISA. Results were statistically analyzed.

Results. SFR was similar between investigated groups. s-Klotho was detected in 66.7% nonT2DM patients and 58.3% T2DM patients. s-Klotho concentrations were higher in nonT2DM patients compared to T2DM, but not significantly. Conversely, VEGF concentrations were higher in T2DM patients compared to nonT2DM, although not significantly. Significantly higher IL-6 concentrations were observed in patients with T2DM compared to those without T2DM. IL-6 concentrations were significantly positively correlated with T2DM presence, as well as with xerostomia presence.

Conclusion. Controlled T2DM does not affect salivary flow rate in elderly patients. s-Klotho is detected in unstimulated whole saliva in most elderly patients, and its concentrations tend to decrease in T2DM presence. Salivary VEGF appears to be increased in T2DM. Salivary IL-6 is increased in diabetic setting and positively correlated with T2DM and xerostomia presence. Further research in larger study sample is warranted for stronger conclusions.

OR - 8

Validity and reliability of craniofacial anthropometric measurement with digital 2D face photogrammetry

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Background/Aim. In addition to direct anthropometry, photogrammetry has been used to measure facial soft tissues too and the main advantages of use the digital face photogrammetry are that it is non-invasive, fast and economical and allows permanent recording that can be used later. The aim of the study was to compare the values of craniofacial linear distances obtained using two methods of face-anthropometric and digital 2D face-photogrammetric measurement.

Methods. A total of 90 adults were selected. Facial distance as a tool to measure the OVD was Sn-Gn - distance between septum of the nose (Sn) and tip of the chin (Gn). Face-anthropometric measurements were made with a Boley Gauge (Buffalo Dental Manufacturing Co.NY,USA). Frontal and profile photographs are used for photogrammetric measurement. A total of 180 photograph were done with a professional camera Sony a7ii (4.3 MP, Full-Frame Exmor CMOS, Sensor BIONZ X Image Processor, lens adapter: Sigma mc-11). Digital 2D photogrammetric facial measurements were performed using the computer program DrCeph (FYI Technologies, USA). A total of 2.700 photogrammetric measurements were done.

Results. The significance of differences in the obtained values and the correlation of the examined parameters between direct measurement on the face and indirect measurement in photographs were: ExL-ExR $p=0.101$; EnL-EnR $p=0.128$; ChL-ChR $p=0.148$; AIL-AIR $p=0.201$; ZyL-ZyR $p=0.351$; PuL-PuR $p=0.334$; Trich-N $p=0.241$; Tr-ExR $p=0.210$; N-Prn $p=0.159$; Sn-Prn $p=0.075$; N-Sn $p=0.149$; N-Gn $p=0.101$; Sn-Gn $p=0.489$; Sn-Sto $p=0.221$; SaR-SbaR $p=0.532$.

Multivariate regression analysis revealed that Sn-Gn(ph) depended on ExL-ExR(ph) $p<0.001$, EnL-EnR(ph) $p=0.029$, N-Sn(ph) $p=0.013$, Sn-Sto(ph) $p=0.001$ and gender.

Conclusions. A comparison of facial anthropometry and digital 2D facial photogrammetry reveals no significance differences in the values obtained and shows that digital 2D facial photogrammetry could be a reliable method as a facial anthropometry and the obtained information, stored in a digital file, could be preserved through life and use for patient's oral rehabilitation.

OR - 9

An anthropometric study of craniofacial measurements and their correlation with vertical dimension of occlusion

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Background/Aim. Establishment or re-establishment of proper occlusal vertical dimension (OVD) is one of the important tasks for successful prosthodontic therapy. Establishing the optimum maxilla-mandibular relations, including correct OVD is crucial for the successful clinical performance of complete denture, implant-

supported prosthesis and full mouth rehabilitation for excessive dental attrition. The aim of the study was to determine the values of 15 craniofacial linear distances in the Serbian ethnic group and the correlations between them that are predictive or can serve as proxy for OVD and to evaluate the variation of these correlations between male and female gender.

Methods. A total of 90 adults were selected. Facial distance as a tool to measure the OVD was Sn-Gn - distance between septum of the nose (Sn) and tip of the chin (Gn). Face-anthropometric measurements were made with a Boley Gauge (Buffalo Dental Manufacturing Co.NY,USA).A total of 1350 anthropometric measurements were done.

Results. Determined mean value for the distance Sn-Gn by face-anthropometric was Sn-Gn X=63.55. Determined mean value for the distance Sn-Gn in women was X=59.280 and in men X=67.827 and statistically significant difference for the distance Sn-Gn between the sexes was $p=0.001$. Based on the results of our study and face anthropometry in respondents from the Serbian population, the Sn-Gn(f) significantly correlated with: ExL-ExR(f) $p=0.003$, EnL-EnR(f) $p=0.028$, AIL-AIR(f) $p=0.019$, ZyL-ZyR(f) $p=0.011$, PuL-PuR(f) $p=0.021$, N-Prn(f) $p=0.031$, N-Sn(f) $p=0.008$, N-Gn(f) $p<0.001$, Sn-Sto(f) $p=0.008$. Multivariate regression analysis revealed that Sn-Gn(f) depended on ExL-ExR(f) $p<0.001$, ZyL-ZyR(f) $p=0.077$, N-Sn(f) $p=0.096$, Sn-Sto(f) $p=0.043$ and gender.

Conclusion. Multivariate regression analysis revealed that OVD depended on distance between exdochantion left to exdochantion right, endochantion left to endochantion right, zygion left to zygion right - face width, nasion to subnasale - middle third of the face, subnasale to stomion - the length of the upper lip and gender.

OR - 10

The association between masticatory efficiency and general physical condition in older adults – a pilot study

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Background/Aim. Loss of teeth, weakening of the masticatory muscles and ageing lead to a decrease in masticatory efficiency. Previous studies have shown an association between physical performance parameters and oral health condition. The aim of this study was to determine the relationship between masticatory abilities and general physical condition in elderly individuals.

Methods. Forty people over the age of 60 participated in this research. Chewing efficiency was tested with chewing gums in two colors, general physical condition with SPPB (Short Physical Performance Battery) tests and hand grip strength test. Subjects used chewing gum in two colors during 20 and 50 chewing cycles. The gums were then analyzed with the ViewGumm software program. SPPB tests are a group of measures that combine the results of walking speed and balance tests, and provide insight into the state of the examinee's general physical condition. The hand grip strength test records isometric grip strength with a Jamar hand dynamometer.

Results. The results showed that more than a third of the respondents have insufficient masticatory efficiency. However, there wasn't significant association with total SPPB score.

Conclusion. The association between masticatory efficiency and general physical condition is not clear, and there is a need for further research with inclusion of occlusal parameters.

OR - 11

Can a low-threshold check-up motivate older adults to schedule a dental visit? Study protocol for a Randomized Controlled Trial

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Background/Aim. Regular dental attendance is important for early diagnosis and treatment of oral diseases (1-3). Despite being at risk for declining oral health and in contrast to their general healthcare consumption, older adults show lower dental attendance than younger age groups (4, 5, 6). Their reasons for not seeking dental care are negative prior experiences, lacking awareness on its importance, edentulousness, dental fear, perceived costs and difficulties in accessing dental services (7-9). Health services research is needed to address these barriers (10). This study aims to assess the effect of a low-threshold oral check-up on future dental attendance among home-dwelling older adults (≥ 65 years of age) in Flanders, Belgium.

Methods. To develop the study protocol, insights were drawn upon from existing literature and findings from qualitative research conducted as part of the Gerodent PLUS project with older adults in the region. A multidisciplinary expert team collaboratively finalized the protocol. Sample size was calculated using G*Power, expecting to detect a mean difference of 20% between control and intervention groups. The protocol follows the SPIRIT-guidelines (11).

Results. For this randomized, controlled, single-blinded, superiority trial with a 1:1 allocation ratio, 194 home-dwelling persons aged 65 and above, without a dental check-up in the last 12 months, will be recruited. The study will occur at a location familiar to participants. The intervention group will receive an oral examination including tailored information. They will also be informed about the importance of regular dental visits and be provided information facilitating a dental appointment. The control group will not undergo an oral examination. The primary outcome is whether participants contact the dentist four months later. A logistic regression analysis will be performed to assess the impact of the intervention.

Conclusion. This trial will indicate whether a low-threshold check-up can reactivate older adults into primary oral care.

OR - 12

Age-related differences in oral function and association with physical function: Normative assessment implications

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Background/Aim. The deterioration of oral function to a state of oral hypofunction has been associated with malnutrition and frailty. The present study investigated for differences in oral function across age groups, sex, and their associations with physical function.

Methods. Adult participants (≥ 20 years old) were recruited after receiving an informed consent. They were age and sex matched. Seven oral functions based on the concept of oral hypofunction were assessed: oral hygiene, oral dryness, maximum occlusal force, lip-tongue motor function, maximum tongue pressure, masticatory function, and swallowing function. Hand grip strength was also measured. The participant groups were classified by age: young group (20 to 49 years), middle group (50 to 69 years), and old group (70 years and older) for statistical analysis of differences in oral and physical function (please mention tests and significance).

Results. A total of 155 healthy adults (median age: 55yrs, range: 22 to 89 yrs) participated in this study. Lip-tongue motor function correlated with age (Standardized partial regression coefficient, $\beta = -0.19$, $p = 0.032$), while occlusal force and masticatory function were influenced more by the number of teeth than by age alone ($\beta = 0.38$, $p < 0.001$, $\beta = 0.28$, $p = 0.002$, respectively). Hand grip strength was significantly associated with tongue pressure ($\beta = 0.58$, $p < 0.001$) and lip-tongue motor function ($\beta = 0.38$, $p = 0.002$) in both male and female participants.

Conclusion. This study demonstrated significant differences in oral functions that varied among age groups and gender. Our findings provide a foundation for establishing age-related normative data for oral functional measurements.

OR - 13

Thirty years of experience in solving terminal edentulism with supradental prostheses

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Background/Aim. Complete or nearly complete edentulism is a common condition among the older population, which makes significant impact on dental restoration. Because of the substantial alveolar ridge resorption and the periodontal problems with remaining teeth, traditional fixed prosthetic options are frequently inappropriate. This study aims to evaluate the benefits and efficacy of overdentures (ODs) in the treatment of these individuals.

Case Report. Thirty years of clinical experience using ODs for treatment of elderly patients with significant tooth loss served as the foundation for this investigation. The paper examines many advantages of ODs, including their functional, biological, financial, technical, and psychological aspects. While there were a few minor problems throughout therapy, these were greatly surpassed by the benefits. Clinical observations indicate that residual ridge resorption of patients with ODs gradually decreases with favourable bone density status and minimum accumulation of plaque, which has been confirmed by routine periodontal exams. Using ODs combined with magnets has been resulted in better stabilization of the prostheses and favourable influence on the surrounding oral tissues.

Conclusion. For elderly patients with terminal dentition and poor periodontal status of the remaining teeth, ODs are beneficial and successful prosthetic solution. Continued research and use of these advancements are imperative, highlighting the necessity for ongoing research and application of these innovations in the field of geriatric dentistry.

OR - 14

Medication related osteonecrosis of the jaw in elderly people

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Background/Aim. Medication related osteonecrosis of the jaw (MRONJ) is a debilitating adverse effect of antiresorbative treatment [1,2]. The aim of the study was

to analyse MRONJ characteristics in elderly people (over 65 years of age) presented in oral and maxillo-facial clinic (OMF) for diagnosis and treatment.

Methods. Retrospective study analysed anamnestic, clinical, and radiological data from medical charts of MRONJ patients presented for diagnostic and treatment in OMF clinics of Craiova and Constanta between 2017 and 2022.[3,4] Statistical analysis was done with Microsoft Excel and SPSS.

Results. 98 patients were diagnosed with MRONJ during 2017-2022, and 54 of them (55.1%) were over 65 years of age [5,6,7,8]. In elderly cohort of patients with MRONJ, 62.9% were females and 37.1% men ($p < 0.001$). Females MRONJ patients had as primary illness a type of cancer (88.24%), and osteoporosis (11.76%) ($p < 0.0001$). The most frequent cancer was breast (76.67%), followed by genital (10%), digestive (6.67%), bone (3.33%), and multiple myeloma (3.33%) ($p < 0.001$). Men had as primary disease cancer, prostate being the most encountered (80%, $p < 0.0001$). Risk factors for MRONJ were HT (since 46.29% from patients with MRONJ had HT), chemotherapy cancer treatment (95% from MRONJ patients with cancer had chemotherapy), and bisphosphonate treatment duration over 24 months. Zoledronic acid was found in 92.59% cases (in cancer), and ibandronic acid in 7.41% (in osteoporosis). 55% patients had stage 2 MRONJ and the rest stage 3. Trigger factor was extraction for 58%, and periapical infection for 30%, and periodontitis. Localization of MRONJ was in mandible (65%), maxilla (30%), or both (5%).

Conclusion. MRONJ was more encountered in female elderly people between 65-74 years of age, with breast cancer and HT, treated with chemotherapy and zoledronic acid. MRONJ appeared especially in mandible, after 24 months of treatment, as a stage 2 disease, after a tooth extraction.

OR - 15

The assessment of dentists' knowledge on stomatitis in removable acrylic denture wearers

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Background/Aim. The denture quality must be monitored by the physician, as it functions in a constantly changing oral environment and has the potential to affect the general health and oral mucosa of patients [1, 2]. A neglected denture may indicate a lack of patient knowledge, but also a potential lack of dentist involvement [3, 4]. Assessment of dentists' knowledge on stomatitis aspects in removable acrylic denture wearers.

Methods. A survey was conducted using a questionnaire distributed online, which included 16 questions. The first 6 questions referred to age, years number of dental

practice, medical specialization and the dental office locations of dentists participating in the study. The following 10 questions evaluated the participants' knowledge about: a. the frequency, risk and etiological factors of denture stomatitis; b. the subjective and objective oral changes highlighted in the acrylic dentures wearers [5,6]; c. recommendations to denture wearers [7]. The data were statistically analyzed, using the Chi-square test, with $\alpha = 5\%$, the value $p < 0.05\%$ being considered statistically significant.

Results. Out of 105 respondents, 58% are between 20-30 years old, 63% have practiced dentistry <5 years, 62% have specialized in general dentistry and 86% have practiced dentistry in the urban area. Between the age, respectively the years number of dentists practice and their answers, the Chi square test ($\chi^2 = 58.63$, $p = 0.003$, respectively $\chi^2 = 58.38$, $p = 0.0004$) revealed a statistically significant correlation. Between the specialization, respectively the study participants dental offices locations and their answers, the Chi square test ($\chi^2 = 20.05$, $p = 0.99$, respectively $\chi^2 = 7.14$, $p = 0.98$) did not show a significant statistical relationship.

Conclusion. The assessment of dentists' knowledge regarding the denture stomatitis revealed a moderate interest, the participants' answers being influenced by age and number of years of dental practical experience.

OR - 16

Oral administration of *Porphyromonas gingivalis* to diet-induced obese mice impairs cognitive function

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Background/Aim. Increasing numbers of individuals with neurodegenerative disease such as dementia has become a worldwide social problem, while no fundamental treatment has been established. In addition to heredity and aging, various acquired and environmental factors are likely involved in dementia development, though details of their complex interaction mechanisms remain largely unknown. Periodontal disease was recently found to be an Alzheimer's disease risk factor, with related inflammatory response possibly involved in cognitive dysfunction caused by periodontal disease. Obesity is also associated with Alzheimer's disease and when regulation of adipokine production secreted from fat becomes disrupted, chronic inflammation with microglial activation can be observed in the brain. The

present study was conducted to examine the effects of periodontal infection on cognitive function in obese individuals, focusing on the role of microglia in the brain.

Methods. For a mouse model of diet-induced obesity and periodontitis, C57BL/6J male mice were fed a high-fat diet with 60% lipid calories *ad libitum* for 18 weeks from 12 weeks of age. Next, *Porphyromonas gingivalis* (Pg) was inoculated intraorally twice a week for six weeks [1] to induce periodontitis in obese mice.

Results. The obese and periodontitis mice group showed cognitive dysfunction, while immunohistochemical analysis findings indicated that cell body size of microglia was increased in the hippocampus, suggesting microglial activation.. Depletion of microglia by use of PLX3397, a colony-stimulating factor 1 receptor inhibitor, improved cognitive dysfunction in that group. Furthermore, gene expression of tight junction proteins responsible for the barrier function of the cerebral blood barrier revealed decreased levels of ZO1 and Occludin in the hippocampus of obese and periodontitis mice.

Conclusion. These results suggest that in individuals with an obese condition, microglia in the brain are involved in cognitive dysfunction caused by periodontitis infection, leading to a decrease in function of the brain-blood barrier.

OR - 17

Effects of Implant Number and Splinting Status on Peri-Implant and Distal Edentulous Area Strains in Mandibular Overdentures Supported by Ti-Zr Roxolid Mini-Implants: In Vitro Study

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Background/Aim. The Ti90Al6V4 alloy mini-implants (MDIs) are successfully used for overdenture (OD) retention in atrophied mandibles. This study investigates effects of splinting of two, three, or four new Ti-Zr (Roxolid®) alloy MDIs retaining mandibular ODs on peri-implant and posterior edentulous area strains in vitro.

Methods. From the CBCT scans of a convenient patient (atrophic mandible) mandibular models mimicking D2 bone density were digitally designed and printed. Two, three or four Ti-Zr MDIs were inserted in each model, either as single-units or splinted (with a bar). Strain gauges were bonded on the vestibular and oral peri-implant sites, and on posterior edentulous areas under the denture. The artificial mucosa was 2 mm thick. The ODs were attached to single-unit MDIs by original attachments (1200g PEEK inserts), and with plastic clips (CEKA) to splinted MDIs. Loads (50-300 N) were applied through the metal plate positioned over the OD's artificial teeth bilaterally, unilaterally (first artificial molars) and anteriorly (incisors). Loadings were repeated 15 times. Means, standard deviations and significance of the differences between registered microstrains, dependent on the loading forces,

loading position, and splinting status were analyzed (two- and three-factor MANOVA; SPSS software).

Results. More inserted MDIs elicit lower peri-implant microstrains ($P<.01$), independent on the splinting status ($P>.05$). Higher microstrains were obtained under higher forces and unilateral loadings, followed by bilateral and anterior loadings ($P<.01$). In the two-MDI models high forces elicited peri-implant microstrains over 3000 ϵ , independent of splinting, exceeding bone reparatory mechanisms. Splinting elicited only lower microstrains in edentulous areas under high loads ($P<.01$).

Conclusion. In the 3- and 4-MDI models, periimplant microstrains were similar and far beyond 3000 ϵ , independent of splinting. Reduced posterior edentulous area microstrains under high loads by splinting, suggest lower rates of bone atrophy. High microstrains elicited by unilateral loadings point out the importance of bilateral chewing.

OR - 18

High maximum occlusal force affects frequency of denture adjustment

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Background/Aim. In clinical practice, patients might complain about denture pain and other problems due to excessive occlusal force. However, no study had evaluated the relationship between occlusal force and denture problems. This study aimed to clarify the relationship between maximum occlusal force (MOF) and the frequency of denture adjustment in denture-wearers.

Methods. This study investigated 140 removable dentures of 90 older denture-wearers (36 males, 54 females, mean age 77.6 \pm 7.1) who had regular dental maintenance at Niigata University Hospital. MOF was measured using a sensor sheet (Dental Prescale II, GC). Oral conditions such as the number of remaining teeth and occlusal support, and denture design such as the number of artificial teeth, were recorded. The frequency of denture adjustment (excluding denture repairs and relines) due to subjective or objective symptoms in the past one year was investigated from the medical records. The frequency of denture adjustment and MOF were divided into two groups by upper quartile. After dividing the removable dentures by Eichner classification (AB group /C group), the factors that affected the frequency of denture adjustment were analysed by two-group comparison and multiple logistic regression analysis. This study was approved by the Ethics Committee of Niigata University (2023-0199), and all authors declared no conflict of interest.

Results. In the patients of Eichner C group, the frequency of denture adjustment was significantly higher in the higher MOF group, and there was no significant difference in those of Eichner AB groups. Factors associated with a higher

frequency of denture adjustment were higher MOF (OR=8.88) and denture location (mandible) (OR=5.90) in patients of Eichner C group.

Conclusion. In the patients without occlusal support of remaining teeth, MOF was found to be a factor affecting the frequency of denture adjustment, suggesting that MOF should be considered in denture treatment.

OR - 19

Evaluation of opiorphin and neural growth factors in saliva of elderly dental patients with and without type 2 diabetes mellitus

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Background/Aim. Diabetic peripheral neuropathy (DPN), salivary glands dysfunction and intraoral sensory perception changes are common diabetic neural complications in ageing population. For neural tissue homeostasis, neural growth factors such as brain-derived neurotrophic factor (BDNF), glial cell line-derived neurotrophic factor (GDNF) and nerve growth factor (NGF) are especially important. Also, salivary opiorphin plays important role in nociceptive signaling in orofacial region. Although type 2 diabetes mellitus (T2DM) alters their concentrations in plasma and peripheral tissues, is still unknown what are T2DM-induced alterations in saliva. Present study aimed to investigate BDNF, GDNF, NGF and opiorphin presence and concentrations in unstimulated whole saliva (UWS) of older T2DM patients; and correlations among investigated signal molecules, salivary flow rate (SFR) and DPN.

Methods. Study sample consisted of 24 patients, both sexes, aged 71.12 ± 7.62 years, divided into controlled T2DM group (12) and non-T2DM group (12). UWS samples were collected by spitting method and SFR was calculated. Salivary BDNF, GDNF, NGF and opiorphin evaluations were performed by ELISA.

Results. DPN was significantly more prevalent in T2DM group compared to non-T2DM ($p=0.005$). SFR was similar between investigated groups ($p=0.686$). Salivary opiorphin concentrations did not differ between groups ($p=0.557$), but were strongly negatively correlated with SFR. Neural growth factors were more frequently detected in T2DM patients saliva than in non-T2DM (BDNF 50% vs. 16.7%; GDNF 41.7% vs. 25%; NGF 33.3% vs. 16.7%), but significant differences in their concentrations between groups were not observed. Significant positive correlation was observed between salivary GDNF and DPN presence.

Conclusion. Salivary opiorphin concentrations are not significantly different in elderly patients with and without T2DM. BDNF, GDNF and NGF are more frequently detected in unstimulated whole saliva of elderly patients with T2DM, although it seems that T2DM does not affect their salivary concentrations. Salivary GDNF concentrations are positively correlated with diabetic peripheral neuropathy presence.

OR - 20

Oral health, prosthetic treatment and comorbidity at geriatric population in Republic of Macedonia

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Background/Aim. New approach to geriatric patients is not only understanding the physical, but also the social and psychological aspects of the oral health as a connective part of the general health and the quality of life. Comorbidity conditions are important co-factors for oral health and quality of life. The aim of this study was to evaluate the oral health, prosthetic treatment and present comorbidities at geriatric patients in Republic of Macedonia and their influence to the quality of life.

Methods. The study was conducted among 165 institutionally sheltered patients at Gerontology Institute (inspected group – IG) and 170 patients from the dental specialist clinics (control group CG) at age 65 and older.

Oral health status was evaluated by oral examination and filling the WHO oral health evaluation form, and GOHAI indicator was used to examine and determine the quality of life of the patients.

Results. It was determined that patients with upper and lower total dentures dominate in both groups (43,6% in IC and 26,5% in CG respectively). Patients from both groups with positive history of chronic diseases had highly significant higher total mean GOHAI scores than those without. IG Patients had significant differences in relation to the physical and psycho-social functioning, while CG patients had significant differences in relation to all three dimensions of quality of life.

Conclusion. Oral health and quality of life at geriatric patients are at unsatisfactory level, and patients in both groups with and without comorbidity had significant differences in terms of physical and psycho-social functioning.

OR - 21

Masticatory behaviours change after prosthodontic treatment with dentures: a pilot study

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Background/Aim. In a clinical practice, masticatory performance was often assessed for the effect of prosthodontic treatment. Though masticatory behaviours, such as the number of chews or chewing rate, may also change after prosthodontic treatment, few studies had been reported. This study aimed to investigate the changes in masticatory behaviours after prosthodontic treatment.

Methods. Seven patients (2 males and 5 females, 72.0 +/- 7.6 years) who had prosthodontic treatment for new dentures fabrication participated. Two patients had posterior occlusal support (PO) and five didn't. Before and after prosthodontic treatment, the number of chews and chewing rate when consuming a rice ball (100g) were measured using a wearable chewing counter. The masticatory performance using a gummy jelly and occlusal force were also assessed. This study was approved by the Ethics Committee of Niigata University (approval no. 2019-0295). There is no COI to disclose.

Results. Masticatory performance improved in all patients except one patient, and occlusal force increased in all patients after treatment. The number of chews and chewing rate during a rice ball consumption in the patients without PO tended to increase after new denture insertion compared to those before treatment. It was speculated to be because before prosthodontic treatment, the patient swallowed without sufficiently comminution, but with new fabricated dentures, they could chew sufficiently and smoothly. However, the number of chews and chewing rate decreased in the patients with PO. Improved masticatory performance could reduce the compensatory chews. Since changes in masticatory behaviours by prosthodontic treatment may be influenced by various factors, such as oral function and the extent of the defect, it will be necessary to increase the number of participants in the future analysis.

Conclusion. This study suggested that masticatory behaviours changed with prosthodontic treatment, but this might depend on conditions such as occlusal support.

OR - 22

Antibiofilm effect of PMMA dentures reinforced with nanogold

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Background/Aim. Local infections are common in elderly patients with dentures, due to the easy accumulation of biofilm on PMMA surface. According to antibacterial properties of gold nanoparticles (GNPs), we wanted to improve PMMA surface by adding GNPs. The aim was to determine if there is antibiofilm effect in composite

PMMA/GNPs, compare it to conventional PMMA and examine whether it is stable over time. Concentration of GNPs was 1 g/l.

Methods. Samples were in form of discs identical shape and diameter. Pure PMMA was used as a control group. Four types of monomicrobial biofilms were formed in RPMI 1640 medium and incubated statically at 37°C in aerobic conditions for 24 h. Antibiofilm activity was analyzed by counting the number of colony forming units (CFU) on discs and the solution around the discs, as well as by performing MTT (3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyl tetrazolium bromide) assay on discs.

Results. The amount of biofilm formed on the PMMA/AuNPs discs was significantly lower by both methods, CFU ($p=0.013$) and MTT ($p=0.003$). On the other hand, the number of CFU of the solutions did not show statistical difference between the two materials ($p=0.909$).

Conclusion. PMMA/GNPs is shown improved antibiofilm properties, and could be interesting for the prevention of denture stomatitis.

OR - 23

The effects of non-surgical periodontal therapy in patients with systematic sclerosis

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Background/Aim. Systemic sclerosis is a rare autoimmune disease marked by vasculopathy and tissue fibrosis, typically manifesting in females aged between their sixth and seventh decades. Due to the high prevalence of periodontitis in patients with systemic sclerosis, systemic sclerosis is classified as a systemic disease that can have an impact on the destruction of periodontal tissues. The assessment of clinical periodontal status, and markers of systemic inflammation in serum (C-reactive protein, and erythrocyte sedimentation rate) in systemic sclerosis patients with periodontitis, and systemically healthy patients with and without periodontitis, before and after the completion of non-surgical periodontal therapy.

Methods. The study included 20 patients with systemic sclerosis and periodontitis (SSc group), 20 systemically healthy patients with periodontitis (P group), and 20 systemically healthy patients with healthy periodontium (C group). Clinical periodontal parameters (probing depth, gingival margin level, clinical attachment level, gingival bleeding on probing, and plaque index), and systemic inflammation markers (C-reactive protein, erythrocyte sedimentation rate) in the blood were evaluated at the initial examination and two months after the completion of non-surgical periodontal therapy.

Results. Non-surgical periodontal treatment in individuals in the SSc group resulted in a significant reduction in mean values of bleeding on probing and plaque index ($p = 0.008$ and $p \leq 0.001$). Also, a significant reduction in the values of serum C-reactive protein ($p \leq 0.001$) and erythrocyte sedimentation rate ($p \leq 0.001$ and $p = 0.02$) was detected within the SSc and P groups two months after the non-surgical therapy of periodontitis.

Conclusion. Non-surgical periodontal therapy significantly resulted in diminishing both the clinical periodontal parameters and systemic inflammation markers in individuals with systemic sclerosis and concurrent periodontitis. This underscores the importance of integrating periodontal treatment into the management of systemic sclerosis.

OR - 24

Implant – prosthodontic therapy in old age – risk factors for implant failure

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Background/Aim. Aging is directly related to majority of factors that cause tooth loss. The rapid development of oral implantology has contributed to the increasing popularity of implant-prosthodontic therapy in old age. The specificity of oral rehabilitation in people over 65 years old is difficult because dental pathology is often associated with overall health deterioration. Some studies indicated that implant failures are frequently occurred in this population. The goal of this research was to identify risk factors for dental implant failure in elderly patients undergoing implant-prosthodontic therapy.

Methods. This cross-sectional study included 38 patients older than 65 years with a total of 168 implants followed-up for 1- 22 years after implant surgery. Independent variables related to the implant, patient, surgical and prosthodontic procedures were identified. The dependent variables were survival and failure rate of dental implants. Assessment of implant survival and failure rate was carried out by applying the Kaplan-Meier model (significance for $p < 0,05$). Finally, the regression logistic model was used to determine whether it is possible to predict the risk of implant failure according to the analyzed variables with the data obtained in this study.

Results. The implant survival rate at the end of the ten-year follow-up period was 94.3% involving a total of 8 implant failures. Implant loss was significantly greater in patients aged 85 and over, in the group of implants where follow-up period was longer than ten years and among implants restored with removable protheses. The risk of implant loss was multiplied more than 20 times by dental plaque presence and 1200 times by bruxism.

Conclusion. It was concluded that advanced age alone is not a contraindication for implant therapy but the indicated risk factors should be considered throughout treatment planning and maintenance.

OR - 25

Determination of biochemical inflammatory indicators after complete denture insertion

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Background/Aim. The aim of this study was to measure the activity of salivary myeloperoxidase and concentrations of salivary tumor necrosis factor (TNF)- α as indicators of inflammation, and salivary immunoglobulin E as an indicator of allergy, after complete acrylic denture insertion.

Methods. This study included 6 male patients, aged 70–75 years with indication for upper and lower complete acrylic dentures. Saliva samples were taken immediately before they were given to the patients, as well as 2, 3, 7, and 30 days after insertion of the dentures, with simultaneous monitoring of changes in the oral mucosa.

Results. No statistically significant differences between the values of the tested parameters during the study period and prior to denture insertion were recorded. The mean values of myeloperoxidase were higher after 7 days, and the mean levels of tumor necrosis factor- α were higher after 7 and 30 days. No changes were seen in the levels of salivary immunoglobulin E during a 30-day observational period. After a 30-day observational period, no oral mucosal lesions were noted in the mouth of the patients.

Conclusion. Nonsignificant increase in levels of salivary myeloperoxidase, tumor necrosis factor- α and immunoglobulin E were seen as indicators of inflammation after 7 and 30 days of wearing upper and lower complete dentures, in a uniform group of patients. The study of the biochemistry of inflammatory patterns in the lesions of the oral cavity is of considerable importance for monitoring changes in oral mucosa in malignant transformations, which is of significance for clinical practice.

OR - 26

Oral health related quality of life and psychosocial impact of oral status in older people in Zagreb, Croatia

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Background/Aim. Malnutrition, inadequate food intake, inability to chew and one's undermined physical condition are problems which encounter older people with poor oral health. The problem of chewing goes beyond just nutritional aspect and is also related to impaired chewing cognitive function. Loss of teeth greatly affects the psychosocial state of the individual and can lead to violation of self-confidence, decreased social interactions and depression. The quality of life is a multidimensional, mental and complex concept that harbors all aspects of life, a unique individual understanding, and a way of expressing a person's feelings about health or other aspects of life, reviewed through an expression of people's beliefs and using standard tools.

Methods. This cross-sectional research was conducted as part of a volunteering public health promotion and free oral health exams of individuals of older age. A questionnaire was used to record demographic data, OHIP-14, and SIQ modification. In addition, calibrated students under the supervision of senior clinicians performed oral examination and recorded clinical data (DMFT and PSR).

Results. 38 participants participated in the study (71,1±6.6 years, 57% female). The mean OHIP-14 score was 12.03±10.61, with a significant difference between women and men, 15.62 and 7.69, respectively ($p<0,05$). The mean mSIQ was 10.53±3.52. SIQ positively correlated with DMFT index (0,390, $p=0-017$).

Conclusion. This study involving 38 individuals highlighted a significant difference in oral health related questions between genders. Women reportedly scored doubled the OHP-14 score compared to men. Also, positive SIQ correlation with DMFT index indicates the importance of better understanding oral health concerns in ageing population.

OR - 27

A new questionnaire for rating oral health-related quality of life in older patients wearing dentures

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Background/Aim. Oral health is a part of general health and is affected by different oral states and diseases. They have specific impacts on patients and are represented by the concept of oral health-related quality of life (OHRQoL). Prosthetic rehabilitation of older patients is usually carried out using dentures, which often may affect the personal attitude of the patients and their satisfaction with oral health and the prosthetic treatment. For rating patients' satisfaction and complaints on wearing dentures and quality of life there are various scales and questionnaires. Until now, there was not a single instrument of this type in the Serbian language. This study aimed to develop and validate a reliable questionnaire suitable for measuring OHRQoL in older patients wearing dentures.

Methods. This cross-sectional study was conducted at the Faculty of Medical Sciences, University of Kragujevac, and assessed the reliability and validity of a newly developed questionnaire for rating OHRQoL in older patients wearing

dentures. The sample size included 200 older adults from Serbia, and all of them were wearers of complete or removable partial dentures.

Results. Mean age of included patients was 66,9±10,3 years, male/female ratio in the study was 86/114 (43%/57%). The definitive version of the new scale with 28 items showed very good reliability, Cronbach's alpha was 0,938. Good temporal stability of the questionnaire was demonstrated, and satisfactory results were obtained for divergent and convergent validity tests. Exploratory factorial analysis revealed four domains of OHRQoL: physical, psychosocial, environmental and aesthetic.

Conclusion. The new questionnaire is reliable and valid generic instrument for rating OHRQoL in older patients wearing dentures; it can be used not only for research purposes, but also in routine clinical practice for measuring the quality of life of individual patients, which is one of the most important outcomes of oral health in prosthetic treatment.

OR - 28

Extraoral implant stability in elderly patients

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Background/Aim. Good implant stability is essential to achieve stable prosthetic rehabilitation. This is one of the demands for oral as well as extraoral implants. Apart from primary implant stability it is important to achieve definitive implant stability through osseointegration, which consists of bone remodeling and bone resorption, influenced by osteoclasts and osteoblasts. At age 35 the number of bone reparatory cells in craniofacial bones starts to decrease. In elderly patients, reparatory mechanisms are slower and less potent, healing period is longer and overall implant stability is not as high as in young patients. Hypothesis is that in the elderly patients (60+) due to lower osseointegration capacity definitive EO implant stability will be lower compared to younger patients. The aim was to assess the difference in EO implant stability between young and elderly patients over time.

Methods. Implant stability was measured between two groups Y -young (24-35) and E -elderly (60-75) patients. 24 screw EO implants (Smart², Ihde Dental AG, Switzerland - diameter 4.1 mm; 4 mm length) were placed in petrous part of temporal bone, 12 in young patient group (Y) and 12 in elderly patient group (E). Implant stability quotient ISQ was measured by resonant frequency analysis -RFA, with Ostell mentor (Sweden), immediately, after 3 and after 6 months.

Results. immediate stability was similar comparing groups (Y=60 vs E= 55 stability; 5% difference). After 3 months, difference (Y=68 vs E=59) was slightly higher (9%). Stability after 6 months (Y=79 vs E=65) difference (14%).

Conclusion. there is a difference in stability between the two groups, which increases over time. Initial primary stability is somewhat similar in young and elderly patients but stability after osseointegration showed lower values in elderly patients which proved the hypothesis that lower reparative bone capacity in elderly patients will result in lower definitive EO implant stability.

OR - 29

Oral hygiene habits in older adults in Zagreb, Croatia

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Background/Aim. Aging is characterized by many physiological and pathological changes that greatly affect the ability to properly maintain oral hygiene. Loss of motor control and decline in cognitive ability in older population all contribute to the decline of oral health, and thus the decline of overall quality of life. The study aimed to evaluate oral hygiene habits in the older population in Zagreb, Croatia.

Methods. This research was conducted by students as part of the Geronto Project, which is a volunteer academic student initiative. The study included individuals from a community association of retirees, as well as five nursing homes in Zagreb, Croatia. The data was recorded through a questionnaire and included information on demographics, health and oral health. The student volunteers performed comprehensive oral examinations under supervision of senior clinicians.

Results. 114 individuals were included in the research, of which 93 were residents of nursing homes, and 21 respondents were retirees. 72.8% of respondents use toothpaste and a toothbrush at least twice a day or more often. Most respondents do not use oral hygiene aids. Dental floss is not used by 90.4%, mouth wash by 75.4%, tongues are never brushed by 57.9% of respondents, and interdental brushes are not used by 92.1%. Almost half of the respondents (46.5%) stated that they change their brush every 3 months or more often, 31.6% of them every 6 months, while 21.9% change their brush in over 6 months.

Conclusion. The oral hygiene of the respondents is almost completely reduced to the use of toothbrush and toothpaste, while most of them never use tools for interdental hygiene. The results of this research indicate less than satisfactory oral hygiene habits.

OR - 30

Geronto project – 14 years of volunteer-based initiative improving oral health of Croatian older age groups

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Geronto project (Cro. *Geronto projekt*) is volunteering-based student initiative, originally established in 2010. at the School of Dental Medicine, University of Zagreb. The main incentives were the lack of formal oral health programs and disparities in oral health access in the older age groups in Croatia. All Project activities and students' training are led and supervised by academic mentors and specialists in dental prosthodontics and periodontology. The Project's activities are divided into education, clinical activities and research, focusing on both institutionalized and non-institutionalized elderly individuals. Education activities encompass public events organization aiming to raise awareness about oral health of elderly among general population, and education of elderly and their caregivers. Lectures tailored to seniors on topics such as oral hygiene, nutrition, oral diseases, and conditions are given during long-term care facility visits. The Project has also produced a series of educational pamphlets. Clinical activities include oral health examinations provided by trained and supervised students and oral health counselling. Data collected through the Project's research activity has already been presented at local and international congresses. It also presents the most recent insight into oral health among the older age groups in Croatia. Academic value of this initiative has been recognized, having been awarded with Rector's award twice, in 2012/2013 and 2019/2020.

On the World Oral Health Day 12.03.2024. also "Geronto Day" was inaugurated. Divided into two teams, students invited passersbys for preventive oral examinations at Zagreb's public square, while other conducted examinations and directed patients for further treatment at the Dental Faculty's Departments.

OR - 31

The influence of different factors on dental students' ageist attitudes

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Background/Aim. Ageism can negatively affect treatment planning and can substantially impair quality of life of elderly patients. Therefore, every effort should be made to help dental students become aware of ageist attitudes and age-related stigma. In this study, we evaluated the influence of various factors on the presence of dental students' negative attitudes about treating elderly patients.

Methods. A cross-sectional study was conducted during the 8th and 10th semesters at the School of Dental Medicine, University of Belgrade. The Serbian version of an ageism scale for dental students (ASDS-Serb questionnaire) consisted of 17 items.

Results. The research included 129 students (35.7% male and 64.3% female), with an average age of 23.2±1.2 years. A logistic model was conducted to evaluate seven independent factors (gender, age, semester of studies, experience, place of residence, having elderly family members, and living with an elderly). The main factor determining whether a person will exhibit a negative attitude towards treating elderly patients is the semester of studies (OR 3.16; 95% CI [1.03, 9.71]; p = 0.045). The analysis showed that 68% of respondents attending the 10th semester are less likely to have ageism.

Conclusion. Although the findings indicate potential ageism in dental students, students are, however, aware of the need for a training in effective communication with the elderly, along with an advanced training in geriatric dentistry. Clinical experience of working with the elderly reduces the possibility of holding prejudices against this population.

OR - 32

Arterial blood pressure alterations in geriatric patients during routine tooth extraction

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Background/Aim. During tooth extraction, the majority of the patients develop psychological stress that is followed by subsequent blood pressure modifications. These findings may be particularly important in the geriatric population, where the symptomatic, as well as asymptomatic blood pressure elevations are common. The present research aimed to assess the parameters that potentially influence blood pressure alterations in geriatric patients during routine tooth extraction.

Methods. The prospective clinical study included a total of 60 patients requiring single tooth extraction. In all the cases, 4% articaine with epinephrine 1:100.000 was applied. Systolic and diastolic blood pressure values were registered prior to anesthetic application and after tooth extraction. The patient's age, the amount of anesthetic solution, and the duration of intervention were noted.

Results. The average patients' age was 67.63 ± 2.99 years. After extraction, blood pressure decreased: systolic -4.7 ± 13.95 mmHg and diastolic -4.9 ± 10.86 mmHg. From the tested parameters, only baseline blood pressure was significantly associated with the changes in blood pressure after the extraction (Systolic: $r = -0.456$, $p < 0.001$ and diastolic: $r = -0.496$, $p < 0.001$).

Conclusion. Proper regulation of blood pressure before tooth extraction is a critical factor in maintaining adequate control of blood pressure during intervention.

OR - 33

Analysis of anatomical characteristics of lingual foramen in elderly patients using CBCT

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Background/Aim. The region between the two mental foramina must receive more attention, especially regarding the anatomical structures present in this region. The lingual foramen (LF) is a small hole on the lingual surface of the mandible, most often localized in the middle of the anterior part of the mandible, which shows considerable variation in localization, size and number. With atrophy, due to dominant vertical resorption of the mandible, the height of the edentulous ridge decreases, and the crest approaches the LF thus putting the vascular bundle in peril of being cut. The aim of this study was to analysis of anatomical characteristics of LF in elderly patients using CBCT.

Methods. In this retrospective study, a total of 204 CBCT scans of elderly patients in the Institute of Dentistry at the Faculty of Medical Sciences, the University of Kragujevac were analysed. The CBCT images were made in the X-ray room of the Institute of Dentistry at the Faculty of Medical Sciences of the University of Kragujevac. In these CBCT images, were analyzed number of LF, their location, foramen diameter.

Results. This study included 98 male and 106 female patients, with an average age of 68.36 years. The lingual foramen was detected in all patients. The average number of lingual foramina per patient was 2.78. Most patients had one or two lingual foramina. Of the total number of lingual foramina, only 17% belong to the lateral lingual canals (the region of molars and premolars), while 83% belong to the medial lingual canals (the midline and the region around it). The average diameter of the lingual foramen was 0.87 mm.

Conclusion. Implantologists should be familiar with this anatomical structure, which must be taken into account when planning implantological treatment, especially at elderly patients.

OR - 34

Epidemiological Trends in Facial Fractures Among the Elderly: A Five-Year Retrospective Analysis of Trauma Experience at School of Dental Medicine University of Belgrade

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Background/Aim. The global population of individuals over 65 years old has been steadily increasing. Consequently, the epidemiology and etiology of facial fractures are undergoing a notable shift, marked by a rising frequency of craniofacial trauma among elderly. Understanding these new aspects can significantly enhance the diagnosis, treatment, and prevention of facial fractures. The objective of the present study was to assess the demographic variables, causes, patterns, comorbidities and treatment of facial fractures in the elderly population treated at the Clinic of Maxillofacial Surgery, School of Dental Medicine, University of Belgrade, Serbia.

Methods. This retrospective epidemiological study gathered data from medical histories of patients over 65 years of age treated from January 2019 until January 2024 due to facial trauma. Gender, age, cause of injury, comorbidities, voluptuary habits, location of fractures, and type of treatment were recorded for each individual.

Results. A total of 79 patients were included in this study (44 men and 35 women) aged 70.3 ±5.86 years. Sixty-one patients (77.2 %) presented with one or more comorbidities. The predominant cause of injury was a fall (67.1%), followed by assault (17.7%). The most frequently fractured bones were the zygomatic bone (48.1%) and the lower jaw (19%). Over half of the patients underwent surgical intervention (54.4%), while the remainder, due to minimal functional impairment, limited bone fragment displacement, and comorbidities, received conservative treatment (36.7%) or were left untreated (8.9%).

Conclusion. The prevailing fracture seen in both male and female patients receiving treatment was the zygomatic bone, often linked to falls. Notably, male patients exhibited a significant rise in fractures due to assaults. This restricted study emphasizes the importance of up-to-date epidemiological data. The investigation of facial trauma among older adults emerges as an expanding research area, especially considering the ongoing demographic aging trend in developed countries.

OR - 35

Gene expression patterns in elderly patients diagnosed with oral potentially malignant disorders

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Background/Aim. Oral potentially malignant disorders (OPMDs) represent a group of heterogeneous lesions that have an increased risk of progression to oral squamous cell carcinoma (OSCC) [1]. Factors that lead to a malignant transition remain unknown. Mitogen-Activated Protein Kinase 14 gene (MAPK14) stimulates cell proliferation and invasion, and the Mammalian Target of Rapamycin gene (mTOR) inhibits cell apoptosis and stimulates cell growth [2,3]. The aim of the study was to evaluate the expression of these two genes in different age categories in patients with OPMDs.

Methods. 30 patients with histopathological diagnoses of OPMDs were enrolled in the study. 19 patients were under the age of 65 (Group A), and 11 patients were over 65 years old (Group B). During the incisional biopsy, a part of the tissue sample was separated and RNAlater stored. RNA was extracted, and Taqman-based real-time PCR was performed in order to estimate gene expression values of MAPK14, mTOR, by means of the relative quantity compared to glyceraldehyde 3-phosphate dehydrogenase (GAPDH) expression which has been used as a control gene.

Results. The OPMDs consisted of 22 leukoplakias, five sublingual keratoses, two erythroleukoplakias, and one erythroplakia. Group B showed a statistically significant difference in MAPK14 and mTOR genes expression compared to group A ($p = 0.23$ for both).

Conclusion. Patients over 65 with OPMDs showed upregulated expression of MAPK14 and mTOR genes. These patients might have an increased risk of progression from OPMDs to OSCC since MAPK14 both genes are involved in stimulation of carcinogenesis.

OR - 36

Dental Specialty Perspectives on Implant Eligibility Criteria for Geriatric Patients: A Qualitative Assessment

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Background/Aim. The older population is increasing, and along with it, the prevalence of systematic and degenerative diseases and related medications increase susceptibility to oral health issues. Conversely, the elderly increasingly seek quality dental care, particularly in teeth replacement, often opting for dental implant-supported restorations. This study aims to establish criteria for dental implant therapy in geriatric patients (≥ 65 years old) across various specialties.

Methods. Literature database and hand searches were performed to identify common health conditions and oral factors among elderly patients and their effects leading to dental implants therapy plan and implant therapy success rate among this age group. A survey comprising 43 questions was conducted to gauge the opinions of specialists regarding eligibility criteria.

Results. The results, drawn from 20 respondents across different specialties from Serbia and Iran, highlighted Osteoporosis, Autoimmune diseases, Diabetes, and cardiovascular diseases as major systemic concerns among geriatric patients. Periodontal diseases and tooth loss emerged as prevalent oral health issues in this demographic. Financial considerations, including cost-benefit ratio, overall patient health, bone density, and patient knowledge, were identified as crucial factors in devising implant therapy plans. Despite these challenges, dental implant therapy was frequently recommended for geriatric patients.

Conclusion. In conclusion, this study highlights the significance of dental implant therapy for geriatric patients, despite the presence of common systemic diseases associated with aging. Through an analysis of literature and survey responses from various specialties, it is evident that age alone should not be a deterrent for elderly patients seeking dental implant-supported restorations. Rather, consideration of factors such as systemic health conditions, oral health status, bone density, financial considerations, and patient knowledge is essential in treatment plans. The consensus among professionals underscores the importance of interdisciplinary collaboration and patient-centred care in meeting the increasing demand for dental implant therapy among the elderly population.

OR - 37

The intricate pathway between chronic diseases, medications and oral health and moisture: A preliminary cross-sectional report

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Background/Aim. The aim of this study is to describe the oral status of hospitalized old adults and to better understand the pathways between polypharmacy, comorbidities and the oral moisture.

Methods. Patients >65 years with at least one respiratory symptom, one finding compatible with an infection, were included (1). The number of chronic diseases and the number of therapeutic drugs administered daily were recorded. A comprehensive oral examination was conducted in 3 hospital sites in Switzerland including oral moisture measurements (Mucus®; Life Co., Ltd., Saitama, Japan) and when below 27, the patient was categorized as having oral dryness (2). Logistic regression was used to model the probability of oral dryness as a function of various therapeutic drugs, controlling for other factors (age, number of teeth) using a statistical software.

Results. 111 patients were included, with a mean age of 81.6±8.0. The mean number of comorbidities were 2.2±1.5 and on average a mean of 7.5±4.0 medications were taken daily. 14.4% of the subjects had complete dentures in upper and lower jaws. The mean number of remaining teeth was 16.6±9.1. The oral moisture measurements (M 26.7±SD 8.6) indicated that 52.8% of the patients had oral dryness. The odds of having oral dryness are 2.95 higher for those who are taking antidiuretics compared to those not taking them (B=1.08, SE=0.55, wald=3.89, p=0.48, OR=2.95). Other drugs did not show significant associations with oral dryness. The regression analysis showed that for each additional year of age, the moisture measurement decreases by 0.23 units, reflecting an increase in oral dryness (B=-0.23, SE=0.115, p=0.04).

Conclusion. These findings call attention to the intricate connections between polypharmacy, multiple chronic diseases, and oral health in old, hospitalized patients. Clinical trials exploring causality between the use of antidiuretics and increased oral dryness should be conducted.

OR - 38

Type 2 diabetes mellitus-induced changes of vascular and inflammatory markers in stimulated whole saliva of elderly dental patients - protein and gene expression levels

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Background/Aim. Type 2 diabetes mellitus (T2DM)-induced vascular complications in elderly are present in salivary glands, manifesting as salivary glands dysfunction and xerostomia. Vascular endothelial growth factor (VEGF), interleukin-6 (IL-6) and interleukin-17 (IL-17) are considered serum and tissue markers of vascular and inflammatory changes in T2DM. However, the extent of

T2DM-induced changes in their salivary levels is still unknown. The aim of this study was to investigate and compare VEGF and IL-6 protein concentrations and VEGF, IL-6 and IL-17 relative gene expression levels in stimulated whole saliva (SWS) of elderly patients with and without T2DM, and to determine their mutual correlations.

Methods. Twenty-four patients, both sexes, aged 71.12 ± 7.62 years, were divided into groups with controlled T2DM (T2DM =12) or without T2DM (nonT2DM =12). Spitting method was used for chemically stimulated whole saliva collection. VEGF and IL-6 protein concentrations were determined by ELISA. Relative gene expression levels of VEGF, IL-6 and IL-17 were determined in SWS by reverse transcription and quantitative polymerase chain reaction.

Results. The changes in relative gene expression levels of IL-6 and VEGF did not reach statistically significant differences, while the levels of IL-17 were even similar between T2DM and nonT2DM groups. IL-6 protein concentrations in SWS were significantly higher in T2DM group when compared to nonT2DM ($p=0.032$), while VEGF protein concentrations did not differ significantly. Significant correlations were observed between presence of T2DM and IL-6 protein concentrations in SWS, as well as between relative gene expression levels of IL-6 and IL-17.

Conclusion. Although VEGF expression appears to be decreased in T2DM presence, further validation on a larger cohort is required. IL-6 protein concentrations in stimulated whole saliva are significantly increased in diabetic setting and significantly correlated with T2DM presence. IL-6 and IL-17 gene expression levels are significantly positively correlated in stimulated whole saliva.

OR - 39

Establishing the vertical dimension through the utilization of the phonetic vowels "O" and "E"

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Background/Aim. The occlusal vertical dimension holds significant importance in accurately reconstructing the inter-jaw relationship. Literature outlines various approaches for its determination, ranging from straightforward, clinically feasible methods to more intricate techniques involving one or multiple devices. This study aimed to explore the feasibility of assessing the occlusal vertical dimension using the phonetic sounds "O" and "E," while also controlling the values obtained through cognitive functions.

Methods. The investigation involved two distinct patient groups. The first group included 50 females and 50 males, aged between 60 and 70 years. Within this group, measurements were taken between reference points (a top of the nose and chin) to assess the mandible's position in the vertical dimension of occlusion, rest, and during pronunciation of the words "OLO" and "ELE." Verification of the accuracy of specific values for the word "OLO" was conducted using a phonetic method alongside cognitive exercises, wherein patients counted backwards from 89 to 80.

The variance in average values obtained for determining the vertical dimension of occlusion, "OLO," and "ELE" in the first group served as a benchmark for determining the vertical dimension of occlusion in the second group. The second group comprised 31 edentulous individuals (14 females and 17 males), aged between 54 and 85 years, who underwent full denture fabrication.

Results. The average value for the vertical dimension of rest across the entire sample was 2.16 mm. for the word "OLO," was 5.51 mm. and For the word "ELE," was 7.47 mm.

Conclusion. Determining the vertical dimension of occlusion entails subtracting 5.5 mm from the position of the mandible during the pronunciation of the word "OLO" or 7.5 mm during the pronunciation of the word "ELE."

OR - 40

Management and protocols for oral surgical interventions in older patients

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Background/Aim. The main oral diseases and conditions impacting on older people are dental caries (or tooth decay), periodontal disease (a group of inflammatory diseases of the gum, connective tissue and dental bone), tooth loss, xerostomia (dry mouth) and oral precancer/cancer lesions. Compromised oral health is associated with respiratory and cardiovascular diseases, diabetes and stroke. This study describes the oral surgical management of older people, including the preoperative assessment and considerations required for those with specific conditions and illnesses. An overview of procedural considerations and diagnoses such as osteoradionecrosis and medicine-related osteonecrosis were explained, as are measures that can be considered to reduce the likelihood of adverse outcomes. The management of older patients with an increased risk of post-procedural bleeding were elaborate. A summary of indications for oral surgery procedures on edentulous ridges was provided.

Methods. A non-invasive approach for oral surgical interventions was used, because in these patients who are with compromised health, we have to be especially careful – with minimal bone removal and constant cooling, which avoids heating the bone tissue and avoids the additional risk of bone necrosis.

Conclusion. Our choice for the application of PRF in older patients for management of oral surgical interventions was based on the benefits that PRF itself possesses: anti-inflammatory, anti-edematous and regenerative effects. Namely, PRF is an addition to the natural wound healing process and has the following effects: the fibrin network is involved in cell migration, mainly of endothelial cells necessary for

neoangiogenesis and vascularization; the healing process is further aided by the continuous release of various growth factors (PDGF, TGF- β , IGF-1 and the presence of leukocytes and various cytokines enables self-regulation of infectious and inflammatory processes.

OR - 41

The Impact of Partial Edentulism on Oral Dysphagia in the Elderly Population

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Background/Aim. The act of swallowing is carried out through three successive phases, each named according to the bolus's position within the digestive tract: the oral, pharyngeal, and esophageal phases. Damage to any of these phases leads to the corresponding type of dysphagia. Oropharyngeal dysphagia (OD) implies damage to the formation or movement of the bolus. It is present in 1% of the general population over the age of 65 and in 51% of institutionalized elderly individuals. Common risk factors for OD include: toothlessness, loss of muscle mass or function, reduced saliva production, and tissue elasticity. Partial edentulism is a syndrome characterized by the absence of one or more healthy teeth in one or both jaws. After tooth loss, pathological tooth migration, inflammation, formation of periodontal pockets, gingival recession, and root exposure can occur. The aim of this study is to review the literature and analyze studies dealing with the impact of toothlessness and periodontal diseases in the elderly on outcomes in the treatment of oral dysphagia.

Methods. Available literature was analyzed using the databases: Google Scholar, PubMed, and Scopus. Studies published from 2014 to 2024 were considered. The keywords used were toothlessness, periodontopathy, and dysphagia. Several studies meeting the criteria were selected and analyzed for the purposes of this paper.

Results. Dental status is a significant factor in the oral preparation phase of the swallowing act. For individuals diagnosed with OD, dental status is associated with the severity of symptoms. Elderly people suffering from OD often have poorer hygiene and a high prevalence of toothlessness, periodontal disease, and caries. Oral health significantly affects OD outcomes, particularly in preventing aspiration pneumonia. Oral dryness and the number of teeth can contribute to dysphagia more than aging, lifestyle, and comorbidities in adults over the age of 50.

Conclusion. Partial edentulism and the preservation of oral soft tissues are extremely important in the treatment of OD in the elderly.

OR - 42

Quality of life for Romanian denture wearers

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Background/Aim. Aging is accompanied by edentulism, usually treated by dentures, since not in all cases patients could afford an implant-prosthetic treatment. The aim of the study was to evaluate the life quality index correlated with oral health in edentulous patients who wear or not dentures.

Methods. 160 partially edentulous patients were included in the study. Each patient completed a questionnaire regarding the assessment of the quality of life related to oral health (OHRQoL index and the OHIP).

Results. 160 patients aged 65 to 95 years old (76 ± 11), 96 women and 64 men, from which 86 wear a denture, participated in the study. Most participants were married (93.33%), 53.33% from the rural environment, and 46.67% from the urban environment. 40% of the patients were high school graduates, 36.66% only general school graduates, and 23.34% college graduates. 63.33% of patients considered themselves in good health, and 33.33% of denture wearers considered ill, while 42% of participants not wearing a denture considered ill. Systemic illnesses in the study group were osteoporosis, ulcers, diabetes, cardiovascular diseases (HT, heart attack). Most patients were non-smokers (60%), and the majority had dental anxiety. All participants in the study considered dental treatment as being important, especially denture wearers, and regarding costs, most patients without denture considered dental treatments as being expensive. 66.66% patients presented symptoms of oral burns, equally in patients wearing dentures and without dentures. Oral lesions were mentioned by 20% of patients, most of them denture wearers. Temporomandibular dysfunction was mentioned by 40% of patients, manifested by noises and pain in the joint. Temporomandibular dysfunction was present almost equally in the two groups of patients.

Conclusion. The study confirmed that edentulous status was the strongest indicator of OHRQoL impairment compared to socio-demographic factors. Patient's education and wealthfare were correlated with quality of life.

OR - 43

Self-assessed chewing ability among complete denture wearers with bilateral balanced and canine-guided occlusion

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Background/Aim. The doctrinal position in prosthodontic on the occlusion of complete dentures promotes bilaterally balanced occlusion. Bilaterally balanced occlusion, among others, has been presented as a concept that improves chewing ability. The aim of this work was to compare the subjectively assessed chewing ability of subjects with the application of two concepts of occlusion - bilaterally balanced and canine guidance.

Methods. In a clinical, randomized, cross-over prospective study, 24 subjects participated, 15 female (62.5%) and 9 male (37.5%). The average age of the respondents was 62.58±5.299 years. For each subject, pairs of complete dentures were made with separately established tested concepts of occlusion. The subjects were divided into two groups, the first group first used dentures with bilateral balance, then dentures with canine guidance, and the second group in the opposite order. The groups were homogeneous according to sex, age, edentulous class and quality of the mucosa and submucosal layer. Vertical, continuous visual analogue scales were used for subjective assessment of overall chewing ability and the ability to chew specific food - bread, cheese, carrots, meat and apples. The results were statistically analyzed using the t-test for paired samples and the t-test for independent samples.

Results. Prospectively, in the group of subjects who were first rehabilitated with dentures with bilateral balanced occlusion, the subjective evaluation was higher with dentures with canine guidance for overall masticatory ability ($p < 0.001$) and ability to chew bread ($p = 0.002$). In the second group of respondents, there was no such difference ($p > 0.05$). An intergroup comparison of the results of overall chewing ability as well as chewing ability for different types of food did not find a statistically significant difference between the examined concepts of occlusion.

Conclusion. Based on the results, the claim that bilaterally balanced occlusion contributes to better masticatory ability cannot be confirmed.

CASE REPORTS - CR

CR - 1

Implant supported maxillary overdentures using OT Equator® Smart Box attachments: A report of two cases

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Background/Aim. Implant rehabilitation in geriatric patients is a viable treatment option with a high implant survival rate. Implant-supported maxillary overdentures retained by two-to-four implants are a cost-effective treatment option for edentulous patients. This treatment improves the stability and retention of the maxillary complete denture and patients' masticatory function compared with conventional removable dentures. The performance of implant-supported overdentures depends on the retentive capacity of the attachment system employed, providing forces that are strong enough to prevent overdenture displacement. The OT Equator® attachment consists of a titanium male abutment with a hard coating of titanium nitride and a semispherical ball attachments that supports a stainless-steel retentive cap housing nylon retentive inserts available with four levels of retention. The OT Equator® Smart Box is a container of caps with an innovative design which, thanks to a tilting mechanism with a rotation fulcrum, allows for the passive insertion of the attachment even in conditions of implant divergence up to 50°, which is of great importance in the cases of maxillary rehabilitation. This case report aimed to evaluate the retention force of the OT Equator® Smart Box attachment system for maxillary overdenture.

Case report. Two patients, one male (70 years old) and female (67 years old), with edentulous upper and lower jaw respectively, both with good general health, underwent dental implant placement surgery. Four implants were placed in the maxillary intercanine sector. After 6-months the implants were uncovered. The patients were rehabilitated with Equator® Smart Box attachments and overdentures. During 6 month follow-up period both patients were satisfied with form, function and esthetics.

Conclusion. Smart Box® is an abutment container that allows passive insertion even in extreme divergences up to 50° which allows predictable and safe rehabilitation. The dentures on these attachments are stable during chewing and talking which significantly improves the patient's quality of life.

CR - 2

Bar-retained implant overdenture in edentulous patient with excessive mandibular resorption

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Background/Aim. The main issue in edentulous patients is excessive alveolar bone resorption after tooth loss, the degree of which is usually higher in the lower jaw. The aim was to present a treatment solution for edentulous patients with excessive mandibular resorption.

Case report. A 67-year-old male edentulous patient presented to the Department of Prosthodontics, School of Dental Medicine, University of Belgrade, with complaints of mucosal sensitivity to touch in regio 35 and 45. The patient reported the absence of systemic diseases and regular use of medicaments as well as the last tooth extraction performed 14 years ago. After clinical examination and cone-beam computed tomography (CBCT) analysis, excessive mandibular resorption and a high position of the mental foramina without bone coverage were observed. Therefore, the treatment plan in the lower jaw included the insertion of three implants in regio 34, 42, and 44 and fabrication of a bar-retained implant overdenture, with distal extension of a bar that overhangs sensitive areas and disallows their direct contact with the denture. In addition, the total prosthesis was indicated in the antagonist upper jaw. Four months after implants insertion (BLT, 4.1 x 10 mm, Straumann Group, Basel, Switzerland), prosthetic therapy began. After conventional impressions, the models were used to produce bite templates for determining the vertical dimension of occlusion (VDO) and for teeth set-up. Both models were then extraorally scanned (inEos x5, Dentsply Sirona, Charlotte, NC, US) with and without the templates with arranged teeth to provide digital models with determined VDO. The implant bar with three attachments (two rods and one bar) and metal framework were then digitally designed and manufactured, and after repeated VDO procedure and teeth set-up, both dentures were fabricated from polymethyl methacrylate.

Conclusion. Bar-retained implant overdenture is an efficient treatment solution for patients with excessive mandibular resorption followed by a high position of the mental foramina without bone coverage.

CR - 3

Clinical management of dental patients receiving dabigatran with and without bridging with heparin

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Background/Aim. Direct anticoagulant drugs (DOAC) are a widely used form of therapy. The lack of uniform tests that would show us the risk of bleeding is the main reason why we see unnecessary bridging of this type of anticoagulant therapy, and consequent complications such as prolonged bleeding due to heparin-induced thrombocytopenia (HIT). The aim was to present management of patients using dabigatran as anticoagulant who have been prepared differently for oral surgery intervention

Case report. Two patients who were taking dabigatran for atrial fibrillation had their teeth extracted. Monitoring of anticoagulant effect in the first patient was based on standard laboratory tests. Two blood samples were taken from this patient, first sample after receiving DOAC therapy, while the second sample was taken 24 hours after stopping DOAC therapy. Standard coagulation tests such as activated partial thromboplastin time (APTT), prothrombin time (PT) and thrombin time (TT) were performed. In the first plasma sample TT and APTT were increased compared to the second sample, indicating the absence of dabigatran in the blood after 24 hours, while there was no change in PT. Teeth were extracted after obtaining this results. In second case patient received low-molecular-weight heparin as replacement for dabigatran. Extractions were carried out 4 days after therapy change when INR (International Normalized Ratio) was in desirable values (INR<2). Hemostasis was achieved without complication in first case by using local haemostatic measures. In the second case, profuse bleeding was present. Less invasive methods were unsuccessful, so more invasive approach by using palatal screw retained thermoplastic splint for hemorrhage control was needed.

Conclusion. The management of these patients should be based on the half-life of the drug and its presence in the blood to avoid prolonged bleeding and unnecessary delay of interventions.

CR - 4

Successful endodontic treatment of maxillary second molar with severe canal curvature and obliteration of root canals

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Background/Aim. Root canal curvature and presence of obliterations within root canal space pose a great challenge to achieve successful endodontic treatment. The aim of this paper is to present successful endodontic treatment of maxillary second molar with severe canal curvature and obliteration of root canals.

Case report. A male patient (67 years) came to the Department of Restorative Dentistry and Endodontics, School of Dental Medicine, University of Belgrade, with severe throbbing pain under metal-ceramic bridge in the region of tooth, second upper molar (17). After removal of the bridge construction and analysis of retro alveolar radiograph, tooth 17 underwent endodontic treatment. After preparation of

access cavity, trepanation of the tooth chamber and pulp extirpation patency was determined with K-files #06-08-10 (Dentsply, Sirona, USA) in palatal and buccodistal canal. After establishing glide path with K#20, palatal canal was instrumented with reciprocating ONLY ONE FILE R-40 (Shenzhen Denco Medical Instruments Co., Ltd). After establishing glide path with K#15, buccodistal canal was instrumented with reciprocating ONLY ONE FILE R-25 (Shenzhen Denco Medical Instruments Co., Ltd). Exploration of mesiobuccal canal with K#06 revealed presence of severe curvature root canal. After establishing glide path with PathFile system (13/02, 16/02, 19/02) (Dentsply, Sirona, Switzerland) mesiobuccal canal was instrumented with MG3II rotary system (Shenzhen Perfect Medical Instruments Co., Ltd) (15/03, 20/04). Canals were obturated with epoxy resin – based sealer Adseal (Meta Biomed, South Korea) and gutta-percha using single cone technique. Quality of obturation was assessed on a follow-up retro alveolar radiograph.

Conclusion. Reaching and maintaining of the working length in obliterated and curved root canals is crucial for prevention of procedural errors during endodontic treatment and successful management of complex root canal morphology. Cases with severe canal curvatures and root canal obliterations requires patience and wise selection of endodontic instruments.

CR - 5

Successful endodontic treatment of the mandibular right second molar using the "by-pass" technique in the mesiobuccal canal

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Background/Aim. Fracture of endodontic instruments is a complication that can occur during endodontic treatment, impeding effective cleaning and shaping of the root canal system. The aim is to present a case of successful endodontic treatment of the mandibular right second molar using the "by-pass" technique in the mesiobuccal canal.

Case report. A male patient (69 years) was referred to the Department of Restorative Dentistry and Endodontics, School of Dental Medicine, University of Belgrade for endodontic treatment of tooth 47 in order to undergo prosthetic rehabilitation. During mechanical instrumentation there has been fracture of the instrument. Analysis of the retroalveolar radiograph revealed a fractured endodontic instrument in the apical third of the mesiobuccal root canal. A "by-pass" procedure was performed using a K#08 instrument. After instrumentation the working length was confirmed radiographically and with electronic apex locator. The root canals were medicated with calcium hydroxide for 14 days, after which they were obturated. The quality of obturation was assessed on a follow-up retroalveolar radiograph.

Conclusion. Re-establishment of the working length alongside the fractured part of the endodontic instrument is essential for successful chemo-mechanical root canal treatment, treating existing infections, and preventing potential complications. In cases of infected root canals, instrumentation and disinfection beyond the fractured instrument apex are crucial for a desirable treatment outcome.

CR - 6

Endodontic management of calcified mandibular first molar and maxillary lateral incisor: a report of two cases

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Background/Aim. Pulp canal obliteration or calcific metamorphosis is a physiological process of aging or a pulp response to trauma that is characterized by the deposition of hard tissue within the root canal space that ultimately determines pulp atrophy by reducing its original volume. The aim of these case reports is to present successful endodontic treatment of calcified mandibular first molar and maxillary lateral incisor.

Case report. Case report 1: A male patient (72 years) was referred for endodontic treatment of tooth 47 in order to undergo prosthetic rehabilitation. Case report 2: A female patient was referred for endodontic treatment of tooth 12 in order to undergo prosthetic rehabilitation. In both cases the root canal patency was ensured using C file+ #08 and C file+ #10 and concentrated citric acid. Root canals were instrumented with AF F ONE (25/.04) rotary file. In the first case the root canals were medicated with calcium hydroxide for 14 days, after which they obturated. In the second case, obturation was performed in the same visit. The quality of obturations was assessed on a follow-up retroalveolar radiograph.

Conclusion. Diffuse calcifications can generally be observed in root canals of older adults. Severely calcified teeth are predisposed to tooth perforation during pulp chamber access or the initial location of the canal orifice. Re-establishment of the working length in calcified root canals is essential for successful chemo-mechanical root canal treatment, treating existing infections, and preventing potential complications. In case of calcified root canals using of various file system, irrigants and chelating agents renders successful treatment of calcified tooth.

CR - 7

Double crowns as a contemporary solution

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Background/Aim. For elderly patients it is not always easy to accept that for correction of their toothlessness they have to undergo a serious and extensive preparation. The preparations can be in a form of implantation, bone augmentation or some other surgical treatment, which the elderly patients do not accept easily. Those patients seek some other possibilities for a prosthodontic solution. One of the possibilities, if the patients have some periodontally healthy teeth, is to try to do

a prosthodontic solution by using double crowns. Double crowns are a solution that has proven itself through time, with some modification and upgrades. Today we are using mostly the double conical crowns. Aim of this case report is to show that a satisfactory solution for an oral rehabilitation of elderly patients can be achieved with a solution that is decades old and in a reasonable time frame and economically acceptable.

Case report. This case report is showing how an oral rehabilitation is done in an elderly patient with only one remaining tooth. The tooth is 13 (upper right canine). Because of crown abrasion the tooth was treated endodontically and reconstructed with a casted upgrade. Grinding of the tooth was done, impression for the double conical crown and impression for the metal framed partial denture. All the steps are done as for a total denture to assure the best possible outcome and satisfaction for the patient.

Conclusion. With retention and stabilization on double conical crown, as well as easy manipulation for the patient and a good possibility for an oral and denture hygiene we have achieved a good oral rehabilitation and a satisfied patient.

CR - 8

Attachment retained maxillary obturator prosthesis: a case report

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Background/Aim. Maxillary defects with an oronasal communication can cause difficulties with swallowing, mastication and speech. Providing an obturator prosthesis is crucial for rehabilitation of patients with maxillary defects. The aim of this case report is to describe the prosthodontic procedures of a maxillary defect rehabilitation with an attachment retained removable obturator.

Case report. A 73-year-old male patient presented to the Department of Prosthodontics, School of Dental Medicine, University of Belgrade with an oronasal communication. He had an old obturator prosthesis that didn't have adequate retention. Remaining four upper teeth were splinted with a metal ceramic bridge. The mobile part of the restoration was a cobalt–chromium removable partial denture. Retention was acquired by placing two ball attachments VKS-SG 2.2mm (Bredent) on each approximal surface of the metal ceramic bridge and two yellow VKS-SG 2.2mm matrices (Bredent) were located in the obturator prosthesis. The palatal surface of the obturator was designed to ensure optimal load distribution to the surrounding tissues as well as to fully close the oronasal communication.

Conclusion. The use of attachments provides increased stability and retention of the prosthesis, leading to a significant functional improvement while maintaining its aesthetic advantage. Prosthodontic rehabilitation allows patients with maxillary defects an improved speech clarity, enhanced masticatory efficiency and an overall better quality of life.

CR - 9

Metastatic melanoma in parotid gland with an unknown primary tumor - Case report

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Background/Aim. Melanoma of the parotid gland is often metastatic in origin, and the primary site is usually located in the forehead and face. Amelanotic melanomas or regressed melanomas pose a certain diagnostic challenge due to their unusual clinical and histological presentation, however primary melanoma arising in the parotid gland has also been reported in literature accounting for less than 0.7% of malignant parotid tumors.

Case report. A 73-year-old female patient with a history of hypertension was referred to the Clinic for maxillofacial surgery with the chief complaint of a mass on the left side of her face which had asymptotically grown for 6 months. On clinical examination, in the left parotid region, approximately 3x4cm, a soft, poorly circumscribed, mobile, painless mass had been present. No facial weakness had been present. The patient was referred to the radiology department for evaluation. CT report indicated a 6x3x3cm lobular, solid lesion involving the superficial and deep lobes of the left parotid gland. Intraoperatively, upon flap elevation and incision of the parotid fascia, a highly pigmented mass was revealed. The branches of the facial nerve were found to be involved by the tumor so a radical parotidectomy was performed. The specimen was sent for histological and immunohistochemical analysis which confirmed the melanoma diagnosis. Upon discharge, the patient was referred to dermatology and ophthalmology with the goal of establishing the primary site, however no such lesion could be identified.

Conclusion. Melanoma in the parotid gland usually lacks in pigmentation and presents with atypical histology, however in our patient the lesion was highly pigmented which was clinically and histologically apparent. No primary site was identified through complete screening and the patient has no recollection of a previously present pigmented lesion, which may indicate that our case could be a primary parotid melanoma.

CR - 10

Immediate full denture - A case report

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Background/Aim. The aim was to present clinical and laboratory procedures in the fabrication of immediate complete denture.

Case report. A 68-year-old female was referred to Clinic for Prosthodontics, School of Dental Medicine for

prosthodontic rehabilitation. Clinical examination, both with x-ray analysis revealed a general periodontitis. Upon periodontal examination, periodontal pocket depth was measured within 8 measuring points for remaining teeth (all diagnosed with stage IV of periodontitis). The treatment plan was to fabricate maxillary and mandibular immediate complete dentures.

Preliminary impressions utilized a standard tray and irreversible hydrocolloid material. Final impressions were taken using the individual closed tray technique with a combination of C-silicone and Zinc oxide eugenol paste. Following the determination of maxillomandibular relations in the presence of natural teeth, the dentures were modeled in wax.

Definitive casts were trimmed based on the previously measured depth of periodontal pockets, allowing for the appropriate adjustment of the removed plaster to accommodate the anticipated soft tissue collapse post teeth extraction. Part of the laboratory procedure for cast trimming involved creating a 45-degree labial bevel in the projection of cortical bone, as indicated by periodontal measurements. Multiple extractions of the existing dentition were performed, and sutures were subsequently placed. The denture was inserted immediately following the natural teeth extraction. The denture base was relined after first and sixth month of denture delivery. After a two-year follow-up, the patient reported favorable adaptation to the dentures, as well as long-term retention and stabilization, all while maintaining satisfactory aesthetics and phonetics.

Conclusion. Immediate complete dentures ensure better physiological and phonetic adaptation in comparison to conventional dentures. Moreover, these devices reduce soft tissue trauma, protect surgical wounds upon immediate delivery of the denture, minimize swelling, and prevent bleeding.

CR - 11

Periodontal treatment and the maintenance of the achieved results in elderly patient- case report

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Background/Aim. Due to increasing number of elderly population, there is increasing tendency for successful periodontal treatment and detailed prevention of progression of periodontal disease in this population group. The aim of this case report is to offer possible periodontal therapeutic and preventive methods achieving better oral health and life quality of elderly people due to a presence of systemic diseases and age-related physiological changes in this group of patients.

Case report. This case report documents clinical and radiographic feature of 84-year-old female patient during last 12 years. The patient was 72 when she was referred to our dental office for the first time complaining of gingival swelling and bleeding. Erythrocyte sedimentation rate was slightly elevated. Patient was using medication for the treatment of arterial hypertension and osteoporosis. Local favouring factors for periodontitis were identified. Radiographic examination

revealed generalized horizontal alveolar bone loss with vertical defects localized in the frontal region of the both jaws. Non-surgical treatment was done in order to eliminate consequences of periodontitis and to avoid its progression. Considering anticoagulant therapy and age of the patient, our goal was to delay surgical treatment as long as possible focusing on elimination of the local favouring factors and improvement of oral hygiene. After several phases of treatment gingival swelling and bleeding were eliminated. Control examinations were carried out every six months during last 12 years. Every two years new panoramic radiogram was done and examined. There was no further alveolar bone loss. The improvement of oral hygiene was successful.

Conclusion. Considering these results, detailed clinical, radiographic and control examinations must be provided in elderly patients, gaining patient's trust and making them aware of oral health significance for life quality.

CR - 12

Advantages and disadvantages of digital technologies in implant prosthodontic rehabilitation of edentulous patients: a case report

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Background/Aim. The advancement of digital technologies has revolutionized the treatment of edentulous patients through full-arch implant therapy. Digital protocol has its benefits, such as patient comfort, better communication with dental laboratory and reduced treatment time, and the notable drawbacks, including high costs and still questionable accuracy in challenging clinical situations such as digitizing edentulous jaws. The aim of this report is to present the possibilities for using digital technologies in the implant prosthetic rehabilitation of edentulous jaw.

Case Report. A 67-year-old male patient, presenting with complete edentulism in both jaws was assessed at the Department of Prosthodontics. Given the inadequate retention of his conventional dentures, implant-supported fixed prostheses were indicated. Six implants (BLT, Straumann, Switzerland) were placed in upper jaw in predefined positions. A conventional impression was obtained immediately after implantation, leading to the delivery of a temporary restoration within 24 hours. After six months, the process for a definitive prosthodontic restoration commenced, utilizing a hybrid bridge with a titanium substructure and acrylic teeth and gingiva. The Trios 4 intraoral scanner (3Shape, Denmark) and Cares MONO scan bodies (Straumann, Switzerland) were utilized for intraoral scanning, according to the manufacturer's guidelines. After intermaxillary relation registration, the virtual model was imported into the CAD software (exocad 3.1 Rijeka, exocad, Germany) and prosthesis prototype was generated, which was then milled in polymethyl methacrylate (PMMA) and tested on a printed dental cast. Significant discrepancies were noted at the passive fit check, which was the reason to continue with

conventional protocol. After digitizing the master cast, definitive prosthesis was finished with a titanium substructure and PMMA components, ensuring passive fit and satisfactory aesthetics.

Conclusion. Full digital protocol in complete arch implant therapy still has significant challenges. Careful monitoring and adjustments are essential to ensure optimal outcomes of full-arch implant rehabilitation.

CR - 13

Short implants vs augmentation in lower jaw in the elderly people

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Background/Aim. Atrophy of the bone of the alveolar ridge is becoming an increasing challenge in modern oral surgery and implantology procedures. With the presence of numerous bone augmentation options, as well as techniques of horizontal and vertical augmentation of the alveolar ridge of the lower jaw, in the presented cases, due to the age of the patients, a modern approach to the installation of "short" implants is chosen as an option for the lack of bone volume for regular size implants. Extensive augmentative procedures are often not an option for the elderly due to the extensiveness and length of the procedures and inadequate bone response of the recipient's bone tissue (osteopenic changes).

Case report. Patients with pronounced atrophy in the mandible and consequent hypertrophy of the attached gingiva in the area of the distal parts of the lower jaw caused by irritation of inadequate lower prostheses will be presented. Radiological analysis (CBCT) diagnoses extreme bone atrophy, which would lead to nerve damage or would not be possible at all with the installation of implants of normal dimensions. Therefore, a therapeutic option is the installation of very short implants with a calcium-enriched surface that affects accelerated healing and biological osseointegration.

The operations are carried out in two acts. In the first operation, vestibuloplasty was performed according to the principle of secondary epithelization supported by healing using blood plasma enriched with growth factors (PRF).

Four weeks after the first procedure, the patients underwent a second oral surgical procedure, in which four short implants were inserted using the principle of biological drilling.

After the implants have been installed, given that there is satisfactory primary ISQ stability, on the same day, multi-unit abutments and prosthetic carriers are immediately placed on the implants, an impression is taken, and after a few hours of the procedure, patients receive a finished fixed-prosthetic temporary work printed from acrylate. which is fixed with screws on the same multi unit abutment.

The role of these bridges is multiple. In addition to immediately establishing satisfactory aesthetic and functional rehabilitation, they are also used for excellent preparation of the exit profile and biological width for permanent works.

Conclusion. In conclusion, it can be said that short implants are a satisfactory implant-prosthetic concept, especially for older people.

CR - 14

Implant-retained auricular epithesis in elderly patient

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Background/Aim. The majority of auricular defects are consequence to resective surgery, congenital deformities, or after mutilating accidents. The aim was to show the clinical and laboratory procedures in manufacturing of auricular prosthesis for a patient with postsurgical deformity.

Case report. A 75-year old male patient was referred to the Clinic for Maxillofacial surgery, School of Dental Medicine, University of Belgrade with postoperative auricular defect. Temporal bone CT, showed sufficient bone quality for implant placement. Screw implants (4,1 mm diameter - Ihde dental Switzerland), were placed in petrous part of temporal bone at 9h, 11h and 7h on the right side perspective, 2 cm from the bony part of external ear canal forming a triangular plane. After the osseointegration, the impression was made with individual open tray method using A-silicone material. At the master model the screw-retained bar was planned and modeled. Based on it's position, a wax model was adapted and made of heat polymerized acrylic resin. Acrylic base was used for sculpting the ear model in wax. Teflon clips were attached to acrylic base employing metal housings, which were set on previously determined positions with cold-polymerized acrylics. After sculpting, the wax model was converted to RTV silicone prosthesis (room temperature vulcanization). Color was previously selected by the color of the surrounding skin using the colour palette. During polymerization the auricular prostheses was connected to acrylic base using multi seal primer . After material was set extrinsic coloring was performed on a silicone prosthesis surface with appropriate color application and adhesion

Conclusion. Using this technique proper stability, retention of prostheses were achieved and satisfying cosmetic result.

CR - 15

Healing of periapical lesion in an older patient with diabetes and high blood pressure - A case report

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Background/Aim. Chronic apical periodontitis (CAP) is endodontic disease characterised with periapical bone loss, due to inflammation induced osteoclastic activity. More than half of the world's population (52%) has at least one tooth with CAP. Prevalence is even higher in older patients and in patients with certain systemic conditions since healing is highly dependent on patient's tissue reparative abilities and, therefore systemic health status. Most commonly associated with the highest prevalence values are groups of patients with cardiovascular diseases, diabetes and smokers. The aim was to report a clinical case of periapical healing in older patient with high blood pressure and type II diabetes.

Case report. A 72 year old woman presented to the office with several month history of slight discomfort on palpation in the area of the tooth 21. Patient reported she suffered from controlled high blood pressure and type II diabetes for the last 20 years. Clinically, tooth 21 was sensitive to vertical percussion and restored with metal-ceramic crown. Periapical radiography revealed well-defined radiolucency (6mm x 10mm approx.) located in the area of apex of the tooth 21. Endodontic access through metal-ceramic crown and complete mechanical preparation of the root canal was conducted in the first visit using reciprocating single file system - Reciproc Blue, R40. Root canal was irrigated with 2% sodium hypochlorite and 10% citric acid solutions and calcium hydroxide dressing was placed. Two weeks later, root canal was definitely obturated using single cone gutta-percha technique in combination with epoxy resin-based endodontic sealer. Periapical radiography, done four months later, showed signs of almost complete healing of periapical structures.

Conclusion. Non-surgical endodontic treatment of large periapical lesions in elderly with type II diabetes can be conducted successfully.

CR - 16

Prosthodontics rehabilitation in subtotal edentulism with teeth and implants - a case report

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Background/Aim. As the quality of life in geriatric patients directly depends on the functions of the orofacial system, the preservation of each remaining tooth and implant is extremely important.

Case report. A 73-year-old female patient was referred from the nursing home and presented to the Clinic for Prosthetic Dentistry for prosthetic rehabilitation of the upper jaw. She had 4 leftover teeth and one implant. She was in good general health but with progressive weight loss. After a detailed analysis, a therapy plan was to preserve three remaining teeth with a good root/crown ratio (17, 16, 21) and implant in position 11. Having in mind unfavorable teeth arrangement, as well as the need to avoid primary fixation between tooth and implant, a removable denture (RPD) was planned with locator abutment on the implant (ASTRA, 5mm), intra-radicular

attachment on the tooth 21 (Bredent, 2.2mm), and metal-ceramic crowns on the teeth 17 and 16 with milled surfaces for removable denture. The same level of root retainers between intra-radicular ball attachment and locator abutment was challenging. Eventually, RPD was made with satisfactory retention, stabilization, comfort, occlusion and aesthetic appearance.

Conclusion. Cooperation between geriatrician and dental medical doctors is crucial, which is confirmed in this case since the geriatrician concluded that weight loss was the consequence of impaired dentition. In older adults, it is good to preserve all functional teeth and implants to provide the optimal prosthetic solution. In this case, locator abutment in combination with intraradicular ball attachment and clasps provided optimal prosthetic solution and increased quality of life of patient.

CR - 17

Ceramic repair of the maxillary upper incisor using a one-component universal primer – a case report

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Background/Aim. Ceramic chipping occurs frequently in ceramic crowns, and the decision to repair or replace them depends on many factors. The least invasive method is the intraoral repair with composite materials using one-bottle universal primer. The adhesive bond between the ceramic/metal and composite is based on two synergy effects, including a micromechanical and a chemical bonding component. Primers containing acidic monomers with phosphoric functional groups have proven successful in achieving stable adhesive bonds between the ceramic and the composite materials.

Case report. The male patient (70 years) was referred to the Clinic for the treatment of fractured ceramics crown of teeth 21. Clinical examination revealed a ceramic chipping in an incisal third of tooth 21. A one-bottle universal primer (MKZ primer, Bredent) was applied on a dry ceramic surface according to manufacturer instructions. After the universal primer, the universal adhesive (G Premio Bond, GC) and composite materials (Gradia Direct Anterior, GC) were used. The composite materials were polished with Sof Lex discs.

Conclusion. The intraoral repair of a chipped all-ceramic crown is a conservative and low-cost alternative that allows for immediate restoration of function and aesthetics.

CR - 18

Managing root canal obliteration in first and second upper molars

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Background/Aim. Endodontic treatment of calcified canals presents significant challenges due to complications such as perforation, canal geometry alteration and loss of dental hard tissue. Various factors such as caries, restorative procedures, oral habits, friction and trauma can lead to partial or complete obliteration of the root canal system. The aim of this case report was to show successful treatment of root canal systems due to difficulties such in an elderly patient, despite difficulties such as canal obliteration.

Case report. A 67-year-old female patient was referred to our clinic due to intermittent pain in right upper jaw. After the evaluation of the medical and dental history, the radiographic examination showed poor restoration, secondary caries and a communication with pulp chamber in teeth 16 and 17, as well as calcification of canals on both teeth. Sensitivity test was positive and teeth were slightly sensitive on percussion. Following adequate access cavity preparation, glide path was achieved and maintained with hand file (size 08). Afterwards, root canal preparation was performed using rotary file system (Reciproc Blue). Post-obturation, X-ray confirmation of quality was performed, and the patient was referred to the Department of Prosthodontics for final restoration.

Conclusion. Managing teeth with obliterated canals presents a great challenge for clinicians. The use of new technologies, in addition to comprehensive knowledge of pulp anatomy and radiographic techniques and patience are the key to success in achieving favorable outcomes in managing calcified root canal systems.

CR - 19

Metastatic squamous cell carcinoma in parotid gland - Case report

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Background/Aim. Squamous cell carcinoma is the second most common skin malignancy after basal cell carcinoma. Head and neck region is a very common localisation due to sun exposure. Those tumors localised in the scalp, preauricular region and eyelids usually metastasize in the parotid lymph nodes and the gland itself, as a result of the lymphatic drainage patterns.

Case report. A 76-year-old male patient with a history of hypertension and diabetes mellitus was referred to the Clinic for maxillofacial surgery with the chief complaint of a mass on the right side of his face, which had asymptotically grown for one month. Prior to this visit, he had undergone surgical excision of four skin tumors, localised on the face and the scalp. All specimens were examined by a pathologist and the diagnosis for all four of them was squamous cell carcinoma. On clinical examination, in the aforementioned region, a hard, poorly circumscribed, fixed, painless mass approximately 3x4cm was found. No facial weakness was found. The patient was referred to the radiology department for evaluation. Intraoperatively, after accessing the parotid gland and visualising the tumor, superficial

parotidectomy with preservation of the facial nerve and excision of the overlying skin was performed, and the defect was reconstructed with the submental myofasciocutaneous flap. The specimen was sent for histological analysis which confirmed the diagnosis of squamous cell carcinoma metastasis.

Conclusion. Neoplasms arising in the parotid region can pose a diagnostic challenge, due to the presence of intraparotid and periparotid lymph nodes which comprise a part of the lymphatic drainage system of the head and neck. Therefore, not all neoplasms located in the parotid region are of glandular origin, though they may clinically resemble them. This proves the importance of anamnestic data in the preoperative period.

CR - 20

Pre-prosthetic surgery in geriatric patients: A case report

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Background/Aim. To provide long-term successful functional and esthetic outcomes of oral rehabilitation of edentulous elder patients using conventional complete dentures, it is necessary to establish proper hard and soft tissue contours. This means a U-shaped bony ridge with adequate height and width without undercuts, protuberances, or sharp edges as well as the oral mucosa with adequate thickness and buccal and lingual depth. However, sharp bony spicules, uneven resorption after teeth extraction, or exostoses might result in bony protuberances that could prevent denture production. Besides, even slight pressure on the mucosa overlying it may cause extreme pain. Exostoses usually occur on the lateral face of the alveolar process near the crest as a functional thickening of the cortical bone, which is more frequent in the maxilla. Sometimes, reduction of these bony protuberances is necessary to provide an accurate denture impression as well as stability and retention of the denture.

Case report. In this work, a case of pre-prosthetic surgical procedure, reduction of the buccal exostoses in the mandible, will be present. An 83-year-old female patient with an edentulous mandible was referred to the Clinic of Oral Surgery to provide proper conditions for the production of conventional lower complete denture. Following local anesthesia and a mid-crest incision, the mucoperiosteal flap was raised up to immediately below the exostosis. A handpiece with bur under copious irrigation was used to reduce the bony excess. To prevent further bony resorption, most but not all exostosis was removed. The site was thoroughly irrigated and checked for haemostasis. The mucoperiosteal flap was repositioned and closed in a running fashion with unresorbable sutures.

Conclusion. A team approach of prosthodontist and oral surgeon with detailed analysis of general health and local anatomical conditions are necessary for successful rehabilitation of edentulous geriatric patients using conventional complete dentures.

CR - 21

Overcoming endodontic challenges in elderly patients – A case report

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Background/Aim. The growing number of elderly patients seeking to retain their teeth presents challenges in endodontic treatment due to factors such as lifelong dentin apposition leading to severe pulp canal calcification. This case report highlights the difficulty of locating canal orifices, which may result in perforation. The emphasis lies on the significance of preserving retention teeth using biocompatible material.

Case report. In this case, a 73-year-old male patient was referred for vital extirpation on tooth 13 following removal of coronal restoration. During the procedure, attempts to locate the canal orifice resulted in coronal perforation. Identification of the canal was later confirmed with retroalveolar radiography. The perforation was successfully sealed utilizing MTA material, known for its biocompatibility and sealing properties. After the material setting period of 4 hours, an additional layer of glass ionomer cement was applied. To prevent any inadvertent leakage of the material into the canal space, the closure procedure was carefully conducted with the assistance of an instrument within the canal. Following this, canal shaping was accomplished using ProTaper Gold rotary instruments, followed promptly by obturation, all managed within a single visit.

Conclusion. This case underscores the challenges encountered in endodontic treatment, particularly in elderly patients with extensive calcification and potential perforations. It emphasizes the significance of utilizing biocompatible materials and advanced instrumentation to achieve favorable outcomes, ultimately contributing to the preservation of retention teeth in the aging population. The prognosis of the tooth is intricately linked to the stages of the treatment process. The initial perforation closure sets the foundation for subsequent procedures, such as canal preparation and obturation.

CR - 22

Uncommon two-rooted two-canal lower canine in an elderly patient – A case report

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Background/Aim. The total number of elderly people in the population and their need for endodontic treatment are continuously increasing. Not only pulp chamber obliteration, but also anatomical variations pose significant challenges. This case study aims to illustrate how the integration of magnification, illumination, cone-beam computed tomography and operator skill can enhance the detection and management of additional and atypical roots and canals.

Case report. A 73-year-old female patient was referred to our clinic due to persistent, dull pain in the right lower jaw. Despite previous vital extirpation and hemo-mechanical debridement performed in private practice, tooth 43 remained sensitive to vertical percussion and mastication. Upon thorough examination and 3D analysis (Cavo CBCT 3D, 5x5, endo program, 4mA, 90kV) it was revealed that tooth 43 possessed not only two canals, but also two roots. Utilizing magnification (Leica Microsystems, M320 Dental Microscope) and after adequate access cavity preparation, the presence of a lingual canal was confirmed. Subsequently, after establishing working length, the canals were shaped using rotary instruments (ProTaper Ultimate) and obturated in the same visit.

Conclusion. The successful management of a rare two-rooted, two-canal lower canine in an elderly patient highlights the importance of utilizing advanced diagnostic techniques and magnification in endodontic practice. By accurately identifying anatomical variations, clinicians can tailor treatment approaches, ultimately improving patient care and treatment outcomes.

CR - 23

Management of partial edentulism using gold alloy telescopic crowns in an elderly patient: a case report

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Background/Aim. Partial edentulism, the absence of one or more teeth, is a common issue among elderly patients. There are various therapeutic modalities that can be applied in the prosthetic rehabilitation of partial edentulism. The imperative imposed in contemporary dental prosthetics is an individualized approach. The aim of this study was to present a case of successful management of partial edentulism in a 76-year-old male patient using gold alloy telescopic crowns.

Case report. A 76-year-old male patient was presented to the Department of Prosthodontics at the University of Belgrade with three remaining teeth in the maxillary arch - two canines and a lateral incisor. Following detailed clinical evaluation and analysis of orthopantomographic radiograph, the fabrication of three gold alloy telescopic crowns in combination with a partial removable denture with cast metal framework was indicated. The procedure involved preparation of the remaining teeth, followed by taking impression with vinyl polysiloxane impression material. The laboratory phase included the fabrication of internal and external gold alloy telescopic crowns. After verifying the fit of the telescopic crowns, impressions were taken for the fabrication of the partial removable denture with cast metal

framework. All clinical and laboratory phases of prosthetic work were completed, followed by delivery of the prosthesis to the patient - a partial removable denture with cast metal framework supported by three gold alloy telescopic crowns.

Conclusion. The use of gold alloy telescopic crowns represents an effective and aesthetically acceptable method for managing partial edentulism in elderly patients. This case may contribute to the importance of an individualized approach and collaboration between dentists and patients in achieving optimal outcomes.

CR - 24

PRF (Platelet-Rich Fibrin) in preprosthetic surgery for elderly patients

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Background/Aim. After tooth loss, alveolar ridge atrophy can significantly compromise the fabrication and wearing of prosthetic restorations. Platelet-rich fibrin (PRF) is an autologous fibrin rich in platelets, leukocytes, growth factors, and cytokines. Obtained by centrifuging venous blood and mixing it with bone substitutes, it significantly accelerates and improves the quality of bone defect healing.

Case report. A 73-year-old female patient was rehabilitated with a complete denture due to edentulism present for the last 30 years. Over the past year, the denture has not been fitting properly, with duplication of the upper lip mucosa and atrophy of the alveolar ridge in the frontal segment of the upper jaw. After not wearing the complete denture for two weeks, signs of local inflammation regressed, and the patient underwent oral surgical intervention - Clark's vestibuloplasty. After the administration of local anesthesia, an incision was made through the mucosa to the periosteum, and the mucosal and submucosal tissues were elevated and pushed to the movable mucosa. Excess mucosa and duplication of the upper lip were removed, and the remaining mucosa was fixed with individual horizontal mattress sutures forming a new fornix depth. The periosteum was left to heal secondarily, was covered with PRF membranes, which were fixed with individual sutures to the periosteum (PGA resorbable 5.0). First postoperative day, the patient denied pain, no extra- or intraoral swelling, and PRF membranes covered with fibrin deposits. After 7 days, the patient was pain-free, with PRF membranes showing characteristics similar to surrounding epithelium. Two weeks after the intervention, the sutures were removed, and PRF membranes had completely epithelialized.

Conclusion. Preprosthetic surgery provides conditions for the fabrication and wearing of appropriate prosthetic restorations. To reduce period until the definitive prosthetic restorations are made, Clark's vestibuloplasty was performed, and the periosteum was not left to heal secondarily but covered with PRF membranes. PRF has an adjuvant effect. In this way, the patient's recovery period is significantly facilitated.

CR - 25

Prosthetic rehabilitation of patients with severe mandibular residual ridge resorption using mini dental implants: A Case Report

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Background/Aim. In cases of mandibular edentulism, an alternative treatment to conventional prosthetic therapy can be rehabilitation with implant supported or retained dentures. Standard implant therapy can be limited in terms of patient cases with severe mandibular resorption and significantly restricted buccolingual dimension of residual bone. In order to overcome that clinical problem, without bone augmentation treatment, reduced diameter dental implants can be used as more appropriate to retain overdenture prosthesis. The aim of this paper is to present clinical and laboratory procedures in protocol of using dental mini implants for the prosthetic rehabilitation of the edentulous mandible.

Case Report. This case report represents prosthetic treatment of a 65 years old male patient, referred to the Clinic for Prosthodontics, complaining about stability of existing conventional denture. His maxillary dentition was restored with fixed implant restoration. After assessment of existing bone volume, due to severe resorption of mandibular ridge, mandibular dentition was planned to be restored with mini implant retained removable denture. Four one – piece tissue level implants (Straumann Mini Implant System; Straumann AG) were placed in the interforaminal region. Following prosthetic procedure was performed according to transmucosal integrated attachment system of the mini implants (Optiloc®, Straumann AG). Individual acrylic impression tray and polyether (Impregum Penta, 3M ESPE, USA) were used for mucodynamic impression taking with appropriate impression copings. Inserting the model analogs into the impression copings was followed with fabricating the master cast. After placement of matrix housings onto the Optiloc®, overdenture was finalized in accordance with all standard laboratory and clinical procedures.

Conclusion. Mini implant retained overdentures can be considered as an adequate alternative treatment option indicated for patients with extreme residual ridge atrophy and reduced denture bearing area, providing clinical benefits such as increased retention and stability of dentures, improvements in phonetics and chewing efficiency.

CR - 26

The repair of ceramics with composite materials – a case report

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Background/Aim. Fractures of dental tissues, as well as ceramics during endodontic treatment and chewing function pose a challenge for dentists in situations where we can't predict the longevity of their repair. In addition to surface preparation of ceramics with various acids and air abrasion, it is possible to perform repair with composite materials by applying adhesives containing functional phosphate monomers (10-MDP) which establish both chemical and micromechanical bonding.

Case report. A female patient (73 years) was referred due to pain and swelling in the region of teeth 32. Analysis of the orthopantomographic image revealed inadequate obturation and periapical lesion in the area of the root of tooth 32. After trepanation through the metal-ceramic crown transcanal drainage was established. After instrumentation and calcium hydroxide-based medication, obturation with epoxy resin-based sealer and gutta-percha was performed. During trepanation through the metal-ceramic crown, a part of the ceramic crown was fractured. Cavity and ceramic defect reconstruction was done using a universal adhesive and nanohybrid composite. Canal filling was protected using conventional glass ionomer cement. Uneven surfaces of the defect were leveled using a diamond bur and the ceramic surface was prepared using 37% orthophosphoric acid. After that a universal adhesive was applied to the cavity and ceramic surface according to the manufacturer's instructions. Composite material application was performed using a layered technique for color matching. Finishing and polishing of the composite were carried out using Soflex discs.

Conclusion. Repair of ceramics with composite materials using universal adhesives with phosphate monomers is performed in situations of inevitable urgency. Preparing the ceramic surface with diamond burs and orthophosphoric acid can achieve greater surface roughness and enable the establishment of chemical and micromechanical bonding with the universal adhesive.

CR - 27

Temporomandibular disorders in elderly patients: a case series

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Background/Aim. Temporomandibular disorders (TMD) are specific by origin and clinical manifestations in elderly patients. Objective was to describe clinical findings and treatment options in elderly patients affected by TMD.

Case Report. Three patients above 65 years of age complained of various TMD symptoms including crepitus, pain, and/ or restricted jaw movements. Based on the patients' medical history and examinations, combined with laboratory testing and imaging, a TMD diagnosis was made for each patient. A non-invasive treatment

approach was initially performed to alleviate the symptoms and to re-establish normal functions. The treatment results depended on the source, duration, course, and nature of the dysfunction, with the presence of certain symptoms that may persist after the completion of the treatment.

Conclusion. In elderly patients complaining of TMD symptoms, the possibility of TMD and potential underlying medical condition has to be considered to correctly identify the source of problems. A non-invasive treatment approach to alleviate the symptoms is preferable.

CR - 28

Complete Denture Replacement using the Copy-Denture Technique

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The copy-denture technique represents a therapeutic solution for elderly patients requiring replacement of complete dentures, necessitating a tailored approach to rehabilitation. Particularly beneficial for physically frail elderly individuals, this technique addresses the diminished adaptive potential and neuromuscular coordination often observed with advancing age. A key advantage lies in replicating the polished surfaces and contours of existing dentures, facilitating adaptation, and easing the transition to new ones. Its objective is to preserve the positive attributes of existing dentures while enhancing deficiencies, typically in occlusal and fitting surfaces. Crucial to decision-making and treatment planning is the clinical evaluation of existing dentures and the extent of necessary alterations required for the new ones. Over the past six decades, advancements have led to various techniques for replicating complete dentures, including those based on CAD/CAM technology. This case report illustrates a method of the copy-denture technique, detailing both clinical and laboratory procedures. The resulting outcome comprised new dentures featuring replicated teeth position, contours, and polished surfaces of the old dentures, alongside adjustments to vertical dimension and fitting surfaces.
