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# 21. KONGRES STOMATOLOGA SRBIJE

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# 20. Kongres stomatologa Srbije

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**PREDAVANJA PO POZIVU**



### PP1 POVREDE ZUBA KOD DECE – DUGOROČNA PROGNOZA I KOMPLIKACIJE

**Prof. Dr V. Petrović**

Stomatološki fakultet Univerziteta u Beogradu, Srbija

Komplikacijama povreda zuba nazivamo kliničke situacije koje se očekivano dešavaju u određenom procentu. Nakon što je terapija povreda zuba odrađena po važećim kliničkim protokolima. A to znamo i možemo pretpostaviti statistički, odnosno zna se u kom procentu se javljaju određene komplikacije i na osnovu epidemioloških praćenja. Komplikacije povreda zuba nikako nisu, i ne smeju biti stručne greške i propusti.

Bez obzira kojom se granom stomatologije bavite, morate uvek stručno ukazati prvu pomoć pre nego što dete (pacijenta) uputite specijalisti.

Pacijent sa povredom zuba je hitan slučaj i zahteva hitan tretman. Tretmanom se smatraju i mere prve pomoći koje se po pravilu mogu ukazati i pre nego što dete stigne do ordinacije gde će se terapija nastaviti od strane stručnog lica. Upravo spoj inicijalnog tretmana i terapije od strane stručnog lica, smatraju se sekundarnom prevencijom od kojih zavisi dugoročna prognoza i eventualne komplikacije. *Primum non nocere!* je vrlo važan činilac i svakako proceduru za određenu vrstu povreda treba odraditi po važećim kliničkim protokolima. Kod povreda zuba kod dece postoje tretmani za mlečne zube, stalne zube sa nezavršenim i sa završenim rastom korena.

Protokoli su stručna pisana uputstva kliničarima; menjaju se i revidiraju u određenim vremenskim intervalima, od strane stručnih tela a na osnovu novih naučnih saznanja. Imamo primer metodologije replantacije stalnih zuba koji se menjao u nekoliko navrata; nekada se izbijeni stalni zub odmah definitivno punio "u ruci", a sada je primat vratiti zub u alveolu, postaviti imobilizaciju a naknadno se radi endodontski tretman.

Traumatska povreda zuba predstavlja akutnu transmisiju energije na zub i potporna tkiva koji rezultira frakturom (prelomom krunice ili korena) i/ili dislokacijom potpornog aparata u smislu razvlačenja ili sabijanja parodontalnog ligamenta.

Specifičnosti zarastanja zubnih tkiva i potpornog aparata ogledaju se u mnogobrojnim komplikacijama koje se mogu javiti nakon povrede zuba.

Povreda zametka stalnog zuba je najteža komplikacija i najčešća kod intruzija mlečnih zuba, ali se javlja i kod avulzije mlečnog zuba. Ova komplikacija uzrokuje promenu morfologije i mineralizacije stalnog zuba, od promene transparentije gleđi, do hipoplazija i ozbiljnih malformacija i zastoja razvitka zuba.

Kod stalnih zuba svaka vrsta povrede ima specifičnu prognozu. Komplikacije su najčešće u toku prve godine (71,7% tokom prvih 6 meseci nakon povrede). Nekroza pulpe je najšešća u toku prva 3 meseca, a negativan test vitaliteta ne mora značiti da zub nije vitalan bez drugih kliničkih i radiografskih potvrda.

Najveći procenat resorpcije korena i gubitka zuba javlja se kod intruzija i avulzija zuba. Terapijski cilj kod težih vrsta povreda sa lošijom dugoročnom prognozom svakako je da se zub što je duže moguće zadrži u alveoli, idealno do momenta kada se završi rast i razvoj kako bi se mogla uraditi fiksna protetska nadoknada ili implant. Iz tog razloga uvek treba uraditi replantaciju stalnog zuba čak i kad je dugoročna prognoza loša i kada je zub duže vremena bio u suvoj sredini. Vrlo su retke kontraindikacije za replantaciju stalnih zuba.

Dugoročna prognoza nakon traumatskih povreda stalnih zuba zavisi od: vrste i obimnosti povrede, pravilnog inicijalnog tretmana, pravilne terapije i kontrolnih pregleda radi rane identifikacije i tretmana inicijalnih komplikacija.

Prof. dr Vanja Petrović je zaposlena na Stomatološkom fakultetu Univerziteta u Beogradu od 2000. godine, a u zvanju redovnog profesora od 2020. Specijalista je preventivne i dečije stomatologije.



### PP2 KARAKTERISTIKE MATERIJALA ZA IZRADU FOLIJA KOJE SE KORISTE U ESTETSKOJ ORTODONCIJI

#### Assist. dr Tina Pajević

Stomatološki fakultet Univerziteta u Beogradu, Srbija

Tokom prethodne tri decenije folije su postale veoma popularne i široko zastupljene u ortodontskoj terapiji. Kao aparati sa odličnim estetskim karakteristikama, prvobitno su korišćene kod blagih nepravilnosti, za pomeranje zuba manjeg obima. Za svakog pacijenta izrađuje se set folija, uz pomoć kojih se zubi pomeraju u prethodno određen pravilan položaj. Kasnije je uvođenjem atečmena na površini zuba, omogućeno bodili pomeranje zuba i torkviranje. Materijali koji se koriste za izradu folija su po svojim osobinama termoplastični viskoelastični polimeri kao što su: poliuretani, PETG, polipropilen, polikarbonati i mnogi drugi.

Ortodontski materijali bi trebalo da imaju malu krutost, veliku jačinu, da se veoma lako oblikuju, da su biokompatibilni i stabilni u spoljašnjoj sredini. Nijedan od termoplastičnih materijala koji su prisutni na tržištu, za sada ne ispunjava sve ove kriterijume. Fizička svojstva termoplastičnih materijala se veoma razlikuju, a takođe svojstva jednog istog materijala nisu ista u sirovom stanju i nakon termoformiranja. U usnoj duplji materijali su izloženi kratkoročnim i dugoročnim opterećenjima i dejstvu pljuvačke. Materijali imaju tendenciju da upijaju vodu iz pljuvačke koja dovodi do hidrolize i degradacije polimera. Promenu u fizičkim svojstvima materijala koje nastaju usled termoformiranja i dejstva pljuvačke, odražavaju se na njihovu sposobnost da laganim kontinuiranim silama deluju na zube. Klinička istraživanja pokazuju da folije u početku deluju na zube silama većeg intenziteta. Tokom terapije intenzitet sile opada. U laboratorijskim istraživanjima uočena je povećana citotoksičnost materijala nakon termoformiranja, dok je u retencionim folijama pronađen BPA. Većina polimera nisu biorazgradivi, predstavljaju kontaminiran otpad. Kao zamena sintetičkim polimerima, predložena je upotreba polimera prirodnog porekla koji nemaju nepovoljan uticaj na životnu sredinu.

Smernice za buduća istraživanja su pronalaženje materijala ili mešavina sa optimalnim fizičkim svojstvima kako bi se omogućilo precizno pomeranje

zuba. Takođe potrebno je posvetiti posebnu pažnju njihovoj biokompatibilosti i uticaju na životnu sredinu.

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Tina Pajević je asistent sa doktoratom na Stomatološkom fakultetu u Beogradu, Klinika za ortopediju vilica. Naučna oblast ekspertize: Stomatološka nauka, ortopedija vilica.

Usavršavanje iz tehnike Tweed-Merrifield, savijanja petlji i krivina na standardnim Edgewise lukovima, na osnovnim i naprednim tipodont kursevima u zemlji i međunarodnom kursu u Italiji. Pohađala kurseve iz oblasti miofunkcionalne terapije. Usavršavanje iz oblasti primene samoligirajućih bravica i tehnike ravnog luka.

Pohađala simpozijum iz oblasti FACE Evolution system principa terapije poremećaja funkcije temporomandibularnog zgloba i okluzije. Uža polja stručnog i naučnog interesovanja su: funkcionalni aparati, terapija impaktiranih očnjaka, terapijski pristup u rešavanju hipodoncija i oligodoncija, antropologija lica i vilica.

Član je Ortodontskog udruženja Srbije, Srpskog lekarskog društva i Stomatološke komore Srbije.



### PP3 EFFECTS OF BITE CORRECTION ON PERFORMANCE IN COMPETITIVE SPORTS

#### Dr Stavros Avgerinos

AVGERINOS, SA, EA4SD, DGSZM, ÖGSZM, IZNS

**Introduction:** The importance of sports dentistry, especially in competitive sports, is rapidly increasing. Basic dental education is not enough to treat elite athletes according to modern standards. Continuous and intensive training in different dental and interdisciplinary fields is mandatory for team and/or sports dentists.

The temporomandibular joint has a key role in the human body. Functional dentistry is the base of a patient satisfying and long lasting dental treatment. Scientific evidence between temporomandibular disorder (tmd) and the impact on the human body is given and scientifically researched more than 10.000 times. A few years ago the correlation between the tmj position and the impact on athletes performance was logical and clear but just a presumption. A good instinct but not really evidenced based. Consequently the orthopedic importance of jaw clenching, biting force and bruxism was absolutely underestimated. Since 2019 intensive and ongoing scientific research fortifies the assumption of the impact of a correct bite in correlation to the tmj and its surrounding muscles on athletes performance.

**Methods:** The perfect and centric jaw relation seems to be the central point in the manufacturing process of the performance splint for the elite athlete. The Performance Splint, based on new scientific evidence and the DGSZM guide Lines, is the research object in our study.

This splint is used in intensive sport activities for non contact sports. Balance, coordination, mobility, running pattern and power have been measured in the performance center of the DGSZM.

The patient group consists of 50 elite athletes from different sports. The measurement results showed the difference between wearing or not the performance splint. Objective results were collected and statistically interpreted.

**Results:** 8 different measurements were taken. Stability on both feet, stability on one foot, rotation, anteflexion, retroflexion, running pattern and 4d body mapping. In all categories wearing an individual manufactured centric related performance splint seems to be superior to habitual occlusion. High significant differences have been observed in the in mobility movements (rotation, lateral flexion) and coordination (centre of pressure - cop) measurements.

**Conclusion:** Intensive dental diagnostic and treatment concepts are important for athletes performance. Professional sports dentistry requires an intensive continuing dental education. An interdisciplinary cooperation of the medical team around the elite athlete is mandatory for trauma prevention, to enhance athletes performance and to enable faster rehabilitation after injuries.

Stavros Avgerinos

Born on the first of May 1970 in Alexandroupolis/Greece. Professional career: from 1998 to 2000 study of biology at the Aristotle University of Thessaloniki, from 1990 to 1995, study of dentistry at the at the Julius-Maximillian-University, Würzburg/ Germany, since 1998 owner of a dental clinic in Oberhausen /Germany with focus on preventive dentistry, periodontology and sports dentistry, since 2007 medical support of professional athletes and sporting events in boxing, soccer, ice hockey, MMA, triathlon, american football, archery, tennis, golf, downhill MTB, biathlon. In 2009 founder and since 2019 CEO of the Intrasmile Ltd. Group of Companies Cyprus, since June 2012 Certified team dentist of the International Academy of Sports Dentistry (IASD). In October 2012 founder and member of the board and since January 2019 honorary president of the German Society for Sports Dentistry, Deutsche Gesellschaft für Sportzahnmedizin (DGSZM). Since November 2016 Chairman of the board at the ice hockey club Eissportverein Duisburg e.V. (Die Füchse). Since June 2019 member of the executive board and the development and international committee of the European Society for Sports Dentistry (EA4SD). In October 2020 co-founder of the Austrian Society of Sports Dentistry and Sports Medicine, ...sterreichische Gesellschaft für Sport -Zahnmedizin und - Medizin and since November 2020 member of the board.



### **PP4 TEMPOROMANDIBULAR DISORDERS IN ORTHODONTIC PATIENTS: CURRENT CONCEPTS IN ETIOLOGY AND MANAGEMENT**

#### **Prof. dr Irena Mladenović**

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

Functional disorders referred to as craniomandibular disorders (CMD) or temporomandibular disorders (TMD) involve a large number of clinical conditions which affect masticatory muscles, temporomandibular joint (TMJ) and adjacent structures. Patients with malocclusions have been widely investigated for presence of dysfunctional changes in the TMJ and masticatory muscles. The interest primarily originated in the early etiological concept according to which the onset of TMD had been associated with occlusal instability and skeletal discrepancy. Therefore, the treatment of dysfunction was oriented towards correction of the occlusion, including orthodontic treatment and orthognathic surgery. However, in some patients which were asymptomatic regarding TMD before, signs and symptoms of dysfunction developed during the orthodontic/orthodontic-surgical intervention. The presentation will include the current understanding and attitudes regarding risk of development of TMD in patients with malocclusions, possible influence of orthodontic intervention on presence of TMD, and the treatment options for orthodontic patients with TMD.

Irena Mladenovic is employed on a full time basis with Department of Prosthetic Dentistry, Faculty of Medicine, University of East Sarajevo, Bosnia and Herzegovina as associate professor. Scientific Field of Expertise: Temporomandibular disorders (TMD): genetics, gender related nature, role of malocclusions and orthodontic-surgical therapy.

Member of International Association of Dental Research (IADR) and International RDC-TMD Consortium Network.





### **PP5 ENDODONTSKI TRETMAN I RETRETMAN MAKSILARNIH MOLARA**

**Prof. dr Katarina Beljić Ivanović**

Stomatološki fakultet Univerziteta u Beogradu, Srbija

Maksilarni molari, pogotovu prvi, imaju najkompleksniju i najvarijabilniju anatomiju kanalnog sistema od svih zuba i zbog toga su od uvek meta istraživanja i prikaza slučajeva velikog broja autora. Najveći procenat neuspeha endodontskog lečenja je kod maksilarnih prvih molara baš zbog njihove kompleksne korenske i kanalne morfologije. Nepronalaženje svih ulaza u kanale moguće je u kliničkim uslovima rešiti primenom uvećanja, gde je operacioni mikroskop apsolutno superioran. Međutim, nepoznavanje međusobnih odnosa kanala, nemogućnost detektovanja promene njihovog toka u jednom korenu konvencionalnim radiografijom, izostanak informacije o lokalizaciji i broju anatomskih foramena istog kanala tokom odontometrije, kao i odabir neadekvatne tehnike i/ili instrumenata za preparaciju dovodi do neuspeha endodontskog lečenja i posledično do česte potrebe za endodontskim retreatmanom. Kompjuterizovana tomografija konusnog snopa otkriva i treću dimenziju morfoloških varijeteta, što u mnogome pomaže predvidljivost i veći uspeh endodontske terapije. Poznavanje treće dimenzije je naročito važno u situacijama ponovljenog lečenja ove grupe zuba, obzirom na neophodnost otkrivanja neobrađenih kanala, dezopturaciju neadekvatno ispunjenih delova kanala i kompletnu endodontsku proceduru preostale neobrađene, najčešće apksne regije korenskog kanala. Iako danas postoje specijalno dizajnirani mašinski instrumenti za uklanjanje opturacionog materijala iz kanala i olakšavaju i skraćuju process retreatmana i pacijentu i stomatologu, nije utvrđena značajna razlika njihovoj u efikasnosti u poređenju s ručnim instrumentima, pogotovu u apeksnoj trećini kanala. Kroz prikaze kliničkih situacija, uz detaljna objašnjenja primenjenog načina i instrumenata za primarno i ponovljeno endodontsko lečenje, daće se smernice za primarni endodontski tretman i retreatman maksilarnih molara, uz analizu svih faktora koji imaju presudan značaj za uspeh endodontske terapije ovih zuba.

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Katarina Beljić-Ivanović je vanredni profesor na Univerzitetu u Beogradu, Stomatološki fakultet, Klinika za bolesti zuba. Naučna oblast ekspertize: Restaurativna odontologija i endodoncija.

Predavač po pozivu plenarnih sesija na međunarodnim i domaćim skupovima. Šef predmeta Predklinička endodoncija, Klinika za bolesti zuba, Stomatološki fakultet u Beogradu. Mentor na specijalističkim i doktorskim studijama. Izvršni sekretar Udruženja endodontista Srbije.



### PP6 ARE INNOVATIONS MAKING ENDODONTICS EASIER?

**Prof. dr Aleš Fidler**

Stomatološki Fakultet, Klinika za ortopediju vilica

**ABSTRACT:** The large gap between the success of endodontic treatment in research and in the general practice points out the technical complexity of endodontic treatment, which is a consequence of the development of many new devices and instruments. In order to increase the success rate of endodontic treatment, it is necessary to simplify endodontic treatment, of course taking into account biomedical principles.

**KEYWORDS:** NiTi instruments, rubberdam, root canal instrumentation, root canal filling, treatment outcome, introduction of new treatment methods

Endodontic treatment is a demanding procedure, performed in a highly confined and inaccessible space and often without direct visibility during the procedure. High precision and asepsis are required to achieve good treatment outcomes. The complexity of the procedure results in a rather low technical inadequacy of fillings, which is between 13% and 56% in the world, and 29% in Slovenia. The success rate of endodontic treatment is higher, between 30% and 78% in the world, and 45% in Slovenia. Nevertheless, the survival rate of endodontically treated teeth is high, reaching 94-97%.

To increase the success rate of endodontic treatment, many new techniques including CBCT imaging, the use of loupes and microscopes, apex locators, mechanical shaping with NiTi instruments, a number of methods for more effective irrigation (ultrasonic, sonic, laser), warm gutta-percha obturation techniques, silicate-based materials ("bioceramics") and the matching gutta-percha pin filling technique have been introduced into endodontics.

These methods are well accepted at the specialist level of endodontic treatment and are widely used. They are often expensive, requiring additional training and sufficient clinical experience for correct and effective use. Some of these methods are also in routine use among general dentists. Nevertheless, there is a clear gap between the performance in controlled academic settings and the general population. An important challenge is therefore to find and develop methods, that are less technically demanding,

more accessible, easier to learn and thus more predictable. The aim of endodontic research is not only to understand disease processes, but also to make endodontic treatment easier, faster and more predictable. This would increase the technical adequacy of the filling and, consequently, the success of the treatment and thus the survival of the endodontically treated teeth. This is the only way to increase the success of endodontic treatment at the level of the population as a whole. Studies, investigating the success of introducing new endodontic treatment methods in general dentists have shown that, after theoretical and practical training, the proportion of dentists using mechanical instrumentation increased from 35% to 75%. The technical adequacy of the filling and tooth survival increased, while the success rate remained unchanged. However, a study in Denmark pointed out that the proportion of dentists using mechanical instrumentation increased from 10% to 69% between 2003 and 2013, but the worrying figure is that the proportion of dentists using cofferdam increased from 4% to only 29%. However, a recent survey of Swedish dentists who have attended a course on mechanical instrumentation and use it indicates that endodontic treatment is a source of fatigue, stress and frustration for them. They often find endodontic treatment complicated and uncertain. The difficulties and confusion are understandable as there are more and more manufacturers on the market offering new instruments.

The development of technology and materials over the last few years has therefore been directed towards simplifying materials and their use. These trends can be observed in a number of material groups. In the case of adhesive systems, the number of components has been reduced to 1 and pre-etching is no longer strictly necessary. In composites, the number of different colors has been reduced from more than 30 to 6-8 and, more recently, composites have emerged that adapt to almost all natural tooth colors using only one shade. A similar trend can be seen in endodontics. Cofferdam clamp kits have emerged which, with a limited number of clips, ease the choice of the appropriate clamp and the difficulty of placing the cofferdam. The number of instruments in the mechanical instrumentation systems is also decreasing, where instead of 6 or more instruments, more and more systems with only one instrument with continuous or reciprocal rotation are emerging. Another simplification is the filling of the canals with gutta-percha points, which correspond in shape and size to the instruments

used for mechanical instrumentation and have comparable clinical results to lateral condensation. From the flood of innovations, it is possible to extract a few recommendations that can help the general dental practitioner to make endodontics simpler, more predictable and successful.

Many studies evaluate the technical properties of new instruments and materials, but clinical trials are scarce due to their complexity and high cost. Most clinical trials evaluate different treatment modalities under ideal conditions, so the findings are not directly transferable to conventional clinics. Pragmatic randomized clinical trials evaluating performance in everyday clinical practice have therefore recently become increasingly important.

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Prof. Aleš Fidler is currently a Professor of endodontics and operative dentistry. He was/is involved in the teaching of tooth anatomy, radiology, dental materials, and operative dentistry. 2013, he was a visiting professor at Ege University, Izmir, Turkey He is a promotor of 1 PhD thesis and co-promotor of 1 PhD thesis. Currently, hsupervisor of 4 PhD candidates.



Since 2016 he is a Head of Endodontics and operative dentistry department, University clinical center, Ljubljana, Slovenia. He is a mentor for endodontic residency program with 5 finished endodontic specialists and 2 residents. He has (co)authored 40 publications in indexed journal has over 340 citations (h index=11). He has co-authored 2 university textbooks.

Since 2008 he works in part-time private dental practice, dedicated to endodontics.

He exhibits good cooperation with national and international researchers in area of physics and technology and some of his findings were found to be universal and applicable in medicine and general image analysis. Recently he is focused on 3D image analysis, acquired CBCT and 3D optical scanning, used for quantitative evaluation of hard and soft tissue changes in oral cavity. Together with his group he identified the limitations of present 2D analysis methods and propose the novel 3D methods revealing previously unavailable clinically important information. His most important skill is an excellent understanding of technology, crucial for effective merging biomedicine and technical sciences.

### PP7 RECENT ADVANCES IN DENTAL RESTORATIVES: WHERE ARE WE NOW?

#### Prof. dr Elizabeta Gjorgievska

Faculty of Dentistry, Head of the Department of Pediatric and Preventive Dentistry,  
University Ss Cyril and Methodius, Skopje, Republic of North Macedonia

The lecture will focus on the advances of the biomaterials in conservative dentistry (bulk-fill materials - glass-ionomer cements and bulk-fill composite resins), as well as the new generation of calcium silicate cements and endodontic sealers.

Special emphasis will be put on the modifications which will improve the existing properties of the conventional glass-ionomer cements. These materials are regarded as one of the most bioactive and biocompatible materials, but their main disadvantage is their low mechanical strength. The possibilities for overcoming of this disadvantage by the employment of the nanotechnology, will be elaborated in the lecture.

#### LEARNING OBJECTIVES

- Advantages and disadvantages following application of the different biomaterials in conservative dentistry, with special emphasis on Pediatric dentistry
- Recent advances in dental biomaterials
- Possibilities for improvement of the existing biomaterials.

Dr Elizabeta Gjorgievska is a Professor Tenure at the Faculty of Dentistry, Head of the Department of Pediatric and Preventive Dentistry, University Ss Cyril and Methodius, Skopje, Republic of North Macedonia.

She became an MSc and specialist in Pediatric and Preventive Dentistry in 2002, and a PhD in 2006. She has conducted numerous research visits at Universities in the UK (Kings' College London, University of Greenwich), USA (Columbia University) and Belgium and has been associated with several international research projects.







## 21. KONGRES STOMATOLOGA SRBIJE

20–21. oktobar 2022.

She has published more than 90 papers in domestic and international journals and was part of the organization and scientific committees of several national and international symposia and conferences. She has given lectures and workshops at scientific conferences in Macedonia and abroad (UK, USA, Ukraine, Croatia, Georgia, Turkey, Serbia etc.). She is an author of 2 and a co-author of 3 monographs, and an editor of the recently published textbook "Pediatric Dentistry". In the period 2010-2014 she was a President of the Macedonian Pedodontic Association. She is a member of MDA, FDI, IAPD, UKSB. She is a visiting professor at Columbia University, USA.

Her research interests involve: synthesis and characterization of glass-ionomer cements, tooth bleaching, laser application in dentistry, enamel de/remineralization.

### PP8 NEŽELJENE REAKCIJE NA GRADIVNE MATERIJALE ZA IZRADU ZUBNIH PROTEZA

#### Prof. dr Milena Kostić

Medicinski fakultet Univerziteta u Nišu, klinika za dentalnu medicinu, Katedra za stomatološku protetiku, Srbija

Vraćanje morfofunkcionalnog kapaciteta destruisanih i nadoknada izgubljenih zuba predstavlja izazov za sintezu novih delotvornijih gradivnih dentalnih materijala i poboljšanje onih koji su već na tržištu.

Gradivni dentalni materijali za izradu zubnih proteza treba da teže ka obezbeđenju optimalne funkcionalnosti uz maksimalni estetski efekat. Pored toga što su efikasni, oni nedvosmisleno moraju da budu i bezbedni. Kako nijedan materijal nije apsolutno bezbedan, odluka da li će se koristiti ili ne zavisi od balansa između očekivanih rizika i kliničkog benefita.

Ispitivanju biokompatibilnosti gradivnih dentalnih materijala treba posvetiti posebnu pažnju, imajući u vidu njihov trajni kontakt sa tkivima usne duplje, čime posredno ili neposredno imaju uticaj na homeostazu oralne sredine i organizma u celini. Zapravo se govori o bioaktivnim kompozicijama koje stvaraju aktivni odnos materijala i tkiva. Ne treba zanemariti ni mogućnost štetnog delovanja ovih materijala na osoblje koje ga priprema i koristi.

Odgovor organizma na prisustvo dentalnih materijala je dinamičan proces, obzirom na to da se tkiva i organizam menjaju starenjem ili pod uticajem bolesti. Sa vremenom nastaju i promene u samom materijalu, usled korozije, zamora i trošenja. Iako su neželjene reakcije tkiva na prisustvo dentalnih materijala za izradu zubnih proteza retke, ogroman broj svakodnevnih stomatoloških tretmana povećava mogućnost njihovog nastanka.

Biološka aktivnost materijala za izradu zubnih proteza može se sagledati kroz dva aspekta, njihovu interakciju sa tkivima i agensima iz okoline i oslobađanje potencijalno toksičnih supstanci sa lokalnim i sistemskim neželjenim efektom. Interakcija ovih materijala sa okolinim tkivima determinisana je površinskim dizajnom materijala, pre svega njegovom hrapavošću. Neravna površina materijala predilekciono je mesto za nakupljanje plaka, pigmenata, ostataka hrane i pića i raspadnutog oralnog tkiva. Najčešća rekurentna infekcija vezana za nošenje zubnih proteza jeste protetski stomatitis (*Stomatitis*

*protetica, Denture stomatitis*) i javlja se kod 20-70% nosilaca akrilatnih zubnih proteza Složeni biofilm na površini zubnih proteza može biti uzrok i drugih oralnih infekcija, a pre svega oštećenja parodontalnog tkiva i karijesa na preostalim zubima. Opisane su i aspiracione pneumonije i gastrointestinalne infekcije kao posledica protetskog stomatita.

Hrapavost akrilata zavisi od vrste, odnosno polimerizacionog postupka, kao i od završne obrade ili poliranja stomatološke nadoknade. Oslobođanje potencijalno toksičnih supstanci može se prevenirati adekvatnom polimerizacionom procedurom. Poliamidni materijali pokazuju bolja biološka svojstva u odnosu na akrilate i mogu se koristiti u izradi pločastih zubnih proteza, kada postoji preosetljivost na akrilatne polimere.

Biokompatibilnost dentalnih legura određena je njihovom postojanošću u visokokorozivnoj sredini kakva je usna duplja i njihovom površinskom strukturom, odnosno sposobnošću da adheriraju biofilm i raspadne produkte oralne sredine. Eventualna toksičnost elemenata dentalnih legura zavisna je od brzine njihovog rastvaranja i intenziteta reakcije sa tkivom. Biološki odgovor tkiva, sa druge strane, zavisi od vrste elementa, količine i kinetike rastvaranja i vremena ekspozicije oralnog tkiva oslobođenim jonima.

Pregled bioloških svojstava dentalnih akrilata, poliamida i legura koje se koriste u izradi zubnih proteza i mogući rizici po oralna tkiva sa kojima su u kontaktu i po organizam uopšte, daju jasnu preporuku stomatolozima gde, kako i kada upotrebljavati ove materijale, koji su rizici njihovog korišćenja i kako unaprediti njihov dizajn u svrhu željene efikasnosti uz maksimalnu moguću bezbednost.

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Milena Kostić je vanredni profesor na Katedri za stomatološku protetiku Medicinskog fakulteta Univerziteta u Nišu. Učestvuje u izvođenju teorijske i praktične nastave na integrisanim studijama stomatologije, akademskim primenjenim studijama- strukovni zubni protetičar i akademskim specijalističkim studijama iz oblasti stomatološke protetike. Mentor je jedne doktorske disertacije. Naučnoistraživački rad u oblasti stomatološke protetike i stomatoloških materijala rezultirao je sa 53 rada objavljena u recenziranim časopisima i preko 60 izlaganja na konferencijama međunarodnog i nacionalnog značaja. Aktivno se bavi ispitivanjem svojstava i upotrebom dentalnih materijala pa je autor je udžbenika *Gradivni dentalni materijali-biološka svojstva i kliničke promene na oralnim tkivima* i monografije *Akrilatni polimeri u stomatologiji*. Recenzent je više domaćih i inostranih časopisa i učesnik u tri naučno istraživačka projekta. Ostvarila je niz aktivnosti u elementima doprinosa široj akademskoj zajednici.



### PP9 RAZVOJ NOVIH ZLATNIH LEGURA ZA FIKSNE ZUBNE NADOKNADE

**Rudolf Rebeka\*, Šakota Dejan\*\*, Lazić Vojkan\*\*\***

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Na predavanju ćemo predstaviti razvoj novih legura zlata (Au) za fiksne zubne nadoknade, koji se odvija u Zlatarni Celje d.o.o. Slovenija, zajedno sa Stomatološkim fakultetom Univerziteta u Beogradu i firmom Tehnodent d.o.o. iz Novog Sada. Osnova za razvoj nove dentalne legure sa visokim sadržajem Au (~ 87 m.%) je odgovarajući hemijski sastav i tehnologija izrade. Zahtevi koje je trebalo ispuniti razvojem novih Au dentalnih legura odnosili su se na predviđene uslove koje ova legura mora da ispuni da bi mogla da se koristi za izradu metalokeramičkih zubnih nadoknada. Prilikom određivanja hemijskog sastava dentalne legure uzelo se u obzir postizanje odgovarajućih mehaničkih karakteristika (napon tečenja, zatezna čvrstoća, izduženje), tvrdoća, koeficijent toplotnog širenja, otpornost na elektrokorozijsku, otpornost na biokorozijsku, biokompatibilnost i termički ciklus. Stomatološke legure moraju biti usklađene sa zakonodavstvom o medicinskim sredstvima, njihovim aditivima i nemedicinskim sredstvima obuhvaćenim Aneksom KSVI Uredbe (EU) br. 182/2011. 2017/745 i glavni je propis kojim se uređuju medicinska sredstva. Predstavićemo tri vrste dentalnih legura: Bioker, Aurokeram 2 i novu leguru zlata na bazi germanijuma (Au-Ge).

U proteklih 10 godina Rebeka Rudolf se intenzivno fokusirala na razvoj novih dentalnih legura, proučavajući njihovu biokompatibilnost i otpornost na koroziju, što je primenljiva vrednost za oblast stomatologije. Pod njenim rukovodstvom Zlatarna Celje je na tržište EU plasirala 4 nove dentalne legure za koje su sprovedi pretklinička ispitivanja u skladu sa standardima EN ISO 10993-1: 2009 i 10993-5: 2009. Legure su zaštićene i patentima. Na tom planu je unapredila i stručne i naučne standarde na Stomatološkom fakultetu Univerziteta u Beogradu –.

Pored toga, član je više strukovnih i građanskih, nevladinih, udruženja. Predsjednik asocijacije BIMA sa kojom je aktivno učestvovao u akcijama pružanja medicinske pomoći povratnicima u ugroženim, zabitim krajevima BiH, te prezentirao ovu asocijaciju u zemlji i inostranstvu.

### **PP10 MISUNDERSTANDING IN COMMUNICATION BETWEEN DENTISTS, PATIENTS AND DENTAL TECHNICIANS**

#### **Prof.dr.sc. Vlatka Debeljak**

University of Rijeka, Faculty of Dental Medicine; Clinical Hospital of Rijeka – Dental Clinic

Nowadays, there is more and more misunderstanding between doctors of dental medicine and dental technicians when planning prosthetic rehabilitation. At the same time, patients are the ones who often make unreasonable and impossible demands regarding aesthetics. In my lecture, I will try to explain communication skills and ways to improve mutual cooperation to the satisfaction and well-being of all participants.

Prof. Vlatka Debeljak, DMD, PhD., senior scientific advisor, was born in 1978. She graduated in School of Dental Medicine at the Medical Faculty in Rijeka. She began her career at the School of Dental Medicine in Rijeka at the Department of dental prosthetics where she still holds the position. Dr. Debeljak became the master of biomedical sciences in 2005. at the School of Dental Medicine in Zagreb, while her the PhD thesis was defended in 2011. at the Medical Faculty in Rijeka. She completed her specialist training and became a specialist of dental prosthetics in 2009. at the School of Dental Medicine in Zagreb. Her career as a specialist commenced the same year at the Clinic of Dental Medicine of the Clinical Hospital Center in Rijeka. She became an assistant professor in 2012, and a professor in 2017. In 2017. she became a head of the Clinic of Dental Medicine of the Clinical Hospital Center in Rijeka. She has published more than 50 papers of which 29 had been quoted in the CC and SCIE data bases. She is a member of the Croatian Chamber of dental medicine (member of the Professional council, member of the Committee for acknowledgement of international professional qualifications, member of the editorial board of the Herald of the Croatian Chamber of dental medicine), Croatian medical assembly, Croatian society for prosthetic dentistry, European prosthodontics association, member of the work group of teaching and education in dental medicine at the Ministry of health.



### PP11 THE USE OF COMPUTER TECHNOLOGIES IN PROSTHETIC DENTISTRY

#### Assoc. prof. Čedomir Oblak, PHD, DMD

Department of Prosthodontics, Faculty of Medicine Ljubljana; University of Ljubljana, Slovenia.

Department of Prosthodontics, University Medical Centre Ljubljana, Slovenia.

The computer technology in dentistry has developed considerably in last decade and becoming reality in dental practice, therefore today modern prosthetic treatment concepts can't be performed without the use of computer technology. In parallel with the development of novel computer technologies, the development of new materials for computer-assisted production such as milling or 3-dimensional printing is taking place in research laboratories.

The main advantages of using these new technologies are more precise, faster production of ceramic, metal and polymer dental restorations with lower material consumption and more pleasant work for the patients.

The basic diagnostic procedures to capture clinical status data for computer-aided design of prosthetic restorations are CBCT x-rax imaging, intraoral scanning and digital photography. Intraoral scanning (IOS) has been the fastest growing digital process in recent years to transfer data from patient's mouth to digital environment in dental laboratory. The main advantages of IOS are: enabled completely digital planning of prosthetic rehabilitations, allow better communication with the dental technician, dentist and patient, time efficient due to fully computerized data transfer from dental office to dental laboratory and to computer-controlled milling machines or 3D printers. However, disadvantages of IOS are difficult detection of subgingival preparation margins and high initial and maintenance costs of the technology.

The advantage of the materials for the production of prosthetic restorations with modern technology are homogeneous industrial blocks reveal a decreased presence of flaws and pores resulting in increased reliability. The main ceramic materials used in milling machines are: feldspatic ceramics, leucite-reinforced glass ceramics, lithium disilicate ceramics, lithium



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silicate/ phosphate glass-ceramics and oxide ceramics in form of veenering techniques and recently developed translucent zirconia to use in monolithic form.

Graduated from the Dental department, Medical Faculty of the University of Ljubljana in 1992. From the same year he is acting in the Centre for Fixed Prosthodontics and Occlusion of Dental Clinic and Medical Faculty the University of Ljubljana. His clinical interests relate mainly to aesthetic fixed prosthodontic and implant prosthetic rehabilitations. His research work is dealing with dental ceramic materials in cooperation with the Ceramic department of Institute Jožef Stefan in Ljubljana. He is a member and president of The Slovenian Prosthodontic Society, the member of The European Association for Osseointegration and the member of International Association for Dental Research. His publications in the fields of Prosthodontics and Dental materials were published in dental journals and he has presented lectures at national/international meetings.



### PP12 TO SCAN OR NOT TO SCAN – DILEME IZ SVAKODNEVNE PRAKSE

#### Dr Siniša Kovačević

privatna praksa, ZU Stomatologija Kovačević, Banja Luka

Digitalizacija u stomatologiji nije više fraza koja samo najavljuje šta nas očekuje u godinama koje slijede. Digitalizacija u stomatologiji je pojava već uveliko prisutna, i sa sigurnošću možemo reći da danas više ne postoji praksa koja makar na indirektnan način nije već osjetila benefite digitalne tehnologije u svakodnevnom radu. Kroz dijagnostiku, analizu i planiranje ili konačnu izradu nadoknada, uz tehnologije kao što su CBCT, CAD/CAM, skeniranje ili 3D printing, svako od nas je zasigurno već došao u kontakt sa "revolucionarnim" promjenama u radu.

Jedna od ključnih promjena koju nam digitalizacija donosi a koja je globalno već široko rasprostranjena jeste i uvođenje digitalnog "otiskivanja", tj. intraoralnog skeniranja. Kroz predavanje će slušaocima biti iznesena iskustva autora o upotrebi intraoralnog skenera u realnim uslovima u svakodnevnoj praksi. Biće iznesene dileme i zaključci, šta možemo a šta ne možemo očekivati od intraoralnog skenera. Jer kao i svaka revolucija, i ova nam donosi i ushićenja ali i razočarenja.

Dr Siniša Kovačević je vlasnik privatne stomatološke ordinacije "Stomatologija Kovačević" u Banjoj Luci. Diplomirao je na Stomatološkom fakultetu u Beogradu 2008. godine.

Osnovno znanje koje je usvojio na fakultetu nadograđuje konstantnim usavršavanjem na brojnim kursevima i stručnim skupovima u zemlji i inostranstvu. Kroz praksu, i uz težnju da pacijentima pruži visokokvalitetne rezultate, svoja interesovanja je usmjerio u pravcu estetske stomatologije, protetike i implantoprotetike. Svakodnevni rad u privatnoj praksi upotpunio je vrsnim poznavanjem i praktičnom primjenom digitalnih tehnologija i dentalne fotografije čime je zaokružio polje djelovanja.



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Od 2015. godine prihvatajući se po pozivu uloge demonstratora i predavača, stečena iskustva sa zadovoljstvom dijeli sa kolegama kroz niz kurseva, radionica i predavanja uspješno održanih u zemljama u regionu.

Opinion leader je vodećeg svjetskog proizvođača dentalnih materijala Ivoclar Vivadent. Suosnivač je projekta za dentalnu edukaciju Dental Supreme Academia.

Višegodišnji je član evropskog udruženja estetskih stomatologa - European Society for Cosmetic Dentistry (ESCD), a od 2017. godine aktivno djeluje kao Country Chairman tog udruženja za BiH/RS.

2016. godine je pozvan da kao član Upravnog odbora aktivno učestvuje i u radu Udruženja stomatologa Republike Srpske što je sa zadovoljstvom i entuzijazmom prihvatio kako bi doprinio podizanju kvaliteta stomatologije u RS.

U aprilu 2019. postaje predsjednik Udruženja stomatologa Republike Srpske.

### **PP13 USE OF BOTULINUM TOXIN IN TMJ DYSFUNCTION TREATMENT? RISKS, BENEFITS, AND OTHER OPTIONS**

**Assoc. professor d-r Aneta Mijoska**

Faculty for Dentistry, University Ss' Cyril and Methodius, Skopje, N. Macedonia

Temporomandibular disorder (TMD) presents a heterogeneous group of conditions involving the temporomandibular joint (TMJ), muscles and surrounding tissues. Although the etiopathology has not been completely explained, the symptoms associated with these disorders are similar and are most commonly manifested as chronic pain in the orofacial region. Pain around the joint, ear, neck, headache, along with sub-luxation, decreased jaw excursion and jaw locking, are some of the main symptoms. In general TMD is divided into myofascial or arthrogenic, and myofascial TMD is associated with the pain from hyperfunctioning mastication muscles.

The prevalence is high, with up to 25% of the population seeking professional care, while clinically significant TMDs requiring treatment is only 3-5%. Treatment approaches include analgesics, muscle relaxants, nonsteroidal anti-inflammatory drug medications, physiotherapy, occlusal appliances, surgery and trigger point injections with local anesthetics, corticosteroids and botulinum toxin.

The first indication that botulinum toxin could be useful for treating pain was observed from patients treated for hyperfunctional facial lines who reported reduced frequency and severity of headache. The pain-relieving effect was also reported during the treatment with botulinum toxin in oromandibular and cervical dystonia. Today, BTX-A is used as a viable alternative approach for pain relief in numerous conditions including tension headaches, migraine headaches, bruxism-related muscle hyperactivity, post-herpetic neuralgia and myofascial TMD. It decreases pain and improves movements of patients, providing long-term relief by reducing the intensity, frequency, and duration of recurrent episodes. The effects are prolonged up to three months after the injection, but because of the complex nature of TMDs and proximity of affected muscles to facial nerves, correct injection technique and appropriate dosing guidelines are very important for successful results.

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Dr. Mijoska is an author-coauthor of 3 university books and 1 practicum book. Had actively participated in 2 national scientific research projects and 1 international scientific research project at Faculty for medicine, Ljubljana, Slovenia. She expresses her professional work as a member of the editorial board of the scientific and professional journal Knowledge - International Journal, indexed in several international databases and Ebsco and reviewer in several SCI journals. Invited lecturer at domestic and international symposiums and congresses.



### PP14 GUIDED IMPLANTOLOGIJA – BENEFITI DIGITALIZACIJE

**Zoran Vlahović, Bojan Vojnović**

Fakultet medicinskih nauka, Univerzitet u Kragujevcu

U eri savremenih digitalnih tehnologija primena IOS (intraoralnih skenera), odogvarajućih softvera za implantno planiranje kao i softvera za dizajniranje nam omogućuje da se bavimo složenom implantološkom - protetskom rehabilitacijom na najvišem nivou. Backward planiranje predstavlja protokol koji pruža mogućnost da samu poziciju implantata definisemo prema budućem privremenom odnosno definitivnom protetskom rešenju. Proces podrazumeva importvanja i analizu odgovarajućih fajlova (IOS i DICOM), a zatim sledi postupak implantnog planiranja i dizajniranja hirurškog stenta - guide-a kao i njegova izrada tehnikom printanja.

Full guided ili potpuno vodjeni protokol rada u ovakvim slučajevima nam omogućava veliku preciznost i bezbednost u toku same hirurške intervencije, pravilan odnos prema koštanim i mekotičnim strukturama kao i jasno definisan izbor protetskih suprastruktura i materijala koje ćemo koristiti kako u privremenoj tako i u definitivnoj protetskoj restauraciji. Ovaj koncept savremene implantologije posebno je važan kod postupka imedijatne ugradnje implantata i imedijatnog opterećenja.

Guided implantologija i digitalni pristup protetskoj rehabilitaciji je koncept sadašnjosti i budućnosti koji već zauzima vazno mesto u našem svakodnevnom radu.

Prof. dr Zoran Vlahović, specijalista oralne hirurgije, vanredni je profesor na Stomatološkom odseku Medicinskog fakulteta Priština u Kosovskoj Mitrovici na predmetima Oralna hirurgija i Oralna implantologija. Autor je mnogobrojnih stručnih i naučnih radova, od kojih 16 na SCI listi. Objavljivao radove na više od 40 naučnih skupova i održao je preko 30 predavanja po pozivu u regionu i inostranstvu. Uže oblasti interesovanja su mu flapless implantohirurgija, CBCT radiologija i guided implantologija.



Autor je Praktikuma iz oralne implantologije i član Sekcije oralnih hirurga i Sekcije oralnih implantologa Srbije.

Bojan Vojnović je zaposlen u Stomatološkoj ordinaciji Vojnovic Dental Clinic. Naučna oblast ekspertize: implanto – protetska rehabilitacija pacijenata

Od 2012 godine kontinuiran napredak u oblastima protetske rehabilitacije, implantologije i parodontalne hirurgije. 2018 godine postaje spec iz oblasti "Parodontologije i oralne medicine". Naredne 4 godine se intenzivno posvećuje digitalnim protokolima rada u oblasti implantologije i implanto protetike. Dalje znanje je sticao u direktnom kontaktu sa nekim od najvećih svetskih predavača i kliničara iz oblasti implantologije kao sto su Prof. Tomas Linkevicius, dr Istvan Urban, dr Stavros Pelecanos.

Višegodišnje iskustvo rada na polju digitalne stomatologije o čemu svedoče i brendovi koje svaklodnevno koristi: IOS – 3Shape Trios, Planmeca Emerald s, Medit I 500; CAD softweri Sirona in lab, Exocad; Implant planing softweri Msoft, Trios implant studio Exoplan.

Objavljeni radovi u časopisu Dental Tribune na teme "Primena fotodinamske terapije u implantološkom konceptu rada fast and fix", "Straumann – tajne navigacione implantologije".





### PP15 A GUIDE THROUGH COMPLICATIONS IN IMPLANTOLOGY – DIAGNOSTICS AND MANAGEMENT OF CLINICAL CASES

#### Prof. dr Enis Redjep

Katedra oralne i maxilofacijalne hirirgije, Fakultet za stomatologiju, Evropski Univerzitet Republike Makedonije (EURM)

Dental implants are a part of everyday practice in modern dentistry. High number of placed implants, different implant systems, compromised site, needs of graftings and very high number of dentists using implants makes the rates of complications to rise.

In my lectures the starting point is always everyday practice and how we can improve it. Therefore, with a big number of cases, I will try to present some of the complications that are happening and more of this, what we can learn in order to avoid complications or at least make them on minimum.

Enis Redjep was born in Gostivar where he finished elementary and high school. He graduated (DDS) at the Faculty of Dentistry at the University "Hacettepe" in Ankara, and received specialisation and PhD (doctorate) degree in Oral & Maxillofacial Surgery at the Faculty of Dentistry, Ankara University in 2004.

In 2008, he had postdoctoral clinical attachment in the dept. of Plastic, Burn and Craniofacial Surgery, Menoufiyah University, Medical School, Cairo, Egypt.

In 2014, he had an Honorary Clinical Attachment in Facial Plastic and Maxillofacial Surgery, Poole Hospital NHS Trust, England.

2004 – 2010 he was working as a surgeon in VITADENT- Private Dental Surgery, Gostivar, Macedonia, where he still works as part time. 2010 – 2015 worked as Associate Professor, Faculty of Medical Sciences, Faculty of Dentistry, State University of Tetova, Macedonia, where he was vice dean and also head of dental Faculty. Since 2015 he works as full time in European University as a professor of Oral & Maxillofacial Surgery.



### PP16 MANAGING CHALLENGES DURING MAXILLARY SINUS ELEVATION

#### Prof. dr Kenan Ferati

University of Tetovo, North Macedonia

Elevation of the floor of the maxillary sinus is usually used in cases where the resorption of the alveolar ridge has reached an insufficient height of the bone for the placement of dental implants. Elevation of the maxillary sinus on the lateral wall is performed when the bone is insufficient in vertical height, which creates conditions for placing implants in this area. Although this procedure has a high success rate, it can present surgical problems. A description of the anatomy of the lateral wall maxillary sinuses and augmentation techniques leads to a discussion of the various challenges and complications that may arise.

In dentistry, replacing single teeth with implants is a common procedure in the population.

Dental implants are very predictable and can often be placed without the need for prior surgical procedures, however in a number of situations, the bone is insufficient for implant placement. The posterior maxilla is often deficient in bone in the vertical dimension after extraction of the premolar and molar teeth for and proximity of the roots to the maxillary sinus.

Kenan Ferati is professor at the University of Tetovo. Scientific Field of Expertise: Maxillofacial Surgery-Regenerative Surgery.

Representative references: Experimental Analysis of the Use of Cranial Electromyography in Athletes and Clinical Implications 2022; Early functional orthodontic treatment of bad oral habits with AMCOP® bio-activators 2022; Electric toothbrush vs. sonic toothbrush, the effectiveness on gingival inflammation: a randomized clinical trial 2022; Functional breastfeeding: from nutritive sucking to oral health 2022; History and advances in neurosurgery and maxillofacial surgery 2022.



### PP17 UPDATED STRATEGIES FOR THE TREATMENT OF MAXILLARY IMPACTED CANINES

**Apostolos I. Tsolakis, Associate Professor of Orthodontics**

National and Kapodistrian University of Athens, Greece

Maxillary canines are the second more frequent impacted teeth, after the third molars presenting a prevalence of impaction ranging from 1% to 3%.

A radiographic evaluation is always necessary in order to confirm the canine impaction. The sensitivity of CBCT compared to the conventional x-rays is much higher allowing more precise diagnosis of the location, the detection of possible root resorption in adjacent lateral and /or central incisors due to canine impaction, as well as treatment decisions.

Prevention is primarily followed during mixed dentition period, including expansion and distal movement of the dental arch. Also extraction of the primary canines in selective cases may be helpful. Whenever prevention strategy of impacted maxillary canines fails, the conventional treatment consists of combined surgical and orthodontic traction approach.

There is a debate among clinicians whether the open or the closed surgical exposure is the favorable treatment of choice for palatally impacted canines. There is some evidence that there is no difference between the two techniques in terms of periodontal health, and that the open exposure technique constitutes a shorter surgical procedure.

Following the surgical exposure, an orthodontic button is bonded on the crown and a wire chain is fixed on the button. Orthodontic traction is applied to the impacted canine and the force is directed according to the site and direction of impaction, taken care of possible resorptions of the adjacent teeth. Many biomechanical strategies have been proposed with the aim to avoid possible side effects. Whenever the impacted canine erupts in the alveolar ridge any rotations and /or torque movements are considered. A number of clinical cases and various treatment protocols are presented.

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Apostolos I. Tsolakis earned his DDS Degree from the University of Thessaloniki, Greece and received his Master's Degree of Science in Dentistry with specialty certification in Orthodontics at Case Western Reserve University, USA. Dr. Tsolakis holds a PhD Degree from Athens University, Greece. Currently he is Associate Professor of Orthodontics at the University of Athens, Greece. He also serves as Adjunct Associate Professor of Orthodontics at Case Western Reserve University, Cleveland, Ohio, USA. He has worked through academics on a variety of research



projects, including the normal and abnormal growth and development of the mandible and maxilla, biologic mechanisms of tooth movement in normal and osteoporotic rats, class III orthodontic problems and impacted teeth with selected publications in these fields. He has published extensively in international and Greek journals and he has contributed to several book chapters with one of his noteworthy contributions to Enlow's and Hans's book "Essentials of Facial Growth". He has lectured extensively in Universities and Professional Organizations in Europe and United States. He is the editor of the journal "European Journal of Dental Science" and he serves as the president of the recently established European Society of Cranio-Dento-Facial Anomalies (EUSOFA). Also he maintains private clinical orthodontic practices in Athens and Larissa Greece.

### PP18 ORAL PREMALIGNANCY: CURRENT STATUS OF KNOWLEDGE AND FUTURE DIRECTIONS

#### Prof. dr Nikolaos G. Nikitakis

School of Dentistry, National and Kapodistrian University of Athens, Greece

Nikolaos G. Nikitakis is Dean – Professor and Chair at the School of Dentistry, National and Kapodistrian University of Athens, Greece. Scientific Field of Expertise: Oral and Maxillofacial Pathology and Oral Medicine.

Prof. Nikitakis received his DDS (1996) and MD (2012) from the National and Kapodistrian University of Athens (NKUA), Greece and his PhD in Oral and Experimental Pathology (2002) from the University of Maryland, Baltimore (UMB), USA. He completed his specialty training in Oral and Maxillofacial Pathology in UMB (2001) and is a Diplomate of the American Board of Oral Maxillofacial Pathology (ABOMP 2003). He is also a Fellow of the American Academy of Oral and Maxillofacial Pathology (AAOMP 2001) and the American Academy of Oral Medicine (AAOM 2004).



He is currently Professor and Chair in the Department of Oral Medicine & Pathology and Hospital Dentistry of the School of Dentistry, NKUA, in which he is Vice Dean (2020-present) and, starting September 1st, 2022, Dean.

He is Immediate Past President of the European Association of Oral Medicine (EAOM) and President of the Hellenic Society of Oral Medicine and Oral Pathology (HSOMOP).

His clinical interests include the clinical and histopathologic diagnosis and management of oral and maxillofacial disease, while his research interests primarily focus on oral oncology/cancer research.

He has over 350 scientific publications (including over 180 peer-reviewed published papers) with more than 3.150 citations (h index: 34) on Scopus and more than 5.250 citations (h index: 42) on Google Scholar. He is the first author of a textbook in Contemporary Stomatology in Greek.

He has presented numerous papers and invited lectures in scientific meetings, has been invited as Visiting Professor in several Universities, and has received several honors and awards.

### **PP19 PARODONTALNI PATOGENI I PODOPLANIN KAO PROGNOSTIČKI FAKTORI U RAZVOJU ORALNOG KARCINOMA**

**Prof. dr Ana Pucar**

Stomatološki fakultet Univerziteta u Beogradu, Srbija

Oralni karcinom je maligni tumor sa visokom incidencom i čestim recidivima koji pokazuje stabilan porast na globalnom nivou. Tradicionalno pominjani faktori rizika kao što su pušenje i konzumacija alkohola ne mogu da objasne nastanak lezija kod određenog broja pacijenata. Približno 20% karcinoma kod ljudi su povezani sa infekcijama. Polimokrobna flora usne duplje je izuzetno kompleksna, i kada dođe do remećenja balansa ekosistema prerastaju patogeni mikroorganizmi koji ekspimiraju svoje faktore virulence. Hronična inflamacija uzrokovana bakterijama dovodi do karcinogeneze, što podrazumeva započinjanje procesa, progresiju, invaziju i metastaze tumorskih ćelija. Parodontitis je uobičajeno hronično inflamatorno oboljenje za koje pacijenti često ne znaju da imaju. Duboki parodontalni džepovi pružaju stanište velikom broju mikroorganizama koji se povezuju sa nizom sistemskih obolenja. Na prvom mestu se pominje *Porphyromonas*

*gingivalis* (*P. gingivalis*), glavni parodontalni patogen crvenog spektra, koji se može kombinovati sa specifičnim ligandima na površini epitelnih ćelija koji mu omogućavaju prodor u samu ćeliju. Sam proces ubrzava drugi parodontalni patogen narandžastog spektra, *Fusobacterium nucleatum* (*F. nucleatum*).

Klinički i epidemiološki prediktori maligne transformacije su važni, ali na žalost, nisu specifični i nezavisni. Bilo bi od velikog značaja naći prognostički biomarker koji bi ukazao na malignu transformaciju premalignih lezija kao i potencijal invazije i metastaza već razvijenog karcinoma. Na histološkom nivou, epitelna displazija predstavlja zlatni standard u predviđanju rizika, ali i njena tačnost i pouzdanost zavisi od mnogih faktora. Imunohistemijske analize predstavljaju grupu jeftinih i jednostavnih analiza koje mogu pomoći u predikciji razvoja suspektnih lezija. Podoplanin je biomarker koji je široko eksprimovan u limfatičnim endotelnim ćelijama, ali ne i u krvnim sudovima. Uključen je u aktinsko remodelovanje ćelijskog skeleta i može da doprinese

ćelijskoj invaziji povećanjem mobilnosti ćelije. Dosadašnje studije pokazuju njegovu značajnu ekspresiju u metastatskim lezijama oralnog karcinoma.

Ovo predavanje je pregled prognostičkih markera u razvoju oralnog karcinoma, pre svega uloji mikroorganizama oralne mikroflore i potentnog biomarkera podoplanina.

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Ana Pucar je redovni profesor na Stomatološkom fakultetu Univerziteta u Beogradu. Uža naučna oblast: Kliničke stomatološke nauke - Oralna medicina i pacijenti rizika.

1. 07. 2008 – 1.07.2009. Gostujući istraživač (Visiting Researcher) Dept. of Oral Biology and Oral Medicine, UCLA School of Dentistry.

Trenutno učestvuje na naučnim projektima: Interakcija etiopatogenetskih mehanizama parodontopatije i periimplantitisa sa sistemskim bolestima današnjice (41008) – Projekat ministarstva prosvete, nauke i tehnološkog razvoja Republike Srbije; The role of periodontal pocket microorganisms in the etiology of potentially malignant and malignant lesions of oral mucosa in patients with chronic periodontitis (2019-191) – Eklund foundation; Projekat IDEJE (2021) - ORCA-PCR oral cancer – new approaches in prevention, control and post-operative regeneration – an in vitro study.



## PP20 OSIFICIRAJUĆA PROGRESIVNA FIBRODISLAZIJA

### Fočo F<sup>1</sup>, Rašiti A<sup>2</sup>

- 1 Privatna specijalistička ordinacija za maksilofacijalnu hirurgiju Sarajevo
- 2 Privatna stomatološka ordinacija Dr Fočo - Sarajevo

Progresivna mišićna osifikacija (FOP) spada u rijetka, autozomno dominantna, upalna oboljenja, koja rezultiraju bolnim i mučnim oticanjem mišića i fascija, praćenih fibroziranjem i kalcificiranjem. U radu je prikazan šesnaestogodišnji dječak, koji je primljen na Kliniku radi potpuno izraženog trizmusa, odnosno nemogućnosti otvaranja usta, nemogućnosti uzimanja hrane, i dentogenog bola. Prilikom dolaska na Kliniku, posjedovao je dokumentaciju sa klinika iz inostranstva, gdje je liječen pod dijagnozom: Sy.Noonan susp.

U sklopu preoperativne pripreme uključena pedijatrijska dijagnostika na Pedijatrijskoj klinici KCUS-a, na osnovu čega se dođe do zaključka da se radi o dijagnozi: Fibrodysplasia ossificans progressiva. Dijete je vraćeno na kućnu njegu sa preporukom da se javi nadležnom gastroenterologu, jer ne postoji mogućnost za izvođenje operativnog zahvata na Klinici za maksilofacijalnu hirurgiju, zbog veoma visokog rizika za opštu anesteziju.

Ključne riječi: FOP, Sy. Noonan, PEG.

Faris Fočo, rođen je u Sarajevu, 1963. godine, gdje je završio osnovnu i srednju školu, a nakon toga i Stomatološki fakultet, te diplomirao 1989. godine. Specijalizaciju iz maksilofacijalne hirurgije je završio 1998. godine i od tada radi na Klinici za maksilofacijalnu hirurgiju KCU Sarajevo. Post-diplomsku nastavu „osnovi medicinskog istraživanja“ uspješno završava 1998. godine. Kao student se bavio naučno-istraživačkim radom i bio aktivan učesnik Kongresa studenata medicine i stomatologije u Ohridu, 1989. godine.



Aktivno je učestvovao na više kongresa u zemlji i inostranstvu: Bejrut, Islamabad, Kuala Lumpur, Johannesburg i drugo. Do sada objavio, kao autor ili koautor, 24 rada u indeksiranim časopisima, te još 45 rada na kongresima, simpozijumima i stručnim sastancima koji su objavljenih u zbornicima radova.



### PP21 FLEGMONOZNA ZAPALJENJA LICA I VRATA

#### Doc. dr Vladimir Sinobad

Stomatološki fakultet Univerziteta u Beogradu, Srbija

Flegmona predstavlja akutno, difuzno zapaljenje rastresitog vezivnog tkiva bez tendencije ka ograničavanju i stvaranju apscesa. Relativno se retko javlja, ali predstavlja infekciju opasnu po život. U maksilofacijalnoj regiji, najčešće su flegmona poda usne duplje, obraza, orbite, kao i flegmone velikih krvnih sudova. Glava i vrat sadrže veliki broj prostora koji mogu biti naseljeni mikroorganizmima. Infekcije ovih prostora zahtevaju imedijatnu drenažu. Prostori infekcija se moraju drenirati uz sistemsku primenu antibiotika. Ukoliko dijagnostika i terapija nisu adekvatne i blagovremene, infekcije dubokih prostora glave i vrata su potencijalno letalna stanja. Najčešći uzroci ovih infekcija su dentogenog porekla (90%), potom infekcije uzrokovane traumom, hirurškim zahvatima u predelu usne duplje i vrata, tumorima MF regije, peritonzilarnim apscesima. Terapija je uglavom hirurška. Svrha ovih smernica za kliničku praksu je pomoć lekarima u usaglašavanju stavova u pristupu lečenja pacijenata sa infekcijama dubokih prostora glave i vrata.

Ključne reči: Flegmona, apsces, duboke infekcije glave i vrata, dijagnostika, lečenje

Vladimir Sinobad je docent na Stomatološkom fakultetu, Univerziteta u Beogradu. Naučna oblast ekspertize: Maksilofacijalna hirurgija.

S.O.R.G. Arthroscopic and open temporomandibular joint surgery-basics and new horizons, Vienna, October 2017.





# 21. KONGRES STOMATOLOGA SRBIJE

**E-POSTERI**

### EP1 DESIGN OF TOTAL DENTURES – CHALLENGE IN DENTAL PROSTHETICS

**Budima Pejkovska Shahpaska, Ivona Kovacevska, Katerina Zlatanovska, Julija Zarkova Atanasova**

Republic of Macedonia

**Introduction:** The design of total dentures in every day clinical practice has always been a challenge for both the dental prosthetist and the dental technician.

**Objective:** To emphasize the need of usage of specific articulator, in accordance with the skeletal class of the patient.

**Result:** In the presented case, a patient with skeletal class by Angle II was treated with removable total dentures. The specific measurements with the usage of face bow and semi individual articulator, resulted in functional - aesthetic rehabilitation of the patient. As therapists, we are indulged to follow nature, to restore what has been lost in terms of vertical and horizontal relation.

**Conclusion:** It is a challenge to create a denture that is satisfactory for both the patient and the dental prosthetics team. Manufacturing dentures by respecting the patient's skeletal class is coordinated with success and proper restoration of function and aesthetics.

### EP2 UTICAJ KOŠTANIH ZAMENIKA NA OSTEOGENU DIFERENCIJACIJU MATIČNIH ĆELIJA PULPE ZUBA

**Dijana Mitić, Milica Jakšić Karišik, Miloš Lazarević, Maja Milošević Marković, Jelena Milašin**

Laboratorija za bazična istraživanja, Stomatološki fakultet, Univerzitet u Beogradu

**Uvod.** Nanostrukturisani koštani zamenci na bazi hidroksiapatita (nHAP), odgovarajućih mehaničkih svojstava i rastvorljivosti, predstavljaju inovativne materijale za primenu u stomatologiji.

**Cilj.** Ispitati uticaj nHAP na vijabilnost i osteogenu diferencijaciju matičnih ćelija pulpe zuba.

**Metodologija.** Iz tkiva pulpe zuba izolovanje su ćelije "outgrowth" metodom. Nakon pete pasaže metodom protočne citometrije ispitana je ekspresija membranskih markera (CD34, CD45, CD73, CD90 i CD105). Vijabilnost ćelija je ispitana MTT testom, 24 sata od izlaganja materijalu. Nakon 14 dana od izlaganja materijalu ispitan je uticaj na osteodiferencijaciju bojenjem Alizarin crvenim.

**Rezultati.** Preko 99% ćelija iz uzorka pozitivno je ispoljavalo mezenhimske markere (CD73, CD90 i CD105), dok je manje od 1% ćelija bilo pozitivno na hematopoezne markere (CD34 i CD45). Vijabilnost ćelija bila je očuvana u prisustvu materijala, dok je veća koncentracija dovela do značajne proliferacije. Nakon 14 dana pokazano je značajno veće prisustvo kalcijumskih globula na membranama ćelija gajenih u prisustvu ispitivanih materijala, u odnosu na kontrolu.

**Zaključak.** Matične ćelije pupe pokazale su visoku ekspresiju markera specifičnih za mezenhimne matične ćelije. U prisustvu materijala došlo je do značajne proliferacije ćelija i stvaranja kalcijumskih depozita, što je svojstvo ćelija diferentovanih ka osteogenoj lozi. Sve navedeno pokazuje da novi koštani zamenci tokom kraćeg izlaganja dovode do umnožavanja ćelija, dok tokom dužeg vremenskog perioda podstiču usmeravanje ćelija ka osteoblastima. Dalja ispitivanja treba da pokažu dejstvo materijala u in vivo uslovima.

Istraživanje sprovedeno uz podršku Fonda za nauku Republike Srbije, broj projekta 7750038, "Oral cancer – new approaches in prevention, control and post-operative regeneration – an in vitro study" – ORCA-PCR

### EP3 APEXOGENESIS STORY – CASE REPORT

**Dr. Dejan Ivanovski (PHD student), Ass. Prof. Julija Zarkova Atanasova, Ass. Verica Toneva Stojmenova, Prof. Ivona Kovacevska Dentalmedika, Dr. Dejan Ivanovski**

University "Goce Delcev" Shtip, Faculty of Medical Sciences, Macedonia

**Introduction:** Apexogenesis is the first choice of treatment for teeth with trauma or carious lesions with a vital pulp at the time of exposure and open the apex.

**Aim:** The goal of this paper was to demonstrate an effective treatment for permanent teeth with unfinished root growth and a deep caries lesion.

**Methodology and material:** A 9-year-old patient came in our office with severe spontaneous pain. During the clinical examination, a deep carious lesion on the upper first premolar 14 was discovered. A radiograph revealed incomplete root growth and an open apex (parallel walls).

**Therapy:** 1. Anesthesia and placement of rubber dam isolation; 2. Removal of the entire inflamed coronary pulp to the level of the radicular pulp (conventional pulpotomy); 3. Control bleeding by pressure with sterile saline-soaked cotton balls; 4. Flushing the exposed pulp with 2.5% sodium hypochlorite; 5. Application of MTA with MAP System on the amputated pulp; 6. Covering with glass ionomer cement; 7. Final restoration.

After follow up in 3-6-9 months, there were no clinical symptoms of any kind, and the periapical radiograph showed continuous apical root growth. (figure 3, 4 and 5)

**Conclusion:** Clinical use of MTA as a material for apexogenesis may be an appropriate and very efficient treatment option. This case report emphasizes the importance of regular follow-up after any procedure in young permanent dentition.

### EP4 POVRATAK FUNKCIJA ARTIKULACIJE I MASTIKACIJE KOD PACIJENATA SANIRANIH GORNJOVILIČNIM POST-RESEKCIJONIM PROTEZAMA

**Univ. Prof. dr Ljubiša Džambas, Dr. Jelena Bratić**

Univerzitet u Novom Sadu, Medicinski Fakultet  
Klinika za Stomatologiju Vojvodine

**UVOD:** Broj pacijenata sa neophodnom sanacijom usne duplje gornjoviličnim postresekcionim protezama poslednjih nekoliko godina se povećao (maligni tumori, ciste, dejstvo tupe sile, vatreno oružje i eksplozivna dejstva), sa naglaskom da se povećao broj pacijenata sa malignim tumorima u orofacijalnoj regiji.

**CILJ:** Dijagnostika i pravovremena hirurška intervencija, predstavljaju 50% uspešnog lečenja. Drugih 50%, predstavlja sanaciju oro-antralne, oro-nazalne šupljine sa gornjoviličnim postresekcionim protezama. Osnovni cilj je da se pacijentima, nakon operativnog tretmana (najčešće maligni tumori) u što većoj meri povrate funkcije artikulacije i mastikacije. Time će se poboljšati kvalitet života pacijenta.

**METODOLOGIJA:** Nakon anamneze koja se dobija najčešće od pratioca, kliničkog pregleda kao i dodatne dijagnostike (OPT snimak, CT snimak, IMR, PH nalaza) pristupalo se operativnom uklanjanju tkiva a time se stvarala oroantralna, oronazalna ili kombinovana komunikacija. Zbog nedostatka delova koštanog i mekog tkiva, kao i nemogućnosti funkcija artikulacije i mastikacije defekti su morali biti sanirani veštačkim materijalima, na bazi akrilata.

Prvo se novonastali defekt – otvor sanira samo sa akrilatnom pločom parcijalnom, ako u usnoj duplji gornje vilice postoje preostali zubi, ili totalnom akrilatnom pločom, kada nedostaju svi zubi u gornjoj vilici a nakon zračne terapije i / ili hemio terapije zatvara se, sa postresekcionim delom i veštačkim krunicnim delom zuba. Od 48 pacijenta oba pola, pacijenata ženskog pola bilo je 18, dok je 30 pacijenata bilo muškog pola.

**REZULTATI:** Imperativno je pristupiti ovakvim pacijentima timskim radom u svrhu što kvalitetnije i brže sanacije pacijenata. Rezultati kod 48 pacijenta, prihvatanja postresekcionih proteza i psihičkog oporavka, poboljšanja funkcija



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artikulacije i mastikacije biće putem tabela i grafikona prikazani u radu in extenso.

**ZAKLJUČAK:** Prevencija, kao i rana dijagnostika predstavljaju osnov što kvalitetnijeg i bržeg izlječenja pacijenata sa ovom patologijom. Pravovremena stomato-protetička sanacija gornjo-viličnim post-resekcionim protezama pokazala je uspeh kod delimičnog povratka funkcija ponovne artikulacije, kao i mastikacije. Pacijenti su pokazali visok stepen zadovoljstva, ne samo zbog povratka navedenih funkcija, već i zbog povratka u porodičnu i radnu sredinu, što je od velikog značaja za pacijente.

### EP5 ASSESSMENT OF ERUPTION AND POSSIBILITY OF IMPACTION OF MANDIBULAR THIRD MOLARS

**Dzipunova B, Toseska-Spasova N, Jankulovska Hodzic M, Radojkova Nikolovska V, Simjanovska Lj, Pancevska S, Stavreva N**

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Dental Clinical Center "Ss.Pantelejmon" Skopje, North Macedonia

**Abstract:** The eruption of mandibular third molars (MM3) is a complex process and often uncertain.

**The aim** of our research was to analyze and determine the position and placement of fully formed and erupted and fully formed but unerupted MM3.

**Material and method:** panoramic images of 64 patients, aged 16-28 years were selected and the positions of 100 MM3 were analyzed, before the orthodontic treatment. The subjects were divided into 2 groups: fully erupted and developed MM3, both clinically and radiographically and unerupted MM3 that are clinically unerupted, but radiographically show complete root formation.

Examined were 3 linear variables (mesiodistal width, available space for eruption to the ramus and to the Xi point), 4 angular ( $\alpha$ ,  $\beta$ ,  $\gamma$  and gonial – angles) and 2 ratios (R1 - between LES-R and MDW and R2 between LES-Xi and MDW).

**Results:** The mesiodistal width had a similar value in the groups with complete erupted and unerupted MM3. Parameters LES–R and LES–Xi were confirmed statistically significant ( $p < 0.0001$ ). Groups had significantly different values for  $\alpha$ - and  $\beta$  –angle ( $p < 0.0001$ ), while the values of  $\gamma$  - and Go - angle between these two groups were not statistically different ( $p = 0.86$ ,  $p = 0.064$  respectively). In the group of fully erupted molars significantly higher R1 and R2 ratios were obtained ( $p < 0.0001$ ,  $p = 0.000008$ ).

**Conclusion:** Results suggests the conclusion that in group with complete formed and erupted MM3, the available space for eruption was significantly greater, as well as the angle formed by the axial axis of the MM3 and the gonio-symphyseal difference and R1 and R2 ratios.



### EP6 MAXILLARY RIDGE PRESERVATION PRIOR TO IMMEDIATE IMPLANT INSERTION

**Bruno Nikolovski<sup>1</sup>, Biljana Dzipunova<sup>2</sup>, Vera Radojkova Nikolovska<sup>2</sup>,  
Natasa Tosevska Spasova<sup>2</sup>, Dimova Cena<sup>1</sup>**

1. Faculty of medical sciences, Goce Delcev University, Stip, North Macedonia

2. University dental clinical center St. Pantelejmon, Faculty of dentistry, Cyril and Methodius University, Skopje, North Macedonia

**Abstract:** There is a growing tendency to place single tooth implants immediately after extracting a failing tooth in the posterior region.

The **aim** of this article is to present the treatment and the one-year clinical follow-up of a patient.

This **case presentation** illustrates a solution of rehabilitation option after maxillary bicuspid loss, including the diagnosis, treatment planning and the procedure of implantation. After the atraumatic extraction of the both maxillary premolars, we did a procedure for alveolar ridge preservation using a mixture of cortico-cancellous allograft and xenograft, and resorbable membrane (Maxgraft® and Mucoderm® by Botiss biomaterials GmbH, Germany) to enlarge the ridge and correct facial and socket defects, as well as thickening the peri-implant tissue.

We used endosseous titanium self-tapping dental implants with conical shape, immediately placed after the act of extraction. The platform-switching helps preventing crestal bone loss, increases the volume of soft tissue around the implant platform and improves the esthetic end result.

Bone and soft tissue defects were healed over time by wearing a long-term temporary crowns, titanium custom made abutments and final BruxZir® solid zirconia crowns.

**Conclusion:** The paper highlights this combined approach in the placement of implants in fresh extraction sockets with good and stable esthetic and functional results.

**Keywords:** Immediate implant placement, posterior region, extraction sites, ridge preservation

### EP7 CLINICAL EVALUATION OF PREVENTION OF ENAMEL DEMINERALIZATION DURING ORTHODONTIC TREATMENT

**Efka Zabokova-Bilbilova<sup>1\*</sup>, Natasha Stavreva<sup>2</sup>, Jasna Simonoska<sup>1</sup>, Tanja Stefanoska<sup>3</sup>, Julijana Stevanandjija<sup>4</sup>**

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2. Department of Prosthodontics, Faculty of Dental Medicine, "Ss Cyril and Methodius" University, Skopje, Republic of North Macedonia
3. PHI Health Centar - Polyclinic Idadija (Mlin Balkan) Skopje, Republic of North Macedonia
4. General Hospital with expanded activities "Borka Taleski Prilep", Republic of North Macedonia

Enamel demineralization around fixed orthodontic attachments is a common complication during and following fixed orthodontic treatment. The aim of this clinical study was to examine the effect of dental crema casein phosphopeptide-amorphous calcium phosphate (CPP-ACP) on the white spot lesion (WSL) formation in patients with fixed orthodontic appliances.

**Material and Methods:** In this clinical trial, 60 patients undergoing or scheduled for fixed orthodontic treatment were divided into two groups of 30 patients each. The control group received no preventive intervention. In the experimental group dental crema was applied every day over the examination period. The clinical examination for WSL took place at baseline, after 3, 6 months and after debonding the fixed orthodontic appliances. WSL formation was assessed by the WSL index.

**Results:** The WSL values between both groups were comparable at baseline (experimental:  $1.23 \pm 0.21$ ; control:  $1.19 \pm 0.22$ ), after 3 months (experimental:  $1.26 \pm 0.25$ ; control:  $1.23 \pm 0.23$ ), and after 6 months (experimental:  $1.24 \pm 0.23$ ; control:  $1.27 \pm 0.26$ ). After debonding of the appliance, the values of WSL were significantly lower in the experimental group vs. control group ( $1.21 \pm 0.28$  vs.  $1.32 \pm 0.33$ ).

**Conclusion:** The incidence of WSL in patients treated with fixed orthodontic appliances is significantly high. The use of dental crema CPP-ACP-containing significantly reduced the incidence of white spot lesion formation. The preventive therapy provided appeared to be effective.

**Keywords:** WSL, fixed orthodontic appliance

## EP8 MAXILLOFACIAL PROSTHETIC REHABILITATION WITH EYEGLASSES – RETAINED ORBITO-NASO-FACIAL PROSTHESIS: A CASE REPORT

Igor Djordjevic, \*Filip Ivanjac, Vojkan Lazic, \*Vitomir Konstantinovic

School of Dental Medicine, University of Belgrade, Clinic for Prosthodontics

\*Clinic for Maxillofacial surgery, Belgrade, Serbia

**Keywords:** maxillofacial prosthodontics, orbital prosthesis, nasal prosthesis, facial defects

**Introduction:** The most facial defects are due to neoplasms. It is rare for a patient to have three facial deformities at the same time. In addition to both contour and color, the wishes of the patient coincide with satisfying and adequate retention of prosthesis.

**The aim** of this case report is to present the clinical and laboratory procedures in manufacturing of orbito-naso-facial acrylic eyeglasses retained prosthesis, for a patient with acquired postsurgical deformity.

**Case Presentation:** A 76-year old female patient was addressed to the Clinic for Maxillofacial surgery, School of Dental Medicine, University of Belgrade with orbito-naso-facial deformity. The resulting left-sided defect was a consequence of advanced basal-cell carcinoma, secondary to surgery. Frontal bone, premaxilla and right-sided portion of nasal pyramids showed sufficient bone quality. The nasal septum was intact, as well. Both quality of the surrounding skin and defect edges were also satisfactory.

The impression was made regularly with an irreversible hydrocolloid material in a plaster slurry.

In this case, the position and depth of the defect, as well as the presence of half of the nasal pyramid and nasal septum were aggravating circumstances for wax-sculpting. The aforementioned circumstances, as well as the patient's general state of health, led us to decide on glasses as a form of episthesis retention in this case. At the master model both form and boundaries of episthesis were planned and wax-sculpted. The artificial eyeball is centered in the usual way. The edges of wax-sculpted episthesis were intimately adapted to the edges of the defect, after finished. The episthesis wax model was converted to heat polymerized acrylic resin in the usual manner, afterwards.

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Previously, color of the heat polymerized acrylic resin was selected by the color of the surrounding skin.

After polymerization the prosthesis was attached to the glasses with self-bonding acrylic resin. Retention glasses should preferably have a stronger plastic frame to hold the prosthesis of this size.

**Conclusion:** Proper stability and retention of prostheses were achieved, as well as satisfied cosmetic result.

## EP9 MAXILLOFACIAL PROSTHETIC REHABILITATION WITH IMPLANT-RETAINED AURICULAR PROSTHESIS: A CASE REPORT

**\*Filip Ivanjac DDS PhD, Igor Djordjevic DDS PhD, Minja Miličić- Lazić DDS PhD, \*Vitomir Konstantinovic DDS MD PhD**

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**Keywords:** maxillofacial prosthodontics, auricular prosthesis, extraoral implants

**Introduction:** The majority of auricular defects are consequence to treatment of neoplasms, congenital deformities, or after mutilating accidents. Auricular defects are predominantly subtotal which are demanding for prosthodontic restoration, the prosthesis has to be similar to the earlobe on the opposite side. Shape and color, are consulted with the wishes of the patient considering adequate prosthetic retention. Sometimes a sibling is asked to give the impression of their earlobe from the same side to be able to imitate the shape and size.

**The aim** was to show the clinical and laboratory procedures in manufacturing of auricular prosthesis for a patient with acquired posttraumatic deformity.

**Case presentation:** A 25-year old male patient was referred to the Clinic for Maxillofacial surgery, School of Dental Medicine, University of Belgrade with posttraumatic auricular defect. Previous reconstructive surgery was unsuccessful, so removal of remaining earlobe was indicated and afterwards prosthetic rehabilitation.

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. Since the cortical bone is „paper thin” implant with a flange design and drill with a stop were used to prevent deeper tissue injury. After the osseointegration period, 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.

## EP10 EFFECT OF ADDED STRONTIUM COMPOUNDS ON SOLUBILITY AND POROSITY OF CALCIUM SILICATE CEMENT

**Veljko Ilić, Sanja Milutinović-Smiljanić, Đorđe Antonijević, Vladimir Biočanin, Vesna Danilović, Dragan Ilić**

**Introduction:** Calcium silicate-based materials are widely used in dentistry. However, in addition to the useful characteristics of these materials, it is possible to further improve their physicochemical and biological properties. The aim of this work was to investigate the solubility and porosity of Portland cement (PC) with the addition of strontium carbonate (SC) and strontium fluoride (SF).

**Materials and methods:** Two experimental groups consisted of PC with the addition of 30% SC (PC+SC) and PC with the addition of 30% SF (PC+SF), while pure PC was used as the control group. Six cylindrical samples (4x6 mm) were made for each group. Solubility was tested according to the ISO 6876 standard by measuring the weight of the samples before and after a seven-day immersion in a simulated body fluid. Porosity was measured before and after immersion using microcomputed tomography and the following parameters were calculated: total porosity (TP), open porosity (OP), closed porosity (CP), average pore size (APS), pore connectivity (PCN) and pore size distribution (PSD). All data were subjected to statistical analysis.

**Results:** PC+SC ( $-8.3\pm 0.6\%$ ) and PC+SF ( $-7.8\pm 0.5\%$ ) showed statistically significantly lower solubility compared to PC ( $0.5\pm 0.6\%$ ) ( $p < 0.05$ ). Statistical significance before immersion was determined in PC+SC and PC+SF for TP ( $0.9\pm 0.3\%$  and  $0.66\pm 0.18\%$ ) ( $p < 0.001$ ), OP ( $0.2\pm 0.1\%$  and  $0.11\pm 0.04\%$ ) ( $p < 0.01$ ) and CP ( $0.67\pm 0.14\%$  and  $0.55\pm 0.18\%$ ) ( $p < 0.05$ ) compared to PC ( $5.4\pm 1.7\%$ ;  $4.0\pm 3.0\%$ ;  $1.5\pm 0.6\%$ ). After immersion, statistical significance was determined in PC+SC and PC+SF for TP ( $0.65\pm 0.15\%$  and  $0.4\pm 0.3\%$ ) ( $p < 0.01$ ), OP ( $0.12\pm 0.07\%$  and  $0.87\pm 0.04\%$ ) ( $p < 0.05$ ) and CP ( $0.52\pm 0.14\%$  and  $0.4\pm 0.2\%$ ) ( $p < 0.05$ ) in comparison with PC ( $4.2\pm 1.2\%$ ;  $3.0\pm 1.6\%$ ;  $1.3\pm 0.6\%$ ).

**Conclusion:** The addition of strontium carbonate or strontium fluoride statistically significantly reduces the solubility and porosity of dental materials based on calcium silicate and thus improves their physical and chemical characteristics.

**Key words:** Portland cement, calcium silicate, strontium carbonate, strontium fluoride, solubility, porosity

### EP11 RAT SUBCUTANEOUS TISSUE RESPONSE TO NEW CALCIUM ALUMINATE CEMENT SUPPLEMENTED WITH ZIRCONIUM OXIDE

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**Introduction/Aim:** To improve the physical and chemical properties of dental materials, this study aimed to evaluate the inflammatory response of a novel calcium aluminate-based cement supplemented with ZrO<sub>2</sub> (CA+ZrO<sub>2</sub>).

**Materials and Methods:** Eighteen Wistar outbred male rats were subjected to subcutaneous implantation of sterilized polyethylene tubes into four separate dorsal regions of each rat. Tubes were filled with the following materials: CA+ZrO<sub>2</sub>, pure calcium aluminate cement (CA), Portland cement (PC), and commercial mineral trioxide aggregate (MTA), while the empty tube served as control. The rats were assigned into three groups (n=6) according to the sacrifice time of 7 days, 30 days, and 90 days. Histological sections of the connective tissue at the open ends of the tubes were prepared. A quantitative assessment of inflammatory cells was histomorphometrically performed at three separate fields of each specimen at x400 magnification of the light microscope and analyzed in SPSS.

**Results and Discussion:** The predominant cell types in 7-day sections were polymorphonuclear neutrophils, lymphocytes, plasma cells, and macrophages. Lymphocytes were predominant in 30-, and 90-day sections. The number of inflammatory cells decreased significantly ( $p < 0.01$ ) in all groups after 30 and 90 days after implantation, compared to their own 7-day periods. Compared to Control and MTA, CA ( $p < 0.01$ ), PC ( $p < 0.01$ ), and CA+ZrO<sub>2</sub> ( $p < 0.05$ ), showed a statistically higher inflammatory reaction after 7 days. The inflammatory response of all groups decreased sharply after 30 days, even CA+ZrO<sub>2</sub> showed significantly lower reaction than MTA ( $p < 0.05$ ). After 90 days, CA ( $p < 0.01$ ), and PC ( $p < 0.01$ ), exhibited statistically higher inflammatory response than Control and MTA. However, CA+ZrO<sub>2</sub> expressed statistically milder inflammatory response compared to MTA ( $p < 0.01$ ).

**Conclusion:** After the longer periods (30 and 90 days) PC, CA, and CA+ZrO<sub>2</sub>, showed similar biocompatibility performance compared to commercially available MTA. CA+ZrO<sub>2</sub> even showed a statistically significant lower inflammatory response compared to MTA for the same periods.



## EP12 DELAIR MASK IN THE EARLY PHASE OF TREATMENT OF CLASS III MALOCCLUSION

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**Introduction** – Angle Class III malocclusion is a sagittal discrepancy usually with a hereditary etiology. These patients have a pronounced extraoral expression at the early age. It is characterized by a concave profile of the face, enlarged lower third, prominent chin, hypoplastic maxilla. The early treatment of patients with the application of Delair mask allow an orthopedic effect on the maxilla and its extension in the sagittal direction.

**Objective** – to show the effect of treatment with the Delair mask on the patient with class III malocclusion in mixed dentition

**Material and method** - A female patient with class III malocclusion aged 9 years and 11 months, in a period of late mixed dentition was treated with Delair mask. Cephalometric analysis indicated a reduced length of the maxilla, with an increased length of the mandible and a tendency for horizontal growth that tended to emphasize the present malocclusion. Patient wore the mask for period of 14 months, from 12-14 hours a day, with an applied force of 350g on each side. After the achieved results with the treatment with the Delair mask, braces with roth prescription were bonded. The patient is still under treatment with fixed orthodontic appliances.

**Results** – after using the orthopedic effect of the Delair mask for a period of 14 months, a protraction of the maxilla, correction of the sagittal relations of the jaws, correction of the occlusal relations were obtained and positive overjet was achieved in the frontal region. Changes in the sagittal relationship of the maxilla and mandible are visible on a cephalometric analysis.

**Conclusion** – use of the Delair mask in the early stages of orthodontic therapy enables orthopedic action on the upper jaw and obtaining satisfactory results in terms of function and aesthetics.

**Keywords** – class III malocclusion, Delair mask, maxilla protraction

### EP13 TERAPIJA PSEUDOPROGENOG ZAGRIŽAJA U PERIODU MEŠOVITE DENTICIJE

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**UVOD:** Progenija je ortodonska nepravilnost koja nastaje zbog nesklada između donje i gornje vilice, kao i nepravilnog odnosa gornjih i donjih sekutića u okluziji, u sagitalnom pravcu. Kombinacija skeletnih nepravilnosti III klase mogu biti: Retrognatizam maksile sa normognatizmom mandibule; bimaksilarni prognatizam sa dominacijom prognatizma mandibule; bimaksilarni retrognatizam sa dominacijom retrognatizma maksile; normognatizam maksile sa prognatizmom mandibule i bimaksilarni normognatizam sa obrnutim preklpom.

**METODOLOGIJA RADA:** Podrazumeva sprovođenje opsežnog diferencijalno dijagnostičkog postupka progenog zagrižaja, koji se postavlja na osnovu ekstra i intraoralnih nalaza, funkcionalne analize, analize studijskih modela i analize telerengenograma glave.

**CILJ RADA:** Podrazumeva prikaz modaliteta lečenja pseudoprogenog zagrižaja u mešovitoj denticiji. Pseudoprogenija (lažna progenija) nastaje usled sagitalne i transverzalne nerazvijenosti maksile, pri čemu je mandibula normalno razvijena. Osnovni zadatak terapije je stimulisanje razvitka maksile pomoću: 1) Aktivnih aparata (Y aparat, sa obostranim bočnim nagriznim grebenovima) i istovremenim okretanjem oba šrafa aparata, 2) Aparata sa lučno sečenom pločom i šrafom postavljenim u predelu očnjaka i obostranim bočnim nagriznim grebenovima, 3) Bionatora po Baltersu tip 2, sa vestibularnim lukom, postavljenim u predelu donjih sekutića, 4) Regulatora funkcije po Frenkl-u i 5) Delerova facijalna maska.

**REZULTAT RADA:** Prikaz slučaja pacijenta muškog pola, uzrasta 9,6 god. Posle opsežnog dijagnostičkog postupka došlo se do zaključka da pacijent poseduje ortodonsku nepravilnost poznatu pod nazivom 'pseudo-



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progenija” ili lažna progenija. Ordiniran: gornji aktivni aparat sa kontra labijalnim lukom, obostranim NG/ Y Aparat/.

**ZAKLJUČAK:** Pacijent je u mešovitoj denticiji. Na početku Th postupka, intraoralno ima obrnut preklop sekutića dubine 3 mm incizalnog razmaka 1mm. Skeletno III klasa, divergentan odnos vilica, rast zadnjom rotacijom. Smanjene vrednosti korpusa maksile i normalna vrednost korpusa MB. Nošenjem gornjeg aktivnog aparata / Y/sa kontralabijalnim lukom i obostranim NG, uz istovremeno okretanje zavrtnja. Za 6 meseci je postignut pravilan preklop sekutića. U potpunosti uklonjeni NG. Pacijent nastavlja da nosi isti aparat kao retencioni.

**KLJUČNE REČI:** pseudoprogenija, kontralabijalni luk, Y Aparat, retencija, nagrizni grebeni.

### EP14 ALERGIJSKE MANIFESTACIJE U USNOJ DUPLJI

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**Uvod:** Alergija je neuspešan odgovor organizma protiv stranih antigena. Ponovno uvođenje iste strane materije u organizam izaziva reakciju koja dovodi do uništavanja sopstvenog tkiva. Alergijske reakcije se mogu izraziti u različitim organima i u bilo kojoj starosnoj grupi.

**Materijal i metode:** U ovom radu učestvovalo je 84 pacijenta. Dijagnoza je zasnovana na pozitivnoj anamnezi preordiniranja leka, ugriza insekata, ranijih alergijskih reakcija, kao i tipične kliničke slike. Pratili su se varijante alergijskih promena, kao i najčešći uzroci njihove pojave. U potrazi za najčešćim alergenima, lekovi u stomatološkoj praksi takođe su smatrani potencijalnim pokretačima alergijskih događaja.

**Rezultati:** Najčešći oblik alergijske reakcije bio je Stomatitis allergica i Enanthema fixum, sa lokalizacijom na dorzalnoj površini jezika i sluzokožom obraza. Skoro polovina registrovanih pacijenata prijavila je promenu nakon uzimanja odgovarajućeg leka iz grupe sulfonamida i penicilina.

**Zaključak:** Ako je uzrok alergija poznat, prevencija kontrole alergijske reakcije je na prvom mestu. Visoka prevalenca alergijskih bolesti, poboljšane dijagnostičke procedure i tretmani imali su veliki uticaj na pružanje medicinske zaštite pacijentima sa alergijom. Ponekad možda neće biti moguće potpuno izbeći alergijsku reakciju, ali ovi koraci mogu pomoći u sprečavanju budućih alergijskih reakcija. Lekari treba da usvoje jasne nazive alergijskih poremećaja i pridržavaju se nomenklature u njihovoj profesionalnoj i javnoj komunikaciji.

**Ključne reči:** alergija, usna duplja, promene u ustima.

### EP15 ŠTETAN UTICAJ DUVANSKOG DIMA NA ORALNO ZDRAVLJE I ESTETIKU USNE DUPLJE

#### Ivana Eskić

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Pušenje duvana štetno utiče na opšte zdravlje pa tako i na zdravlje usne duplje. Sagorevanjem duvana klasične cigarete oslobađa se duvanski dim, kao složena mešavina sa oko 6000 poznatih štetnih supstanci (preko 50 registrovanih kancerogena). Nikotin se izdvaja kao glavna ovisnička molekula sa određenim rizikom po zdravlje, međutim nije glavni uzročnik oboljenja koja se dovode u vezu sa pušenjem duvana. To su pre svega toksini i kancerogeni duvanskog dima. Kao posledica hronične izloženosti usne duplje hemijskim i termičkim efektima duvanskog dima, mogu se uočiti različite promene i oboljenja od banalnih estetskih promena do malignih promena opasnih po život.

Čvrsta komponenta duvanskog dima-katran, taložeći se na zubnoj gleđi, zubnom ispunu, protetskoj nadoknadi ili cementu ogoljenog korena zuba formira hrapavu, lepljivu površinu, koja olakšava akumulaciju dentalnog plaka (biofilma) i otežava oralnu higijenu. Rastvorljivi pigmenti duvanskog dima ugrađuju se u hronično oslabljenu kristalnu rešetku hidroksiapatita i prouzrokuju prebojenost zuba. Kod hroničnih pušača kompromitovan je lokalni i opšti imunitet. Češća je pojava i progresija različitih oboljenja, niza komplikacija u različitim vidovima terapije u usnoj duplji, lošija prognoza i otežano održavanje postignutih terapijskih rezultata.

Prestanak pušenja je najbolje moguće rešenje. Stomatolog ima značajnu ulogu u multidisciplinarnom pristupu odvikavanja od ove štetne navike, kao i u savetovanju pacijenata o postojanju manje štetnih alternativnih duvanskih proizvoda.

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### EP16 PROSPECTIVE ELEMENTS FOR FABRICATION OF A PULP EXTRACELLULAR MATRIX SCAFFOLD FOR REGENERATIVE ENDODONTICS

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**Introduction:** Extracellular matrix (ECM) scaffold is a promising tool in dental pulp tissue regeneration via cell homing. Adding non-collagenous molecules-proteoglycans (PGs) to collagen-based matrices can be beneficial for mimicking the pulp ECM. The PGs make a structural and signalling network within ECM and are crucial for controlling the bioavailability of various growth factors. They provide nesting for dental pulp stem cells and enable the sequential release of dentin matrix components capable of initiating dentinogenesis and producing dentin-like tissue. Here, we conduct a literature evaluation searching for the most promising PG candidates to develop a novel scaffold for dental pulp regeneration.

**Method:** Literature research was conducted via Medline, Embase, Cochrane databases and Boolean operators (OR, AND) with combined MeSH terms and keywords: scaffold, dental pulp regeneration, proteoglycans, extracellular matrix.

**Results:** Small leucine-rich proteoglycans (SLRPs) are the most common PGs in dental pulp, including decorin (DCN), biglycan (BGN), versican, and hyaluronic acid (Listik et al., 2019). They are involved in transforming growth factor  $\beta$  (TGF  $\beta$ ), bone morphogenetic protein (BMP-2/4) activity, receptor tyrosine kinases, insulin-like growth factor I receptors, and toll-like (TLR-2/4) receptor signalling cascades (Schaefer et al. 2008). It was suggested that the role of BGN and DCN in the formation and mineralization of dentin is due to their ability to bind and sequester TGFs  $\beta$  within the dentin and pulp ECM. They control the activity and bioavailability of TGFs, regulating their presentation to cell-surface receptors on the odontoblast and controlling the process of tissue regeneration following tooth injury or caries (Baker et al., 2009). BGN is one of the most abundant PG in pulp ECM. It binds and increases bone morphogenetic protein activity (BMP-2/4) and stimulates

osteoblast differentiation (Chen et al., 2004; Mochida et al., 2006, Kram et al., 2020). It demonstrated the capacity to initiate crystal nuclei, accelerate matrix mineralization, and modulate osteoblast differentiation in vitro (Boskey et al. 1997). PGs influence collagen fibrillogenesis. BGN/Fibromodulin double-ablated mice revealed abnormal collagen fibrils, and mice showed osteoporosis-like phenotypes and had hypomineralized dentin (Goldberg et al., 2005). BGN expression was increased in the periodontal ligament and remodelled alveolar bone under physiologic load and tooth movement (Chen et al., 2004; Alimohamad et al., 2005; Wang et al., 2014). Also, BGN is involved in the tooth resorption process as there was an increased expression in predentin and pulp connective tissue during physiological root resorption of primary human teeth (Benedetto et al., 2013).

**Conclusion:** PGs are promising candidates for developing ECM dental pulp scaffolds to facilitate dental pulp regeneration.

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### EP17 DENTAL CARIES EXPERIENCE OF 12 YEAR OLD CHILDREN FROM PRILEP REGION

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Dental caries is defined as an irreversible, microbiological disease of the teeth that is characterized with demineralization of the inorganic component and the destruction of the organic teeth substance. It represents a localized pathological process that occurs after the tooth eruption and it is a multi-causal disease that is a consequence of the interaction among several local and general, conditional and casual factors that last for within a period of time long enough to cause changes.

**Aim:** The primary objective of this research is to perform a more detailed examination of the dental causes and the actual condition among all examines and to make a comparison and also to make the incidents of caries among the male and female twelve year old children in this region.

**Material and method:** To achieve the set goals a dental examination of 721 children from both genders at the age of twelve with a good health conditions with exception of dental caries was performed. During the examination the values of the DMFT index over the children. The statistic program SPSS statistic version 20.

**Results:** The gained results show a significant statistical difference in the value of the DMFT index, with much higher value for the caries parameter of the DMFT structure in the male sex which is  $1,14 \pm 2028$  compared to the female where it is  $0,86 \pm 1733$ .

A statistically significant difference in the values of the DMFT index was also found i.e the mean value of the filled teeth in females is  $1,45 \pm 2,1107$  and it is higher in comparison with the value of  $1,06 \pm 1,749$  in males.

**Conclusion:** Prevention is the most significant measure which needs to be undertaken in control of dental caries within child population. The preventive measures and activities are those that need to be included educated the population for the dental caries characteristics and the ways for its presentation.

### **EP18 UTICAJ VITAMINA D NA ZDRAVLJE PARODONTALNIH TKIVA-DOSADAŠNJA ISTRAŽIVANJA**

**dr Ksenija Zelić Mihajlović, naučni saradnik, dr Nataša Pejčić, naučni saradnik, dr Neda Perunović, naučni saradnik**

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Uticaj vitamina D kao modulatora imuniteta na nivou parodonticijuma još nije razjašnjen iako ovaj vitamin ima značajnu ulogu u smanjenju nivoa zapaljenja.

Vitamin D ima ključnu ulogu u regulaciji nivoa kalcijuma i fosfata u krvi, njihovoj apsorpciji iz creva kao i formiranju i metabolizmu kosti. Međutim poslednjih godina postalo je jasno da je Vitamin D takođe modulator imuniteta organizma.

Vitamin D je liposolubilna i može da prođe kroz ćelijsku membranu. Nakon toga veže se za receptor vitamina D te će zajedno sa njim da formira kompleks sa receptorom retinoid H i taj kompleks je sposoban da aktivira određene ciljane gene. Ti geni dovode do produkcije određenih supstanci koje imaju uticaja na imunitet.

Smatra se da je zbog načina života (nedovoljna izloženost suncu) kod mnogih ljudi prisutan nedostatak vitamina D što može imati uticaj na opšti imunitet organizma ali i na lokalni imunitet kao što je slučaj u razvoju parodontopatija.

Oštećenje tkiva tokom progresije parodontopatije dolazi od strane parodontopatogenih bakterija tj njihovih toksina ali i preagresivnog lokalnog imuniteta - proinflamatornih citokina. Zna se da citokine proizvode ćelije bele loze, neutrofili, monociti/makrofagi, ali budući da je potrebno da prvo krvni sudovi postanu permeabilni za neutrofile, smatra se da su prvi koji proizvode citokine -ćelije periodoncijuma. Može se spekulirati da su upravo ćelije periodoncijuma ključne u procesu nastanka primarnog zapaljenja.

Neke studije su pokazale da osobe sa parodontopatijom imaju statistički značajno manji nivo serumskog vitamina D u poređenju sa zdravim osobama ali se ovo ne može nedvosmisleno tvrditi.

U jednoj studiji je pokazano da je kod pacijenata koji su imali uznapredovalu parodontopatiju statistički značajno češće postojao deficit vitamina D ali ipak nije postojala korelacija između nivoa serumskog vitamina D i kliničkih parametara kao što su krvarenje na provokaciju, dubina sondiranja i nivo pripojnog epitela.

Do sada je vršeno nekoliko ispitivanja uticaja vitamina d na lokalno zapaljenje u parodonticijumu kao i na novo citokina u ovoj regiji koji su prethodno produkovani pod uticajem lipopolisaharida bakterija.

Jedan od puteva kojim vitamin d može da utiče na imunitet je preko antimikrobnog peptida LL-37. On pokazuje značajan antimikrobni efekat na mnoge orlane bakterije i visok nivo ovog peptida je pokazan kod pacijenata sa parodontopatijom u gingivalnoj tečnosti.

Vitamin D značajno stimuliše proizvodnju LL-37 preko gena za njegovu sintezu. LL-37 neutrališe bakterijeske lipopolisaharide tako što se vezuje za njih.

Takođe Andrukhov je pokazao da vitamin D smanjuje produkciju MSR-1 i IL-8 koji su in vitro produkovani pod uticajem lipopolisaharida bakterije P Gingivalis ali da ne deluje na IL-6 dok u slučaju citokina produkovanih pod uticajem lipopolisaharida bakterije E. Coli vitamin D dovodi do atenuacije IL-6.

I pored otkrića ovih mogućih mehanizama kako vitamin d može da modulira lokalni imunitet i reakciju organizma na infekciju, očigledno je da je dosta toga nerazjašnjeno, rezultati su zavisni od laboratorijskih uslova i pojavljuju se i oprečni zaključci te je stoga potrebno obaviti dalja istraživanja u ovoj oblasti. Očekuje se da vitamin D može da bude od velike pomoći u lečenju parodontopatija.

### EP19 POKRIVENOST STOMATOLOŠKOM ZDRAVSTVENOM ZAŠTITOM U EVRPSKOJ UNIJI I SRBIJI

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**Uvod:** Deklaracijom o kontroli i prevenciji nezaraznih bolesti zvanično je prepoznato da oralna oboljenja predstavljaju globalno zdravstveno opterećenje i da dele zajedničke faktore rizika sa drugim hroničnim nezaraznim bolestima. U političkoj Deklaraciji o univerzalnoj zdravstvenoj pokrivenosti ukazano je na potrebu za uključivanjem stomatološke zdravstvene zaštite kao dela univerzalne zdravstvene pokrivenosti, što je u Strategiji i Akcionom planu za oralno zdravlje posebno naglašeno.

**Metod:** Analiza izveštaja evropske kancelarije SZO: Evropska opservatorija za zdravstvene sisteme i politike (The European Observatory on Health Systems and Policies) i postojećih zakonskih regulativa i zdravstvenih politika u Republici Srbiji u oblasti oralnog zdravlja.

**Rezultati:** Zakonska pokrivenost stomatološkom zdravstvenom zaštitom varira u evropskim zemljama u pogledu grupa stanovništva, usluga i troškova koje pokrivaju. U većini zemalja vulnerabilne grupe stanovništva, kao što su deca i stariji ljudi, uživaju širu pokrivenost od ostatka stanovništva; izuzeti su od participacije ili imaju pravo na više beneficija za stomatološke usluge. Pokrivenost stomatoloških usluga za odraslu populaciju je generalno manje sveobuhvatna. U većini zemalja postoje posebni propisi za pokrivanje stomatoloških usluga za starije osobe i/ili druge ugrožene grupe stanovništva, uključujući osobe sa niskim prihodima, beskućnike, primaocce socijalne pomoći, trudnice i osobe sa većom potrebom za stomatološkim lečenjem zbog određenog stanja. Zakonom o zdravstvenom osiguranju Republike Srbije propisana je ograničena pokrivenost odraslog stanovništva stomatološkom zdravstvenom zaštitom dok su dece i omladina do 18 godina, studenti do 26 godina na redovnom školovanju i žena u vezi sa trudnoćom i pojedine populacione grupe, obuhvaćene širim obimom stomatoloških usluga.



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**Zaključak:** Različite zemlje EU su prepoznale da je ograničena pokrivenost stomatološkom zdravstvenom zaštitom glavna prepreka za jednaku i pristupačanu dostupnost stomatološkim uslugama. Potrebno je uvesti reforme i u našoj zemlji kojima bi se obuhvatilo celokupno stanovništvo, kao deo univerzalne zdravstvene pokrivenosti.

### EP20 IDENTIFIKACIJA CD44 POZITIVNIH TUMORSKIH ĆELIJA ORALNOG KARCINOMA METODOM PROTOČNE CITOMETRIJE

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**Uvod:** Oralni karcinom spada među šest najzastupljenijih maligniteta u svetu. Nastanak karcinoma rezultat je nakupljanja genetičkih, epigenetičkih, biohemijskih i drugih promena unutar ćelije. Poslednjih godina se posebna pažnja usmerava na izučavanje kancerskih matičnih ćelija koje na svojoj površini poseduju CD44 antigen. Prisustvo CD44+ subpopulacije ćelija u određenom tkivu ukazuje na početak razvoja tumora, te je otkrivanje ove ćelijske subpopulacije značajno i za dijagnostiku ranih faza oralnog karcinoma. Protočna citometrija je savremena dijagnostička metoda koja omogućava brzu analizu brojnih ćelijskih karakteristika, na osnovu ekspresije specifičnih antigena i njihove detekcije preko usmerenog laserskog svetla, filtera i kompjuterskog softvera.

**Cilj:** U heterogenoj ćelijskoj populaciji oralnog karcinoma identifikovati CD44+ ćelije korišćenjem protočne citometrije.

**Materijal i metod:** Iz uzorka tumorskog tkiva pacijenta dobijenog nakon hiruške intervencije koja se odvija u cilju dijagnoze i terapije izolovana je primarna ćelijska kultura i uzgajana je u osnovnom medijumu za kultivaciju ćelija u plastičnim flaskovima (površina 25 cm<sup>2</sup>) na temperaturi 37°C u atmosferi sa 5% CO<sub>2</sub> i 100% vlažnošću vazduha. Nakon postizanja konfluentnosti od 80% ćelije su podignute i u ćelijsku suspenziju prema uputstvu proizvođača dodata su CD44 antitela (FITC), nakon čega je usledila inkubacija u trajanju od 45 minuta na temperaturi od 4°C i ispiranje ćelijske suspenzije PBS-om (Phosphate-Buffered Saline, Sigma). Analiza obojenih ćelija izvršena je protočnom citometrijom (BD FACSMelody™ Cell Sorter), korišćenjem plavog lasera sa ekscitacijom od 488nm.

**Rezultati:** Metodom protočne citometrije izvršena je analiza heterogene tumorske ćelijske populacije u kojoj smo detektovali prisustvo male subpopulacije CD44+ ćelija. Svega 0,51% od ukupne ćelijske populacije



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na svojoj površini je posedovalo CD44 antigen, odnosno 96,3% tumorskih ćelija na svojoj površini nije posedovalo ovaj glikoprotein. Premda je reč o jako maloj subpopulaciji ćelija, ne smemo zanemariti činjenicu da su bas ove ćelije odgovorne za hemorezistenciju I recidive oralnog karcinoma. BD FACSMelody™ Cell Sorter nam nudi i posebnu mogućnost da nakon identifikacije CD44 pozitivnih ćelija izvršimo I njihovo sortiranje, što nam pruža priliku da buduće eksperimente vršimo upravo na CD44+ odnosno kancerskim matičnim ćelijama.

**Ključne reči:** oralni karcinom, kancerske matične ćelije, CD44+ ćelije, protočna citometrija

Istraživanje sprovedeno uz podršku Fonda za nauku Republike Srbije, broj projekta 7750038, "Oral cancer – new approaches in prevention, control and post-operative regeneration – an in vitro study" – ORCA-PCR

### EP21 EVALUACIJA EFEKTIVNIH DOZA JONIZUJUĆEG ZRAČENJA PACIJENATA

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**Uvod:** Koncept efektivne doze koristi se u radiologiji kao mera rizika pri parcijalnom izlaganju organizma rendgenskom zračenju, a merna je Sivert (Sv) 1. Pogodna je za poređenje relativnih rizika pri različitim dijagnostičkim procedurama populacije slične starosne i polne strukture. Iako je korist radioloških dijagnostičkih metoda neosporiva, generalno je prihvaćeno da uvek postoji i mali rizik da će njihova učestala upotreba uticati i na nastanak neoplazmi. Rizik za nastanak tumora je individualan i razlike postoje u odnosu na godine starosti, pol i ostale faktore

**Cilj:** Utvrditi da li postoje razlike prosečnih ekvivalentnih efektivnih doza u odnosu na pol, starost i telesnu masu.

**Materijal i metode:** Istraživanje je sprovedeno kao epidemiološka studija preseka na Poliklinici Kliničkog Centra Vojvodine na odeljenju za maksilofacijalnu hirurgiju kao i u privatnoj dentalnoj radiološkoj ordinaciji „Dental Scan“ u trajanju od 3 meseca. Uslovi za uključivanje pacijenata u istraživanje bili su da je pacijent stariji od 18 godina i da je u dijagnostičke svrhe sniman u predelu glave i vrata upotrebom jonizujućeg zračenja u poslednjih 12 meseci. Ispitanici su odgovarali na 31 pitanje iz upitnika

**Rezultati:** U odnosu na pol ne postoji statistički značajna razlika u rosečnoj ekvivalentnoj dozi po glavi ispitanika. U odnosu na godine starosti pacijente smo podelili u 3 grupe. Uočeno je da postoji statistički značajna razlika u prosečnim ekvivalentnim efektivnim dozama zračenja pacijenata u odnosu na godine starosti ( $p=0,040$ ), gde su pacijenti stariji od 49 godina imali najviše efektivne doze. U odnosu na telesnu masu, pacijente smo podelili u 3 grupe. Postoji statistički značajna razlika u ekvivalentnim dozama u odnosu na





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telesnu masu ( $p=0,017$ ) gde su pacijenti telesne mase od 66 do 82kg imali najviše efektivne doze.

**Zaključak:** Postoje značajne razlike u prosečnim ekvivalentnim efektivnim dozama po glavi ispitanika snimanih u predelu glave i vrata upotrebom jonizujućeg zračenja poslednjih 12 meseci u odnosu na starost i telesnu masu, dok u odnosu na pol statistički značajne razlike nema.

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### EP22 FLOW CYTOMETRY IN DENTAL PULP STEM CELL IDENTIFICATION

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Regenerative procedures are one of the most attractive fields of modern dentistry. The third molars have been reported to be a useful source of mesenchymal stem cell (MSC) as they are usually discarded tissue due to orthodontic indications or pericoronitis. The aim of this study was to isolate dental pulp stem cells from freshly extracted third molars and to investigate marker expression on dental pulp cells utilizing surface markers for flow-cytometry.

The dental pulp from the extracted teeth were removed after splitting the tooth and the collected pulp tissue was washed using antibiotics (100U/mL penicillin, 100 Ig/mL streptomycin), rinsed with phosphate-buffered solution, and dissected into 1 mm<sup>3</sup> pieces. Pulp fragments were transferred to culture plate with DMEM culture medium, supplemented with 10% fetal bovine serum and antibiotics, and then incubated at 37°C and 5% CO<sub>2</sub>. Immuno-phenotypic antigens of DPSCs were characterized by flow-cytometry analysis using with BD FACS Melody flow-cytometry system and BD FACSCorus™ software. The cells were trypsinized and incubated with human FITC- conjugated CD73, CD90, CD105 and CD34 antibodies for 45 min.

The spindle shaped cells were attached to the culture flasks. The FACS analysis demonstrated that the dental pulp cell sources showed positive expression for the stem cell markers. Dental pulp cell cultures exhibited >90% positive expression of CD73, CD90, and 80% CD105, with <2% expression of CD34.

**Conclusions:** Dental pulp cells exhibit characteristics to that of MSCs. Considering the results, dental pulp stem cells can be thought of as being part of the MSC population and may be considered suitable for use in regenerative dentistry.

### EP23 PROCENA VELIČINE I OBLIKA GORNJIH PREDNJIH ZUBA U ODNOSU NA ZLATNU PROPORCIJU KOD SRPSKOG STANOVNIŠTVA

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**Uvod:** U stomatološkoj protetici imamo stalnu potrebu za rekonstrukcijom izgubljenih, oštećenih zuba. Da bismo imali parametre koji bi nas usmeravali pri izboru veličine, oblika prednjih zuba utvrđene su određene dentalne proporcije kao što je zlatna. Na osnovu zlatne proporcije, prednji zub estetski je lep ako njegova širina iznosi 60% veličine njegovog mezijalnog susednog zuba. Dakle, ako je širina lateralnog sekutića 1, centralni sekutić je širi 1,6 puta, a očnjak 0,6 puta uži.

**Cilj:** je bio poređenje proporcija gornjih prednjih zuba i određenih linearnih rastojanja lica, kao i poređenje proporcija gornjih prednjih zuba sa trenutnim estetskim parametrima (zlatna proporcija) na digitalnim fotografijama i 3D modelima dobijenim intraoralnim skeniranjem, u Srpskoj etničkoj grupi.

**Metode:** U istraživanju je učestvovalo 29 studenata stomatologije (12 muškaraca, 17 žena), starosti 18-28 godina. Da bi ispitanik ušao u studiju morao je biti srpske nacionalnosti, dentoalveolarnog odnosa zuba u prvoj klasi, mogao je imati istoriju ortodonskog lečenja ali bez trenutnih ortodonskih aparata. Faktori isključenja su bili: plastične operacije na licu, kraniofacijalni defekti, prisustvo ožiljaka na licu, asimetrija lica, abrazija, atricija, trošenje zuba, fiksne nadoknade na prednjim zubima, rotacija zuba, teskoba zuba, prisustvo gingivalne recesije.

Napravljene su digitalne fotografije lica i prednjih zuba ispitanika spreda. Na fotografijama lica su merena sledeća transferzalna linearna rastojanja: EnR/EnL (između unutrašnjih uglova očiju), AIR/AIL – širina nosa, ChR/ChL – širina usana, ZyL/ZyR – širina lica.

Takođe, na digitalnim fotografijama pomoću ONYX programa je merena širina i visina centralnih sekutića, kao i prividna širina i visina leteralnih



sekutića i očnjaka. Intraoralnim skenerom napravljen je digitalni otisak. Na digitalnom intraoralnom otisku su takođe mereni visina i širina svih prednjih zuba pomoću programa.

Dobijeni podaci su obrađeni pomoću SPSS 22 programskog paketa. Za opisivanje podataka korišćene su srednje vrednosti i standardna devijacija, za opisivanje grupa korišćen je One- Sample T test.

**Rezultati:** Nema značajne korelacije između linearnih rastojanja koje smo merili na licu i dimenzija zuba. Po polu, postoji razlika između AIR/AIL, ovo rastojanje je šire kod muškaraca i iznosi 39,5 mm, kod žena je 34,5 mm. Vrednost ChR/ChL kod muškaraca iznosi 51,03 mm, kod žena je 47,23 mm. U visini levog i desnog centralnog sekutića na 3D modelima postoji statistički značajna razlika ( $p=0,001$ ).

**Zaključak:** Od zlatne proporcije odstupaju svi naši ispitanici. Naša zlatna proporcija iznosi sa desne strane zubnog niza 1,26:1:0,86. Sa leve strane iznosi 1,27:1:0,87.

### EP24 PRIMENA TWIN BLOK–A

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**UVOD:** Twin blok spada u grupu mobilnih, zubno nošenih funkcionalnih aparata novije generacije, koji za svoje delovanje koristi modifikaciju rasta. Sastoji se iz dve Švarcove ploče, posebno za gornju i donju vilicu /bimaksilarni aparat/, što ga čini mnogo konformnijim za nošenje od aktivatora i drugih monomandibularnih aparata.

**METODOLOGIJA:** Delovanje aparata se zasniva na postojanju kosine između dva bočna nagrizna grebena. Indikacije su: 2 klasa/1.i 2.odeljenja i bez odeljenja; 3.klasa/uslov da pacijent može da dovede mandibulu do ivičnog odnosa/duboki zagrižaj; dentoalveolarno otvoren zagrižaj; ukršteni zagrižaj; facijalne asimetrije; teskoba; poremećaji TMZ/podizanjem zagrižaja rasterećujemo TMZ/. Konstrukcioni zagrižaj- je najvažnija faza u izradi funkcionalnih aparata. Uzima se: u sagitali–do 1. klase,- u vertikali- 6 do 8mm iznad fiziološkog mirovanja u predelu 2. PM-a, u transverzali- poklopiti sredine gornje i donje vilice. Prednosti aparata su mogućnost lateralnih kretnji; nezavisno delovanje na gornju i donju vilicu; omogućava normalnu funkciju obraza, usana, jezika, pa samim tim i brzu korekciju položaja donje vilice i povećava donju trećinu lica. Komplikacije su protruzija donjih sekutića i bočno otvoren zagrižaj.

**REZULTAT:** Skeletni, Dentoalveolarni, Mišićni.

**ZAKLJUČAK:** Veoma brz terapijski efekat povećava motivaciju pacijenata. Drži pod kontrolom zadnju rotaciju. U svom sastavu može imati aktivne elemente, te pored korekcije sagitale i vertikalne možemo istovremeno rešavati protruziju, retruziju i teskobu.

**KLJUČNE REČI:** modifikacija rasta, bimaksilarni aparat, konstrukcioni zagrižaj, zadnja rotacija, funkcionalni aparat

### EP25 UTICAJ MENOPAUZE NA STANJE PARODONTALNIH TKIVA KOD ŽENA

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**Uvod:** Steroidni polni hormoni mogu imati uticaj na stanje brojnih tkiva i organa, uključujući i potporni aparat zuba. Tokom menopauze nivo estradiola kao glavnog cirkulišućeg hormona opada, dok raste nivo estrona, derivata razgradnje estradiola, što može imati posledice na stanje potpornog aparat zuba.

**Cilj:** Ispitati mogućnost uticaja promene nivoa steroidnih polnih hormona na stanje parodontalnih tkiva, kao i faktore rizika za nastanak parodontalnih oboljenja kojima su žene u menopauzi izložene.

**Metodologija:** Izvršen je pregled literature koja je za temu istraživanja imala uticaj promene nivoa steroidnih polnih hormona, kod žena tokom menopauze na stanje parodontalnih tkiva. Pretraživani su radovi objavljeni u poslednjih deset godina u časopisima indeksiranim citatnim bazama Current Contents i Science Citation Index. Nakon selekcije radova po zadatim kriterijumima pretrage analizirano je 25 radova koji se bave navedenom tematikom.

**Rezultati:** Menopauza izaziva širok spektar promena na ženskom telu, uključujući i usnu duplju. Mehanizmi koji dovode do ovog procesa nisu još uvek dovoljno i u pravoj meri razjašnjeni, ali se smatra da su posledica delovanja estradiola na vezivno tkivo.

Kod osoba ženskog pola nakon menopauze dolazi do smanjenog lučenja estrogena, što doprinosi smanjenju gustine kosti, uključujući i vilične kosti, kao i do amplifikacije imunog odgovora na parodontalnu infekciju, te do posledičnog gubitka alveolarnog pripoja i parodontopatije.

Snižena gustina viličnih kostiju korelira sa oštećenjem parodonticijuma i posledičnim gubitkom zuba. Pokazano je da osteoporoza korelira sa rastom produkcije inflamatornih citokina, kao što je IL-6, koji posledično dovodi do napredovanja koštane destrukcije i daljeg razvoja parodontopatije.



Nedostatak estrogena dovodi do povećanja imunološke funkcije, što rezultira povećanom proizvodnjom tumor nekrosis faktora (TNF) od strane aktiviranih T ćelija. TNF dalje stimuliše formiranje osteoklasta i time dovodi do posledične resorpcije kostiju.

Eksperimentalni radovi, sprovedni u in vitro uslovima sugerišu da estrogen sprečava gubitak gustine kostiju, regulacijom koštanog metabolizma, kao i regulacijom funkcije imuniteta, kroz regulaciju interakcije T ćelija i koštanih ćelija.

**Zaključak:** Nakon menopauze, žene postaju podložnije razvoju oboljenja potpornog aparata zuba, usled nedostatka estrogena. Nedostatak estrogena može dovesti do smanjenja gustine koštane mase, kao i povećane sklonosti za razvoj upalnih procesa. Rana dijagnostika osteoporoze, kao i parodontalnih oboljenja, je faktor od ključnog značaja za sprečavanja daljeg napredovanja ovih oboljenja i preveniranja posledičnog gubitka zuba.

### EP26 INFLUENCE OF PROGESTERONE ON GINGIVAL HEALTH IN PUBERTY GIRLS

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**Aim:** to evaluate the influence of progesterone in the maintenance of gingival health in puberty girls, by determining: serum and salivary levels of progesterone in puberty girls and the influence of progesterone on the gingival tissue, followed by correlation with gingival indexes.

**Material and method:** 30 girls aged between 11 and 14 were divided in two groups-examined group with signs of pubertal gingivitis (n=15) and the same number without gingival inflammation (control group).The examination of serum and salivary levels of progesterone was performed with Progesterone RIA - DSL 3400 Advancing Diagnostics technology.

**Results:** The results obtained in the examined group indicate the pronounced presence of gingival inflammation. Progesterone levels in the tested group of girls varied from 0.32 ng/ml in saliva to 16.76 ng/ml in serum and from 0.27 ng/ml in saliva to 13.90 ng/ml in serum at puberty girls without gingivitis. Correlative values comparing the serum and salivary level of progesterone and gingival indices in examined group, indicate a positive correlation with all index values. Strong positive correlation was noted with plaque (r=0.56) and calculus indices (r=0.80), as well as with gingival bleeding index (r=0.80), while a moderately positive correlation of salivary progesterone was obtained with the gingival inflammation index (r=0.42) and gingival enlargement (r=0.46).Mann Whitney U test reveal statistically significant differences in the mean values of progesterone in the serum between the girls with and without gingivitis, while the analysis of the salivary values of progesterone did not show a statistically significant difference between the examinees and the control group.





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**Conclusion:** The latest findings are another direct confirmation of the involvement of sex hormones in the development of gingival alterations in female children during the period of pubertal maturation.

**Key words:** sex hormones, progesterone, gingival indexes.

### EP27 FAMILY-RELATED MAXILLARY DEFICIENCY ACCOMPANIED BY DELAYED PERMANENT DENTITION: A CASE REPORT

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**Introduction:** Class III malocclusion is considered an arduous disorder of the maxillofacial system, characterized by concave facial profile, usually accompanied by the severe or mild mandibular protrusion, maxillary retrognathism, or some other possible heterogeneity of this malocclusion.

**The aim:** To present a family-related class III malocclusion with deficient maxilla combined with delayed permanent teeth eruption.

**Material and methods:** Two cases of a sister (9 years) and brother (8 years) with similar, yet not identical characteristics are presented. Clinical extraoral, intraoral assessments and radiographic examinations were performed.

**Results:** The extraoral examinations in both patients presented long dolichofacial anatomy with a prominent forehead and prominent eyes. Profile analysis exhibits a concave profile. The Ricketts' aesthetic (E-Line) revealed protruding lower lips. In both patients intraoral examination revealed delayed eruption of the permanent teeth, which does not correspond with the patient's chronological age. According to the cephalometric analysis, both patients presented with a maxillary deficiency in different degrees, and delayed eruption of the permanent teeth. Also, midfacial deficiency is notable. The overall symptomatology was unclear and gave a suspicion of a mild form of cranial syndromic synostosis (Crouzon Sy.). Parents were given a referral for a genetic examination, but they refused further examination.

**Conclusion:** A deeper clinical diagnostic protocol was suggested, taking into consideration, not just the clinical examination, but the overall evaluation of systemic health. Further evaluation and follow-ups of the patient's condition are necessary. Genetic examination with a referral from a pediatrician would be of benefit in both cases.

**Keywords:** deficient maxilla, delayed permanent dentition.

## EP28 DIREKTNI MEHANIZAM POVEZANOSTI PARODONTITISA I PREVREMENOG POROĐAJA – ANALIZA PRISUSTVA PARODONTOPATOGENIH BAKTERIJA

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**UVOD:** Parodontitis trudnica se smatra visokim faktorom rizika za prevremeni porođaj. Predložena su dva glavna mehanizma povezanosti inflamiranih parodontalnih tkiva i fetoplacentalne jedinice – direktni i indirektni. Direktni mehanizam podrazumeva moguću transmisiju parodontopatogenih bakterija i/ili njihovog najagresivnijeg gradivnog elementa endotoksina iz zapaljenskih tkiva parodonticijuma putem cirkulacije u fetoplacentalnu jedinicu i sledstvenu stimulaciju lokalne inflamacije. Prema mogućem direktnom mehanizmu, hematogeni prispeli mikroorganizmi i endotoksin stimulišu lokalnu produkciju, od strane placente, proinflamatornih citokina i prostaglandina E2. Dostizanjem kritičnih koncentracija ovih medijatora započinje porođaj.

**CILJ:** Cilj studije je bio da se ispita prisustvo parodontopatogenih mikroorganizama *Porphyromonas gingivalis*, *Aggregatibacter actinomycetemcomitans*, *Prevotella intermedia* i *Treponema denticola* u uzorcima subgingivalnog plaka prevremeno porođenih žena i žena porođenih u terminu.

**METODOLOGIJA:** Istraživanjem je obuhvaćeno 120 sistemski zdravih žena, 60 prevremeno porođenih žena (pre 37. nedelje gestacije) i 60 žena porođenih u terminu (kontrolna grupa). Prisustvo genoma parodontopatogenih mikroorganizama *Porphyromonas gingivalis*, *Aggregatibacter actinomycetemcomitans*, *Prevotella intermedia* i *Treponema denticola* u uzorcima subgingivalnog dentalnog plaka dokazivano je lančanom reakcijom polimeraze (Polimerase chain reaction – PCR). Stanje parodontalnih tkiva je ispitivano merenjem kliničkih parodontalnih parametara.

**REZULTATI:** Grupa prevremeno porođenih žena je pokazala značajno veću zastupljenost parodontitisa i značajno veće vrednosti merenih kliničkih



parametara u poređenju sa grupom žena porođenih u terminu ( $p < 0.001$ ). *Porphyromonas gingivalis*, *Aggregatibacter actinomycetemcomitans* i *Treponema denticola* su bile zastupljene u većem procentu uzoraka subgingivalnog plaka prevremeno porođenih žena u odnosu na njihovu zastupljenost u uzorcima subgingivalnog plaka žena porođenih u terminu ( $p < 0.05$ ). *Prevotella intermedia* je bila procentualno najzastupljenija u uzorcima subgingivalnog plaka obe ispitivane grupe. Poređenjem njene zastupljenosti između grupa nije pokazana statistički značajna razlika ( $p > 0.05$ )

**ZAKLJUČAK:** Rezultati istraživanja ukazuju na mogući direktan mehanizam povezanosti paradontitisa i prevremenog porođaja. Visoka zastupljenost bakterije *Prevotella intermedia* kod svih ispitivanih porodilja je posledica povišenih nivoa hormona, u toku trudnoće, koji predstavljaju njen nutritivni izvor.

### EP29 INCIDENCA ORALNIH OBOLJENJA KOD GERIJATRIJSKIH PACIJENATA

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**Uvod:** Gerijatrijska stomatologija je grana stomatologije koja se bavi oralnim bolestima kod starih osoba uključujući prevenciju i lečenje. Cilj ovog istraživanja bio je da se ispituju vrste i učestalost oralnih lezija kod starijih osoba.

**Materijali i metode:** U istraživanju je učestvovalo 75 starijih osoba. Klinička dijagnoza je postavljena u korelaciji sa etiološkim faktorima koji su povezani sa lezijama, sistematskim pregledom oralne sluzokože i klasifikacijom promena prema epidemiološkom vodiču za dijagnozu bolesti oralne sluzokože. Prilikom kliničkog pregleda analizirani su sledeći elementi: karakteristike lezije, anatomska lokacija, etiološki faktori ili srodni faktori, dentalni status, loše navike kao što su upotreba alkohola, duvana, traume oralne sluzokože, nošenje proteza idr.

**Rezultati:** Kod 75 pacijenata dijagnostikovano je 60 oralnih lezija. One su klasifikovane prema kliničkim, histopatološkim i mikrobiološkim karakteristikama i raspoređene u 15 različitih kliničkih entiteta. Preovlađujuće patologije su bile inflamatorne i reaktivne, povezane sa dugim nošenjem proteza (67% pacijenata sa lezijama koristilo je proteze). Od lezija povezanih sa upotrebom proteza, stomatitis je najčešći i dijagnostifikovan je u 20 slučajeva (33,3%). Druge najčešće lezije u ovoj studiji bile su Linqua plicata, Xerostomia i Pseudomembranous Candidiasis.

**Zaključak:** Oralna i perioralna tkiva starenjem prolaze kroz različite funkcionalne i strukturne promene. Uloga stomatologa je postavljanja rane dijagnoze i pravovremeno lečenje u cilju sprečavanja mogućih komplikacija.

**Ključne reči:** oralne lezije, gerijatrija, prevalenca

### EP30 KOMPLIKACIJE OROFARINGEALNIH INFEKCIJA

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**Uvod.** Tromboflebitis vene jugularis interne (Lemierres syndrome) se može javiti kao komplikacija orofaringealne infekcije, i obično se manifestuje akutnom pojavom inflamacije sa sekundarnom septičnom propagacijom i nastankom venske tromboze. *Streptococcus pyogenes* jeste glavni uzročnik tonzilofaringitisa, dok anaerobi poput *Fusobacterium necrophorum*, često dovodi do komplikacija. Andre Lemierre je 1936. godine izolovao uzročnik infekcije kod tonzilarnog i peritonzilarnog apscesa i dao jasan opis kliničkog nalaza ove bolesti. U to vreme, ovu vrstu oboljenja karakterisala je visoka stopa smrtnosti. Od ukupno 20 pacijenata, kod 18 pacijenata ishod je bio letalan zbog anaerobne post-anginozne septikemije.

Lemierrov sindrom se najčešće javlja kod mlađih osoba s kraja zime i u rano proleće. Oko 51% slučajeva javlja se u drugoj deceniji života, a oko 20% slučajeva javlja se tokom treće decenije. U 20% slučajeva javlja se kod pacijenata mlađih od 18 godina, dok se u oko 89% slučajeva, javlja kod pacijenata između 18 i 39 godina. Podjednako se javlja kod osoba muškog i ženskog pola. Smrtnost je kod Lemier-ovog sindroma pre upotrebe antibiotika bila između 62% i 90%. U današnje vreme, mortalitet se kreće između 4% i 22%.

Sindrom može nastati kao komplikacija dentogenih infekcija, kod mastoiditisa, otitisa, orofaringitisa, angine, flegmone poda usta ali može nastati i kod zapaljenja slepog creva, urinarne infekcije, gnojnog endometritisa i nakon porođaja. Može nastati i kao komplikacija infektivne mononukleoze.

Od simptoma, u 82% slučajeva prisutni su groznica, otok i bol u predelu vrata kao i gastrointestinalne tegobe.

**Cilj.** Cilj ovog rada je prikaz dijagnostike i lečenja pacijenta sa tromboflebitisom vene juguaris interne posle tonzilektomije. Četrnaestog dana posle operacije, pacijent je ponovo hospitalizovan zbog povišene temperature, malaksalosti, difuznog otoka submandibularne regije sa leve strane, bola prilikom gutanja i ograničenog otvaranja usta. Na osnovu ortopana isključen je dentogeni



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uzrok infekcije, dok je ultrazvučnim (UZ) pregledom vrata dijagnostikovano tromboziranje vene jugularis interne. U toku lečenja sprovedena je antibiotska i antikoagulantna terapija u trajanju od tri nedelje što je dovelo do rekanalizacije venskog suda i potpunog izlečenja

**Zaključak.** Infekcije orofaringsa mogu biti uzrok tromboflebitisa vene jugularis interne naročito kod mlađih osoba. U zavisnosti od težine infekcije i prisustva sistemskih komplikacija, primena antibiotika i antikoagulantne terapije predstavljaju metod izbora u lečenju ovog oboljenja.

### EP31 INFORMISANOST ŠKOLSKE DECE O ZNAČAJU ORALNE HIGIJENE I ISHRANE ZA ORALNO ZDRAVLJE

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**Uvod:** Adekvatno održavanje oralne higijene i pravilna ishrana značajno utiču na očuvanje opšteg i oralnog zdravlja. Neadekvatne navike mogu dovesti do razvoja oralnih oboljenja, pre svega karijesa i parodontopatije.

**Cilj:** Cilj rada je bio da se utvrdi stepen informisanosti dece školskog uzrasta o značaju oralne higijene i pravilne ishrane na oralno zdravlje.

**Materijal i metod:** Istraživanje je sprovedeno u aprilu 2022. Godine, u OŠ „Stefan Nemanja“ u Novom Pazaru, OŠ „Braća Aksić“ u Lipljanu i OŠ „Branko Radičević“ u Kosovskoj Mitrovici. Ispitivanjem je obuhvaćeno 84 dece uzrasta od 12 do 15 godina, 38 ženskog i 46 muškog pola. Za ocenu stepena informisanosti konstruisan je poseban upitnik koji sadrži pitanja o oralnoj higijeni, ishrani i lošim navikama. Učešće u istraživanju je bilo anonimno i na dobrovoljnoj bazi uz pisanu saglasnost roditelja i direktora škola.

**Rezultati:** Najveći broj dece smatra da zube treba prati 2 puta dnevno (62%), u trajanju od 1-3 minuta (58%). Značaj adekvatnog održavanja oralne higijene prepoznaje 96% dece, redovnih poseta stomatologu 99% i ravnopravni odnos zdravlja usta i zuba sa ostatkom tela 81% dece. Međutim, tek svako treće dete smatra da pasta za zube treba da sadrži fluoride i informacije u vezi nege usta i zuba dobija od stomatologa. Trećina od ukupnog broja ispitanika navodi da roditelji nikada ne kontrolišu da li su dobro oprali zube i odlazi kod stomatologa tek kada ima bolove i probleme sa zubima. Deca adekvatno razlikuju zdrave od nezdravih namirnica u ishrani ali neredovne obroke ima čak svako četvrto dete a nešto više od polovine konzumira grickalice i slatkiše dok je u školi.

**Zaključak:** Potrebno je unaprediti zdravstveno vaspitni rad sa decom i roditeljima kako bi se unapredile navike u ishrani i očuvanju zdravlja usta





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i zuba. Ispitivana populacija školske dece je tinejdžerskog uzrasta te su im prioriteta najednom promenjeni, ali i teško im je bitan fizički izgled, naročito zdrav osmeh.

Ovim upitnikom htela se skrenuti pažnja na informisanost školske dece o oralnom zdravlju, ali i njihovom podizanju svesti o očuvanju istog kroz redovne posete stomatologu, redovnom održavanju oralne higijene i pravilnoj ishrani.

### EP32 LASER VESTIBULOPLASTY AND CONVENTIONAL VESTIBULOPLASTY COMPARISON

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In order to avoid the post - surgical complications and discomfort in patients treated with vestibuloplasty, new approaches have been implemented in solving the problems that occur in patients with massive atrophy of the mandible. Vestibuloplasty provides the necessary vestibular depth and can be performed with scalpel, electrocautery or laser. Many patients often end up with feeling pain and discomfort, despite the successful outcome of the intervention. Because of that, the laser performed vestibuloplasty has been considered to be far better option due to the minimal invasion in the tissue, less bleeding during the treatment and the reduced swelling. In this study were treated 24 patients with inadequate vestibular depth that required vestibuloplasty, divided in two groups each of 12 participants. First group was treated with the scalpel method, which involves incisions made in the musoca to separate the connective tissue from the muscle attachments. Scalpel surgery was performed as Clark's vestibuloplasty. The second group was treated with the laser method. We used diode laser to remove the muscle fibers and to expand the vestibule. Local anesthesia was administrated in the same way as the first group. The postoperative parameters such as pain and swelling were evaluated after 24, 48 hours and after 7 days. The success from the therapy and the absence of relapses were evaluated after 2 and 6 months. From the gathered results, it has been shown that patients treated with laser approach have had less post – surgical complications, such as less swelling only in 1 patient (8,3%), pain in two patients (16,6%); compared to the patients from the second group treated with classic scalpel technique symptoms have been more frequent, swelling (41,6%) and pain (83,3%) in the first 24 hours. After 24 hours in the laser group there were no pain and swelling registered in the patients (0%), compared to the scalpel group where pain and swell were found in 2 patients (16,6%). Also a better healing



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of the operated tissue and faster recovery have been registered in the group of patients treated with laser, with only one relapse (8,3%) after 6 months, compared to the group treated with scalpel where the relapses were found in 5 patients (41,6%) from the total number of 12 participants in the group. From this study we can conclude that when it comes to vestibuloplasty, laser treatment has been proved to be a better option and ensure better treatment success compared to the conventional approach, leaving better healing outcomes and less complications such as pain and swelling after the treatment. Therefore the laser treatment has shown that leaves less relapses compared to the conventional method.

Key words: vestibuloplasty, complications, laser treatment, postoperative parameters, scalpel metho

Conflict of Interest: None declared.

### EP33 ORTHODONTICS INDICATIONS FOR UTILIZATION OF 3D ANALYSIS DURING DIAGNOSIS, TREATMENT PLAN AND CASE MONITORING

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**Introduction:** RTG projections are essential for diagnosis, treatment plan, follow up and treatment outcomes. Three-dimensional cephalometry, using a cone beam computerized tomography (CBCT) exam, allows more detailed evaluation of the craniofacial hard and soft tissue structure. Utilisation of 3D analysis in orthodontic are more than necessary in cases with impacted teeth, supernumerary teeth as well as in cases with craniofacial deformities.

**Aim:** The present descriptive study aims to explore possible applications of 3D technologies during the diagnosis, treatment plan, case monitoring and their assessment in orthodontics including their advantages and disadvantages.

**Materials and Methods:** More than one impacted tooth in both cases were presented, so the 3D technique was necessary for precise diagnose. We made cortectomy on left maxillary central incisor (case 1) and operculectomy on left maxillary first molar (case 2). The third case was patient with supernumerary teeth, suspected root concrescence and tongue dysfunction (case 3).

**Results:** Utilization of 3D analysis helped us to make accurate diagnosis and to achieve appropriate surgical approach. With the use of fixed appliances and the surgical exposure the orthodontic traction was done. The teeth movement of the impacted teeth started four months ago and they are already seen in the mouth. There is notable improvement in patient with tongue dysfunction.

**Conclusion:** Utilisation of 3D analysis in orthodontic are more than necessary in cases with impacted teeth, supernumerary teeth as well as in cases with craniofacial deformities. The conventional techniques as 2D panoramic radiograph considered to be especially arduous because of lack information for precise diagnose. Therefore, 3D technique is less prone to error and can improve the clinicians' workflow.

## EP34 CHRONIC DISEASES IN RELATION TO ORAL HEALTH AT GERIATRIC DENTURE WEARERS IN MACEDONIA

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**Aim.** The basic components of quality of life and oral health are health and health condition as connected part of general health. Chronic diseases (comorbidity) are important factors for perception of oral health. Purpose of this study was to evaluate the oral health and quality of life at geriatric population aged >65 in relation to the type of oral prosthetic dentures and present comorbidity (chronic diseases).

**Materials and methods.** The survey was a prospective transversal (cross-sectional) study 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. Statistical program SPSS for Windows ver 13.0 was used for statistical processing.

**Results.** Patients with upper and lower total dentures were dominant (43,6% vs. 26,5%). 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 psychosocial functioning while CG patients had significant differences in relation to all three dimensions of quality of life. Most frequent chronic diseases are: diabetes, cardio-vascular diseases, kidney diseases and hypertension.

**Conclusion.** Quality of life and oral health at geriatric patients in Macedonia are at unsatisfactory level with significant influence of the chronic diseases.

**Key words:** geriatric, chronic diseases, dentures, oral health

### EP35 PREVENTIVE METHODS FOR OCCLUSAL SURFACE OF THE FIRST MOLAR

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Cavities or tooth decay are one of the most common chronic diseases. Untreated cavities can cause pain and infections that may lead to problems with eating, speaking and children's confidence. Treatment requires removing the decayed part of the tooth and replacing it with filling. Pit and fissures are most vulnerable to tooth decay.

The purpose of the study was to evaluate the preventive influence of GC Fuji Triage on the pit and fissures of permanent teeth.

The study included 42 children from elementary school of both genders at the age of 6 years. All respondents are done a regular dental check-up and used GC Fuji Triage sealant to all erupted permanent healthy teeth (first molar). Sealant was applied on 62 teeth (36%). After two years all study participants were controlled with another dental check-up. During the examination period, we included lectures about oral hygiene, and how and when to brush teeth properly. The study shows a low index of dental caries, (on teeth that we sealed before), it was located on 2 teeth in 2 children (3,2%).

Children should get sealant as soon as these permanent teeth (premolars and molars) come out. It bonds with teeth surface, forming a protective shield over the enamel of the tooth, especially glass ionomers because of



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their long-term fluoride release. Sealants need to be controlled at least once a year and replaced if it's necessary but also need to be followed with good oral habits, brushing at least twice a day with fluoride toothpaste and floss regularly (preventive methods) against tooth cavities.

Keywords: dental caries, preventive methods, sealant

### EP36 PREPARACIJA INSTRUMENTACIONE PUTANJE PRIMENOM RUČNIH I MAŠINSKIH INSTRUMENTATA

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**Uvod:** Formiranje instrumentacione putanje je važan korak koji omogućava sigurnu i efikasnu mašinsku instrumentaciju kanala korena i može se realizovati ručnim K-turpijama od nerđajućeg čelika ili posebno dizajniranim, mašinskim NiTi instrumentima.

**Cilj** ove studije je bio da uporedi vreme potrebno za uspostavljanje instrumentacione putanje primenom ručnih K-turpija i mašinskih PathFile instrumenata.

**Materijal i metod:** Istraživanje je realizovano na 20 endo-trening modela. Instrumentaciona putanja je uspostavljena primenom ručnih K-turpija od nerđajućeg čelika ( $n=10$ ) odnosno mašinskih PathFile NiTi instrumenata ( $n=10$ ). Vreme potrebno za uspostavljanje instrumentacione putanje mereno je iPhone štopericom (Apple Inc. Cupertino, California). Statistička analiza je urađena Mann-Whitney testom na nivou pouzdanosti od 5% ( $\alpha=0,05$ ).

**Rezultati:** Uočena je statistički značajna razlika u pogledu vremena potrebnog za uspostavljanje instrumentacione putanje ručnim (6 min 22 s) i mašinskim instrumentima (3 min 20 s) ( $p<0,05$ ).

**Zaključak:** Primena mašinskih PathFile instrumenata rezultirala je bržim formiranjem instrumentacione putanje u poređenju sa ručnim K-turpijama.

**Ključne reči:** instrumentaciona putanja; ručni instrumenti; mašinski instrumenti

Autori izjavljuju da ne postoji sukob interesa.



### EP37 ORALNO ZDRAVLJE KOD DECE PREDŠKOLSKOG UZRASTA

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**Uvod:** sprovedeno je istraživanje o stanju oralnog zdravlja kod dece predškolskog uzrasta.

Istraživanje je rađeno u vrtiću "Veselo detinjstvo" u Raški.

**Cilj:** cilj ovog istraživanja je da odredi učestalost karijesa kod dece predškolskog uzrasta

**Metod:** istraživanje je studija preseka, usklađena sa metodom svetske zdravstvene organizacije za sprovođenje istraživanja oralnog zdravlja. Rasprostranjenost karijesa je verifikovana primenom Klein-Palmerovog sistema „DMF“, koji je preveden u „KEP“ index. Intraoralni stomatološki pregledi su izvršeni u predškolskim ustanovama, korišćenjem stomatološkog ogledalca, sonde, veštačkog osvetljenja i modifikovanog stomatološkog kartona svetske zdravstvene organizacije.

**Zaključak:** visoka rasprostranjenost karijesa kod dece ovog uzrasta ukazuje na potrebu primene primarnih preventivnih mera u najranijem uzrastu, sanaciju mlečnih zuba I informisanje roditelja o značaju mlečnih zuba.

### EP38 PRESENCE OF PERIODONTOPATHOGENS IN THE ORAL MUCOSAL LESIONS

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**Introduction:** Oral squamous cell carcinoma (OSCC) represents the most common form of oral malignancies and includes more than 85% of all oral carcinomas. It can often be preceded by a group of lesions called Oral potentially malignant disorders (OPMDs). Smoking and alcohol consumption are undoubtedly connected with OSCC as risk factors. Despite these and other known risk factors, contemporary medicine cannot explain the increasing prevalence of malignancies in younger patients, as well as in patients who have not been exposed to any risk factors. Endotoxins, enzymes and metabolic products from oral microorganisms directly damage host tissue cells and also lead to cytokines, chemokines and growth factors secretion. These processes affect cell proliferation, apoptosis, cell migration and neoangiogenesis causing genetic and epigenetic malformations that can potentially lead to malignant alteration.

**Objective:** The objective of this study was to detect periodontopathogens, funghi and viruses in tissue samples of 3 lesion groups – benign lesions, OPMDs and OSCC using PCR method.

**Matherials and Methods:** Oral lesions were divided in 3 groups – benign lesions, oral potentially malignant disorders and oral squamous cell carcinoma. Biopsy was performed using 11 scalpel blade. Polimerase chain reaction (PCR) procedure was performed to detect the following microorganisms – Fusobacterium Nucleatum, Porphyromonas gingivalis, HPV 16, HPV 18 and Candida spp.

**Results:** In this study, 27/32 samples (84,4%) were positive for Candida spp, 18/43 (41,9%) were positive for Fusobacterium nucleatum, 2/43 (4,7%) were positive for Porphyromonas gingivalis and 4/32 (12,5%) for both HPV 16 and 18.



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**Conclusions:** Periodontopathogens, funghi and viruses can be detected in biopted tissue samples of the oral lesions. Further studies are needed to confirm the results and to obtain more complex correlation between microorganisms and oral mucosal lesions.

### EP39 OCCLUSION: UNDERSTANDING OR MISUNDERSTANDING

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**Introduction:** The definition of an ideal functional occlusion is not completely clear. To achieve this ideal occlusion during the finishing stage, it is important to have an ideal occlusal force distribution and maximum amount of normal occlusal contacts during maximum intercuspation.

**Aim:** The aim of our case reports is to determine the dynamic occlusal parameters and to understand the occlusion by detailed computerized occlusal analysis in orthodontic patients with and without TMJ problems in order to make proper diagnosis and treatment plan.

**Material and method:** Patients with malocclusion Angle Class II with and without TMJ problems were presented. Besides analyses of CO-CR difference and anterior guidance, presence of premature contacts, Center of occlusal force-COF, time of occlusion and time of disclusion were analyzed with T-Scan III System.

**Results:** Centric slide more than 2 mm, presence of occlusal interferences, high values for occlusion and disclusion time respectively were evaluated in both patients. The in-depth occlusal analysis determined non balanced occlusion.

**Conclusion:** After the orthodontic adjustments, a new balanced oral system with functional occlusion was accomplished with the aid of T-Scan software which presents a valuable method for clinical evaluation and understanding of the occlusal problems.

**Key words:** Occlusion, Digital occlusal analysis, Dynamic occlusal parameters, TMD, Orthodontic malocclusion.

### **EP40 THE TIME DURATION OF INSTRUMENTATION WITH PROTAPER UNIVERSAL NITI HAND SYSTEM, PROTAPER NEXT NITI ROTARY SYSTEM AND PROTAPER GOLD ROTARY SYSTEM**

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**Introduction:** ProTaper systems are the most used in endodontic instrumentations. They have rotary and hand systems that create adequate cone form of mechanically treated root canal.

**Aim:** The aim of this study was to calculate the incidence of time that we spent when we instrument the root canal of single rooted teeth with different systems.

**Material and methods:** This study was conducted in September, in University Goce Delcev Stip, R. N. Macedonia. Thirty human extracted tooth were selected and kept in distilled water. Inclusion and exclusion criteria were used. Specimens with straight roots, single rooted and single canal were included in this study. Tooth with fracture lines, open apices, anatomic irregularities, calcified canal or multiple canals were discarded. The working length of the canals was determined by inserting a size #10 K file in the root canal, until the tip of the file was visible at the apical foramen and then we bring back 1 mm from the measurement. Also, the glide path was performed with the same size of this hand instrument. Then specimens preparation was made. The crowns were removed 2 mm above the proximal cemento-enamel junction.

The irrigation was with 2% solution of sodium hypochlorite, chlorhexidine gluconate 3% and 17% of EDTA. We spent same time to irrigate the specimens. The specimens were randomly divided into 3 equal groups (n=10) and were subsequently prepared using hand or rotary system.

Group 1: (n=10) NiTi hand instruments: specimens instrumented with NiTi ProTaper Universal hand system

Group 2: (n=10) NiTi rotary instrument: specimens instrumented with NiTi ProTaper Next rotary system

Group 3: (n=10) NiTi rotary instruments: specimens instrumented with NiTi ProTaper Gold rotary system

**Results:** When we instrumented with the hand system we spent 18 minutes in average, when we instrumented with Pro Taper Gold rotary system we spent 14 minutes and with the Pro Taper Next system 9 minutes.

**Discussion:** About the time, we spent more time to instrument with Pro Taper Gold than Pro Taper Next NiTi rotary system. The longest time we spent was with NiTi ProTaper Universal hand system.

**Conclusion:** There was no significant difference found, when we compared the instrumentation between NiTi ProTaper Universal hand system, NiTi Pro Taper Next rotary system group and NiTi ProTaper Gold rotary system group. We think that the time duration is related to number of instruments from the system that we use during instrumentation. For example, the system of ProTaper Gold has 6 different sizes of instrument in compare to system of ProTaper Next that has 3 sizes. Also, we spent more time for calibration on every instrument (on the endomotor) of the system. So, the time duration for instrumentation with ProTaper Gold is longer than ProTaper Next. There is a need for further research to complete the whole image for this problem.

**Conflict of interest:** None

### EP41 FAILURES OF INDIRECT COMPOSITE VENEERS

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**Introduction:** Indirect composite veneers are an excellent option for cost-effective and efficient cosmetic rehabilitation with minimal or no tooth preparation. Because these restorations are fabricated extraorally, their finishing and polishing quality is superior to that of direct resin composite veneer restorations.

**Aim:** The purpose of this study was to determine the most common clinical failures of indirect composite veneers after three years of placement.

**Methodology and material:** In four patients, a total of 28 indirect composite veneers ( $n=28$ ) were fabricated. A microfilled, light-heat-curing veneering composite was used to create the veneers extraorally on die models. Of these, 23 veneers were fabricated without preparation, while 5 veneers required minimal preparation. All veneers were cemented using a translucent-shade light-cure cement with the total-etch technique. Over a three-year period, the veneers were evaluated for failures, including fractures, chipping, debonding, and marginal discoloration..

**Results:** A total of five failures were observed over the three-year period, consisting of two cases of debonding ( $n=2$ ), two fractures ( $n=2$ ), and one case of chipping ( $n=1$ ). No marginal discoloration was detected in any of the veneers. All debonded veneers had a minimal preparation design. The overall survival rate of the composite veneers over three years was 82.1%.

**Conclusion:** With the development of new composite resins, indirect composite veneers can be a viable treatment option for patients with esthetic concerns regarding their anterior teeth, provided they maintain good oral hygiene. These veneers have now become a predictable restorative solution in terms of longevity, periodontal response, and patient satisfaction. As a conservative alternative to full-coverage restorations, they help preserve tooth structure by minimizing or eliminating aggressive dental preparation.

