

# Abstracts of 9<sup>th</sup> International Congress of the Croatian Society of Dental Implantology of the Croatian Medical Association

April 1 – 3, 2022, Dubrovnik – Srebreno/Mlini, Croatia

## Sažeci 9. Međunarodnog kongresa Hrvatskoga društva za dentalnu implantologiju Hrvatskoga liječničkog zbora

1. – 3. travnja 2022, Dubrovnik – Srebreno/Mlini, Hrvatska

**Editors • Urednici:** Ivan Salarić, Davor Brajdić

### Organizing and Programme Committee • Organizacijski i programski odbor:

Darko Macan, president  
Amir Čatić, vice president  
Davor Brajdić, secretary  
Daniele Cardaropoli, ITA  
Erhan Čömlekoğlu, TUR  
Marco Degidi, ITA  
Petar Đanić

Dragana Gabrić  
Olaf John  
Davor Katanec  
İhsan Hakan Özyuvaci, TUR  
Darije Plančak  
Péter Windisch, HUN  
Domagoj Žabarović

### Pre-Congress Hands-on Training Course

#### W STEPWISE TREATMENT OF ACUTE AND CHRONIC ALVEOLAR RIDGE DEFECTS

Péter Windisch

Head & Chair Department of Periodontology, Faculty of Dentistry Semmelweis University, Budapest, Hungary

The workshop provides a unique opportunity for participants to receive first hand clinical experiences and instructions for the treatment of both acute (fresh extraction site) and chronic, healed (lateral or vertical ridge deficiencies - more than 1 year following tooth extraction) alveolar ridge defects. During the course, the clinical steps of a novel flap design and a predictable reconstruction approach of localized 3D alveolar defects will be presented on pig jaws by using different types of membranes.

### Pretkongresna radionica

#### W POSTUPNO LIJEČENJE AKUTNIH I KRONIČNIH DEFEKATA ALVEOLARNOGA GREBENA

Péter Windisch

Predstojnik Zavoda/Katedre za parodontologiju Stomatološkog fakulteta Sveučilišta Semmelweis, Budimpešta, Mađarska

Radionica pruža jedinstvenu priliku sudionicima da iz prve ruke dobiju klinička iskustva i upute za liječenje akutnih (mjesto svježega vađenja zuba) i kroničnih, izliječenih (nedostaci lateralnog ili vertikalnog manjka alveolarnoga grebena – nakon više od 1 godine od vađenja zuba) defekata alveolarnog grebena. Tijekom tečaja bit će predstavljeni klinički koraci novog dizajna reznja i predvidljivi pristup rekonstrukcije lokaliziranih 3D alveolarnih defekata na svinjskim čeljustima korištenjem različitih vrsta membrana.

### Invited lectures

#### 11 RECONSTRUCTION OF SEVERELY COMPROMISED ALVEOLAR DEFECTS: FRESH EXTRACTION SITES AND CHRONIC RIDGE DEFICIENCIES /A STEPWISE APPROACH/

Péter Windisch

Head & Chair Department of Periodontology, Faculty of Dentistry Semmelweis University, Budapest, Hungary

There is an increasing need from patients for aesthetic fixed dental restorations with, or without implant placement. The alveolar jaw is a tooth dependent structure – any tooth extraction results in alveolar ridge resorption. Surgical techniques used today to preserve or augment deficient ridges follow biologic principles to achieve the same goal: a maintained or enlarged alveolar ridge with harmonious soft tissue contours. While the extent and pattern of resorption varies among individuals, there is an obvious loss of ridge contour as a result of physiological bone remodeling after tooth extraction. The tendency for advanced resorption is even more increased around deep periodontal defects, especially when the buccal alveolar plate has been destroyed. In advanced cases of acute alveolar ridge defects (extraction defects; EDS Class 3, EDS Class 4), alveolar ridge preservation has to be performed in order to reduce or completely avoid the need for further hard tissue reconstructions. However, in some cases horizontal and/or vertical ridge augmentation is inevitable. Therefore, a stepwise surgical protocol has to be implemented to achieve a functionally and esthetically good result. The lecture will present surgical approaches to reconstruct lost alveolar hard- and soft tissues by applying socket preservation, guided bone regeneration utilizing xenogeneic grafts, resorbable pericardium and non-resorbable dPTFE and membranes as well as an insight into future perspectives with resorbable magnesium membranes.

### Pozvana predavanja

#### 11 REKONSTRUKCIJA VELIKIH ALVEOLARNIH DEFEKATA: SVJEŽA POST - EKSTRAKCIJSKA ALVEOLA I KRONIČNI NEDOSTACI GREBENA /POSTUPNI PRISTUP/

Péter Windisch

Predstojnik Zavoda/Katedre za parodontologiju Stomatološkog fakulteta Sveučilišta Semmelweis, Budimpešta, Mađarska

Sve je veća potreba pacijenata za estetskim fiksnim zubnim nadomjescima sa ili bez ugradnje implantata. Alveolarna kost je struktura ovisna o zubu – svako vađenje zuba dovodi do resorpcije alveolarnog grebena. Kirurške tehnike koje se danas koriste za očuvanje ili augmentacija alveolarnoga grebena slijede biološke principe za postizanje istoga cilja: održanje ili povećanje alveolarnoga grebena sa skladnim konturama mekoga tkiva. Dok opseg i obrazac resorpcije varira među pojedincima, nakon vađenja zuba dolazi do očitoga gubitka konture alveolarnoga grebena kao rezultat fiziološke pregradnje kosti. Tendencija uznapredovale resorpcije je još veća oko dubokih parodontnih defekata, osobito kada nema bukalne alveolarne lamine. U uznapredovalim slučajevima akutnih defekata alveolarnoga grebena (post-ekstrakcijski defekti; EDS klasa 3, EDS klasa 4), potrebno je provesti preservaciju alveolarnoga grebena kako bi se smanjila ili potpuno izbjegla potreba za daljnjim rekonstrukcijama tvrdoga tkiva. Međutim, u nekim je slučajevima neizbježna horizontalna i/ili vertikalna augmentacija alveolarnoga grebena. Stoga je potrebno primijeniti postupni kirurški protokol kako bi se postigao funkcionalno i estetski dobar rezultat. Predavanje će predstaviti kirurške pristupe rekonstrukciji izgubljenih alveolarnih tvrdih i mekih tkiva primjenom tehnike preservacije alveole (socket preservation), vođene regeneracije kosti korištenjem ksenogenih graftova, resorptivnih membrana i neresorptivnog dPTFE-a te dati uvid u buduće perspektive s resorptivnim magnezijским membranama.

## 12 NEW FRONTIERS IN BONE AUGMENTATION: THE USE OF CAD-CAM CUSTOMIZED TITANIUM MESH

Daniele Cardaropoli

*Adjunct Professor in Periodontology, Dental School University of Catania; Scientific Director PROED Institute for Professional Education in Dentistry, Torino, Italy*

The need to expand the treatment options of the therapeutic areas, even in cases with high complexity and soft tissue deficiency, requires an in-depth study of the most advanced surgical techniques. At the same time regenerative medicine and plastic surgery of the new millennium try to improve the predictability of treatment by reducing the morbidity of care towards the patient. In this perspective, modern cad-cam technologies allow to manage computer-guided surgical protocols through the creation of custom-made titanium mesh, the Yxoss, in order to customize the regenerative procedures.

## 13 THE CONOMETRIC CONCEPT IN IMPLANT PROSTHETIC: A NEW WAY TO MAKE FIXED RESTORATIONS

Marco Degidi

*Adjunct professor, Postgraduate Master in Clinic Implantology at the University of Bologna. Private Practice in Bologna, Italy*

Until now, two means have traditionally been used for retaining prostheses: screws or cement. We all know the pluses and minuses of each method. Now imagine a third method that has the advantages of both traditional methods with none of the disadvantages: for example, restorations with occlusal tables that don't have holes but which are easy to remove. This is the Conometric Concept: permanent prostheses retained only by friction, not removable by the patient, but, when required, easily removable by the dentist. It can be applied on single teeth, partials or full arches; to make temporaries or final prostheses, immediately or stage loaded; in combination with many type of restorative materials. It's a new whole world that deserve to be discovered. Drawing from his long experience, Dr Degidi will present in detail all aspects of this revolutionary technique.

## 14 DIGITALLY BASED PLANNING FOR SUCCESS IN IMPLANT DENTISTRY

Sinead McEnhill

*Clinical Director, Belmore Dental Implant Clinic, Enniskillen, Northern Ireland*

Use of dental technologies or devices that incorporate digital or computer-controlled components for the performance of dental procedures has become fully integrated in a contemporary office-laboratory workflow. The lecture will consist of setting protocols for the dental team and clinician to enable a predictable pathway to long term success. Furthermore, the patient's expectations should be brought forward even more than before, to help manage and simplify the consenting process. The emphasis of the topic itself is to demystify the digital planning platforms with a patient centric focus.

## 15 NEW CONCEPTS IN ORAL IMPLANTOLOGY

İhsan Hakan Özyuvaci

*Dentistry Oral and Maxillofacial Surgery Department, Istanbul University Faculty of Dentistry, Turkey*

Staying up to date is not effortless nowadays. To stay current on everything, one needs to work on it. It's like time is moving faster than a decade ago and it's accelerating. Same rules apply to oral implantology. It's not an exceptional practice performed by limited amount of practitioners anymore. It's common, it's necessary and it's essential. So we have no other options than to stay up to date. In the past few decades when the idea first came up, dental implants were thought to be doubtful and their fields of applications were limited. There were no long-term follow ups, not enough technology to evaluate the outcomes and success of the procedure. But still the idea of dental implants had given so much hope that, despite all the doubts, practitioners gave it a shot. So, where are we now today? Today, in comparison with the alternatives, when function and aesthetics are considered, dental implants have very satisfactory results and their long term success is well proved, hence many different case types can be treated safely. Today, practitioner's aim is to reach to the perfection and to get close to the natural in both ways, both aesthetical and functional. Briefly, today "good" is just not good enough. So, if today the good is not good enough, where will we be in the future? Future is high but also limitless. Considering the improvements of technology just by observing our daily life, we can have some clues and at the same time we know that even if we have some clues, technology will shock us anyway. Biogenetics, 3D technology, nanotechnology, biomechanical engineering are the pathways to the ultimate success and beyond. We already see their reflections in implantology, CAD-CAM technologies, imaging systems...etc. Are we ready to see beyond?

## 12 POMIČANJE GRANICA U KOŠTANOJ AUGMENTACIJI: UPOTREBA CAD-CAM PRILAGODENE TITANSKE MREŽICE

Daniele Cardaropoli

*Dopunski profesor parodontologije, Stomatološki fakultet Sveučilišta Catania; Znanstveni direktor PROED Instituta za profesionalnu edukaciju u dentalnoj medicini, Torino, Italija*

Potreba za proširenjem mogućnosti liječenja, čak i u složenim slučajevima s nedostatkom mekog tkiva, zahtijeva detaljno proučavanje najnaprednijih kirurških tehnika. U isto vrijeme suvremena regenerativna medicina i plastična kirurgija pokušavaju poboljšati predvidljivost liječenja smanjenjem morbiditeta u skrbi za pacijenta. U ovoj perspektivi, suvremene cad-cam tehnologije dopuštaju izradu računalno vođenih kirurških protokola uz izradu individualne titanske mrežice, Yxoss, u cilju individualizacije regenerativnih postupaka.

## 13 KONOMETRIJSKI KONCEPT U IMPLANTO-PROTETICI: NOVI NAČIN IZRADE FIKSNIH RESTAURACIJA

Marco Degidi

*Dopunski profesor, Poslijediplomski studij iz kliničke implantologije, Sveučilište u Bolonji, Privatna ordinacija u Bolonji, Italija*

Dosad su se tradicionalno koristila dva načina pričvršćivanja proteza: vijcima ili cementiranjem. Poznate su prednosti i nedostaci obje metode. Sada zamislite treću metodu koja ima prednosti objiju tradicionalnih metoda bez ikakvih nedostataka: na primjer, restauracije koje nemaju komunikacijski otvor na okluzalnim ploham, ali koje je lako skinuti. Riječ je o konometrijskom konceptu: proteze koje se zadržavaju samo trenjem, a ne mogu ih ukloniti pacijenti, ali ih, kada je to potrebno, lako uklanjaju doktori dentalne medicine. Može se primijeniti na pojedinačne zube, djelomične ili potpune proteze; mogu se izraditi privremene ili konačne proteze, opterećivati ih se može imedijatno ili odgođeno te se mogu koristiti u kombinaciji s mnogim vrstama restaurativnih materijala. To je cijeli novi svijet koji zaslužuje biti otkriven. Na temelju svog dugogodišnjeg iskustva, dr. Degidi će detaljno predstaviti sve aspekte ove revolucionarne tehnike.

## 14 DIGITALNO PLANIRANJE ZA USPIJEH U IMPLANTOLOGIJI

Sinead McEnhill

*Klinički direktor, Belmore klinika za dentalnu implantologiju, Enniskillen, Sjeverna Irska*

Korištenje dentalnih tehnologija ili uređaja koji uključuju digitalne ili računalno kontrolirane komponente za izvođenje stomatoloških zahvata postalo je potpuno integrirano u suvremeni rad između dentalnih laboratorija i ordinacija. Predavanje će se sastojati od postavljanja protokola za stomatološki tim i kliničara kako bi se omogućio predvidljiv put do dugoročnog uspjeha. Nadalje, očekivanja pacijenata treba istaknuti još više nego prije, kako bi se lakše upravljalo i pojednostavilo proces pristanka. Naglasak same teme je demistificirati platforme za digitalno planiranje s fokusom na pacijenta.

## 15 NOVI KONCEPTI U ORALNOJ IMPLANTOLOGIJI

İhsan Hakan Özyuvaci

*Zavod za dentalnu medicinu, oralnu i maksilofacijalnu kirurgiju, Sveučilište u Istanbulu Stomatološki fakultet, Istanbul, Turska*

Danas nije lako biti u toku. Da bismo bili u toku sa svime, potrebno je raditi na tome. Kao da vrijeme teče brže nego prije deset godina i ubrzava se. Ista pravila vrijede za dentalnu implantologiju. To više nije praksa koju izvodi manji broj praktičara. Ona je česta, nužna i važna. Stoga, nemamo druge opcije nego biti u toku. U posljednjih nekoliko desetljeća, kada se ideja pojavila, smatralo se da su dentalni implantanti upitne prognoze, a područja njihove primjene ograničena. Nije bilo dugoročnoga praćenja, nedovoljno tehnologije za procjenu ishoda i uspjeha postupka. No ipak je ideja o dentalnim implantatima davala toliko nade da su, unatoč svim sumnjama, praktičari im dali šansu. Dakle, gdje smo danas? Kada se razmatraju funkcija i estetika, u usporedbi s alternativama, dentalni implantati danas imaju veoma zadovoljavajuće rezultate te je njihova dugoročnost dokazana i dokumentirana. Zbog navedenoga, različite kliničke situacije mogu se sigurno liječiti. Danas je cilj praktičara doći do savršenstva i približiti se prirodnom na oba načina, estetski i funkcionalno. Ukratko, danas "dobro" jednostavno nije dovoljno dobro. Dakle, ako danas dobro nije dovoljno dobro, gdje ćemo biti u budućnosti? Budućnost je blizu, ali i bez granica. Uzimajući u obzir napredak tehnologije samo promatrajući naš svakodnevni život, možemo imati neke naznake da će nas tehnologija iznenaditi. Biogenetika, 3D tehnologija, nanotehnologija i biomehanički inženjering su načini i putevi do uspjeha. Njihove refleksije već vidimo u implantologiji, CAD-CAM tehnologijama, radiologiji... itd. Jesmo li spremni gledati dalje?

## 16 THE IMPLANT REHABILITATION OF THE EDENTULOUS PATIENT: PAST, PRESENT AND FUTURE

Luca Lavorgna

Founder and CEO of Odontosynergy, Telese Terme, Italy, Visiting professor at the Universities of Foggia, Napoli, Bari, Messina and Valencia

New technologies are changing the world of Dentistry. The diagnosis and the planning of a treatment don't change, let alone the biology. What do change, and radically, are the approach and the protocols. The benefits of adopting new technologies, such as computer-guided surgery software combined with a 3D Printer and CAM process, are incredibly solid: being able to make a proper diagnosis immediately, plan a punctual therapy and translate it into an encoded workflow are undeniable, key benefits for the dentist. When it comes to therapy, the approach should not avoid a thorough analysis of the patient, the clinical request and, last but not least, the reasons that induce the patient to choose a treatment: the Prosthetic Rehabilitation. In this context, the goal is to provide the audience with a tool that supports a holistic perspective towards each clinical case, moving from a real diagnosis (the patient's rehabilitation), analyzing the propedeutical steps for the reproducibility of the case (the planned implants insertion) and finalizing the proposed therapy, i.e. the Prosthetic Rehabilitation. This conference is targeted at dentists who are willing to broaden their views, seeking new digital tools, on one hand, while keeping the focus on the patient, on the other.

## 17 B.O.P.T. AND INTRAMUCOSAL CONCEPT: PERIO AND PERI-IMPLANT / RESTORATIVE INTERFACE IN ESTHETIC DENTISTRY

Stefano Conti

Lecturer at the Master Program of Implantology and Facial Esthetics at the University of Parma, School of Dentistry, Italy

During the clinical practice of esthetic dentistry, the critical issues, beauty, health and integrity, that differentiate an excellent end result from a failure lie mostly within the crucial areas where these items come into contact: the interfaces. The presentation focuses on a new Prosthetic protocol for vertical preparation of the tooth, the B.O.P.T. concept and on the restorative aspects and uniqueness of an intramucosal implant, designed to work in synergy with biologic factors in achieving long term aesthetics. A new emergence profile of the crown with a finishing line at different levels allows us to interact with surrounding tissue modifying their shape and thickness for a new ideal and stable esthetic gingival architecture. Biodynamic Soft Tissue shaping, 3D positioning, defined and appropriate emergence profiles with an accurate analysis of STA around implant supported restorations will be thoroughly discussed with clinical cases. Delegates will know how to: Understand the B.O.P.T. technique (tooth preparation – provisional relining – impression – final cementation), Understand Papillae and Facial Gingival Dynamics around natural teeth and around intramucosal implants.

## 18 GUIDED SURGERY - TOOL OR SOLUTION?

Maja Chmielevska

Smile Clinic, Gdansk, Poland

As guided surgery is becoming more and more popular we see both opportunities and complications which may arise from its use. Many important questions arise, like "In what clinical cases will guided surgery be helpful?", "Is it really an accuracy improving solution?" or "Is guided surgery a tool for every clinician?". Important quality influencing factors which may change the final outcome of treatment will be discussed within this lecture.

## 19 PERIIMPLANT PINK WHITE ESTHETIC

Erhan Çömlekoğlu

Department of Prosthodontics, School of Dentistry, Ege University, Izmir, Turkey

One of the crucial problems regarding anterior implant restorations, in terms of esthetics, is to provide periimplantary soft tissue integrity. Pink & White esthetics may not be accomplished in some clinical cases, although a complete osseointegration is achieved. Biological width hypothesis is important in this context and has gained support in recent years. Zirconia or glass-ceramics custom abutments have been widely used, due to their optimal emergence profile and natural-like appearance. Moreover, the ones that are placed at the same day of the implant surgery and are never detached again, can provide both a better esthetic appearance and prevent any soft tissue related problems, due to the intact-remained biological width.

## 16 IMPLANTOLOŠKA REHABILITACIJA BEZUBIH PACIJENATA: PROŠLOST, SADAŠNOST I BUDUĆNOST

Luca Lavorgna

Osnivač i izvršni direktor stomatološkog edukacijskog centra Odontosynergy, Telese Terme, Italija; Gost profesor na Sveučilištima Foggia, Napoli, Bari, Messina i Valencia

Nove tehnologije mijenjaju svijet stomatologije. Dijagnoza i planiranje liječenja se ne mijenjaju, a kamoli biologija tkiva. Ono što se mijenja, i to radikalno, jesu pristup i protokoli. Prednosti usvajanja novih tehnologija, kao što je softver za računalno vođenu operaciju u kombinaciji s 3D printanjem i CAM procesom, su: mogućnost postavljanja ispravne dijagnoze, planiranje preciznoga terapijskoga postupka i prenošenje iste u kliničku praksu. Kada je u pitanju terapija, u pristupu treba napraviti temeljitu analizu pacijenta i kliničkih zahtjeva, a na kraju, ali ne manje važno, razumjeti razlog koji je pacijenta naveo na liječenje: protetska rehabilitacija. U tome kontekstu, cilj je publici pružiti alat koji pruža holistički pristup prema svakom kliničkom slučaju, polazeći od stvarne dijagnoze (rehabilitacija pacijenta), analizirajući propedeutičke korake za ponovljivost slučaja (planirana ugradnja implantata) i završetak predložene terapije tj. protetske rehabilitacije. Ova konferencija namijenjena je doktorima dentalne medicine koji žele proširiti svoje vidike, tražeći nove digitalne alate koji će im omogućiti individualan pristup pacijentima.

## 17 B.O.P.T. TEHNIKA I INTRAMUKOZNI KONCEPT: "PERIO AND PERI - IMPLANT" / RESTAURACIJSKO SUČELJE U ESTETSKOJ STOMATOLOGIJI

Stefano Conti

Predavač na Master programu Implantologija i Estetika lica, Stomatološki fakultet Sveučilište u Parmi, Italija

Tijekom kliničke prakse u estetskoj stomatologiji, kritični problemi, ljepota, zdravlje i integritet, koji razlikuju odličan krajnji rezultat od neuspjeha leže uglavnom unutar ključnih područja gdje ti predmeti dolaze u kontakt - sučelja. U prezentaciji će biti predstavljen novi protetski protokol za vertikalnu preparaciju zuba, B.O.P.T. koncept te će biti riječi o restaurativnim aspektima i jedinstvenosti intramukoznog implantata, dizajnerskog u sinergiji s biološkim čimbenicima u cilju postizanja dugoročne estetike. Novi izlazni profil krunice sa završnom linijom na različitim razinama omogućuje nam interakciju s okolnim tkivom, modificirajući njihov oblik i debljinu za novu idealnu i stabilnu estetsku arhitekturu gingive. Biodinamičko oblikovanje mekog tkiva, 3D pozicioniranje, definirani i prikladni profili nicanja s točnom analizom STA oko protetskih radova na implantatima bit će detaljno raspravljani s prikazima kliničkih slučajeva. Polaznici će znati kako: razumjeti B.O.P.T. tehniku (preparacija zuba – provizorno podlaganje – otisak – završno cementiranje), razumijeti dinamiku papila i gingive oko prirodnih zuba i oko intramukoznih implantata.

## 18 VOĐENA KIRURGIJA - ALAT ILI RJEŠENJE?

Maja Chmielevska

Klinika "Smile", Gdansk, Poljska

Kako vođena kirurgija postaje sve popularnija, uočavamo i mogućnosti i komplikacije koje mogu proizaći iz njezine uporabe. Pojavljuju se mnoga važna pitanja, poput „U kojim će kliničkim slučajevima vođeni kirurški zahvat biti od pomoći?“, „Je li to doista rješenje za poboljšanje preciznosti?“ ili „Je li vođena kirurgija alat za svakog kliničara?“. U okviru predavanja bit će riječi o važnim čimbenicima koji utječu na kvalitetu i koji mogu promijeniti konačni ishod liječenja.

## 19 PERIIMPLANTATNA ROZO-BIJELA ESTETIKA

Erhan Çömlekoğlu

Zavod za protetiku, Stomatološki fakultet, Sveučilište Ege, Izmir, Turska

Jedan od ključnih problema u vezi s protetskim radovima na implantatima u fronti, u pogledu estetike, jest osigurati periimplantatni integritet mekog tkiva. U pojedinim kliničkim slučajevima se "Pink & White" estetika ne može postići, iako je došlo do oso-integracije implantata. Hipoteza biološke širine važna je u ovom kontekstu te je dobila prepoznata kao važna posljednjih godina. Individualni abutmenti od cirkona ili staklokeramike redovito se koriste, zbog optimalne reprodukcije izlaznog profila i prirodnog izgleda. Štoviše, oni koji se postavljaju na isti dan ugradnje implantata i više ne uklanjaju, mogu pružiti i bolji estetski izgled i spriječiti probleme vezane uz meka tkiva zbog netaknute preostale biološke širine.

**110 MEDICAL EMERGENCIES IN THE DENTAL PRACTICE**

Vesna Degoricija

*Head of the medical ICU, University Hospital Center Sisters of Charity, University of Zagreb School of Medicine, Zagreb, Croatia*

It is estimated that, on average, a general dental practitioner will experience a medical emergency at least once every two years. Medical emergencies that occur in dental practices include vasovagal syncope, high blood pressure and hypertensive crises, acute chest pain (angina), hypoglycaemia, diabetic ketoacidosis in the settings of severe infection and/or sepsis, epileptic seizures, choking, asthma, anaphylaxis and cardiac arrest. The satisfactory performance in a medical emergency in the dental practice has many implications in terms of equipment, training, standards of care, clinical governance, and risk management. Members of the dental team must maintain their knowledge and competence to deal with a medical emergency effectively and safely. Present lecture emphasizes importance of continuous medical education for dental practitioners through seminars and workshops implementing problem solving teaching and practicing on simulators and manikins. Such practice is present in collaboration of University of Zagreb School of Dental Medicine and University of Zagreb School of Medicine in last ten years through continuing professional education, and as electives in residency postgraduate education. The extent of treatment by the dentist requires preparation, prevention and medical emergencies management, as necessary. Prevention is accomplished by conducting a thorough medical history. The dentist must be competent in basic cardiopulmonary resuscitation, airway management, oxygenation, and automated external defibrillation. Drugs that should be available to the dentist are oxygen, normal saline, epinephrine, nitroglycerin, aspirin, amlodipine, diazepam, flumazenil, diphenhydramine, methylprednisolone, beta-2 agonist such as albuterol or salbutamol, and injectable carbohydrate.

**Oral presentations****01 AUGMENTATION PROCEDURES OF KERATINIZED MUCOSA AROUND IMPLANTS**Blašković M<sup>1,2,4</sup>, Blašković D<sup>1,3</sup>, Kovač Z<sup>3,4</sup>, Zuljani A<sup>2,4</sup>, Zeneral Žuža I<sup>2,4</sup>, Čabov T<sup>2,4</sup>.*<sup>1</sup>Polyclinic Blašković; <sup>2</sup>Chair of Oral Surgery; <sup>3</sup>Division/Chair of Prosthodontics, Department of Dentistry, Clinical Hospital Center Rijeka; <sup>4</sup>Faculty of Dental Medicine University of Rijeka, Rijeka, Croatia*

The peri-implant soft tissue (PIS) augmentation procedure has become the integral part of implant-prosthetic rehabilitation. Minimal width of keratinized mucosa (KM) of 2 mm is deemed necessary to facilitate oral hygiene maintenance around implant. Furthermore, 2 mm or more of KM width is associated with hard and soft peri implant tissue stability. Free gingival graft (FGG) combined with the apically positioned flap (APF) has been considered the gold standard procedure to widen the KM. Nevertheless, after FGG harvesting, the palatal donor site heals with secondary intention resulting in prolonged healing time and increased patient morbidity rate. In order to avoid the aforementioned drawback resulting from FGG harvesting, alternative methods were developed to increase the KM width.

**02 SOFT TISSUE AUGMENTATION WITH COLLAGEN MATRIX – CASE REPORT**Marković L<sup>1</sup>, Gabrić D<sup>2,4</sup>, Brzović Rajić V<sup>3,4</sup>, Vuletić M<sup>2,4</sup>, Smojver I<sup>5</sup>.*<sup>1</sup>Private Dental Clinic for Periodontology dr. Marković, Pula; <sup>2</sup>Department of Oral Surgery; <sup>3</sup>Department of Endodontics and Restorative Dentistry; <sup>4</sup>School of Dental Medicine, University of Zagreb, University Hospital Center Zagreb; <sup>5</sup>Specialty hospital St. Catherine, Zagreb, Croatia*

When we lose one or more teeth, we often witness large bone and soft tissue defects. Such defects, if we want to supply the toothless part with dental implants we must ensure adequate bone and regenerate the bone defect. Soft tissue also plays an important role and contributes greatly to the long-term health of the peri-implant mucosa. With the right approach in implant prosthetics, the results are guaranteed. If some patients do not want to engage in more extensive surgical procedures for bone regeneration and decide to com-

**110 MEDICINSKE HITNOSTI U ORDINACIJI DENTALNE MEDICINE**

Vesna Degoricija

*Pročelnica Zavoda za intenzivnu medicinu Klinike za unutarnje bolesti, KBC Sestre milosrdnice, Sveučilište u Zagrebu Medicinski fakultet, Zagreb*

Procjenjuje se da će liječnik dentalne medicine u prosjeku doživjeti jednu od medicinskih hitnosti u svojoj ordinaciji najmanje jednom u tijeku dvije godine. Medicinske hitnosti koje se najčešće javljaju u bolesnika u ordinaciji dentalne medicine su: vazovagalna sinkopa, visok krvni tlak s ili bez hipertenzivne krize, akutna bol u prsima uzrokovana anginom pektoris, hipoglikemija, dijabetička ketoacidoza uz ozbiljnu odontogenu upalu i/ili sepsu, epileptički napadaj, gušenje, aspiracija stranog tijela, akutni asmatski napadaja, teška alergijska reakcija/anafilaksija/anafilaktički šok i kardiorespiratorni arrest. Učinkovita incijalna terapija ovih stanja do dolaska medicinskog hitnog tima ovisi o brojnim čimbenicima: medicinska oprema, trening članova tima ordinacije dentalne medicine za rješavanje ovih hitnih stanja, propisani standardi liječenja u zadanom prostoru, kliničko prosuđivanje i djelovanje i rješavanje rizika primijenjenih mjera liječenja. Članovi tima ordinacije dentalne medicine trebali bi jednom godišnje pohađati tečajeve trajne poslijediplomske edukacije iz područja hitnih medicinskih stanja i razvijati svoje kompetencije u tom području te rješavati ova hitna stanja učinkovito i sigurno do dolaska medicinskog hitnog tima. Predavanja stavlja naglasak na važnost kontinuirane edukacije liječnika dentalne medicine i članova njihovog tima putem seminara i radionica tehnikom podučavanja rješavanja problema i vježbanjem na modelima za simulaciju u medicini. Posljednjih deset godina ovakva praksa prisutna je kroz tečajeve trajne medicinske edukacije stomatologa i putem izbornog predmeta u specijalističkom poslijediplomskom studiju Dentalna implantologija zahvaljujući suradnji Medicinskog i Stomatološkog fakulteta Sveučilišta u Zagrebu. Djelovanje liječnika dentalne medicine u slučaju medicinske hitnosti zahtjeva pripremu, prevenciju neželjenog događaja i spremnost za rješavanje medicinske hitnosti do dolaska hitnog medicinskog tima. Prevencija je moguća samo uz pažljivu pripremu bolesnika i prikupljanje anamnestičkih podataka o njegovim bolestima. Liječnik dentalne medicine mora biti educiran i treniran za provođenje osnovnih mjera kardiopulmonalne reanimacije, osiguranje dišnog puta i ventilaciju maskom i balonom te upravljanje vanjskim automatskim defibrilatorom. Obvezni lijekovi u ordinaciji liječnika dentalne medicine jesu: kisik, fiziološka otopina, adrenalina, nitroglicerina, aspirina, amlodipina, diazepam, flumazenil, difenhidramin, metilprednizolon, inhalacijski beta-2 agonist poput salbutamola i hidrogenkarbonat za intravensku primjenu.

**Usmena izlaganja****01 TEHNIKE AUGMENTACIJE KERATINIZIRANE SLUZNICE OKO IMPLANTATA**Blašković M<sup>1,2,4</sup>, Blašković D<sup>1,3</sup>, Kovač Z<sup>3,4</sup>, Zuljani A<sup>2,4</sup>, Zeneral Žuža I<sup>2,4</sup>, Čabov T<sup>2,4</sup>.*<sup>1</sup>Poliklinika Blašković; <sup>2</sup>Katedra za oralnu kirurgiju; <sup>3</sup>Zavod za stomatološku protetiku, Klinika za dentalnu medicinu, KBC Rijeka; <sup>4</sup>Fakultet dentalne medicine, Sveučilište u Rijeci*

Augmentacija peri-implantatnog mekog tkiva postala je sastavni dio implantoprotetske rehabilitacije. Minimalna širina keratinizirane sluznice od 2 mm smatra se neophodnom kako bi pacijent mogao provoditi oralnu higijenu oko implantata. Nadalje, 2 mm keratinizirane sluznice povezano je sa stabilnošću mekog i tvrdog tkiva oko implantata. Slobodni gingivalni transplantat (engl. Free Gingival Graft) u kombinaciji s apikalno pomaknutim reznjem (engl. Apically Positioned Flap) smatra se zlatnim standardom među zahvatima za širenje keratinizirane sluznice. Unatoč tome, nakon prikupljanja slobodnog gingivalnog transplantata, donorsko mjesto na nepcu cijeli sekundarnom intencijom što dovodi do produljenog vremena cijeljenja i povećanog morbiditeta za pacijenta. S ciljem izbjegavanja ranije navedenih nedostataka, razvijene su alternativne tehnike širenja keratinizirane sluznice.

**02 AUGMENTACIJA MEKOG TKIVA KOLAGENIM MATRIKSOM – PRIKAZ SLUČAJA**Marković L<sup>1</sup>, Gabrić D<sup>2,4</sup>, Brzović Rajić V<sup>3,4</sup>, Vuletić M<sup>2,4</sup>, Smojver I<sup>5</sup>.*<sup>1</sup>Specijalistička ordinacija dentalne medicine za parodontologiju dr. Marković, Pula; <sup>2</sup>Zavod za Oralnu kirurgiju; <sup>3</sup>Zavod za Endodonciju i restaurativnu stomatologiju; <sup>4</sup>Stomatološki fakultet Sveučilišta u Zagrebu, Klinika za stomatologiju KBC Zagreb; <sup>5</sup>Specijalna bolnica Sv. Katarina, Zagreb*

Prilikom gubitka jednog ili više zuba često svjedočimo velikim koštanim i mekotkivnim defektima. Takvi defekti, ukoliko bezubi dio želimo opskrbiti postavom dentalnih implantata moramo osigurati adekvatnu kost te koštani defekt izregenerirati. Meko tkivo također ima važnu ulogu i uvelike pridonosi dugoročnom zdravlju periimplantatne sluznice. Pravilnim pristupom u implanto-protetički rezultati su zagarantirani. Ukoliko se neki pacijenti ne žele upuštati u ekstenzivnije operativne zahvate radi koštane regeneracije te se



compensate for the lack of teeth with fixed prosthetic work, soft tissue augmentation is desirable to improve the red and white aesthetics. The gold standard for soft tissue augmentation is connective tissue from the palate or tuberosity of the patient and over time tends to increase its volume unlike the collagen matrix which loses 50% of its initial volume in 6 months. A male patient, due to old prosthetic work over 15 years, appears to improve the aesthetics of the front. After the CBCT image, it was determined that the bone volume is not sufficient for the implants placement and bone regeneration is required. Soft tissue augmentation with a change in prosthetic work was agreed with the patient. A collagen matrix was proposed to the patient in order to minimize the trauma during the operation and thus prevent the opening of another surgical field. Removing the old prosthetic work is a prerequisite for this work not to apply pressure on the augmented area. The defect is accessed through the frenulum and a full-thickness flap is raised using tunnelling instruments and the collagen matrix is fixed with the threads at the desired location, the wound is sutured and provisional teeth are made that do not apply pressure to the augmented area. After 3 months, new temporary teeth are made so that the soft tissue can be conditioned. After 8 months, the soft tissue volume still looks satisfactory and it is assumed that there will be no more loss in volume, it follows into the prosthetic phase and the patient is supplied with a zirconia-ceramic bridge.

### 03 SINGLE VERTICAL INCISION APPROACH FOR HARD AND SOFT TISSUE AUGMENTATION WITH IMMEDIATE IMPLANT PLACEMENT IN THE AESTHETIC ZONE

Buljan M<sup>1</sup>, Salarić P<sup>2</sup>, Morelato L<sup>3</sup>, Pohl S<sup>4</sup>.

<sup>1</sup>Department of Otorhinolaryngology, General Hospital "Dr. Josip Benčević", Slavonki Brod; <sup>2</sup>Department of Oral & Maxillofacial Surgery, University Hospital Dubrava; <sup>3</sup>University of Zagreb, School of Dental Medicine; <sup>4</sup>Department of Oral surgery, Faculty of Dental Medicine University of Rijeka; <sup>5</sup>Department of Oral medicine and Periodontology at University of Rijeka, Dental Clinic Rident, Rijeka, Croatia

Implant placement in the maxillary anterior region is a challenge for clinicians, because both functional and aesthetic outcomes must be re-established. Expectations are high especially in patients with a high smile line. Preservation of the soft and hard tissue architecture is a primary clinical objective. However, multiple studies have demonstrated that immediate implant placement alone cannot prevent dimensional changes in the bone that occur after extraction. Therefore, hard and soft tissue grafting such as guided bone regeneration (GBR) or connective tissue grafting (CTG) is required during immediate implant placement to compensate for the ridge alterations after tooth extraction. Additionally, hard and soft tissue grafting have positive effects on the thickness and height of the periimplant mucosa and therefore may reduce aesthetic complications such as tissue discoloration caused by mucosal transparency from the underlying implant, midfacial recession (especially with maxillary anterior teeth that usually have a thin buccal bone or bony defects) and abutment exposure. In order to acquire more stable peri-implant tissues and predictable aesthetic outcome, well documented protocols have to be followed. Flapless tooth extraction and implant placement, filling the residual gap between implant and a buccal bone, tunneling techniques for soft tissue augmentation, buccal aesthetic flap for the buccal bone fenestration defect grafting and provisionalization with emergence profile contouring are shown to deliver the most predictable aesthetic outcomes with immediately placed implants. This lecture will present a single vertical incision approach for hard and soft tissue augmentation in combination with post extraction implant placement in the maxillary anterior region. Following subperiosteal flap elevation, single vertical incision enables buccal bone fenestration grafting and soft tissue graft insertion. Additionally, a single vertical incision provides access for apical lesion debridement when an implant is being placed immediately at the site of a tooth with a periapical lesion.

### 04 THE CONCEPT OF SOLVING ATROPHIC EDENTULOUS MANDIBLE USING VESTIBULOPLASTY WITH SPLIT THICKNESS SKIN GRAFT AND MINI IMPLANTS

Matoš I<sup>1</sup>, Danić P<sup>2,4</sup>, Biočić J<sup>2,4</sup>, Salarić P<sup>2,4</sup>, Brajdić D<sup>2,4</sup>, Sušić M<sup>3,4</sup>.

<sup>1</sup>Private practice dr. Ante Matoš, Dugo Selo; <sup>2</sup>Department of Oral & Maxillofacial Surgery, University Hospital Dubrava; <sup>3</sup>Department of Oral Surgery; <sup>4</sup>University of Zagreb School of Dental Medicine, Zagreb, Croatia

Edentulous mandible represents a challenge in prosthetic rehabilitation of patients due to reduced support of bone and soft tissues for mobile prosthetic replacements, and often bone exostoses require alveolar ridge modelling. The use of dental implants eliminates numerous procedures in pre-prosthetic surgery that are necessary to increase the retention and stabilization of complete dentures. However, in cases when the shallow vestibule and elevated floor mouth interfere with the wearing of prostheses retained with implants and restrict the movements of the muscles of the lips and cheeks, an indication for vestibuloplasty is set. The use of split thickness skin grafts can increase the vestibule and provide a stable denture supporting area due to keratinized epidermis that tolerates masticatory stress, and compli-

odluče nedostatak zuba nadoknaditi fiksnim protetskim radom, augmentacija mekog tkiva je poželjna kako bi se poboljšala crveno-bijela estetika. Zlatni standard za augmentaciju mekog tkiva je vezivno tkivo s nepca ili tubera pacijenta te s vremenom ima tendenciju povećavanja svojeg volumena za razliku od kolagenog matriksa koji za 6 mjeseci gube 50% od svog početnog volumena. Pacijent muškog spola, zbog starog protetskog rada preko 15 godina javlja se kako bi poboljšao estetiku fronte. Nakon CBCT snimke utvrđeno je kako volumen kosti nije dovoljan za ugradnju dentalnih implantata te je potrebna koštana regeneracija. S pacijentom dogovorena je augmentacija mekog tkiva uz promjenu protetskog rada. Pacijentu je predloženo kolageni matriks kako bi se trauma prilikom operativnog zahvata svela na minimum i time spriječilo otvaranje još jednog kirurškog polja. Skidanjem starog protetskog rada je preduvjet kako taj rad nebi radio pritisak na augmentirano područje. U defekt se pristupa kroz frenulum te se pomoću instrumenata za tuneliranje odigne režanj pune debljine te se šavovima fiksira kolageni matriks na željeno mjesto, rana se sašije te se izrađuju provizorni zubi koji ne rade pritisak na augmentirano područje. Nakon 3 mjeseca izrađuju se novi provizorni zubi kako bi se meko tkivo moglo kondicionirati. Nakon 8 mjeseci volumen mekog tkiva i dalje izgleda zadovoljavajuće i pretpostavlja se kako neće biti više gubitka u volumenu, slijedi u protetska faza te se pacijenta opskrbljuje zirkon-keramičkim mostom.

### 03 PRISTUP KROZ VERTIKALNI REZ ZA AUGMENTACIJU TVRDIH I MEKIH TKIVA PRILIKOM IMEDIJATNE UGRADNJE IMPLANTATA U ESTETSKOJ ZONI

Buljan M<sup>1</sup>, Salarić P<sup>2</sup>, Morelato L<sup>3</sup>, Pohl S<sup>4</sup>

<sup>1</sup>Odjel za otorinolaringologiju, Opća bolnica "Dr. Josip Benčević", Slavonki Brod; <sup>2</sup>Klinika za kirurgiju lica, čeljusti i usta KB Dubrava, Sveučilište u Zagrebu Stomatološki fakultet; <sup>3</sup>Zavod za oralnu kirurgiju, Fakultet dentalne medicine Sveučilište u Rijeci; <sup>4</sup>Zavod za oralnu medicinu i parodontologiju, Sveučilište u Rijeci; Dentalna poliklinika Rident, Rijeka

Imedijatna ugradnja implantata u fronti gornje čeljusti izazov je za kliničara, zbog ponovne uspostave funkcijskog i estetskog ishoda. Očekivanja su velika, posebice kod pacijenata s visokom linijom osmijeha. Očuvanje arhitekture mekog i tvrdog tkiva primarni je klinički cilj. Međutim, brojna istraživanja su pokazala da samo imedijatno postavljanje implantata ne može spriječiti dimenzijske promjene u kosti koje nastaju nakon ekstrakcije. Stoga je transplantacija tvrdih i mekih tkiva, kao što je vodena regeneracija kosti (GBR) ili primjena transplantata vezivnog tkiva (CTG), potrebna tijekom imedijatne ugradnje implantata kako bi se kompenzirale promjene grebena nakon vađenja zuba. Dodatno, augmentacija tvrdih i mekih tkiva pozitivno utječe na debljinu i visinu periimplantatne sluznice i stoga može smanjiti estetske komplikacije kao što su diskoloracija tkiva uzrokovana prosljavanjem implantata kroz sluznicu, gingivalna recesija (posebno kod prednjih maksimalni zubi koji imaju tanku bukalnu kost ili koštani defekt) i izloženost suprastrukture implantata. Kako bi se stekla stabilnost periimplantatnih tkiva i predvidljivi estetski ishod, moraju se slijediti dobro dokumentirani protokoli za neposrednu ugradnju implantata. Ekstrakcija zuba i ugradnja implantata bez odizanja mukoperiostalnog režnja, augmentiranje rezidualnog prostora između implantata i bukalne kosti, tunelske tehnike za augmentaciju mekog tkiva, bukalni estetski režanj za prekrivanje fenestracije bukalne kosti graftom i postava provizorija s oblikovanjem izlaznog profila pokazuju najpredvidljiviji estetske rezultate kod imedijatno postavljenih implantata. Ovo predavanje će predstaviti tehniku pristupa kroz jedan vertikalni rez za augmentaciju tvrdih i mekih tkiva u kombinaciji s ugradnjom implantata imedijatno nakon ekstrakcije u estetskoj zoni. Nakon odizanja subperiostalnog režnja, vertikalni rez omogućuje augmentaciju fenestracije bukalne kosti i umetanje vezivotkivnog transplantata. Dodatno, pristup kroz jedan vertikalni rez osigurava uklanjanje apikalnih lezija kod imedijatne ugradnje implantata.

### 04 KONCEPT RJEŠAVANJA ATROFIČNE BEZUBE DONJE ČELJUSTI POMOĆU VESTIBULOPLASTIKE SA SLOBODNIM KOŽNIM TRANSPLANTATOM I MINI IMPLANTATIMA

Matoš I<sup>1</sup>, Danić P<sup>2,4</sup>, Biočić J<sup>2,4</sup>, Salarić P<sup>2,4</sup>, Brajdić D<sup>2,4</sup>, Sušić M<sup>3,4</sup>.

<sup>1</sup>Ordinacija dentalne medicine dr. Ante Matoš, Dugo Selo; <sup>2</sup>Klinika za kirurgiju lica, čeljusti i usta KB Dubrava; <sup>3</sup>Zavod za oralnu kirurgiju; <sup>4</sup>Sveučilište u Zagrebu Stomatološki fakultet

Bezuba donja čeljust predstavlja izazov u protetskoj rehabilitaciji pacijenata zbog smanjene potpore koštanih i mekih tkiva za mobilne protetske nadomjestke, a često koštane egzostoze zahtijevaju modelaciju alveolarnog grebena. Korištenjem dentalnih implantata eliminiraju se brojni zahvati u preprotetskoj kirurgiji koji su nužni za povećanje retencije i stabilizacije totalnih proteza. Međutim, u slučajevima kada plitak vestibulum i visoko dno usne šupljine ometaju nošenje proteze retinirane implantatima te ograničavaju kretanje mišića usana i obraza, postavlja se indikacija za vestibuloplastikom. Upotrebom slobodnih kožnih transplantata može se postići povećanje vestibuluma i omogućiti stabilno ležište za protezu zbog keratiniziranog epidermisa koji izvrsno podnosi žvačni stres, a komplikaci-

cations of the donor site transplant in the form of infection, scarring and prolonged healing are minimal. In cases of reduced bone volume for the placement of standard dental implants, and alveolar ridge augmentation techniques are not an option, mini dental implants are considered. In former studies, mini-implants have shown a high survival rate (92%), acceptable marginal bone loss, and high patient satisfaction with increased masticatory function and quality of life. The purpose of this presentation is to demonstrate vestibuloplasty with split thickness skin graft as a safe and predictable pre-prosthetic method of improving the anatomical relationships of the edentulous mandible and implant-prosthetic rehabilitation using a denture retained with mini dental implants. Patients who cannot wear fixed mobile prosthetic replacements due to the unfavourable relationship between the movable and immovable mucosa should undergo some of the pre-prosthetic procedures, such as vestibuloplasty with a split thickness skin graft. In cases where it is not possible to rehabilitate the patient with standard dental implants, mini dental implants come into consideration as an alternative method in the rehabilitation of the edentulous mandible.

#### 05 IMMEDIATE IMPLANT-PROSTHETIC AND SOFT TISSUE REPAIR OF ATROPHIC EDENTULOUS MANDIBLE WITH SHORT IMPLANTS

Katanec T<sup>1,2</sup>, Prpić V<sup>1</sup>, Filipović-Zore I<sup>1,2</sup>, Gabrić D<sup>1,2</sup>, Bjelica R<sup>1</sup>, Miličević A<sup>1,3</sup>, Čatić A<sup>1,2</sup>.

<sup>1</sup>School of Dental Medicine, University of Zagreb; <sup>2</sup>University Hospital Centre Zagreb, Department of dentistry; <sup>3</sup>University Hospital Dubrava, Department of Oral and Maxillofacial Surgery, Zagreb, Croatia

Alveolar ridge atrophy is becoming an increasing challenge in modern oral surgery and implant procedures. With various options for bone augmentation, and the sinus lifting technique, a modern, less invasive approach to the implantation of short "short" implants has been chosen in this case. A case of a 65-year-old patient with completely atrophic edentulous mandible, and hypertrophy of the attached gingiva in the anterior part of the mandible caused by irritation of an inadequate lower complete denture is presented. In the first surgical phase, vestibuloplasty was performed according to the principle of secondary epithelialization using plasma rich with growth factors (PRGF). Four weeks after the first procedure, the patient underwent a second surgery, in which four short implants with 4.0 x 5 mm dimensions were implanted. Due to the advanced resorption of the alveolar ridge, the distance from the tip of the alveolar ridge to the alveolar nerve in the distal parts of the mandible was between 2 and 3 mm. According to the therapeutic indication, it is decided to show both *mental foramina*, and place the implants directly in front of them so that the patient has a preserved sensation in the innervated area. Upon completion of the implant procedure, multi-unit abutments and prosthetic transplants are placed on the implants immediately, and monophasic polyether impression is taken. A few hours after the procedure, the patient receives ready-made fixed-prosthetic provisional restoration made of acrylate, which is screw retained with multi-unit abutments and covers the mandibular region from the first left lower to the first right lower molar.

#### 06 ASSESSMENT OF AESTHETIC OUTCOME AND SUCCESS OF SOCKET SHIELD TECHNIQUE

Vuletić M<sup>1,6</sup>, Smojver I<sup>2</sup>, Illeš D<sup>3,6</sup>, Marković L<sup>4</sup>, Brzović Rajić V<sup>5,6</sup>, Gabrić D<sup>1,6</sup>.

<sup>1</sup>Department of Oral Surgery; <sup>2</sup>St. Catherine Specialty Hospital, Zagreb; <sup>3</sup>Department of Prosthodontics; <sup>4</sup>Private Dental Clinic Pula; <sup>5</sup>Department of Endodontics and Restorative Dentistry; <sup>6</sup>School of Dental Medicine, University of Zagreb, Croatia

Reconstructing the absence of a single tooth in the anterior region of the maxilla is a challenge for the clinician, especially at a time when patient requirements have evolved from satisfactory functionality to high aesthetics with harmonious and pleasant restoration. Modern dentistry offers several options for rehabilitation of the tooth loss in the aesthetic zone, but dental implants are considered the most optimal therapy. In implantology, increasing attention is focused to aesthetic parameters that assess the appearance of periimplant soft tissue and prosthetic restoration. Fürhauser et al. presented in 2005 an index of seven variables for assessing gingival condition as an objective method for qualitative assessment of implant aesthetics - Pink Esthetic Score (PES). On the other hand, Hürzeler et al. in 2010 patented the socket shield technique for preserving the bundle bone of the buccal wall and consequently soft tissue aesthetics. The aim of this study was to examine the clinical success of the socket shield technique, soft tissue stability and overall aesthetic outcome in three time intervals (6 months; 4 years and 6 years) after surgical and prosthetic rehabilitation using PES from the perspective of three different specialists. A prospective cohort clinical study was performed on 30 patients (23 men and 7 women; mean age 42.3 years) who underwent implant-prosthetic therapy due to lack of teeth in the upper intercanine region. The results showed that one implant was lost due to periimplantitis, while all the others were without complications throughout the follow-up period. Analysis of the average PES values showed statistically significant similarities between the assessments of the oral surgeon and prosthodontist after 6 months ( $p = 0.125$ ) and 6 years ( $p =$

je donorskog mjesta u obliku infekcije, ožiljkastog i produljenog cijeljenja su minimalne. U slučajevima smanjenog koštanog volumena za postavljanje standardnih dentalnih implantata te kada tehnike augmentacije alveolarnog grebena nisu opcija, tada u obzir dolaze mini dentalni implantati. U dosadašnjim istraživanjima mini implantati su pokazali visoku stopu preživljavanja (92%), prihvatljiv gubitak marginalne kosti i visoko zadovoljstvo pacijenata povećanjem žvačne funkcije i kvalitete života. Svrha ovoga izlaganja je prikazati vestibuloplastiku sa slobodnim kožnim transplantatom kao sigurnu i predvidljivu preprotetsku metodu poboljšanja anatomskih odnosa bezube donje čeljusti te implantoprotetsku metodu pomoću pokrovne proteze retinirane namodnestke zbog nepovoljnih odnosa pomične i nepomične sluznice, trebali bi se podvrgnuti nekom od preprotetskih zahvata kao što je vestibuloplastika sa slobodnim koštanom transplantatom. Mini dentalni implantati dolaze u obzir kao alternativna metoda u rehabilitaciji bezube donje čeljusti kada to nije moguće sa standardnim implantatima.

#### 05 IMEDIJATNA IMPLANTOPROTETSKA I MEKOTKIVNA SANACIJA ATROFIČNE BEZUBE MANDIBULE KRATKIM „SHORT“ IMPLANTATIMA

Katanec T<sup>1,2</sup>, Prpić V<sup>1</sup>, Filipović-Zore I<sup>1,2</sup>, Gabrić D<sup>1,2</sup>, Bjelica R<sup>1</sup>, Miličević A<sup>1,3</sup>, Čatić A<sup>1,2</sup>.

<sup>1</sup>Stomatološki fakultet, Sveučilište u Zagrebu; <sup>2</sup>Klinički bolnički centar Zagreb, Klinika za stomatologiju; <sup>3</sup>Klinička bolnica Dubrava, Klinika za kirurgiju lica, čeljusti i usta

Atrofija kosti alveolarnog grebena postaje sve veći izazov u suvremenim oralnokirurškim i implantološkim zahvatima. Uz prisutnost brojnih opcija koštanog augmentacija, te tehnika podizanja dna maksilarnog sinusa u ovom slučaju odabire se suvremeni pristup ugradnje kratkih „short“ implantata. Prikazuje se slučaj pacijentice u dobi od 65 godina s potpuno atrofičnom bezubom donjom čeljusti, te hipertrofičnom pričvršne gingive u području prednjeg dijela donje čeljusti izazvanom uslijed iritacije neadekvatne donje potpune proteze. U prvom operativnom zahvatu učini se vestibuloplastika po principu sekundarne epitelizacije koristeći krvnu plazmu obogaćenu faktorima rasta (PRGF). Četiri tjedna nakon prvog zahvata pacijentica je podvrgnuta drugom oralnokirurškom zahvatu, u kojem se ugrađuju četiri kratka „short“ implantata dimenzija 4,0 x 5 mm. Radi izrazite resorpcije alveolarnog grebena udaljenost od vrha alveolarnog grebena do alveolarnog živca u distalnim dijelovima mandibule je između 2 i 3 mm. Sukladno terapijskoj indikaciji odlučuje se prikazati oba otvora n. mentalisa, te ugraditi implantate neposredno ispred izlazišta kako bi pacijentici ostao očuvan osjet u inerviranoj regiji. Po završenom implantološkom zahvatu, na ugrađene implantate imedijatno se postavljaju multi-unit abutmenti i protetski prijenosnici te se uzima jednofazni otisak iz polietera. Pacijentica nekoliko sati nakon zahvata dobiva gotov fiksno-protetski privremeni rad od akrilata, koji se fiksira vijcima za multi-unit abutmente i pokriva regiju mandibule od prvog lijevog donjeg do prvog desnog donjeg kutnjaka.

#### 06 PROCJENA ESTETSKOG ISHODA I USPJEŠNOSTI SOCKET SHIELD TEHNIKE

Vuletić M<sup>1,6</sup>, Smojver I<sup>2</sup>, Illeš D<sup>3,6</sup>, Marković L<sup>4</sup>, Brzović Rajić V<sup>5,6</sup>, Gabrić D<sup>1,6</sup>.

<sup>1</sup>Zavod za oralnu kirurgiju; <sup>2</sup>Sv. Katarina specijalna bolnica, Zagreb; <sup>3</sup>Zavod za mobilnu protetiku; <sup>4</sup>Privatna stomatološka ordinacija, Pula; <sup>5</sup>Zavod za endodonciju i restaurativnu stomatologiju; <sup>6</sup>Sveučilište u Zagrebu Stomatološki fakultet

Rekonstrukcija nedostatka jednog zuba u prednjoj regiji maksile predstavlja izazov za kliničara, posebno u vrijeme kada su zahtjevi pacijenata evoluirali od zadovoljavajuće funkcionalnosti do visoke estetike sa skladnom i ugodnom restauracijom. Moderna stomatologija nudi nekoliko mogućnosti za sanaciju gubitka zuba u estetskoj zoni, ali sedentni implantati smatraju najoptimalnijom terapijom. U implantologiji sve je veća pozornost usmjerena na estetske parametre koji ocjenjuju izgled periimplantatnog mekog tkiva i protetsku restauraciju. Fürhauser i sur. su 2005. prezentirali indeks od sedam varijabli za ocjenu stanja gingive kao objektivnu metodu za kvalitativnu procjenu estetike implantata Pink Esthetic Score (PES). S druge strane Hürzeler i sur. 2010. godine patentiraju „socket shield“ tehniku za očuvanje snopne kosti (bundle bone) bukalne stijenke i posljedice no estetik mekog tkiva. Cilj ovog istraživanja je bio ispitati klinički uspjeh tehnike socket shield-a, stabilnosti mekog tkiva i ukupni estetski ishod u tri vremenska intervala (6 mjeseci; 4 godine i 6 godina) nakon kirurške i protetske rehabilitacije primjenom PES-a iz gledišta tri različita specijalista. Prospektivno kohortno kliničko istraživanje je provedeno na 30 pacijenata (23 muškaraca i 7 žena; prosječna dob 42.3 godine) kojima je provedena implanto-protetska terapija zbog nedostatka zuba u gornjoj interkaninnoj regiji. Rezultati su pokazali kako je izgubljen jedan implantat zbog periimplantitisa, dok su svi preostali bili bez komplikacija tijekom cijelog perioda praćenja. Analiza vrijednosti prosječnog PES-a je pokazala statistički značajne sličnosti između ocjena oralnog kirurga i protetičara nakon 6 mjeseci ( $p=0.125$ ) i 6 godina ( $p=0.875$ ), za razliku ocjena parodontologa. Ana-

0.875), in contrast to the assessments of periodontist. Analyzing each individual variable at given time intervals, significant differences showed distal papillae (Chi square = 6.182,  $p < 0.05$ ) and soft tissue margin level (Chi = 6.507,  $p < 0.05$ ). By assessing the appearance of soft tissue, PES showed agreement among evaluators, but the effect of evaluator's specialty was also shown. Very good aesthetic results have been achieved by using the socket shield technique as a promising approach for implant placement in the aesthetic zone.

## 07 SHIELD TECHNIQUE FOR RESTORING TEETH IN THE AESTHETIC ZONE

Sapundžiev D.

Private Dental Institute Vergina, Ljubljana, Slovenia

**Introduction:** Restoring teeth in the aesthetic zone is a challenging procedure that requires fulfilling several conditions in order to achieve good aesthetic result. Avoiding resorption of the buccal bone is impossible and procedures for replacing it are unpredictable and not reliable. Shield technique (ST) offers natural way to preserve buccal bone by leaving intact periodontal ligament. **Materials and methods:** In three healthy patients 11 implants (Ankylos C/X 3.5 Dentsply-Sirona) were placed by ST in the anterior part of the upper jaw. No biomaterial was used to fill the gap. All implants were immediately loaded after obtaining digital impressions with intraoral scanner 3Shape, TRIOS 3. No antibiotic was used postoperatively. Definitive restorations were placed after 3 months. Patients were radiographically followed up for one year and intraoral scans were obtained to follow changes of the alveolar ridge. The satisfaction index was measured by filling specific questionnaires after temporary and final restoration. **Results:** All implants osseointegrated uneventfully. No early implant failure or complications with the shield were observed. In all patients high aesthetic outcome was achieved with high satisfaction index after the operation and after final rehabilitation. During follow up visits clinical examination showed good emergence profile with adequate interdental papilla around restored teeth. No changes of the alveolar ridge were noticed during follow up. No radiographic signs of bone resorption were noticed around placed implants during follow up. **Conclusion:** Shield technique is well documented method for restoring teeth with high short term success rate. Unfortunately long term follow up is not well documented. Despite the limitation of this technique restoring missing teeth in the anterior region by shield technique is a good alternative to preserve buccal/bundle bone from resorption and achieve good aesthetic results.

## 08 HORIZONTAL AUTOGENOUS BLOCK AUGMENTATION OF THE POSTTRAUMATIC REGION

Bursać D<sup>1</sup>, Vuletić M<sup>2</sup>, Stojić L<sup>3</sup>, Gabrić D<sup>2</sup>, Sušić M<sup>2</sup>.

<sup>1</sup>Clinic for Biomedical medicine Matković, Zagreb; <sup>2</sup>Department of Oral Surgery, School of Dental Medicine, University of Zagreb; <sup>3</sup>DentA Centar, Zagreb, Croatia

Implant-prosthetic rehabilitation of extremely atrophic alveolar ridges is a complex and time-consuming procedure that requires certain knowledge and experience. Every tooth loss consequently has a defect of alveolar ridge that is compensated by bone augmentations. Augmentation techniques may be needed before or during implant therapy to achieve ideal alveolar ridge volume for implant positioning, placement of implants in the position necessary to achieve aesthetic and functional outcome of therapy, preserve peri-implant tissues and reduce complications. Horizontal augmentation is indicated when insufficient alveolar ridge width, with adequate ridge height is present, for proper implant placement. Major techniques for horizontal bone ridge augmentation include guided bone regeneration, bone block grafting, ridge-split technique and distraction osteogenesis. A 51-year-old patient came to the Department of Oral Surgery with the wish of implanto prosthetic therapy of the long-term partial toothlessness in the region 43-44 as a result of a traumatic injury. Clinical examination and CBCT analysis showed a severe horizontal atrophy of the alveolar ridge with insufficient width for implant placement. Rehabilitation was carried out in three phases. In the first phase, autogenous block augmentation was performed from the ramus of the mandible in combination with xenograft and PRGF fractions 1 and 2, and the resorbable membrane. In the second phase after 6 months, the fixation screws were removed and two implants were placed in region 43 and 44. In the third phase, after a period of osseointegration of 3 months, the implants were opened and the healing abutments were placed. After the period of soft tissue healing, taking impressions, the final fixed-prosthetic work on the screw is made. Follow up after one year showed no complications. The review of this case shows that the reconstruction of atrophic alveolar ridges with autogenous bone blocks is a predictable technique of augmentation of the atrophic ridge. Although there are different numbers of bone replacements, autologous bone is considered the "gold standard" and the most effective material for two-phase preprosthetic augmentation, and can serve as a reliable option for reconstructing isolated defects in dental implantology.

lizirajući svaku pojedinu varijablu u zadanim vremenskim intervalima značajne razlike su pokazale distalne papile ( $hi = 6.182$ ,  $p < 0,05$ ) i razina ruba mekog tkiva ( $hi = 6.507$ ,  $p < 0,05$ ). PES je procjenom izgleda mekog tkiva prikazao slaganje među ocjenjivačima, ali je također prikazan učinak specijalnosti ocjenjivača. Postignuti su vrlo dobri estetski rezultati primjenom tehnike socket shield kao obećavajućeg pristupa za ugradnju implantata u estetsku zonu.

## 07 SHIELD TEHNIKA ZA RESTAURACIJU ZUBA U ESTETSKOJ ZONI

Sapundžiev D.

Privatni Dentalni Institut Vergina, Ljubljana, Slovenia

**Uvod:** Restauracija zuba u estetskoj zoni je zahtjevan zahvat koji zahtijeva ispunjenje nekoliko uvjeta kako bi se postigao dobar estetski rezultat. Nemoguće je izbjeći resorpciju bukalne kosti alveole, a postupci njezine nadoknade su nepredvidivi i nepouzdan. Shield tehnika (ST) nudi prirodan način očuvanja bukalne kosti alveole ostavljajući netaknutim periodontalni ligament. **Materijali i metode:** U tri zdrava bolesnika ST metodom ugrađeno je 11 implantata (Ankylos C/X 3,5 Dentsply-Sirona) u prednji dio gornje čeljusti. Za popunjavanje praznine nije korišten biomaterijal. Svi implantati su imedijatno opterećeni nakon dobivanja digitalnih otisaka intraoralnim skenerom 3Shape, TRIOS 3. Postoperativno nisu korišteni antibiotici. Konačne restauracije postavljene su nakon 3 mjeseca. Bolesnici su radiografski praćeni godinu dana i napravljeni su intraoralni skenovi kako bi se pratile promjene alveolarnog grebena. Indeks zadovoljstva mjeren je ispunjavanjem specifičnog upitnika nakon privremene i konačne restoracije. **Rezultati:** Svi implantati su osseointegrirani bez problema. Nije primijećeno rano odbacivanje implantata ili komplikacije sa shield-om. Kod svih bolesnika postignut je visok estetski ishod uz visok indeks zadovoljstva nakon operacije i nakon završne rehabilitacije. Tijekom kontrolnih posjeta klinički pregled pokazao je dobar izlazni profil s odgovarajućom interdentalnom papilom oko restauriranih zuba. Tijekom praćenja nisu primijećene promjene alveolarnog grebena. Tijekom praćenja oko postavljenih implantata nisu primijećeni radiografski znakovi resorpcije kosti. **Zaključak:** Shield tehnika je dobro dokumentirana metoda za restauraciju zuba s visokom stopom kratkoročnog uspjeha. Nažalost, dugoročno praćenje nije dobro dokumentirano. Unatoč ograničenjima ove tehnike, nadoknada zuba koji nedostaju u prednjoj regiji shield tehnikom dobra je alternativa za očuvanje bukalne kosti alveole (bundle bone) od resorpcije i postizanje dobrih estetskih rezultata.

## 08 HORIZONTALNA AUTOLOGNA BLOK AUGMENTACIJA POSTTRAUMATSKE REGIJE

Bursać D<sup>1</sup>, Vuletić M<sup>2</sup>, Stojić L<sup>3</sup>, Gabrić D<sup>2</sup>, Sušić M<sup>2</sup>.

<sup>1</sup>Poliklinika za Biomedicinu Matković, Zagreb; <sup>2</sup>Zavod za oralnu kirurgiju, Stomatološki fakultet, Sveučilište u Zagrebu; <sup>3</sup>DentA Centar, Zagreb

Implanto-protetska rehabilitacija izrazito atrofičnih alveolarnih grebena je složen i dugotrajan postupak koji zahtijeva određeno znanje i iskustvo. Svaki gubitak zuba posljedica je nedostatka alveolarnog grebena koji se nadoknađuje koštanim augmentatima. Augmentacijske tehnike mogu biti potrebne prije ili tijekom implantološke terapije kako bi se postigao idealan volumen alveolarnog grebena za pozicioniranje implantata, postavu implantata u poziciju koja je nužna da bi se ostvario estetski i funkcijski ishod terapije, očuvala periimplantatna tkiva i smanjile mogućnosti komplikacija. Horizontalna augmentacija je indicirana kod nedostatne širine alveolarnog grebena, s adekvatnom visinom grebena za pravilnu postavu implantata. Glavne tehnike za horizontalnu augmentaciju košanog grebena uključuju vodenu regeneraciju kosti, koštani blok-transplantat, ridge-split tehniku i distrakcijsku osteogenezu. Na Zavod za oralnu kirurgiju javlja se 51-godišnji pacijent sa željom da se dugogodišnja djelomična bezubost u regiji 43-44 kao posljedica traumatske ozljede, sanira implanto-protetskom terapijom. Kliničkim pregledom i analizom CBCT-a navedene regije vidljiva je izrazita horizontalna atrofija alveolarnog grebena s nedostatnom širinom za ugradnju implantata. Rehabilitacija je provedena u tri faze. U prvoj fazi je napravljena autologna blok augmentacija s ramusa mandibule u kombinaciji s ksenograftom i PRGF frakcijama 1 i 2, te resorptivnom membranom. U drugoj fazi nakon 6 mjeseci, odstranjeni su fiksacijski vijci i ugrađena su dva implantata u regiju 43 i 44. U trećoj fazi nakon perioda osseointegracije od 3 mjeseca, pristupilo se otvaranju implantata i postavi gingiva formera. Nakon perioda cijeljenja mekih tkiva, uzimanja otisaka izradi se konačni fiksno-protetski rad na vijak. Pacijent je u postupku praćenja godinu dana i nisu zabilježene komplikacije. Prikaz ovoga slučaja pokazuje da je rekonstrukcija atrofičnih alveolarnih grebena autolognim blokovima kosti predvidljiva tehnika augmentacije atrofičnog grebena. Iako postoji različit broj koštanih nadomjestaka, autologna kost smatra se "zlatnim standardom" i najučinkovitijim materijalom za dvofaznu preprostetsku augmentaciju, te može poslužiti kao pouzdana opcija rekonstrukcije izoliranih defekata u dentalnoj implantologiji.



### 09 HORIZONTAL AUGMENTATION OF THE ALVEOLAR RIDGE USING THE BONE BLOCK OF THE LATERAL WALL OF THE UPPER JAW – A CASE REPORT

Čivljak T<sup>1</sup>, Morelato L<sup>2,7</sup>, Vučinić D<sup>3,7</sup>, Paljušaj E<sup>4</sup>, Buljan M<sup>5</sup>, Gabrić D<sup>6</sup>.

<sup>1</sup>Dental Polyclinic Zagreb; <sup>2</sup>Department of Oral Surgery; <sup>3</sup>Department of Prosthodontics; <sup>4</sup>Community health center Slunji; <sup>5</sup>Department of Otorhinolaryngology, General Hospital Slavonki Brod; <sup>6</sup>Department of Oral Surgery, School of Dental Medicine, University of Zagreb; <sup>7</sup>Faculty of Dental Medicine, University of Rijeka, Croatia

Due to the physiological or pathological resorption of the alveolar ridge, atrophies of such proportions often occur which makes it impossible to place dental implants without prior augmentation. The most common intraoral donor sites are areas of the angulus, corpus, and symphysis of the mandible. Recently, the anterior and lateral wall of the maxilla, from which the thin cortical bone is taken, has been mentioned as an intraoral donor site. Due to the opening of only one operating field, the advantage of this technique is an easier and more pleasant postoperative course for the patient and a shorter procedure for the operator. Complications such as infection, swelling, and pain of the donor site were no greater than with the frequently used lateral sinus lift technique. Compared to other intraoral donor sites, the disadvantage of this technique is the potential perforation of the Schneider membrane. The case of a patient with a lack of teeth in the lateral area of the maxilla will be presented. Imaging diagnostics and clinical examination determine that due to the atrophy of the alveolar ridge, horizontal augmentation is required before dental implants can be placed. It is decided to do, previously described, horizontal augmentation by taking a bone block from the lateral wall of the maxilla just above and distal to the defect area. Using a piezo device, the bone block is carefully lifted from the lateral wall of the upper jaw without perforating the maxillary sinus membrane (Ustomed Bone-Fixation, Ulrich Storz GmbH & Co, Tuttlingen, Germany), and the raised block is placed into the area of horizontal atrophy of the alveolar ridge with two fixation screws. In addition, the previously scraped bone, Safescraper TWIST (Meta, Reggio Emilia, Italy), is placed between the bone block and the alveolar ridge, and the healing period is awaited.

### 010 INTERDISCIPLINARY APPROACH IN THE MANUFACTURE OF IMPLANT PROSTHETIC COMPONENTS

Kosec P, Jovanović M.

Neo dens d.o.o., Division of Prosthodontics, Zagreb, Croatia

How often do you find yourself in a situation where standard implant components do not match your needs? Illustrated with the example of several cases, we will show how we make an individual multi-unit abutment with a combination of different fittings, how the screw outlet on the construction can be adjusted additionally, or what can be done when the implant system screw does not provide angulation. All parts and accessories are made entirely in our own production center, so we have the ability to completely adapt our parts to each individual case. Our final products are the result of constant innovations created by the fusion of knowledge of different professions. Guided by the inputs from doctors of dental medicine and surgeons, our dental technicians together with mechanical engineers come up with advanced solutions that were not possible before.

### 011 IMPLANT-PROSTHETIC REHABILITATION OF A PATIENT AFTER MAXILLECTOMY

Znaor S<sup>1,2,3</sup>, Pelivan F<sup>4</sup>, Verzak Ž<sup>2,5,6</sup>, Gabrić D<sup>1,2,5</sup>.

<sup>1</sup>Department of Oral Surgery; <sup>2</sup>Department of Dentistry, University Hospital Center Zagreb; <sup>3</sup>Resident, Štimac dental center, Zagreb; <sup>4</sup>Department of Removable Prosthodontics; <sup>5</sup>University of Zagreb School of Dentistry; <sup>6</sup>Department of Paediatric and Preventive Dentistry

Nowadays, in today's age of implant prosthetic therapy, it is possible to adequately supply patients with extensive defects in the maxillofacial region. The 83-year-old patient came to the Department of Otorhinolaryngology and Maxillofacial Surgery in June 2020 for surgical treatment of a giant cell lesion on the right side of the maxilla. Under general anesthesia, the soft tissue formation measuring 25x10x23mm was removed. Tumor resection was performed with access to the right maxillary sinus and resection of the bottom of the nasal mucosa. After the operation, the patient wore a palatal plate for a year. After that period, she came for an examination and a further plan of therapy and prosthetic care. Clinical examination showed atrophy of the toothless upper jaw and communication with the nasal cavity approximately 20 mm wide. The treatment plan consisted of the implantation of dental implants in the left distal area of the maxilla has regardless that it has been radiologically treated. Both CBCT and orthopantomogram were performed for this purpose. The analysis of the same indicated for the installation of two dental implants in the area of the left alveolar ridge distally and an overdenture anchored with two dental implants. In oral surgical therapy, two parallel implants were placed at positions 24 and 26. The postoperative period passed without any complications and four months after the installation of den-

### 09 HORIZONTALNA AUGMENTACIJA ALVEOLARNOG GREBENA KORIŠTENJEM KOŠTANOG BLOKA LATERALNOG ZIDA GORNJE ČELJUSTI - PRIKAZ SLUČAJA

Čivljak T<sup>1</sup>, Morelato L<sup>2,7</sup>, Vučinić D<sup>3,7</sup>, Paljušaj E<sup>4</sup>, Buljan M<sup>5</sup>, Gabrić D<sup>6</sup>.

<sup>1</sup>Stomatološka poliklinika Zagreb; <sup>2</sup>Katedra za oralnu kirurgiju; <sup>3</sup>Katedra za stomatološku protetiku; <sup>4</sup>Dom zdravlja Slunji; <sup>5</sup>Odjel za otorinolaringologiju, Opća bolnica Slavonki Brod; <sup>6</sup>Zavod za oralnu kirurgiju, Stomatološki fakultet Sveučilišta u Zagrebu; <sup>7</sup>Fakultet dentalne medicine, Sveučilište u Rijeci

Usljed fiziološke ili patološke resorpcije kosti alveolarnog grebena često nastaju atrofije takvih razmjera da nije moguća postava dentalnih implantata bez prethodne augmentacije. Najčešća intraoralna donorska mjesta su područje angulus, korpusa i simfize donje čeljusti. Odnedavno se kao intraoralno donorsko mjesto spominje prednji i lateralni zid gornje čeljusti odakle se uzima tanka kortikalna kost. Zbog stvaranja samo jednog operacijskog polja prednost ove tehnike je lakši i ugodniji postoperativni tijek za pacijenta te kraće vrijeme zahvata za operatera. Komplikacije kao što su infekcija, otekline i bol donorskog mjesta nisu bile veće nego kod često korištene tehnike lateralnog sinus lifta. U usporedbi s ostalim intraoralnim donorskim mjestima nedostatak ove tehnike je potencijalna perforacija Schneiderove membrane. Prikazat ćemo slučaj pacijenta s nedostatkom zubi u lateralnom području gornje čeljusti. Slikovnom dijagnostikom i kliničkim pregledom utvrdi se kako je zbog atrofije alveolarnog grebena prije postave dentalnih implantata potrebno napraviti horizontalnu augmentaciju. Odlučio se napraviti, prethodno opisanu, horizontalnu augmentaciju uzimanjem koštanog bloka s lateralnog zida gornje čeljusti neposredno iznad i distalno od područja defekta. Piezo uređajem se pažljivo bez perforacije membrane maksilarnog sinusa odigne koštani blok s lateralne stjenke gornje čeljusti te se s dva fiksacijska vijka (Ustomed Bone-Fixation, Ulrich Storz GmbH & Co, Tuttlingen, Germany) odignuti blok postavi u područje horizontalne atrofije alveolarnog grebena. Uz to se, prethodno sastrugana kost Safescraper® TWIST (Meta, Reggio Emilia, Italy), postavi između koštanog bloka i alveolarnog grebena, te se sačeka period cijeljenja.

### 010 INTERDISCIPLINARNI PRISTUP U IZRADI IMPLANTOLOŠKIH PROTETSKIH KOMPONENTI

Kosec P, Jovanović M.

Neo dens d.o.o., Odjel za dentalnu protetiku, Zagreb

Koliko se često susrećete sa situacijom da standardne implantološke komponente nisu primjenjive? Na primjeru nekoliko slučajeva pokazat ćemo kako se može izraditi individualna multi-unit nadogradnja s kombinacijom različitih dosjeda, izlazi za vijak na konstrukciji s dodatnim korekcijama ili što možemo napraviti kada vijak implantološkog sistema koji koristite ne pruža mogućnost angulacije. Sve vrste nadogradnji na implantatima u potpunosti izrađujemo u vlastitom proizvodnom centru, te na taj način maksimalno prilagođavamo proizvode svakom pojedinačnom slučaju. Naši radovi su rezultat stalnih inovacija stvorenih fuzijom znanja različitih struka. Vođeni smjernicama protetičara i kirurga, naši dentalni tehničari zajedno s inženjerima strojarstva dolaze do rješenja koja do sada nisu bila moguća.

### 011 IMPLANTOPROTETSKA REHABILITACIJA BOLESNIKA NAKON MAKSILEKTOMIJE

Znaor S<sup>1,2,3</sup>, Pelivan F<sup>4</sup>, Verzak Ž<sup>2,5,6</sup>, Gabrić D<sup>1,2,5</sup>.

<sup>1</sup>Zavod za oralnu kirurgiju; <sup>2</sup>Klinika za stomatologiju, KBC Zagreb; <sup>3</sup>Štimac centar dentalne medicine, Zagreb; <sup>4</sup>Zavod za mobilnu protetiku; <sup>5</sup>Stomatološki fakultet Sveučilišta u Zagrebu; <sup>6</sup>Zavod za dječju i preventivnu stomatologiju

U današnje doba implantoprotetske terapije moguća je adekvatna opskrba pacijenata s opsežnim defektima u maksilofacijalnoj regiji. Pacijentica u dobi od 83 godine dolazi u 6. mjesecu 2020. godine na Zavod za otorinolaringologiju i maksilofacijalnu kirurgiju radi kirurškog liječenja gigantocelularne lezije desne strane maksile. U općoj anesteziji uklonila se mekotivna tvorba veličine 25x10x23mm. Učinila se resekcija tumora sa pristupom desnom maksilarnom sinusu i resekcijom dna sluznice nosa. Nakon operacije pacijentica je godinu dana nosila palatinalnu ploču. Nakon tog perioda dolazi na pregled radi daljnijeg plana terapije i protetske opskrbe. Kliničkim pregledom bila je vidljiva atrofija bezube gornje čeljusti te komunikacija s nosnom šupljinom širine otprilike 20 mm. Plan terapije sastojao se od ugradnje dentalnih implantata u lijevom distalnom području maksile bez obzira što je radiološki liječena. U tu svrhu učinjen je i CBCT i ortopantomogram. Analizom istih postavila se indikacija za ugradnju dva dentalna implantata u području lijevog alveolarnog grebena distalno te izrada pokrovne resekcijske proteze sidrene s dva dentalna implantata. U oralno kirurškoj terapiji su se postavila dva paralelna implantata na pozicije 24 i 26. Postoperativno razdoblje je prošlo bez ikakvih komplikacija te su se četiri mjeseca nakon ugradnje dentalnih implantata postavili gingiva formeri. Nakon toga je pacijentica nastavila s implantoprotetskom opskrbom. Na Zavodu za dentalnu protetiku odlučeno je



tal implants, the gingiva formers were placed. After that, the patient continued with the implant-prosthetic supply. At the Department of dental prosthetics, it was decided to make an overdenture retained with two locators. One week after the overdenture was made and handed over, the patient was due for the first check-up, during which the prosthesis overhaul process was performed and the occlusal relations in the articulator were fine-tuned.

#### O12 CHALLENGES OF IMPLANT PROSTHETIC REHABILITATION IN PATIENTS IRRADIATED IN THE HEAD AND NECK AREA

Brajdić D<sup>1</sup>, Batinjan G<sup>2</sup>, Matoš I<sup>3</sup>, Macan D<sup>1</sup>.

<sup>1</sup>Department of Oral and Maxillofacial Surgery, University Hospital Dubrava, University of Zagreb School of Dental Medicine; <sup>2</sup>Division of Prosthodontics, University Hospital Dubrava; <sup>3</sup>Private dental practice Labor-dent Matoš d.o.o., Zagreb, Private practice dr. Ante Matoš, Dugo Selo

Modern standards of treatment for patients with head and neck cancer include complete rehabilitation of the stomatognathic system, which includes the use of the most modern operative techniques in the reconstruction of hard and soft tissues of the oral cavity. This means the use of free bone grafts on their own, together with the associated blood supply, muscle, skin, as well as the use of dental implants to replace official units. During this complex procedure, there are numerous challenges that we will face in order to achieve the best possible outcome of the treatment of our patients. It should be emphasized that such rehabilitation requires a multidisciplinary approach by specialists in general medicine, maxillofacial surgery, oncologists, psychiatrists, as well as doctors of dental medicine, oral medicine specialists, oral surgery specialists and dental prosthetics specialists, each of whom in their own segment, encountering numerous obstacles, contribute to the final goal. The purpose of this presentation is on the basis of long-term follow-up and treatment of patients irradiated in the head and neck area, along with the presentation of scientific data from modern research, to present guidelines for the placement of dental implants with the aim of their best possible survival, considering the inevitably harmful effects of radiotherapy. Apparently, positive changes have occurred in the last decade in terms of progress and minimal negative impact of radiotherapy on tissues, as well as in dental implantology in terms of bone and surface of dental implants, expected treatment outcomes and survival of dental implants in such patients have improved.

#### O13 SEALING EFFICACY OF THE ORIGINAL AND THIRD PARTY CUSTOM – MADE ABUTMENTS – MICROBIOLOGICAL IN VITRO PILOT STUDY

Smojver I<sup>1</sup>, Bjelica R<sup>2</sup>, Čatić A<sup>3</sup>, Vuletić M<sup>2</sup>, Gabrić D<sup>2</sup>.

<sup>1</sup>St. Catherine Specialty Hospital, Zagreb; <sup>2</sup>Department of Oral Surgery, School of Dental Medicine, University of Zagreb; <sup>3</sup>Department of Fixed Prosthodontics, School of Dental Medicine, University of Zagreb, Croatia

**Background and aim:** Implant-abutment connection (IAC) is a key factor for long-term success and stability of implant – borne prosthetic restoration and its surrounding tissues. Misfit between prosthodontic abutment and implant at the IAC leads to mechanical and biological complications. Two kinds of abutments are currently available on the market: original and third party abutments. The aim of this pilot study was to indirectly check the internal fit (gap) at the implant – abutment interface depending on the abutment fabrication method based on microbial leakage in static conditions and the need for the use of the gap sealing material. **Methods:** 80 dental implants and respective abutments were used in this study. Two groups of 40 implants were formed relative to the type of abutment (original and third party). Group A consisted of 20 GC Aadva Standard implants (GCTech.Europe GmbH, Breckerfeld, Germany) and 20 Zimmer Tapered Screw - Vent implants (Zimmer Biomet Dental, Palm Beach Gardens, Florida, USA) connected to respective original factory – made prosthodontic abutments. Group B consisted of same number and type of implants, but connected to respective third party custom – made abutments. In each of the groups, two subgroups of 10 implants were formed. The GapSeal (Hager and Werken, Duisburg, Germany) was applied in test subgroups. The implant – abutment assemblies were contaminated with a solution containing *Staphylococcus aureus* and *Candida albicans* for 14 days under aerobic conditions. **Results:** This study showed that there was no statistically significant difference ( $p > 0.05$ ) regarding microleakage between original and 3<sup>rd</sup> party custom – made abutments regardless of the use of sealing material. **Conclusions:** The abutment fabrication method has no significant influence on sealing efficacy regarding the bacterial and fungal leakage in static conditions.

#### O14 ABUTMENT SCREW FRACTURE, A CHALLENGE IN CLINICAL PRACTICE

Vidaković B<sup>1,2</sup>, Matijević M<sup>3</sup>, Dujmenović K<sup>1,2</sup>, Tomas M<sup>1</sup>.

<sup>1</sup>Faculty of Dental Medicine and Health, University of Osijek; <sup>2</sup>Istrian County Health Centers, Pula; <sup>3</sup>Osijek-Baranja County Health Center, Osijek

The abutment screw fractures are relatively rare, however they are potentially very un-

izraditi potpunu pokrovnu protezu retiniranu s dvije Locator nadogradnje. Nakon izrade i predaje proteze, pacijentica je naručena na prvi kontrolni pregled nakon tjedan dana od predaje proteze na kojem je odrađen proces remontaže proteze i fino usklađivanje okluzijskih odnosa u artikulatoru.

#### O12 IZAZOVI IMPLANTOPROTETSKE REHABILITACIJE KOD PACIJENATA ZRAČENIH U PODRUČJU GLAVE I VRATA

Brajdić D<sup>1</sup>, Batinjan G<sup>2</sup>, Matoš I<sup>3</sup>, Macan D<sup>1</sup>.

<sup>1</sup>Klinika za kirurgiju lica, čeljusti i usta KB Dubrava, Sveučilište u Zagrebu Stomatološki fakultet; <sup>2</sup>Ambulanta za kiruršku protetiku, KB Dubrava; <sup>3</sup>Stomatološka ordinacija Labor-dent Matoš d.o.o., Zagreb, Ordinacija dentalne medicine dr. Ante Matoš, Dugo Selo

Suvremeni standardi liječenja bolesnika s karcinomom glave i vrata, podrazumijevaju kompletnu rehabilitaciju stomatognatog sustava koja uključuje korištenje najsuvremenijih operativnih tehnika u rekonstrukciji tvrdih i mekih tkiva usne šupljine. Pod time se podrazumijeva korištenje slobodnih koštanih transplantata samostalno, zajedno s pripadajućom krvnom opskrbom, mišićem, kožom, kao i upotreba dentalnih implantata za nadoknadu značajnih jedinica. Tijekom toga kompleksnog postupka postoje brojni izazovi s kojima se susrećemo u cilju što boljih ishoda liječenja naših bolesnika. Treba naglasiti da takva rehabilitacija zahtijeva multidisciplinarni pristup specijalista doktora opće medicine, maksilofacijalnih kirurga, onkologa, psihijata, kao i doktora dentalne medicine, specijalista oralne medicine, oralnih kirurga i specijalista stomatološke protetike, koji svaki u svome segmentu, susrećući se s brojem preprekama doprinose konačnom cilju. Svrha ovog izlaganja je temeljem dugogodišnjeg praćenja i liječenja bolesnika zračenih u području glave i vrata uz prikaz znanstvenih podataka suvremenih istraživanja, iznijeti smjernice za postavljanje dentalnih implantata sa svrhom njihovog što boljeg preživljavanja obzirom na neminovno štetne učinke radioterapije. Obzirom su se u posljednjem desetljeću dogodile pozitivne promjene u smislu napretka i što manjeg negativnog utjecaja radioterapije na tkiva, kao i u dentalnoj implantologiji u smislu obrade kosti i površine dentalnih implantata, očekivani ishodi liječenja i preživljavanje dentalnih implantata kod takvih pacijenata su se poboljšali.

#### O13 UČINKOVITOST BRTVLJENJA TVORNIČKIH I INDIVIDUALNIH ABUTMENTA – MIKROBIOLOŠKA IN VITRO PILOT STUDIJA

Smojver I<sup>1</sup>, Bjelica R<sup>2</sup>, Čatić A<sup>3</sup>, Vuletić M<sup>2</sup>, Gabrić D<sup>2</sup>.

<sup>1</sup>Specijalna Bolnica Sv. Katarina, Zagreb; <sup>2</sup>Zavod za oralnu kirurgiju, Stomatološki fakultet Sveučilišta u Zagrebu; <sup>3</sup>Zavod za fiksnu protetiku, Stomatološki fakultet Sveučilišta u Zagrebu

**Svrha rada:** Spoj abutmenta i implantata ključan je faktor za dugotrajan uspjeh protetskog rada nošenog implantatima i stabilnost okolnih tkiva. Neadekvatno prijanjanje na spoju između abutmenta i implantata vodi do mehaničkih i bioloških komplikacija. Dvije vrste abutmenta su trenutno dostupne na tržištu: tvornički i individualni. Cilj ove pilot studije bio je indirektno istražiti brtvljenje na spoju implantata i abutmenta testirajući mikropropuštanje u statičkim uvjetima te potrebu za korištenjem materijala za brtvljenje. **Materijali i metode:** 80 dentalnih implantata i abutmenta korišteno je u ovoj studiji. Dvije skupine od 40 implantata formirane su ovisno o vrsti abutmenta (tvornički i individualni). Skupina A sastojala se od 20 GC Aadva Standard implantata (GCTech.Europe GmbH, Breckerfeld, Germany) i 20 Zimmer Tapered Screw - Vent implantata (Zimmer Biomet Dental, Palm Beach Gardens, Florida, USA) spojenih s originalnim tvorničkim abutmentima. Skupina B sastojala se od istog broja i vrste implantata, ali su bili povezani s individualnim abutmentima. U svakoj od skupina, formirane su po dvije podskupine od 10 implantata. GapSeal (Hager and Werken, Duisburg, Germany) korišten je u testnim podskupinama. Sklopovi implantat/abutment uronjeni su u suspenziju kontaminiranu sa *Staphylococcus aureus* i *Candida albicans* na 14 dana u aerobnim uvjetima. **Rezultati:** Ova studija pokazala je da nema statistički značajne razlike ( $p > 0.05$ ) u mikropropuštanju između tvorničkih i individualnih abutmenta neovisno o korištenju materijala za brtvljenje. **Zaključak:** Način proizvodnje abutmenta nema značajan utjecaj na učinkovitost brtvljenja u pogledu propuštanja bakterija i gljivica u statičkim uvjetima.

#### O14 FRAKTURA VIJKA ABUTMENTA, IZAZOV U KLINIČKOJ PRAKSI

Vidaković B<sup>1,2</sup>, Matijević M<sup>3</sup>, Dujmenović K<sup>1,2</sup>, Tomas M<sup>1</sup>.

<sup>1</sup>Fakultet za dentalnu medicinu i zdravstvo Sveučilište u Osijeku; <sup>2</sup>Istarski domovi zdravlja, Pula; <sup>3</sup>Dom zdravlja Osječko-baranjske županije, Osijek

Fraktura vijaka abutmenta je relativno rijetka ali potencijalno vrlo neugodna komplikacija u implantološkoj kliničkoj praksi koja može rezultirati gubitkom odnosno eksplantaci-

pleasant complication in implantology which can result with the explantation of the well osseointegrated dental implant. Usually, abutment screw fractures occur because of the screw torque which is over the recommended values, or are caused by the material fatigue because of cyclic occlusal forces during a prolonged period of time, in addition screw fractures can occur as a result of the unobserved screw loosening. Loosened screw should be fastened in time to prevent fracture. Fractured screw can be removed by burr, excavator or by special implant removal kit. Outcome is often uncertain and is not always successful. The aim of this presentation is to report a case of a patient referred to oral surgeon because of abutment screw fracture. Initially, the patient was referred from a dental office to the specialist for dental implant explantation with a remark that nothing more can be done and that oral surgeon should surgically remove the dental implant. Despite of that remark it was decided to try to remove the fractured screw. The position of the fractured screw was below implant platform which was disadvantage, in the end, fractured screw was successfully removed without damage of the implant internal thread, because of that implant was saved and reused for new implant suprastructure.

#### 015 HOW TO COPE WITH DIGITAL AGE?

Domazet K

“Dr. David Digital Orthodontics”, Split

Dental medicine on the whole is getting rapidly digitalized and more advanced technologies are being used every day, from the most basic ones such as electronic patient records, through advanced software for fully digitalised business management, to futuristic ones such as the use of virtual reality in implantology. This critical review of the latest literature on digitization has shown that despite some doubts, an increasing number of dentists are choosing to use digital solutions. The most common reasons for switching to digital technologies are saving time and money, higher earnings, faster and easier workflow and increased patient satisfaction. As there is a growing number of software solutions for every aspect of the work of doctors of dental medicine, there are five key factors that must be considered when choosing technology, namely: fast and thorough training, ease of use, availability of technical support, use of digital cloud technology for data storage and work, as well as easy and complete integration with all other technologies. The future of dentistry is digital and doctors of dental medicine must choose the technological solutions that will best suit their clinic, mode of operation, business and their patients.

#### 016 IMPLANT-PROSTHODONTIC REHABILITATION BY IMMEDIATE IMPLANT PLACEMENT AND LOADING WITH DIGITAL PROSTHODONTIC WORKFLOW - A CASE REPORT

Midžić B<sup>1</sup>, Bjelica R<sup>2</sup>, Sušić M<sup>3</sup>, Gabrić D<sup>2</sup>.

<sup>1</sup>Implant center Martinko, Zagreb; <sup>2</sup>Department of Oral Surgery, University of Zagreb School of Dental Medicine, Zagreb, Croatia

Immediate implant placement followed by immediate loading of implants by provisional restorations has become an important and frequently used procedure in modern dentistry. This approach has been investigated and has shown predictable and successful results. It reduces the duration of therapy, which is a key factor in most of the patients. The use of digital technologies is also rapidly growing and provides a precise and time effective treatment. An implant-prosthodontic solution of the case with multiple teeth indicated for extraction in patient with bruxism will be presented. A 60-year-old male patient came for an implant-prosthodontic solution for both jaws. Clinical examination and CBCT analysis revealed that teeth number 16, 15, 14, 13, 12, 11, 21, 22, 31, 48, 47, 45, 44 and 41 were indicated for extraction. Treatment plan for maxilla included the extraction of all teeth and immediate implantation of 4 dental implants loaded with immediate provisional restoration. The plan for the mandible was to extract indicated teeth and perform guided bone regeneration (GBR) with placement of 2 dental implants. Preoperatively, intraoral scanning was performed, along with photo documentation of the initial situation. The planned treatment for the mandible was done the first day of the surgery and 2 Straumann SP implants (Institut Straumann AG, Basel, Switzerland) were placed in regions 44 and 46. Extractions with alveolar ridge reduction in maxilla with immediate placement of 4 Straumann RC BLT implants were performed the next day. Remained lower teeth preparations and intraoral digital impressions of both jaws were taken after the surgery in the maxilla. Due to the primary stability and bone quality, implants were early prosthetically loaded with fixed provisional restorations from milled PMMA and provisionals were also milled for the remaining teeth in the mandible. After 3 months, final prosthodontic restorations were made.

jom dobro oseointegiranog implantata. Najčešći uzroci frakture vijka *abutmenta* su jakiji *torque* kod zatezanja vijka ili fraktura uzrokovana zamorom materijala zbog cikličkog okluzijskog opterećenja u dužem vremenskom periodu kao i posljedica popuštanja navoja vijka. Takav rasklimani vijak ako se pravovremeno ne zategne može posljedično frakturirati. Sam frakturirani dio vijka može se pokušati odstraniti svrdlima, ekskavatorom ili posebnim setom za uklanjanje frakturiranog vijka. Ishod u konačnici ne rezultira uvijek uspjehom. Cilj ove prezentacije je prikaz slučaja pacijentice upućene oralnom kirurgu radi frakture vijka *abutmenta*. Inicijalno pacijentica je bila upućena specijalisti na eksplantaciju iz jedne ordinacije dentalne medicine u kojoj je implantat postavljen s opaskom da se više ništa ne može učiniti te da treba intervencija oralnog kirurga radi eksplantacije implantata. Unatoč tome, odlučeno je da se pokuša odstraniti frakturirani vijak. Iako je pozicija frakturiranog vijka bila ispod razine implantata čime je sama situacija dodatno bila nepovoljna, na kraju je kod pacijentice uspješno odstranjen frakturirani dio vijka bez oštećenja navoja unutar implantata čime je i sam implantat sačuvan za novi protetski rad.

#### 015 DIGITALNO DOBA - KAKO SE SNAČI?

Domazet K.

“Dr. David digitalna ortodoncija”, Split, Croatia

Dentalna medicina u cjelini se ubrzano digitalizira i svaki dan u upotrebu ulaze sve naprednije tehnologije, od onih najosnovnijih poput elektronskih kartona pacijenata, preko naprednih softvera za potpuno digitalno vođenje poslovanja, pa do onih futurističkih poput korištenja virtualne realnosti u implantologiji. Ovaj kritički osvrt na najnoviju literaturu o digitalizaciji pokazao je da se unatoč određenim sumnjama sve veći broj doktora dentalne medicine odlučuje na korištenje digitalnih rješenja. Kao najčešći razlozi prelaska na digitalne tehnologije navode se ušteda vremena i novca, veća zarada, brži i lakši rad te povećano zadovoljstvo pacijenata. Budući da postoji sve veći broj softverskih rješenja za svaki aspekt rada doktora dentalne medicine, utvrđeno je postojanje pet ključnih faktora na koje se mora obratiti posebnu pažnju pri odabiru tehnologije a to su: brza i temeljita obuka, jednostavnost korištenja, dostupnost tehničke podrške, korištenje digitalnog oblaka za čuvanje podataka i rad te laka i potpuna integracija sa svim ostalim tehnologijama. Budućnost stomatologije je digitalna i doktori dentalne medicine moraju birati ona tehnološka rješenja koja će najviše odgovarati njihovoj klinici, načinu rada, poslovanju i pacijentima.

#### 016 IMPLANTOPROTETSKA REHABILITACIJA IMEDIJATNOM UGRADNOM I OPTEREĆENJEM IMPLANTATA UZ DIGITALNI PROTETSKI PROTOKOL – PRIKAZ SLUČAJA

Midžić B<sup>1</sup>, Bjelica R<sup>2</sup>, Sušić M<sup>3</sup>, Gabrić D<sup>2</sup>.

<sup>1</sup>Implant centar Martinko, Zagreb; <sup>2</sup>Zavod za oralnu kirurgiju, Stomatološki fakultet, Sveučilište u Zagrebu

Imedijatna implantacija nakon koje slijedi imedijatno opterećenje implantata privremenim protetskim radom postala je važna i često korištena metoda u modernoj dentalnoj medicini. Takav pristup je istražen i pokazao je predvidljive i uspješne rezultate. Smanjeno je trajanje terapije, što je ključan faktor kod većine pacijenata. Upotreba digitalne tehnologije također rapidno raste te omogućava precizan i vremenski isplativ tretman. Prikazat će se implantoprotetsko rješenje u slučaju s multiplim zubima indiciranim za ekstrakciju kod pacijenta s bruksizmom. Muškarac u dobi od 60 godina dolazi na implantoprotetsku terapiju u obje čeljusti. Kliničkim pregledom i analizom CBCT snimke utvrđuje se da su zubi 16, 15, 14, 13, 12, 11, 21, 22, 31, 48, 47, 45, 44 i 41 indicirani za ekstrakciju. Plan terapije u maksili uključivao je ekstrakciju svih zubi i imedijatnu implantaciju 4 dentalna implantata imedijatno opterećenih privremenim protetskim radom. Plan za mandibulu bio je ekstrahirati indicirane zube i provesti vođenu regeneraciju kosti uz istovremenu postavu 2 dentalna implantata. Preoperativno, provedeno je intraoralno skeniranje zajedno sa fotografiranjem inicijalnog stanja. Planirani zahvati u mandibuli provedeni su prvi dan s postavom 2 Straumann SP implantata (Institut Straumann AG, Basel, Switzerland) u regijama 44 i 46. Ekstrakcije i redukcija alveolarnog grebena u maksili s imedijatnom postavom 4 Straumann RC BLT implantata provedene su idućim dan. Brušenje preostalih zubi u mandibuli te intraoralno skeniranje obje čeljusti napravljeni su odmah nakon zahvata u maksili. Uzimajući u obzir adekvatnu primarnu stabilnost i kvalitetu kosti, implantati su imedijatno opterećeni fiksnim privremenim protetskim radovima od glodanog PMMA te su privremeni radovi glodani i za ostale zube u donjoj čeljusti. Konačni protetski radovi napravljeni su nakon 3 mjeseca.

#### O17 A NOVEL DIODE LASER WAVELENGTH OF 445NM AND RIBOFLAVIN IN ANTIMICROBIAL PHOTODYNAMIC TREATMENT OF PERIIMPLANTITIS

Morelato L<sup>1</sup>, Budimir A<sup>2</sup>, Smojver I<sup>3</sup>, Katalinić I<sup>3</sup>, Vuletić M<sup>4</sup>, Gabrić D<sup>4</sup>.

<sup>1</sup>Chair of Oral Surgery, Faculty of Dental Medicine, University of Rijeka;

<sup>2</sup>Department of Clinical and Molecular Microbiology, University Hospital Centre Zagreb, School of Medicine, University of Zagreb; <sup>3</sup>Specialty Hospital St. Catherine, Zagreb; <sup>4</sup>Department of Oral Surgery, University Hospital Centre Zagreb, School of Dental Medicine, University of Zagreb, Croatia

Dental implant therapy is being increasingly used to replace missing teeth. With the increase in the number of dental implants placed, the frequency of complications in clinical practice, in the form of peri-implant diseases, has also increased. The treatment of peri-implantitis is a great challenge for clinicians due to the complex pathogenesis of the disease and the difficulty in decontaminating the rough surface of dental implants. New therapies have been extensively investigated in contemporary dentistry, and many *in vitro*, animal, and clinical studies have already shown that non-invasive antimicrobial photodynamic therapy with diode laser can serve as a successful and safe adjunctive therapeutic protocol for the treatment of peri-implantitis. PDT implant surface treatment is based on a photochemical reaction consisting of photosensitizers, oxygen, and diode laser light. After binding photosensitive molecules to target cells, the implant surface is irradiated with light at a certain wavelength in the presence of oxygen. The excited photosensitizers can undergo type I (electron transfer) and/or type II (energy transfer) reactions to produce reactive oxygen species (ROS), resulting in disruption of the bacterial cell wall and/or normal metabolism, leading to bacterial cell damage or death. The described mechanisms do not cause host cell damage, as the human cell has mechanisms to survive oxidative stress. Various photosensitizers have been used in clinical practice, such as toluidine blue, methylene blue, curcumin, and riboflavin, which can be activated by light at appropriate wavelengths. In clinical practice and in studies, most research employing photodynamic therapy has used methylene or toluidine blue in combination with 600–660 nm wavelength light from the red part of the spectrum; however, a novel method that combines riboflavin as a photosensitizer and a laser beam with blue light (in particular, of 445 nm wavelength) was recently introduced shows promising results.

#### O18 IMPORTANCE OF ORAL HYGIENE FOR PATIENTS WITH IMPLANT PROSTHETIC RESTORATIONS

Banjšak L.

Procter & Gamble, Zagreb; Department of Dental Anthropology, University of Zagreb School of Dental Medicine, Croatia

Due to the trend of increasing popularity of implant-prosthetic restorations, a large number of patients opt for this type of therapy. But this trend is also accompanied by an increased incidence of mucositis and periimplantitis. It has been clinically and scientifically proven that proper oral hygiene prolongs the lifespan and integrity of implant prosthetics. By motivating the patient and educating him about the proper technique of oral hygiene, greater patient satisfaction is achieved subjectively, but also functionally. Mechanical plaque reduction is the most effective way to maintain favorable conditions for long-term implant function. Oscillating-rotating-pulsating brushes in combination with dental floss are set as the gold standard of mechanical maintenance of oral hygiene.

#### O19 THE EFFECT OF IMPLANT SURFACE DECONTAMINATION METHOD BY MEANS OF PHOTODYNAMIC THERAPY IN PERI-IMPLANTITIS REGENERATIVE SURGERY

Rakašević D<sup>1,2</sup>, Đukić Lj<sup>2,3</sup>, Aleksić Z<sup>1,2</sup>, Lazić Z<sup>4,5</sup>, Marković A<sup>2,5</sup>, Gabrić D<sup>5,6</sup>.

<sup>1</sup>Department of Periodontology and Oral Medicine; <sup>2</sup>School of Dental Medicine, University of Belgrade, Serbia; <sup>3</sup>Institute of Pharmacology; <sup>4</sup>Medical Military Academy, Belgrade, Serbia; <sup>5</sup>Department of Oral Surgery; <sup>6</sup>School of Dental Medicine, University of Zagreb, University Dental Clinic, Clinical Hospital Center Zagreb, Croatia

Implant surface decontamination plays a crucial and important step in peri-implantitis therapy. The primary goal of implant surface decontamination is to eradicate bacteria and their products from dental implant surface and surrounding tissues, ensuring implant survival while simultaneously promoting surrounding peri-implant tissues regeneration. Several implant surface decontamination methods have been proposed to prevent bacterial resistance development or/and surface damage. Photodynamic therapy (PDT) has been proposed as an adjuvant to surgical peri-implantitis therapy. The study aimed to assess clinical, microbiological and immunological outcomes 12 and 24 months after peri-implantitis regenerative surgical procedure, performing two divide implant surface decontamination methods. *Materials and methods:* In the test group, during the surgical procedure, implant surface decontamination was conducted by means of titanium curettes and PDT, while in a control group, 1 % gel of chlorhexidine (CHX) was used. Clinical pa-

#### O17 UČINKOVITOST UPOTREBE DIODONOG LASERA NOVE VALNE DULJINE 445NM I RIBOFLAVINA U FOTODINAMSKOJ TERAPIJI PERIIMPLANTITISA

Morelato L<sup>1</sup>, Budimir A<sup>2</sup>, Smojver I<sup>3</sup>, Katalinić I<sup>3</sup>, Vuletić M<sup>4</sup>, Gabrić D<sup>4</sup>.

<sup>1</sup>Katedra za oralnu kirurgiju, Fakultet Dentalne medicine, Sveučilište u Rijeci;

<sup>2</sup>Zavod za kliničku i molekularnu mikrobiologiju, KBC Zagreb, Medicinski fakultet, Sveučilište u Zagrebu; <sup>3</sup>Specijalna bolnica Sv. Katarina, Zagreb; <sup>4</sup>Zavod za oralnu kirurgiju, KBC Zagreb, Stomatološki fakultet, Sveučilište u Zagrebu

Otkrićem oseointegracije i razvojem tehnologije, terapija dentalnim implantatima sve je češće korištena za nadoknadu nedostajućih zuba. Povećanjem broja ugrađenih dentalnih implantata, u kliničkoj praksi povećava se i učestalost komplikacija u vidu periimplantatnih bolesti. Liječenje periimplantitisa kliničarima predstavlja veliki izazov zbog složene patogeneze bolesti i otežane dekontaminacije hrapave i posebno obrađene površine dentalnih implantata, kao preduvjeta za uspješnu regeneraciju. U modernoj stomatologiji istražuju se dodatne terapijske mogućnosti te se u mnogim *in vitro* i kliničkim studijama antimikrobna fotodinamska terapija (aPDT) pokazala kao uspješan i siguran dodatni terapijski protokol liječenja periimplantitisa. Tretnam površine implantata aPDT-om temelji se na fotokemijskoj reakciji koja se sastoji od fotosenzibilizatora, kisika i svjetlosti. Nakon vezivanja fotosenzibilnih molekula na ciljne stanice, površina implantata se ozrači svjetlošću određene valne duljine, uz prisutnost kisika. Ekscitirane molekule fotosenzitivnog sredstva prolaze reakciju tip I (transfer elektrona) i/ili tip II (transfer energije), što inducira produkciju visoko reaktivnih kisikovih molekula, koje uzrokuju uništavanje i smrt bakterijske stanice. Opisani mehanizmi ne djeluju na stanicu domaćina jer ljudske stanice posjeduju mehanizme za preživljavanje oksidativnog stresa. Kao fotosenzibilizirajuća sredstva koriste se različiti preparati poput toluidinskog modrila, metilenskog modrila, indocijanin zelenog, kurkumina ili riboflavina koji bivaju aktivirani svjetlom određenih valnih duljina. U kliničkoj praksi i studijama, većina istraživanja fotodinamske terapije koriste metilensko ili toluidinsko modrilo u kombinaciji sa svjetlom crvenog spektra valne duljine 600–660 nm. Novi protokol korištenjem kombinacije riboflavina i plavog spektra svjetlosti 445 nm valne duljine mogao bi imati izvjesne prednosti zbog mogućnosti korištenja u estetskoj zoni jer ne dovodi do bojenja tkiva te dokazanog učinka plavog svjetla na parodontne patogene.

#### O18 VAŽNOST ORALNE HIGIJENE U PACIJENATA S IMPLANTO-PROTETSKIM NADOMJESCIMA

Banjšak L.

Procter & Gamble, Zagreb; Zavod za dentalnu antropologiju, Sveučilište u Zagrebu Stomatološki fakultet

Zbog trenda povećanja popularnosti implantato-protetskih radova veliki broj pacijenata uključuje se za taj tip terapije. No taj trend također prati povećana incidencija mukozitisa i periimplantitisa. Klinički i znanstveno je dokazano da se pravilnom oralnom higijenom produžuje vijek trajanja te integritet implantato-protetskih radova. Motivacijom pacijenta te edukacijom o pravilnoj tehnici oralne higijene postiže se veće zadovoljstvo pacijenata subjektivno, ali i funkcijski. Mehanička redukcija plaka najučinkovitiji je način održavanja povoljnih uvjeta za dugotrajnu funkciju implantata. Kao zlatni standard mehaničkog održavanja oralne higijene postavljaju se oscilirajuće-rotirajuće-pulsirajuće četkice u kombinaciji sa zubnom svilom.

#### O19 UČINAK METODE DEKONTAMINACIJE POVRŠINE IMPLANTATA FOTODINAMIČKOM TERAPIJOM U PERIIMPLANTITISNOJ REGENERATIVNOJ KIRURGIJI

Rakašević D<sup>1,2</sup>, Đukić Lj<sup>2,3</sup>, Aleksić Z<sup>1,2</sup>, Lazić Z<sup>4,5</sup>, Marković A<sup>2,5</sup>, Gabrić D<sup>5,6</sup>.

<sup>1</sup>Katedra za parodontologiju i oralnu medicinu; <sup>2</sup>Stomatološki fakultet Sveučilišta u Beogradu, Srbija; <sup>3</sup>Institut za farmakologiju; <sup>4</sup>Vojnomedicinska akademija, Beograd, Srbija; <sup>5</sup>Zavod za oralnu kirurgiju; <sup>6</sup>Sveučilište u Zagrebu Stomatološki fakultet, Klinika za stomatologiju, KBC Zagreb

Dekontaminacija implantatne površine predstavlja ključan korak u terapiji periimplantitisa. Primarni cilj dekontaminacije implantatne površine je eradicacija bakterija i njihovih produkata s površine dentalnog implantata i okolnih tkiva, osiguravajući preživljavanje implantata uz istovremeno omogućavanje regeneracije okolnih periimplantatnih tkiva. Predloženo je nekoliko metoda dekontaminacije implantatne površine kako bi se spriječio razvoj bakterijske rezistencije i/ili oštećenja površine. Fotodinamska terapija (PDT) predložena je kao jedna od pomoćnih metoda kirurškoj terapiji periimplantitisa. Cilj ove studije bio je procijeniti kliničke, mikrobiološke i imunološke ishode 12 i 24 mjeseca nakon regenerativnog kirurškog zahvata periimplantitisa, primjenom dvije različite metode dekontaminacije. *Materijali i metode:* Dekontaminacija implantatne površine tijekom kirurškog zahvata u ispitivanoj skupini bila je provedena primjenom titanske kirete i PDT protokola, dok je u kontrolnoj skupini korišten 1 % klorheksidinski gel. Praćeni su i procijenjeni klinički parametri (krvarenje pri sondiranju (KPS), plak indeks, dubina sondira-



rameters including bleeding on probing (BOP), plaque index, peri-implant probing depth (PPD), clinical attachment level; immunological (IL-17, IL-1 $\beta$ , IL-6) and microbiological parameters, were assessed at 12 and 24 months postoperatively. Results: Both groups showed a statistically significant improvement in clinical outcomes. There was a significant reduction in terms of PPD and BOP in the test group compared to the control one, 12 and 24 months after the surgery ( $p < 0.05$ ). A statistically significant better result in a reduction of peri-implantitis causatives' bacteria and pro-inflammatory IL concentrations were achieved by means of PDT in the test group ( $p < 0.05$ ) compared to CHX application in the control group, 12 and 24 months postoperatively. Conclusion: PDT may be suggested as an effective adjuvant implant surface decontamination method to the surgical regenerative treatment of peri-implantitis, resulting in clinical outcomes enhancement and reduction of pathogenic bacteria and pro-inflammatory interleukins.

## O20 THE USE OF STEM CELLS IN ALVEOLAR RIDGE RECONSTRUCTION

Simončić B<sup>1</sup>, Vulićević ZR<sup>2</sup>.

<sup>1</sup>Medical Center Mirje, Ljubljana, Slovenija; <sup>2</sup>School of Dental Medicine, University of Belgrade, Serbia

Severe resorption of alveolar ridge is following loss of the tooth. Missing of the tooth could lead to psychological trauma due to appearance, functional insufficiencies and severe tooth migration. Reparation and regeneration of bone tissue is a complex part of medicine, not only in oral region. Bone tissue is a complex structure, composed of extra cellular matrix enriched with collagen tissue and elastic fibres which are bound on hydroxyapatite crystals. Bone tissue is constantly undergoing reparative and remodelling activity through interaction among osteoblast and osteoclast cells. New techniques of regenerative surgical treatment introduce the use of stem cells, which enable qualitative ridge augmentation and predictive therapy through induction of bone reparation and prevention of bone resorption.

## O21 ONE-YEAR FOLLOW-UP OF IMMEDIATELY LOADED FULL-ARCH IMPLANT-SUPPORTED FIXED PROSTHESES BASED ON THE ALL-ON-FOUR CONCEPT – CUMULATIVE SUCCESS RATES

Babić V<sup>1</sup>, Horvat B<sup>1</sup>, Džodan L<sup>1</sup>, Marijan F<sup>1</sup>, Srdjak S<sup>1</sup>, Bošnjak A<sup>2</sup>.

<sup>1</sup>Dental polyclinic ArenalAdria Dental Group, Zagreb; <sup>2</sup>School of Dental Medicine University of Rijeka, Croatia

Edentulous patients are focus group for implant-supported restorations due to numerous factors, and lower edentulous jaw is a clinical situation where implant-supported restoration represents the treatment of choice, notwithstanding the age of the patient. This report describes a case series of edentulous patients (both or only one edentulous jaw) that were treated in the Dental polyclinic "Arena" by means of the Paltop dental implant system (Keystone Dental Group, Burlington, USA). According to the protocol and indications, during the first year of use of the dental implant system there were 103 patients that received 4 implants in each edentulous jaw (66 male, 37 female), in a one-phase protocol that were immediately loaded in the first 24 hours following implant insertion. There were 37 (35.92%) completely edentulous patients, 38 (36.89%) patients with only upper jaw edentulous, and 28 (27.18%) patients with only lower jaw edentulous. Mean age of subjects was 55.89 $\pm$ 9.47 years. A total of 530 implants were placed. Cumulative success rate (CSR) for first six months was 99.24%, and 99.04% for the next six months. The protocol and the implant system were deemed reliable, and the CSR in accordance with previously published studies.

## O22 SURGICAL ASPECTS, ADVANTAGES AND DISADVANTAGES OF CONVENTIONAL AND COMPUTER GUIDED IMPLANT SURGERY IN THE ANTERIOR MAXILLA

Bizevski D<sup>1</sup>, Bajramov E<sup>2</sup>, Markoski N<sup>1</sup>, Peeva Petreska M<sup>3</sup>, Vlaski Z<sup>4</sup>, Delov Z<sup>5</sup>, Ivanov I<sup>6</sup>.

<sup>1</sup>Nova Dental Surgery, Skoplje, North Macedonia; <sup>2</sup>Nova Dental Group, Skoplje, North Macedonia; <sup>3</sup>School of Dental Medicine, University of Skoplje, North Macedonia; <sup>4</sup>PZU Dr. Zlatko Vlaski, Skoplje, North Macedonia; <sup>5</sup>Private Dental Practice Delov d.o.o., Rijeka, Croatia; <sup>6</sup>Private Dental Practice PZU Parodont, Kavadarci, North Macedonia

Immediate implant placement in the aesthetic zone of the anterior maxilla is a promising and most desirable type of therapy to compensate for a lost tooth. On the other hand, mediate implantation is the golden standard used for many years, but almost never as a stand-alone technique in the frontal maxilla. There are several difficulties that an implantologist encounters in planning and implantation in this area. The presence or absence of the buccal bone plate is crucial for the further fate of the implant, but also for the method of

nja (PD), klinička razina pričvršćivanja), imunološki (IL-17, IL-1 $\beta$ , IL-6) i mikrobiološki parametri, 12 i 24 mjeseca nakon operacije. Rezultati: Obje skupine pokazale su statistički značajno poboljšanje kliničkih ishoda. Značajno smanjenje PD i KPS zabilježeno je u ispitivanoj skupini u odnosu na kontrolnu, 12 i 24 mjeseca nakon operacije ( $p < 0,05$ ). Statistički značajno smanjenje mikroorganizama uzročnika periimplantitisa i koncentracije proupalnih IL-a postignut je primjenom PDT ( $p < 0,05$ ), 12 i 24 mjeseca nakon operacije. Zaključak: PDT se može predložiti kao učinkovita pomoćna metoda dekontaminacije površine implantata kirurškoj regenerativnoj terapiji periimplantitisa, rezultirajući poboljšanjem kliničkih ishoda i smanjenjem patogenih bakterija i proupalnih interleukina.

## O20 PRIMJENA MATIČNIH STANICA U REKONSTRUKCIJI ALVEOLARNE KOSTI

Simončić B<sup>1</sup>, Vulićević ZR<sup>2</sup>.

<sup>1</sup>Medicinski Centar Mirje, Ljubljana, Slovenija; <sup>2</sup>Stomatološki fakultet Sveučilišta u Beogradu, Srbija

Gubitak stalnog zuba prati i obimna resorpcija alveolarne kosti. Nedostatak zuba može dovesti do ispoljavanja psiholoških trauma zbog izgleda, smanjene funkcije i ozbiljnog pomicanja preostalih zuba. Reparacija i regeneracija koštanog tkiva je veoma zahtjevno područje medicine, ne samo u predjelu lica i čeljusti. Kost je kompleksna struktura, koja se sastoji od ekstracelularnog matriksa bogatog kolagenim i elastičnim vlaknima koja se vezuju za kristale hidroksiapatita. Koštano tkivo je u procesu konstantne reparacije i remodelacije kroz djelovanje i interakciju stanica osteoblasta i osteoklasta. Nove tehnike regenerativnog kirurškog liječenja uvode u praksu upotrebu matičnih stanica, koje omogućavaju kvalitetno nadomještanje alveolarne kosti i predvidive ishode liječenja, kroz indukciju koštane reparacije i sprečavanje koštane resorpcije.

## O21 JEDNOGODIŠNJE PRAĆENJE IMEDIJATNO OPTEREĆENIH NADOMJESTAKA PODUPRTIH IMPLANTATIMA TEMELJENIH NA KONCEPTU ALL-ON-FOUR – KUMULATIVNE STOPE USPJEŠNOSTI

Babić V<sup>1</sup>, Horvat B<sup>1</sup>, Džodan L<sup>1</sup>, Marijan F<sup>1</sup>, Srdjak S<sup>1</sup>, Bošnjak A<sup>2</sup>.

<sup>1</sup>Stomatološka poliklinika ArenalAdria Dental Group, Zagreb; <sup>2</sup>Fakultet dentalne medicine Sveučilište u Rijeci

Bezubi pacijenti su primarna ciljna skupina za nadomjeske poduprte implantatima zbog niza faktora, a bezuba donja čeljust posebice klinička je situacija u kojoj se gotovo uvijek fiksno rješenje poduprto implantatima nudi kao terapija izbora, bez obzira na dob pacijenta. U ovom priopćenju bit će prikazan niz slučajeva bezubih čeljusti (obje, samo gornja ili samo donja bezuba čeljust) koje su sukcesivno obrađene u Stomatološkoj poliklinici "Arena" implantološkim sustavom Paltop (Keystone Dental Group, Burlington, SAD). Prema protokolu i indikacijama, tijekom prve godine korištenja implantološkog sustava opskrbljena su 103 pacijenta (66 muških, 37 ženskih pacijenata) jednofaznim kirurškim postupkom kojim su u čeljust ugrađena po 4 implantata koja su unutar 24 sata bila opskrbljena imedijatnim privremenim fiksnim nadomjeskom pričvršćenim vijcima. Potpuno bezubih pacijenata bilo je 37 (35.92%), dok je 38 pacijenata (36.89%) imalo samo gornju bezubu čeljust, a 28 (27.18%) samo donju bezubu čeljust. Srednja dob ispitanika bila je 55.89 $\pm$ 9.47 godina. Ukupno je u prvih godinu dana ugrađeno 530 implantata. Kumulativna stopa uspješnosti za prvih šest mjeseci iznosila je 99.24%, a za drugih šest mjeseci 99.04%. Protokol i implantološki sustav pokazali su se uspješnima, a stopa uspješnosti u skladu s ranije objavljenim istraživanjima.

## O22 KIRURŠKI ASPEKTI, PREDNOSTI I NEDOSTACI METODA KONVENCIONALNE I KOMPJUTERIZIRANE IMPLANTACIJE U PREDNJOJ MAKSLI

Bizevski D<sup>1</sup>, Bajramov E<sup>2</sup>, Markoski N<sup>1</sup>, Peeva Petreska M<sup>3</sup>, Vlaski Z<sup>4</sup>, Delov Z<sup>5</sup>, Ivanov I<sup>6</sup>.

<sup>1</sup>Nova Dental Kirurgija, Skoplje; <sup>2</sup>Nova Dental Group, Skoplje; <sup>3</sup>Stomatološki fakultet, Skoplje; <sup>4</sup>PZU Dr. Zlatko Vlaski, Skoplje, Sjeverna Makedonija; <sup>5</sup>Stomatološka ordinacija Delov d.o.o., Rijeka; <sup>6</sup>Stomatološka ordinacija PZU Parodont, Kavadarci, Sjeverna Makedonija

Imedijatna implantacija u estetskoj zoni prednje maksile je obećavajuća i najpoželjnija vrsta terapije za nadoknadu izgubljenog zuba. S druge strane, medijalna implantacija je zlatni standard koji se godinama koristi u rješavanju bezubosti, ali gotovo nikad kao samostalna metoda u frontalnoj maksili. Postoji nekoliko poteškoća s kojima se implantolog susreće u planiranju i implantaciji u ovom području. Prisutnost ili odsutnost vestibularne lamine presudna je za daljnju sudbinu implantata, ali i za način ugradnje. Osim toga, ovo je područje u kojem oblik, položaj i estetika igraju ključnu ulogu u uspješnosti tera-



implantation. In addition, this is an area where shape, position, and aesthetics play a key role in therapy success. Conventional implantation or computer-guided implant therapy as the therapies of choice, have its aspects on the fate of the buccal bone plate and other peri-implant tissues, which must be analyzed in detail preoperatively and postoperatively. Purpose of work: Review and compare surgical techniques of conventional or computer-guided implant surgery in mediate and immediate implantation, in the anterior maxilla, their advantages and disadvantages, through clinical and paraclinical methods. Material and methods: Patients with an indication for tooth extraction or teeth in the frontal maxilla requiring immediate implantation, and patients with partial edentulousness in the anterior maxilla requiring mediate implantation were taken for analysis. Conventional implantation methods and computer guided implantation were used in both groups of patients. Expected results: The results obtained by clinical methods preoperatively, operatively and postoperatively, as well as radiographic analysis in all phases of implant therapy, will give the answer and direction of the choice of therapy for edentulousness in the anterior maxilla. A comparison of conventional implantation methods and computer-guided implantation will show all the advantages and disadvantages of these methods, their combination and ways to overcome and manage them.

#### O23 MECHANICAL CHARACTERISTICS OF POLYLACTIC ACID (PLA) IN THE FABRICATION PROCESS OF INDIVIDUALIZED BIODEGRADABLE AUGMENTATION SCAFFOLD – IBAM

Prpić V<sup>1,3</sup>, Bjelica R<sup>2,3</sup>, Drvar N<sup>4</sup>, Gabrić D<sup>2,3,5</sup>, Čatić A<sup>1,3,5</sup>.

<sup>1</sup>Department of Fixed Prosthodontics; <sup>2</sup>Department of Oral Surgery; <sup>3</sup>University of Zagreb School of Dental Medicine, Zagreb, Croatia; <sup>4</sup>Topomatika, Sveta Nedelja, Croatia; <sup>5</sup>Clinical Hospital Centre Zagreb, Croatia

**Introduction:** Various techniques have been developed for 3D reconstruction of the lost bone tissue, with currently the most widely used being titanium mesh replacement, the Khoury technique, and the distraction osteogenesis. All three techniques have significant disadvantages, narrow indication, and require exceptional operator skill. IBAM scaffold is made of biodegradable material, provide space for the formation of new bone tissue, and have the ability to be built into 3D complex individualized shapes. Simple individualized fabrication, biocompatibility, and planned biodegradability are the properties due to which PLA has found its application in tissue engineering. **Materials and methods:** In order to optimize the shape and mechanical characteristics of the biodegradable scaffold, the mechanical properties of 3D printed specimens were tested by finite element analysis (FEA) with different print orientations - horizontal, lateral and vertical. Also, the flexural strength and impact strength of extruded PLA were tested on an Inspekt table 50 kN (Hegewald & Peschke Meß - und Prüftechnik GmbH). **Results:** The results of the FEA examination demonstrated higher values of tensile strength in the horizontal (32.98-35.53 MPa) and the lateral positions (26.97-29.69 MPa) compared to the vertical position (4.43-14.20 MPa). The horizontal position of the specimens also demonstrated the highest values when testing flexural strength, while during the impact strength testing the horizontal (0.40 J) and lateral positions (0.41 J) demonstrated double the values of the vertical position (0.2 J). Specimens of all tested orientations showed similar hardness values after 60s. **Conclusions:** Based on the defined marginal loads of the model and the FEA, the results demonstrate that the planned arc geometry satisfies the criteria of the loads to which the scaffold will be exposed in the oral cavity. Mechanical properties of PLA meet the planned utilization of IBAM in computer-guided individualized bone augmentation.

#### O24 NEW GENERATION OF MOUTHWASHES – A CLOSE LOOK AT CURADEN'S NEW ANTISEPTIC LINE

Bošnjak A.

Department of Oral Medicine and Periodontology, School of Dental Medicine University of Rijeka, Rijeka, Croatia; School of Medicine, University of Mostar, Mostar, Bosnia and Herzegovina; Private practice limited to periodontology/Dental polyclinic "Arena", Zagreb, Croatia

This lecture presents a new line of Curaden's antiseptic mouthwashes under the name Perio Plus+ that introduces a combination of synthetic and natural antibacterial effect. In line of a more natural approach to the oral biofilm control, Curaden has developed products that, apart from the golden standard – aqueous solution of chlorhexidine – uses natural ingredients – bioflavonoids – that are efficient against bacteria and protect the mucosa. Thanks to a sequence of experiments, today we have antiseptics that are at the same time highly efficient and protective towards the host's tissues. Additionally, this lecture gives newest results that speak for increased use of antiseptics based on natural ingredients.

pije. Konvencionalna implantacija ili kompjuterski vođena implantoterapija, kao terapija izbora, imaju svoje aspekte na sudbinu vestibularne lamine i drugih periimplantatnih tkiva, koja se moraju detaljno analizirati preoperativno i postoperativno. Svrha rada: Pregledati i usporediti kirurške tehnike konvencionalne ili kompjuterski vođene implantološke kirurgije u medijatnoj i imedijatnoj implantaciji, u prednjoj maksili, njihove prednosti i nedostatke, kroz kliničke i parakliničke metode. Materijal i metoda: Analizirani su pacijenti s indikacijom za vađenje zuba ili zubi u frontalnoj maksili koji zahtijevaju imedijatnu implantaciju te pacijenti s djelomičnom bezubošću u prednjoj maksili koji zahtijevaju medijatnu implantaciju. U obje skupine bolesnika korištene su metode konvencionalne implantacije i kompjuterizirane vođene implantacije. Očekivani rezultati: Rezultati dobiveni kliničkim metodama preoperativno, operativno i postoperativno, kao i radiografske analize u svim fazama implantoterapije, dati će odgovor i smjer izbora terapije bezubosti u prednjoj maksili. Usporedba metoda konvencionalne implantacije i računalno potpomognute implantacije, pokazat će sve prednosti i nedostatke metoda, njihovu kombinaciju te načine za njihovo prevladavanje i upravljanje.

#### O23 MEHANIČKE ZNAČAJKE POLILAKTIČNE KISELINE (PLA) U IZRADI INDIVIDUALIZIRANE BIORAZGRADIVE AUGMENTACIJSKE MREŽICE - IBAM

Prpić V<sup>1,3</sup>, Bjelica R<sup>2,3</sup>, Drvar N<sup>4</sup>, Gabrić D<sup>2,3,5</sup>, Čatić A<sup>1,3,5</sup>.

<sup>1</sup>Zavod za fiksnu protetiku; <sup>2</sup>Zavod za oralnu kirurgiju; <sup>3</sup>Sveučilište u Zagrebu Stomatološki fakultet; <sup>4</sup>Topomatika, Sveta Nedelja; <sup>5</sup>KBC Zagreb

**Uvod:** Za 3D nadoknadu izgubljenog koštanog tkiva razvijene su različite tehnike od kojih se trenutno najviše koriste nadoknada primjenom titanijevе mrežice, Khouryjeva tehnika i distrakcijska osteogeneza. Sve tri tehnike imaju značajne nedostatke, vrlo suženu indikaciju i zahtijevaju izuzetnu vještinu operatera. IBAM mrežica (eng. *scaffold*) izrađena je od bioresorptivnih materijala, osigurava prostor za stvaranje novog koštanog tkiva i ima mogućnost 3D gradnje u složene individualizirane oblike. Jednostavna individualizirana proizvodnja, biokompatibilnost i planirana biorazgradivost predstavljaju svojstva zbog kojih je PLA našla svoju primjenu u tkivnom inženjerstvu. **Materijal i metode:** U svrhu optimizacije oblika i mehaničkih značajki biorazgradive mrežice provedeno je ispitivanje mehaničkih svojstava 3D građenih uzoraka analizom konačnih elemenata (FEA) s različitim orijentacijom tiska - polegnuti, bočni i uspravni. Također, testirane su savojna čvrstoća i udarna žilavost ekstrudiranog PLA na uređaju Inspekt table 50 kN (Hegewald & Peschke Meß - und Prüftechnik GmbH). **Rezultati:** Rezultati FEA istraživanja pokazuju veće vrijednosti vlačne čvrstoće u polegnutom položaju (32,98-35,53 MPa) i bočnom položaju (26,97-29,69 MPa) u odnosu na uspravan (4,43-14,20 MPa). Polegnuti položaj uzoraka pokazuje najveće vrijednosti i prilikom testiranja savojne čvrstoće dok prilikom testiranja udarne žilavosti dvostruko veće vrijednosti pokazuju polegnuti (0,40 J) i bočni položaj (0,41 J) u odnosu na uspravni (0,2 J). Uzorci svih testiranih orijentacija pokazuju ujednačene vrijednosti tvrdoće nakon 60s. **Zaključci:** Na osnovi definiranih rubnih opterećenja modela i FEA, rezultati pokazuju kako planirana lučna geometrija zadovoljava uvjet opterećenja kojima će mrežica biti izložena u usnoj šupljini. PLA mehanička svojstva zadovoljavaju planiranu uporabu IBAMA u računalno vođenoj individualiziranoj augmentaciji koštane osnove.

#### O24 TEKUĆINE ZA ISPIRANJE USTA NOVE GENERACIJE – DETALJNIJI POGLED NA NOVU CURADENOVU LINIJU ANTISEPTIKA

Bošnjak A.

Katedra za oralnu medicinu i parodontologiju Fakulteta dentalne medicine Sveučilišta u Rijeci, Medicinski fakultet Sveučilišta u Mostaru, Mostar, Bosna i Hercegovina, Specijalistička ordinacija dentalne medicine za parodontologiju/Stomatološka poliklinika „Arena“, Zagreb

U ovom predavanju predstaviti ću novu liniju Curadenovih antiseptika koji pod nazivom Perio Plus+ po prvi puta u dentalnu medicinu unose kombinaciju sintetičkog i prirodnog antibakterijskog djelovanja. Na tragu što je moguće prirodnijeg pristupa kontroli oralnog biofilma, Curaden je predstavio liniju proizvoda koji, osim zlatnog standarda, vođene otopine klorheksidina, sadrže i prirodne spojeve – bioflavonoide, efikasne u borbi protiv bakterija, ali istovremeno maksimalno protektivne prema sluznici usne šupljine. Zahvaljujući nizu eksperimenata, provedenih početkom prošlog desetljeća, danas na raspolaganju imamo antiseptičke proizvode koji su istovremeno maksimalno učinkoviti, ali i poštediti prema tkivima domaćina. Osim pregleda proizvoda i indikacija za njihovu upotrebu, u ovom predavanju bit će predstavljena i najnovija istraživanja koja govore u prilog sve većoj i široj primjeni antiseptika baziranih na prirodnim sastojcima.

**O25 ANTIBIOTIC THERAPY IN DENTAL PRACTICE, QUO VADIS?**

Engel G.

MiP Pharma GmbH, Blieskastel, Germany

Antimicrobial resistance (AMR) is an increasing problem for health and health systems worldwide. The GRAM report (2022) estimates around 1.27 million deaths in 2019 directly from AMR and a further 4.95 million, where AMR have played a significant role, now surpassing victims of HIV/AIDS and malaria. A dominant proportion of these cases are deep respiratory infections and bloodstream infections with pathogen resistance to fluoroquinolones and beta-lactam antibiotics. Antibiotic stewardship (ABS) programs are therefore important building blocks to counteract this, for example by reducing the use of fluoroquinolones and oral cephalosporins. In Germany, ABS program measures are primarily limited to hospitals and general practitioners. But after all, around 7% of antibiotic prescriptions outside of hospitals are from resident dentists. These prescriptions are to a large extent beta-lactams such as amoxicillin +/- clavulanic acid, which are actually needed as first-line medication for e.g. respiratory infections. At the same time, their widespread use can select for penicillin-resistant pneumococci and ESBL-Enterobacteriaceae (as e.g. cause of respiratory or bloodstream infections). In the dental field, clindamycin can be considered as a viable alternative antibiotic. The WHO placed it in the Antibiotic Categorization Group „ACCESS“. Dentists in Germany use this well-proven antimicrobial successfully, e.g. for odontogenic infections and for perioperative prophylaxis. Clindamycin has a well-matched pathogen sensitivity spectrum for the dental field without the danger of directly selecting for penicillin-resistant pneumococci or ESBL. Clindamycin shows very good tissue and bone penetration; a special feature of the favorable pharmacokinetic will be a topic of the lecture.

**O25 ANTIBIOTSKA TERAPIJA U STOMATOLOŠKOJ PRAKSI, QUO VADIS?**

Engel G.

MiP Pharma GmbH, Blieskastel, Njemačka

Antimikrobna rezistencija (AMR) sve je veći problem za zdravlje i zdravstvene sustave diljem svijeta. GRAM izvješće (2022.) procjenjuje oko 1,27 milijuna smrtnih slučajeva u 2019. izravno od AMR-a i daljnjih 4,95 milijuna, pri čemu je AMR odigrao značajnu ulogu, sada nadmašujući žrtve HIV-a/AIDS-a i malarije. Dominantan udio ovih slučajeva su infekcije donjih dišnih puteva i infekcije krvotoka uzrokovane patogenima otpornim na fluorokinolone i beta-laktamske antibiotike. Stoga su programi upravljanja antibioticima („Antibiotic stewardship“ - ABS) ključni elementi za suzbijanje rezistencija, na primjer smanjenjem upotrebe fluorokinolona i oralnih cefalosporina. U Njemačkoj su mjere ABS programa prvenstveno ograničene na bolnice i liječnike opće prakse. No, oko 7% recepta za antibiotike izvan bolnica izdaju stomatolozi. Ovi recepti su u velikoj mjeri beta-laktami kao što je amoksicilin +/- klavulanska kiselina, koji su zapravo potrebni kao lijekovi prve linije za npr. respiratorne infekcije. Istodobno, njihova široka upotreba može dovesti do selekcije pneumokoka otpornih na penicilin i ESBL-Enterobacteriaceae (kao npr. uzročnike respiratornih ili krvotočnih infekcija). U stomatološkom području, klindamicin se može smatrati održivim alternativnim antibiotikom. WHO ga je uvrstio u grupu za kategorizaciju antibiotika „ACCESS“. Stomatolozi u Njemačkoj uspješno koriste ovaj dokazani antimikrobni lijek, npr. za odontogene infekcije i za perioperativnu profilaksu. Klindamicin ima dobro usklađen spektar osjetljivosti na patogene u području stomatologije bez opasnosti od izravne selekcije za pneumokoke rezistentne na penicilin ili ESBL. Klindamicin pokazuje vrlo dobru penetraciju u tkivo i kosti; posebno obilježje povoljne farmakokinetike bit će tema predavanja.

**Poster presentations****P1 FABRICATION OF INDIVIDUALIZED HEALING ABUTMENT FOR IMMEDIATE PLACED IMPLANTS**Blašković D<sup>1,3</sup>, Blašković M<sup>1,2,4</sup>, Kovačević-Pavičić D<sup>3,4</sup>, Kovač Z<sup>3,4</sup>, Filipović-Zore I<sup>5</sup>.

<sup>1</sup>Polyclinic Blašković; <sup>2</sup>Chair of Oral Surgery; <sup>3</sup>Division/Chair of Prosthodontics, Department of Dentistry, Clinical Hospital Center Rijeka; <sup>4</sup>Faculty of Dental Medicine University of Rijeka; <sup>5</sup>Department of Oral Surgery, University of Zagreb School of Dental Medicine, University Hospital Centre Zagreb, Croatia

Until lately, success of implant treatment was based on implant survival rates, prosthetic stability, radiographic bone loss and absence of infection. Today, patients implant treatment expectations have changed. They have shifted from healthy and functional to healthy, functional, aesthetic and natural looking tooth replacement. The colour, texture, volume, level of mucosal margin of peri-implant soft tissue and presence of adequate papilla height has a major influence on the overall esthetical outcome. In case of immediate implant placement, the individualized healing abutment can retain the ideal emergence profile simplifying the procedure by reducing the duration and number of procedures. Furthermore, the individualized healing abutment can protect the bone graft if used for grafting the gap between the implant and the buccal bony wall. Individualized healing abutment reduce the force against the implant, mainly in cases of patients with reduced occlusal space or heavy occlusal force.

**P2 IMPLANT-PROTHETIC SOLUTION FOR ECTOPIC PREMOLAR WITH IMMEDIATE IMPLANTATION – CASE REPORT**Petrović V<sup>1</sup>, Brajdić D<sup>2</sup>.

<sup>1</sup>Private dental practice, Sesvete; <sup>2</sup>Department of Oral and Maxillofacial Surgery, University of Zagreb School of Dental Medicine, University Hospital Dubrava, Zagreb, Croatia

The case shows a younger patient with hypodontia of second premolars in the upper jaw and a palatally laid first premolar on the left in the same jaw, with looseness in the lower jaw. The patient primarily comes to the dentist's office because of a prosthetic solution in the region of ectopic premolar 24, which causes her the only subjective aesthetic problem. The case analysis presented three therapeutic options. The first and best option is fixed orthodontic therapy which could properly position the palatally placed premolar in the dentition and the same therapy could solve diastemas in the lower jaw and partial cross-bite on the right, which the patient does not agree to due to the duration of therapy and financial reasons. Another option is extraction of the ectopic tooth and immediate placement of the dental implant more vestibular, while solving the problem of lack of width of the alveolar ridge vestibularly. The advantage of this solution is the preservation of the integrity of adjacent teeth and a shorter duration of therapy than orthodontic. The third

**Poster prezentacije****P1 IZRADA INDIVIDUALNE NADODGRADNJE ZA CIJELJENJE KOD IMEDIJATNO POSTAVLJENIH IMPLANTATA**Blašković D<sup>1,3</sup>, Blašković M<sup>1,2,4</sup>, Kovačević-Pavičić D<sup>3,4</sup>, Kovač Z<sup>3,4</sup>, Filipović-Zore I<sup>5</sup>.

<sup>1</sup>Poliklinika Blašković; <sup>2</sup>Katedra za oralnu kirurgiju; <sup>3</sup>Zavod za stomatološku protetiku, Klinika za dentalnu medicinu, KBC Rijeka; <sup>4</sup>Fakultet dentalne medicine, Sveučilište u Rijeci; <sup>5</sup>Zavod za oralnu kirurgiju, Sveučilište u Zagrebu Stomatološki fakultet, Klinički bolnički centar Zagreb

Sve do nedavno, uspjeh implantoprotetske terapije se procjenjivao na temelju preživljavanja implantata, protetskom stabilnošću, izostanku gubitka kosti vidljivom na rtg-u i izostanku infekcije. U odnosu na ranije očekivanja pacijenta su se promijenila. Danas pacijenti osim zdravog i funkcijski zadovoljavajućeg protetskog nadomjestak, pažnju polažu i njegovom estetskom izgledu. Boja tekstura, volumen, razina marginalne sluznice periimplantatnog tkiva i odgovarajuća visina papile ima bitan utjecaj na estetski izgled implantoprotetskog nadomjestaka. U slučaju imedijatne implantacije, individualna nadogradnja za cijeljenje može očuvati idealni izlazni profil pojednostavljajući cjelokupnu terapiju skraćivanjem ukupnog vremena trajanja i broja potrebnih zahvata. Dodatno, individualne nadogradnje za cijeljenje mogu zaštititi koštani nadomjestak ako se isti koristi za popunjene međuprostora između implantata i bukalne površine kosti. Upotrebom individualnih nadogradnja za cijeljenja smanjuju se pritisak na implantat, što posebno dolazi do izražaja kod pacijenta s reduciranim meoduokluzijskim prostorom ili jakim žvačnim silama.

**P2 IMPLANTOPROTETSKO ZBRINJAVANJE DISTOPIČNOG PREMOLARA UZ IMEDIJATNU IMPLANTACIJU – PRIKAZ SLUČAJA**Petrović V<sup>1</sup>, Brajdić D<sup>2</sup>.

<sup>1</sup>Privatna ordinacija dentalne medicine, Sesvete; <sup>2</sup>Zavod za oralnu kirurgiju, Klinika za kirurgiju lica, čeljusti i usta, KB Dubrava, Sveučilište u Zagrebu Stomatološki fakultet

Prikazujemo slučaj pacijentice mlade životne dobi s hipodontijom drugih premolara u gornjoj čeljusti te palatinalno položenim prvim premolarom lijevo u istoj čeljusti, s rastresitostu u donjoj čeljusti. Pacijentica primarno dolazi u ordinaciju zbog protetskog rješenja u regiji distopičnog premolara 24 koji joj pričinja jedini subjektivni estetski problem. Analizom slučaja prezentirane su joj tri terapijske mogućnosti. Prva i najispravnija opcija je fiksna ortodontska terapija kojom bi se palatinalno položen premolar pravilno mogao pozicionirati u zubni niz te bi se istom terapijom mogla riješiti i rastresitost u donjoj čeljusti te djelomično križni zagriz desno, na što pacijentica ne pristaje zbog duljine trajanja terapije i financijskog izračuna. Druga opcija je ekstrakcija distopičnog zuba i imedijatno postavljanje dentalnog implantata vestibularnije uz istovremeno rješavanje problema nedostatka širine alveolarnog grebena vestibularno. Prednost toga rješenja je očuvanje integriteta

option is also the extraction of the ectopic premolar and its replacement in the dentition with a fixed prosthetic replacement as the fastest, but also the most invasive option. After a detailed space analysis and explanation of all therapeutic options with all the advantages and disadvantages of each of them, the patient explicitly refuses orthodontic therapy and grinding of adjacent teeth and decides on extraction and immediate implantation. After atraumatic extraction of tooth 24, the problem of vestibular lack of soft tissue due to palatally ectopic premolar was solved by placing Geistlich Mucograft<sup>®</sup> vestibularly after lifting the full-thickness sulcular flap, and the palatal defect after tooth extraction in the socket of the extracted tooth is preserved with Geistlich Biooss<sup>®</sup> and Geistlich BioGide<sup>®</sup>. The dental implant was placed in the correct position more vestibularly than the extracted premolar in the desired prosthetic position. After 4 months, control radiological imaging and complete osseointegration, the implant was prosthetically supplied with full zirconia crown, which the patient is completely satisfied with.

### P3 IMPLANT-PROSTHETIC REHABILITATION OF A PATIENT WITH BILATERAL CLEFT OF THE LIP AND PALATE WITH ANODONTIA

Kovač Z<sup>1,5</sup>, Cerović R<sup>2</sup>, Mady Maričić B<sup>3,5</sup>, Kinkela Devčić M<sup>4,5</sup>, Uhač M<sup>3,5</sup>, Vučinić D<sup>1,5</sup>.

<sup>1</sup>Department of Prosthodontics; <sup>2</sup>Department of Maxillofacial Surgery, Faculty of Medicine University of Rijeka; <sup>3</sup>Department of Orthodontics; <sup>4</sup>Department of Oral Surgery; <sup>5</sup>Faculty of Dental Medicine, University of Rijeka, Croatia

This is a case report of a patient (18 years old) operated several times in childhood due to a bilateral cleft of the lip and palate. Subtotal edentulousness in the upper jaw and partial edentulousness in the lower jaw due to anodontia were expressed. The maxilla is distinctly retroponated and the bone segments have not fused together in the area of the anterior alveolar process. She has a very unsuitable upper total denture and a lower partial denture. In the period of two and a half years, the patient underwent several surgical procedures in terms of definitive implant-prosthetic rehabilitation of her condition. In the first procedure, a Le Fort I osteotomy of the maxilla and a forward movement with simultaneous augmentation with a bone graft from the pelvis and maxilla were performed. After a few months, implants were placed in the maxilla, and one zygomatic implant was used. Then, under general anesthesia, the alveolar ridge of the mandible was reconstructed with a bone graft from the other pelvic bone, and after a few months, dental implants were placed. Both jaws were repaired with fixed prosthetic replacements fixed with screws on dental implants. In the upper jaw, a Malo Bridge was made, which consists of a titanium structure made by the milling technique and zirconium oxide crowns cemented to the structure.

### P4 ORTHODONTIC AND IMPLANT-PROSTHETIC SOLUTION OF HYPODONTIA OF THE UPPER LATERAL INCISORS WITH RETENTION OF BOTH UPPER CANINES USING A SURGICAL GUIDE

Morelato L<sup>1,4</sup>, Milohanić G<sup>2</sup>, Morelato I<sup>3,4</sup>, Morelato E<sup>3,4</sup>, Vučinić D<sup>3,4</sup>, Kinkela Devčić M<sup>1,4</sup>.

<sup>1</sup>Department of Oral surgery; <sup>2</sup>Dental polyclinic Morelato, Poreč; <sup>3</sup>Department of Dental prosthetics; <sup>4</sup>Faculty of Dental Medicine, University of Rijeka, Croatia

Lateral incisors are described as the most common hypodontic teeth of the upper jaw, and due to the aesthetic aspect and visibility during a person smile, they represent a demanding orthodontic and prosthetic problem. In the presented case, hypodontia of the lateral incisors is combined with high retention of both upper canines. Due to the patient's age, high position of canine retention and the questionable possibility of their orthodontic movement and possible complications during extraction, it was decided to conduct implant-prosthetic therapy after orthodontic therapy, leaving retained teeth in their positions. In order to perform implant therapy with greater precision without compromising the surrounding structures and avoiding placing implants in contact with retained teeth, static surgical guide for fully guided implantology stabilized on the teeth was used. Using surgical guides, planned situation is transferred to the clinical situation in the mouth with the help of dental computed tomography (CB CT - English Cone Beam Computer Tomography) with a satisfactory degree of precision. The surgical guide is planned and constructed after precise three-dimensional overlap of the obtained CB CT image and the digitized jaw model using multiple reference points. After placement of dental implants with the help of a surgical guide and special instruments used for guided implantology, the implants are immediately loaded with temporary prosthetic restorations in order to enable the patient normal function during the period of osseointegration. After orthodontic therapy finished, definitive impressions are taken and the final prosthetic restoration is fixed with prosthetic screws. The paper underlines the importance of cooperation between an orthodontist, an oral surgeon and a dentist who deals with the prosthetic part of therapy in order to successfully solve a demanding case. Equally, it is pointed the importance

of adjacent teeth and shorter duration of therapy and orthodontic. The third option is also the extraction of ectopic premolar and its replacement with a fixed prosthetic replacement as the fastest, but also the most invasive option. After a detailed space analysis and explanation of all therapeutic options with all the advantages and disadvantages of each of them, the patient explicitly refuses orthodontic therapy and grinding of adjacent teeth and decides on extraction and immediate implantation. After atraumatic extraction of tooth 24, the problem of vestibular lack of soft tissue due to palatally ectopic premolar was solved by placing Geistlich Mucograft<sup>®</sup> vestibularly after lifting the full-thickness sulcular flap, and the palatal defect after tooth extraction in the socket of the extracted tooth is preserved with Geistlich Biooss<sup>®</sup> and Geistlich BioGide<sup>®</sup>. The dental implant was placed in the correct position more vestibularly than the extracted premolar in the desired prosthetic position. After 4 months, control radiological imaging and complete osseointegration, the implant was prosthetically supplied with full zirconia crown, which the patient is completely satisfied with.

### P3 IMPLANTOPROTETSKA REHABILITACIJA PACIJENTICE S OBOSTRANIM RASCJEPOM NEPCA I USNE S ANODONCIJOM

Kovač Z<sup>1,5</sup>, Cerović R<sup>2</sup>, Mady Maričić B<sup>3,5</sup>, Kinkela Devčić M<sup>4,5</sup>, Uhač M<sup>3,5</sup>, Vučinić D<sup>1,5</sup>.

<sup>1</sup>Katedra za stomatološku protetiku; <sup>2</sup>Katedra za maksilofacijalnu kirurgiju, Medicinski fakultet, Sveučilište u Rijeci; <sup>3</sup>Katedra za ortodontiju; <sup>4</sup>Katedra za oralnu kirurgiju; <sup>5</sup>Fakultet dentalne medicine, Sveučilište u Rijeci

Radi se o prikazu slučaja pacijentice (18 godina) operirane u djetinjstvu nekoliko puta zbog obostranog rascjepa nepca i usne. Izražena je subtotalna bezubost u gornjoj čeljusti i djelomična bezubost u donjoj zbog anodoncije. Maksila je izrazito retroponirana, a koštani segmenti nisu međusobno srasli u području alveolarnog nastavka srijeda. Ima vrlo neprikladnu gornju totalnu protezu i donju djelomičnu protezu. U periodu od dvije i pol godine kod pacijentice je učinjeno nekoliko kirurških zahvata u smislu definitivne implantoprotetske sanacije njezinog stanja. U prvom zahvatu učinjena je Le Fort I osteotomija maksile i pomak prema naprijed uz istovremenu augmentaciju koštanim transplantatom s zdjeljične kosti i maksile. Nakon nekoliko mjeseci postavljeni su implantati u maksilu, a korišten je i jedan zigomatični implantat. Potom je u općoj anesteziji učinjena i rekonstrukcija alveolarnog grebena mandibule, koštanim transplantatom s druge zdjeljične kosti i nakon nekoliko mjeseci postavljeni dentalni implantati. Obje čeljusti protetski su sanirane fiksnim protetskim nadomjestcima fiksnih vijcima na dentalne implantate. U gornjoj čeljusti izrađen je „Malo Bridge“ nadomjestak koji se sastoji od titanske konstrukcije izrađene tehnikom glodanja te cirkonij oksidnih krunica cementiranih na konstrukciju.

### P4 ORTODONTSKO I IMPLANTOPROTETSKO ZBRINJAVANJE HIPODONTIJE GORNJIH LATERALNIH INCIZIVA UZ RETENCIJU OBA GORNJA OČNJAKA POMOĆU KIRURŠKE VODILICE

Morelato L<sup>1,4</sup>, Milohanić G<sup>2</sup>, Morelato I<sup>3,4</sup>, Morelato E<sup>3,4</sup>, Vučinić D<sup>3,4</sup>, Kinkela Devčić M<sup>1,4</sup>.

<sup>1</sup>Katedra za Oralnu kirurgiju; <sup>2</sup>Dentalna poliklinika Morelato, Poreč; <sup>3</sup>Katedra za Stomatološku protetiku; <sup>4</sup>Fakultet Dentalne medicine, Sveučilište u Rijeci

Lateralni incizivi nakon umnjaka najčešći su hipodontni zubi gornje čeljusti, te zbog estetskog aspekta vidljivosti pri osmijehu predstavljaju zahtjevan ortodontski i protetski problem pri rješavanju. U prikazanom slučaju hipodontija lateralnih inciziva pojavljuje se uz visoku retenciju oba gornja očnjaka. Zbog dobi pacijenta, visoke retencije očnjaka i upitne mogućnosti njihovog ortodontskog izvlačenja te mogućih komplikacija prilikom vađenja odlučeno je nakon ortodontske terapije provesti implantoprotetsku terapiju ostavljajući retinirane zube na njihovim pozicijama. Kako bi se implantološka terapija mogla provesti sa većom sigurnošću ne ugrožavajući okolne strukture i izbjegavanje postavljanja implantata u kontakt sa retiniranim zubima korištene su statičke kirurške vodilice za potpuno vodenu implantologiju stabilizirane na zubima. Korištenjem kirurških vodilica prenosimo planiranu situaciju pomoću dentalne kompjutorizirane tomografije (CBCT - engl. Cone Beam Computer Tomography) na kliničku situaciju u ustima uz zadovoljavajući stupanj preciznosti. Kirurška vodilica se planira i izrađuje nakon preciznog prostornog preklapanja CBCT snimke i digitaliziranog modela čeljusti pomoću više referentnih točaka. Nakon postavljanja dentalnih implantata pomoću vodilice i posebnog instrumentarija namijenjenog vođenju implantologiji, implantati su imedijatno opterećeni privremenim protetskim nadomjestcima kako bi se pacijentu u periodu osteointegracije omogućilo normalno funkcioniranje. Dopršetkom ortodontske terapije po uzimanju otisaka protetskim vijcima fiksira se definitivni protetski rad. U radu se naglašava važnost suradnje ortodont, oralnog kirurga i doktora dentalne medicine koji se bavi protetskim dijelom terapije kako bi se uspješno riješio zahtjevan slučaj. Jednako tako naglašena je i važnost adekvatnog planiranja i mogućnost primjena kirurških vodilica u zahtjevnim slučajevima kod kojih se zahtjeva preciznost postave dentalnih implantata na planirane pozicije u posebno zahtjev-



of adequate planning and the possibility of using surgical guides in demanding cases that require precision in placement of dental implants in planned positions in particularly demanding cases when the guide is supported with only part of the teeth and palate due to orthodontic braces on buccal surfaces.

nim slučajevima kada se vodilica s uporištem na zubima naslanja samo na dio zuba i nepca zbog ortodontskih bravica na bukalnim plohamu.

#### P5 MODIFIED IMPLANT GUIDE WITH A PHYSIOLOGICAL SOLUTION COOLING SYSTEM FOR OSTEOTOME DRILLS BELOW THE GUIDE: CASE REPORT

Delić I<sup>1</sup>, Kovač Z<sup>2,4</sup>, Debeljak V<sup>2,4</sup>, Kovačević-Pavičić D<sup>2,4</sup>, Blašković D<sup>1</sup>, Žuža I<sup>3,4</sup>.

<sup>1</sup>Private dental practice, Rijeka; <sup>2</sup>Chair of Prosthodontics; <sup>3</sup>Chair of Oral Surgery;

<sup>4</sup>Faculty of Dental Medicine, University of Rijeka, Croatia

Thermal damage at the osteotomy site is one of the most common causes of implant failure: osteocyte degeneration, hyperemia, fibrosis, necrosis, delayed healing. When placing implants with a guide, most cooling irrigants do not reach the drill itself, and thus do not mitigate the temperature rise at the site of preparation. Research from the MOD Institute (Charleston SC, USA) shows that at 1400 rpm the temperature of the place of preparation on beef bone can be reduced by 15-30 °C depending on bone density. The aim of this report is to show the manufacture and use of a modified implant guide on a patient in whom two implants are placed in the lower jaw to improve the retention of existing prosthesis with locators.

#### P5 KORIŠTENJE MODIFICIRANE ŠABLONE ZA NAVODENU IMPLANTOLOGIJU SA SISTEMOM HLAĐENJA SVRDLA ZA OSTEOTOMIJU FIZIOLOŠKOM OTOPINOM ISPOD ŠABLONE: PRIKAZ SLUČAJA

Delić I<sup>1</sup>, Kovač Z<sup>2,4</sup>, Debeljak V<sup>2,4</sup>, Kovačević-Pavičić D<sup>2,4</sup>, Blašković D<sup>1</sup>, Žuža I<sup>3,4</sup>.

<sup>1</sup>Privatna ordinacija dentalne medicine, Rijeka; <sup>2</sup>Katedra za stomatološku protetiku;

<sup>3</sup>Katedra za oralnu kirurgiju; <sup>4</sup>Fakultet dentalne medicine, Sveučilište u Rijeci

Termalna oštećenja na mjestu osteotomije spadaju pod najčešće uzroke odbacivanja implantata: degeneracija osteocita, hiperemija, fibroza, nekroza, usporeno cijeljenje. Prilikom postavljanja implantata sa šablonom za navodenu implantologiju, većina irigansa za hlađenje ne dopire do samoga svrdla, a time ne dolazi do ublažavanja porasta temperature na mjestu preparacije. Istraživanja s MOD instituta (Charleston SC, SAD) pokazuju da se pri 1400 o/min, temperatura mjesta preparacije na goveđoj kosti može smanjiti 15-30°C ovisno o gustoći kosti. Cilj ovoga izvješća je prikazati izradu i korištenje takve modificirane šablone na pacijentici kod koje se postavljaju dva implantata u donjoj čeljusti za poboljšanje retencije postojeće proteze lokatorima.

#### P6 USE OF AUTOGENOUS DENTIN GRAFT IN POSTEXTRACTION DENTAL SOCKET-CASE REPORT

Matić S<sup>1</sup>, Krakar N<sup>1</sup>, Krakar S<sup>2</sup>.

<sup>1</sup>Department of otorhinolaryngology and oral surgery, General Hospital „dr. Ivo Pedišić“ Sisak; <sup>2</sup>Private dental practice, Sisak, Croatia

**Introduction:** Dimensional changes of postextraction dental sockets in the form of bone loss have been the subject of scientific research for many years. The conclusion of these studies was that within the first 12 months after tooth extraction, the alveolar ridge loses 50% or more of its width and height. Since the preservation of alveolar bone after tooth extraction has a great impact on the functionality and aesthetic outcome of prosthodontic replacement, the use of autologous dentin graft was proposed as one of the possible solutions in the prevention of these dimensional changes. The autologous dentin graft was developed and clinically applied for the first time in Korea in 2008 and has shown good clinical and histological results. **Case report and results:** A 33-year-old patient was referred to an oral surgeon for extractions of the lower left first and second molar with the diagnosis of chronic periapical osteitis and deep caries. Clinical and radiological examination established extensive loss of hard dental tissue of the crown and inflammatory processes on both roots of the left first molar which was not conducive to the endodontic and prosthodontic therapy. The endodontic treatment was proposed for the left second molar but patient refused, so an indication was set up for teeth extractions and sockets preservation. Since patient had partially impacted mesioangulated third molar on the same side of the jaw, which was indicated for alveolotomy, it was decided to use it for dentin graft. Implants were placed approximately a year after teeth extractions and sockets preservation with dentin graft. **Conclusion:** In this case report, the use of dentin graft in postextraction dental sockets proved to be a successful solution in preventing dimensional bone changes which enabled adequate implant-prosthodontic therapy of the distal segment of the lower jaw after teeth extractions.

#### P6 UPORABA DENTINSKOG GRAFTA U POSTEKSTRAKCIJSKOJ ALVEOLI- PRIKAZ SLUČAJA

Matić S<sup>1</sup>, Krakar N<sup>1</sup>, Krakar S<sup>2</sup>.

<sup>1</sup>Odjel za otorinolaringologiju i oralnu kirurgiju, Opća bolnica „dr. Ivo Pedišić“ Sisak;

<sup>2</sup>Privatna stomatološka ordinacija, Sisak

**Uvod:** Dimenzionalne promjene postekstrakcijskih alveola u vidu gubitka koštanog tkiva predmet su znanstvenih istraživanja već duži niz godina. Kao zaključak tih istraživanja nametnula se činjenica da unutar prvih 12 mjeseci nakon vađenja zuba alveolarni greben izgubi 50 % ili više svoje širine i visine. S obzirom da prezervacija alveolarne kosti nakon ekstrakcije zuba ima veliki utjecaj na funkcionalnost i estetski ishod protetskog nadomjeska, kao jedno od mogućih rješenja u prevenciji navedenih dimenzionalnih promjena predlaže se uporaba autolognog dentinskog grafta. Autologni dentinski graft razvijen je i klinički primjenjen prvi put u Koreji 2008. godine i pokazao je dobre kliničke i histološke rezultate. **Prikaz slučaja i rezultati:** Tridesetgodinjsni pacijent upućen je u ambulantu oralne kirurgije na ekstrakcije donjeg lijevog prvog i drugog molara sa dijagnozom periapikalnog ostitičkog procesa te dubokog karijesa. Kliničkim i radiološkim pregledom ustanovljen je opsežan gubitak tvrdog zubnog tkiva krune prvog lijevog molara te upalni procesi na oba korijena koji nisu bili indicirani za endodontsku niti protetsku terapiju. Predloženo je liječenje drugog lijevog molara no pacijent nije bio motiviran i odbio je pa je postavljena indikacija za vađenje oba zuba te prezervaciju alveola. S obzirom da je pacijent imao mezoangulirani poluimpaktirani umnjak na istoj strani, koji je bio indiciran za alveotomiju, donesena je odluka da se isti iskoristi za dentinski graft. Implantati su postavljeni godinu dana nakon vađenja zubi i prezervacije alveola dentinskim graftom. **Zaključak:** U ovom prikazu slučaja, uporaba dentinskog grafta u postekstrakcijskim alveolama pokazala se kao uspješno rješenje u sprječavanju dimenzionalnih promjena kosti što je omogućilo adekvatnu implantoprotetsku terapiju distalnog segmenta donje čeljusti nakon vađenja zubi.

#### P7 AUTOLOGOUS DENTIN GRAFT FOR ALVEOLAR RIDGE AUGMENTATION – 2 YEARS FOLLOW-UP OF CLINICAL STUDY

Marković L<sup>1</sup>, Smojver P<sup>2</sup>, Vuletić M<sup>3,6</sup>, Morelato L<sup>4</sup>, Pelivan I<sup>5,6</sup>, Gabrić D<sup>3,6</sup>.

<sup>1</sup>Private Dental Clinic for Periodontology dr. Marković, Pula; <sup>2</sup>Specialty hospital

St. Chatarine, Zagreb; <sup>3</sup>Department of Oral Surgery, University Hospital Centre

Zagreb; <sup>4</sup>Chair of Oral Surgery, Faculty of Dental Medicine, University of Rijeka;

<sup>5</sup>Department of Removable Prosthodontics; <sup>6</sup>School of Dental Medicine, University of

Zagreb, Croatia

**Background:** A human periodontal ligament fibroblast cell line showed a very promising growth reaction to the mineralized dentin. The mineral and organic matrix compositions of a tooth, dentin, and cementum are almost identical to membranous bone, although, compared to bone, teeth contain more mineral. This feature may be beneficial for volume maintenance since at the remodeling stage dentin graft is resorbed slowly. As a supplement of bone graft material, dentin particulate autograft could be beneficial. The aim of this pilot clinical study was to assess efficacy and predictability of dentin particulate autograft as regenerative treatment for alveolar ridge augmentation and two stage implant placement using CBCT radiographic analysis. **Procedure:** The sample of presented study consisted of 8 patients, with insufficient width of alveolar ridge in lateral lower jaw. After surgical removal of third molar or periodontally compromised tooth, a dentin autograft was pre-

#### P7 DENTINSKI GRAFT ZA AUGMENTACIJU ALVEOLARNOG GREBENA – DVOGODIŠNJE PRAĆENJE KLINIČKE STUDIJE

Marković L<sup>1</sup>, Smojver P<sup>2</sup>, Vuletić M<sup>3</sup>, Morelato L<sup>4</sup>, Pelivan I<sup>5</sup>, Gabrić D<sup>3</sup>.

<sup>1</sup>Privatna stomatološka ordinacija za parodontologiju, Pula; <sup>2</sup>Specijalna bolnica Sv.

Katarina, Zagreb; <sup>3</sup>Zavod za oralnu kirurgiju, Sveučilište u Zagrebu Stomatološki

fakultet, KBC Zagreb; <sup>4</sup>Katedra za oralnu kirurgiju, Fakultet dentalne medicine,

Sveučilište u Rijeci; <sup>5</sup>Zavod za mobilnu protetiku, Sveučilište u Zagrebu, Stomatološki

fakultet

Stanice fibroblasta ljudskog parodontnog ligamenta pokazala je vrlo obećavajuću reakciju rasta na mineralizirani dentin. Mineralni i organski sastavi matriksa zuba, dentina i cementa gotovo su identični membranoznoj kosti, iako, u usporedbi s kosti, zubi sadrže više minerala. Ova značajka može biti korisna za održavanje volumena budući da se u fazi remodeliranja dentinski graft sporo resorbira. Kao dodatak materijalu augmentata, partikli dentina mogli bi biti korisni. Cilj ove pilot kliničke studije bio je procijeniti učinkovitost i predvidljivost dentin grafta kao regenerativnog materijala za augmentaciju alveolarnog grebena i ugradnju implantata dvofaznom tehnikom korištenjem CBCT radiografske analize. **Uzorak prikazane studije** činilo je 8 pacijenata, s nedovoljnom širinom alveolarnog grebena u lateralom dijelu mandibule. Nakon alveotomije trećeg kutnjaka ili parodontološki kompromitiranog zuba, pripremljen je dentinski graft prema preporukama



pared according to manufacturer recommendations. Clean extracted teeth were dried and ground in a sterile chamber of the Smart Dentin Grinder® unit (KometaBio Inc., Cresskill, USA). The particulate teeth were immersed in a basic alcohol cleanser to dissolve all organic remnants and bacteria and dehydrated. The particles were rinsed twice with sterile phosphate-buffered saline solution. The platelet-rich fibrin (PRF) membranes were prepared. Graft material was used for ridge augmentation and covered with PRF membranes. After 5 months of healing CBCT scan were made. During implants placement homogeneous integration of dentin particulate was found. Dental implants (BEGO Semados® SC BEGO, Germany) were inserted and restored by titanium abutment and zirconia crown. **Outcome:** Clinical re-entry, prior to dental implants placement confirmed a homogeneous integration of dentin autograft and bone-like appearance in former grafted area. Six months after implants placement CBCT scans were obtained as part of the standard procedure. The radiographic images of the target areas revealed no grafted bone resorption around the implants. All patients were followed for 6, 12 and 24 months after loading through clinical follow-ups and control CBCT scans. No resorption of the autograft around inserted implants was found. **Conclusion:** Within its limitation, the present pilot clinical study revealed that autologous dentin particulate autograft may serve as an alternative autologous bone substitute to support alveolar ridge augmentation and two-stage implant placement.

#### P8 BONE RING TECHNIQUE – CASE REPORT

Miletić I, Granić M, Sušić M, Gabrić D.

<sup>1</sup>Department of Oral Surgery, School of Dental Medicine, University of Zagreb, Croatia

The bone ring technique is a surgical methodology invented in 2004. by dr. Bernhard Giesenhausen (Kassel, Germany) that allows bone augmentation and implantation in a one-stage procedure. Compared to the more conventional two-stage approach, the main advantage of the bone ring technique is that of significantly reducing the treatment time by several months. The bone ring technique enables vertical/horizontal augmentation and formation of new bone, thereby simplifying the surgical treatment of 3-dimensional bone defects. According to the original approach, the augmentation is performed with autologous bone rings, which are harvested intraorally (mostly from the chin area, alternatively from the retromolar area or palate) with a trephine. The bone ring is then transferred to the trephine drill-prepared recipient site. The implant bed is thus prepared in the local bone through the ring opening, and the implant is inserted through the ring. Cancellous bone collected from the donor site during or after harvesting of the ring block can be used as additional augmentation material. The bony integration of the bone ring and implant occurs via the surrounding bone during the following few months. In this case we will present a 43 year old female patient who lost her tooth number 45 five years ago due to a chronic periapical lesion. As we could see on the CBCT-scan (Cone Beam Computer Tomography), the bone defect which was left behind was ideal for the bone ring technique. Using this augmentation technique we simultaneously augmented the area and inserted a Nobel Biocare (Kloten, Switzerland) implant. We used PRGF (Growth factor-rich plasma) membranes to cover the recipient site and ensured tension free closure using polypropylene sutures.

#### P9 IMPLANT-PROSTHETIC TREATMENT OF ATROPHIC MAXILLA WITH 5 IMPLANTS AND BILATERAL SINUS LIFT

Mendušić Ivić M<sup>1</sup>, Filipović –Zore I<sup>2,3</sup>, Katanec T<sup>2,3</sup>.

<sup>1</sup>Private dental practice Mendident, Zagreb; <sup>2</sup>Department of Oral Surgery, University of Zagreb; <sup>3</sup>University Hospital Centre Zagreb, Croatia

Successful implantation requires the availability of sufficient quantities and quality of bone. For this reason, atrophy of the bone and associated soft tissue of the alveolar ridge is a challenge in modern implant prosthetic therapy. We present the case of a 68 year old patient who, in addition to extremely atrophic upper jaw, also suffers of osteoporosis and the current upper denture is not adequate solution either aesthetically and functionally. Prolonged bone loss caused a significant narrowing of the vestibule, lowering the vertical dimension of the lower third of the face and impaired quality of life. The patient expressed a desire to resolve this situation in the oral cavity with fixed prosthetic work on implants. Inspecting the radiological image, we noticed that from the top of the alveolar ridge on the both sides of the upper jaw to the Schneider membrane there was only 1,5mm of bone height. Since the correct positioning of the implant in the horizontal and vertical dimensions is a prerequisite for successful osseointegration, the patient underwent surgery to lift the bottom of the maxillary sinus of both sides. The created cavity was filled with xenograft granules with a diameter of 0.1-0.5 mm and covered with JASON resorptiv membrane for guided bone regeneration. Six months after procedure of open lifting of the maxillary sinuses, the patient was fitted with five dental implants in the regions of teeth 16, 15, 13, 23, 26 with diameters of 3.75 x 8.5 and 3.75 x 10. After successful osseointegration and ensured adequate stability of dental implants, according to the principle of all-on-five model, fixed prosthetic treatment is performed.

proizvođača. Čisti ekstrahirani zubi osušeni su i mljeveni u sterilnoj komori Smart Dentin Grinder® jedinice (KometaBio Inc., Cresskill, SAD). Zubi u obliku partikla uronjeni su u etilni alkohol kako bi se otopili svi organski ostaci i bakterije. Partikli dentina su dvaput isprani sterilnim fosfatnim puferom. Pripremljene su membrane fibrina bogate trombocitima (PRF). Nakon postave augmentata isti je prekriven PRF membranama. Nakon 5 mjeseci zacjeljivanja napravljen je CBCT snimak. Tijekom ugradnje implantata utvrđena je homogena integracija partikla dentina. Dentalni implantati (BEGO Semados® SC BEGO, Njemačka) kasnije su opskrbljeni titanskom bazom i zirkonijoksidnom krunicom. Klinički ponovni ulazak prije ugradnje dentalnih implantata potvrdio je homogenu integraciju autotransplantata dentina i izgleda nalik na kost. Šest mjeseci nakon ugradnje implantata CBCT snimke su napravljene kao dio standardne procedure. Radiografske slike ciljanih područja nisu otkrile resorpciju novostvorene kosti oko implantata. Svi pacijenti praćeni su 6, 12 i 24 mjeseca nakon završene terapije kroz kliničko praćenje i kontrolne CBCT snimke. Nije pronađena resorpcija autografta oko postavljenih implantata. U okviru svog ograničenja, ova pilot klinička studija otkrila je da autološki partikli dentina mogu poslužiti kao alternativni nadomjestak kosti za augmentaciju alveolarnog grebena i dvofaznom postavljanju implantata.

#### P8 AUGMENTACIJA “RING” TEHNIKOM – PRIKAZ SLUČAJA

Miletić I, Granić M, Sušić M, Gabrić D.

Zavod za oralnu kirurgiju, Sveučilište u Zagrebu Stomatološki fakultet

“Ring” augmentacijska tehnika je oralno-kirurški pristup koji je 2004. godine prvi predstavio dr. Bernhard Giesenhausen (Kassel, Njemačka). Ova tehnika u jednom zahvatu omogućuje istovremenu koštanu augmentaciju te postavu dentalnog implantata. U usporedbi s dvofaznim konvencionalnim pristupom glavna prednost je značajno kraći trajanje terapije. Tehnika koštanog prstena omogućuje vertikalnu/horizontalnu augmentaciju autolognom kosti te pospješuje formiranje nove kosti, čime se pojednostavljuje kirurški pristup trodimenzionalnim koštanim defektima. Augmentacija se izvodi autološkim koštanim prstenovima, koji se uzimaju intraoralno (uglavnom iz područja brade, alternativno iz retromolarnog područja ili nepca) koristeći trepan svrdlo. Koštani prsten se zatim prenosi na za to unaprijed pripremljeno mjesto koje se želi augmentirati. Ležište implantata priprema se kroz prstenasti otvor na koštanom bloku te se implantat postavlja unutar prstenastog bloka. Spongiozna kost prikupljena s donorskog mjesta prilikom ili nakon uzimanja bloka se može iskoristiti za dodatnu augmentaciju. Koštana integracija bloka te implantata odvija se preko okolne kosti tijekom sljedećih nekoliko mjeseci. U ovom slučaju prikazat će se pacijentica stara 43 godine koja je unatrag pet godina izgubila zub 45 zbog kronične periapikalne lezije. Analizom CBCT (Cone Beam Computer Tomography) snimke, zaključuje se da je defekt koji je zaostao bio prikladan za tehniku koštanog prstena. Istovremeno se augmentiralo navedeno područje te ugradilo Nobel Biocare (Kloten, Švicarska) implantat. Prilikom zatvaranja rane korištena je PRGF (plazma obogaćena faktorima rasta) membrana te je osigurano zatvaranje bez napetosti polipropilenskim šavovima.

#### P9 IMPLANTOPROTETSKA SANACIJA ATROFIČNE MAKSIJE S 5 IMPLANTATA I OBOSTRANIM SINUS LIFTOM

Mendušić Ivić M<sup>1</sup>, Filipović –Zore I<sup>2,3</sup>, Katanec T<sup>2,3</sup>.

<sup>1</sup>Privatna ordinacija dentalne medicine Mendident, Zagreb; <sup>2</sup>Zavod za oralnu kirurgiju, Sveučilište u Zagrebu Stomatološki fakultet; <sup>3</sup>KBC Zagreb

Za uspješnu ugradnju dentalnih implantata neophodna je dostupnost dovoljne količine i kvalitete kosti. Iz tog razloga, atrofija kosti i pripadajućeg mekog tkiva alveolarnog grebena predstavlja izazov u suvremenoj implantoprotetskoj terapiji. Prikazujemo slučaj pacijentice u dobi od 68. godina koja uz izrazito atrofičnu bezubu gornju čeljust boluje i od osteoporoze, a trenutna gornja proteza ne predstavlja adekvatno rješenje niti u estetskom niti u funkcionalnom smislu. Dugotrajni gubitak kosti uzrokovao je značajno suženje vestibuluma, spuštanje vertikalne dimenzije donje trećine lica te narušio kvalitetu života. Pacijentica je izrazila želju da navedenu situaciju u usnoj šupljini riješi fiksno protetskim radom na implantatima. Uvidom u radiološku snimku uočili smo da je od vrha alveolarnog grebena obje strane gornje čeljusti do Schneiderove membrane bilo svega 1,5 mm visine kosti. Budući da je pravilno pozicioniranje implantata u horizontalnoj i vertikalnoj dimenziji preduvjet za uspješnu osseointegraciju, pacijentica je podvrgnuta zahvatu obostranog odizanja dna maksilarnog sinusa. Stvorena šupljina ispunjena je granulama ksenografa promjera 0,1-0,5 mm te prekrivena JASON resorptivnom membranom za vodenu regeneraciju kosti. Šest mjeseci nakon zahvata otvorenog odizanja dna maksilarnih sinusa pacijentici je ugrađeno pet dentalnih implantata u regijama zuba 16, 15, 13, 23, 26 dijametara 3,75 x 8,5 i 3,75 x 10. Nakon uspješne osseointegracije te osigurane adekvatne stabilnosti dentalnih implantata, po principu all-on-five modela, izradi se fiksno protetski rad.

#### P10 CAVITATION OSTEONECROSIS-INDUCED NEURALGIA (NICO) AND DENTAL IMPLANT EXPLANTATION DUE TO NICO

Kvesić M<sup>1</sup>, Filipović-Zore F, Matulić N<sup>3</sup>.

<sup>1</sup>Private dental practice, Zagreb; <sup>2</sup>Department of Oral Surgery, University of Zagreb School of Dental Medicine, University Hospital Centre Zagreb; <sup>3</sup>Polyclinic dr. Zubović, Zagreb, Croatia

NICO is defined as a chronic pain syndrome similar to neuralgia (similar to trigeminal neuralgia or atypical neuralgia) that is thought to have been caused by pathological changes in the alveolar bone. NICO was first described in the dental literature by G. V. Black in 1915. NICO can affect any bone, but most commonly affects the bones of the hips, knees and jaw. It can occur as a result of trauma such as tooth extraction, endodontic treatment, dental implant placement, and chronic infection. Current studies describe ischemic disorders of alveolar bone marrow coagulation as a cause of NICO, which may be the result of thrombosis with or without hypofibrinolysis which interferes with blood flow. The most common symptoms are deep constant pain of varying intensity and sharp pulsating pain. The proposed treatment for NICO is surgical decortication and bone debridement. In this case, an anamnestically healthy patient, who developed NICO symptoms immediately after dental implant placement will be presented. The patient reached out because of continuous radiating pain in the lower jaw that spreads to the left side of the face toward the ear and the neck. The clinical finding in the implant region is normal. An osseointegrated implant, distant from the mandibular nerve, is visible on control radiological images (OPC, CBCT). Implant stability shown by resonant frequency analysis was 86 ISQ. The patient underwent dental implant explantation, after which all symptoms disappeared.

#### P11 IMPLANT-PROSTHETIC REHABILITATION OF A PATIENT AFTER TREATMENT OF TONSIL CANCER: A CASE STUDY

Matoš I<sup>1</sup>, Sušić M<sup>2</sup>, Brajdić D<sup>3</sup>, Matulić N<sup>4</sup>, Đanić P<sup>5</sup>, Gabrić D<sup>2</sup>.

<sup>1</sup>Labor-dent private dental practice and laboratory, Dugo Selo; <sup>2</sup>Department of Oral Surgery, University of Zagreb School of Dental Medicine, University Hospital Centre Zagreb; <sup>3</sup>Department of Oral and Maxillofacial Surgery, University Hospital Dubrava, University of Zagreb School of Dental Medicine; <sup>4</sup>Polyclinic dr. Zubović, Zagreb, Croatia

Surgical treatment of oropharyngeal tumors with combined radiotherapy often creates a negative impact on the hard and soft tissues in the oral cavity. The result of surgical treatment is reduced tongue mobility, lack of space in the oral cavity vestibule, as well as lack of mandible in radical neck dissections. Oral adverse effects of head and neck radiotherapy cause pathological conditions such as mucositis, xerostomia, irradiation caries, vascular fibrosis and reduce the potential of bone healing. The most severe complication, occurring in 2% of all patients, appears to be osteoradionecrosis. Such conditions require a multidisciplinary approach of specialists in various branches of dental medicine and medicine to ensure that the patient's quality of life after successful tumor surgery is satisfactory. The modern approach to oral rehabilitation of oncology patients includes the use of dental implants whose retention and denture stabilization is facilitated in cases of major atrophy and defects of the alveolar ridge. The purpose of this presentation is to show the success of implant-prosthetic rehabilitation of an oncology patient in the form of implant survival and overall patient satisfaction with prosthetic work. The positive outcome of the therapy follows the latest results of coherent research dealing with the survival rate of implants by giving different guidelines in implant placement. Although more research is needed, preferably that which is controlled and randomized, recent studies show progress in osseointegration of implants and reduction of complications after head and neck radiotherapy. The occurrence of osteoradionecrosis in this case, regardless of placed dental implants, confirms this.

#### P12 IMPLANTOPROTETSKA REHABILITACIJA PACIJENTA S FACIOSKAPULOHUMERALNOM MIŠIĆNOM DISTROFIJOM

Balać D<sup>1</sup>, Salarić I<sup>2</sup>, Zajc I<sup>2</sup>, Brajdić D<sup>2</sup>, Macan D<sup>2</sup>.

<sup>1</sup>Private dental practice, Zadar; <sup>2</sup>Department of Oral and Maxillofacial Surgery, University Hospital Dubrava, University of Zagreb School of Dental Medicine, Croatia

A thirty-year-old male patient with a facioscapulohumeral muscular dystrophy came to a dental office due to a horizontal crown fracture of the tooth 11. Patient came in a wheelchair, has a reduced manual dexterity, untreated oral cavity and poor oral hygiene. Facioscapulohumeral muscular dystrophy is a rear genetic disorder which manifests with progressive muscle weakness. Primarily, it affects facial, upper arm and shoulder muscles. Afterwards, it can affect pelvic and leg muscles and thereby some patients can end up in a wheelchair. Life expectancy is normal. Teeth extractions, periodontal treatment, new fillings and root canal treatments were performed. Oral hygiene demonstration and education was carried out. The patient was re-evaluated after six months and despite the reduced manual dexterity, the patient was able to maintain good oral hygiene (using electric tooth-

#### P10 NEURALGIJA IZAZVANA KAVITACIJSKOM OSTEONEKROZOM (NICO) EKSPANTACIJA DENTALNOG IMPLANTATA ZBOG NICO-A

Kvesić M<sup>1</sup>, Filipović-Zore F, Matulić N<sup>3</sup>.

<sup>1</sup>Ordinacija dentalne medicine, Zagreb; <sup>2</sup>Zavod za oralnu kirurgiju, Sveučilište u Zagrebu Stomatološki fakultet, KBC Zagreb; <sup>3</sup>Poliklinika dr. Zubović, Zagreb

NICO je definiran kao sindrom kronične boli nalik neuralgiji (sličnoj trigeminalnoj neuralgiji ili atipičnoj neuralgiji) za koju se pretpostavlja da su je prouzročile patološke promjene u alveolarnoj kosti. NICO je u stomatološkoj literaturi prvi opisao G. V. Black 1915. godine. NICO može zahvatiti bilo koju kost, ali najčešće zahvaća kosti kukova, koljena i čeljusti. Može nastati kao posljedica traume poput ekstrakcije zuba, endodontskog liječenja, ugradnje dentalnog implantata i kronične infekcije. Trenutne studije opisuju ishemijske poremećaje koagulacije alveolarne koštane srži kao uzrok NICO-a, što može biti rezultat tromboze s hipofibrinolizom ili bez nje koja ometa protok krvi. Najčešći simptomi su duboka konstantna bol varirajućeg intenziteta i oštra pulsirajuća bol. Predloženi tretman za NICO je kirurška dekortikacija i debridman kosti. U ovom slučaju prikazat će se pacijentica, anamnestički zdrava, kod koje su se razvili simptomi NICO-a neposredno nakon ugradnje dentalnog implantata. Pacijentica se javlja zbog kontinuirane sijekajuće boli u donjoj čeljusti koja se širi lijevom stranom lica prema uhu i vratu. Klinički nalaz u regiji implantata je uredan. Na kontrolnim radiološkim snimkama (OPC, CBCT) vidljiv je oseointegriran implantat, udaljen od mandibularnog živca. Stabilnost implantata analizom rezonantne frekvencije iznosila je 86 ISQ. Pacijentici je učinjena ekspanacija dentalnog implantata nakon koje su svi simptomi nestali.

#### P11 IMPLANTOPROTETSKA REHABILITACIJA PACIJENTA NAKON LIJEČENJA KARCINOMA TONZILE: PRIKAZ SLUČAJA

Matoš I<sup>1</sup>, Sušić M<sup>2</sup>, Brajdić D<sup>3</sup>, Matulić N<sup>4</sup>, Đanić P<sup>5</sup>, Gabrić D<sup>2</sup>.

<sup>1</sup>Labor-dent stomatološka ordinacija i zubotehnički laboratorij, Dugo Selo; <sup>2</sup>Zavod za oralnu kirurgiju, Sveučilište u Zagrebu Stomatološki fakultet, KBC Zagreb; <sup>3</sup>Klinika za kirurgiju lica, čeljusti i usta KB Dubrava, Sveučilište u Zagrebu Stomatološki fakultet; <sup>4</sup>Poliklinika dr. Zubović, Zagreb

Kirurško liječenje tumora orofarinksa s udruženom radioterapijom često stvara negativan utjecaj na tvrda i meka tkiva u usnoj šupljini. Rezultat kirurškog liječenja je smanjena mobilnost jezika, nedostatak prostora u vestibulum usne šupljine, a kod radikalnih disekcija vrata i nedostatak mandibule. Štetni učinci radioterapije u području glave i vrata na oralna tkiva uzrokuju patološka stanja poput mukozitisa, kserostomije, iradijacijskog karcinoma, fibroze krvnih žila te smanjuju potencijal cijeljenja košanog fundamenta, a najteža komplikacija, koja se javlja u 2% svih bolesnika, je osteoradionekroza čeljusti. Takva stanja zahtijevaju multidisciplinarni pristup specijalista različitih grana stomatologije i medicine kako bi kvaliteta života pacijenta nakon uspješne operacije tumora bila zadovoljavajuća. Suvremen pristup oralne rehabilitacije onkoloških bolesnika uključuje uporabu dentalnih implantata kojima je olakšana retencija i stabilizacija proteza u slučajevima velikih atrofija i defekata alveolarnog grebena. Svrha ovog izlaganja je prikazati uspješnost implantoprotetske rehabilitacije onkološkog pacijenta u obliku preživljavanja implantata i ukupnog zadovoljstva pacijenta protetskim radom. Pozitivan ishod terapije slijedi najnovije rezultate koherentnih istraživanja koja se bave stopom preživljavanja implantata dajući različite smjernice u postavljanju implantata. Iako je potrebno još studija, po mogućnosti kontroliranih randomiziranih, novija istraživanja pokazuju napredak u oseointegraciji implantata i smanjenju komplikacija nakon provedene radioterapije u području glave i vrata, a pojava osteoradionekroze u ovom slučaju neovisno o postavljenim dentalnim implantatima to potvrđuje.

#### P12 IMPLANTOPROTETSKA REHABILITACIJA PACIJENTA S FACIOSKAPULOHUMERALNOM MIŠIĆNOM DISTROFIJOM

Balać D<sup>1</sup>, Salarić I<sup>2</sup>, Zajc I<sup>2</sup>, Brajdić D<sup>2</sup>, Macan D<sup>2</sup>.

<sup>1</sup>Privatna ordinacija dentalne medicine, Zadar; <sup>2</sup>Zavod za oralnu kirurgiju Klinike za kirurgiju lica, čeljusti i usta, KB Dubrava, Sveučilište u Zagrebu Stomatološki fakultet

Tridesetogodišnji muškarac koji boluje do facioscapulohumeralne mišićne distrofije dolazi u ordinaciju radi horizontalne frakture krune zuba 11. Dolazi u kolicima, s reduciranim manualnim kretnjama te s nesaniranom usnom šupljinom i lošom oralnom higijenom. Facioscapulohumeralna mišićna distrofija je rijedak nasljedni poremećaj koji se očituje progresivnom mišićnom slabosti. Primarno zahvaća mišićnu muskulaturu, nadlaktične mišiće te mišiće ramenog obruča. Kako bolest napreduje, zahvaća mišiće zdjelice i nogu te pojedini pacijenti završavaju u invalidskim kolicima. Očekivani životni vijek je normalan. Nakon pregleda i obrade učinjene su ekstrakcije, parodontološka obrada, izrada ispuna te endodontska liječenja zuba. Nakon demonstracije i edukacije o oralnoj higijeni, nakon 6 mjeseci ustanovi se da je pacijent, unatoč smanjenoj manualnoj spretnosti, sposoban sa-

brush). He was motivated and aware of the importance of good oral hygiene. Two Ankylos® implants were placed in positions 14 and 16. After five months of submerged healing gingiva formers were placed. After soft tissue contouring, impression was made using an open tray technique with transfer posts. Two individual Atlantis® Ti abutments and temporary PMMA bridge were placed for the next 3 weeks. After evaluating the occlusion, bridge design, zirconium oxide ceramic bridge was made and permanently cemented.

mostalno i dobro provoditi higijenu pomoću električne četkice, da je motiviran i svjestan važnosti dobre higijene. Postave se dva implantata Anyklos® na pozicijama 14 i 16, koja se za 5 mjeseci otvore i postave gingivaformeri. Nakon oblikovanja izlaznog profila zuba, uzme se otisak transferima tehnikom otvorene žlice te se izrade dvije titanske individualne nadogradnje Atlantis®. Izradi se privremeni PMMA most kojeg pacijent nosi 3 tjedna. Nakon kontrole okluzije, odnosa mosta sa susjednim zubima, antagonistima, dizajna mosta i mogućnostima čišćenja, izradi se most od cirkon oksidne keramike koji se trajno cementira. Pacijent dolazi redovno na kontrole svakih 6 mjeseci te uspješno održava oralnu higijenu. Nakon dvije godine i dalje su zdrava periimplantatna tkiva.

### P13 THE SIGNIFICANCE OF ATTACHED MUCOSA ON THE LONG-TERM SUCCESS OF IMPLANT-PROSTHODONTIC THERAPY

Lovrić NT<sup>1,5</sup>, Prpić V<sup>2,6</sup>, Katanec T<sup>3,5,6</sup>, Ovčarić B<sup>4,6</sup>, Čatić A<sup>2,5,6</sup>.

<sup>1</sup>Dental Prosthodontic Intern; <sup>2</sup>Department of Fixed Prosthodontics; <sup>3</sup>Department of Oral Surgery; <sup>4</sup>6th year student; <sup>5</sup>University Hospital Centre Zagreb; <sup>6</sup>University of Zagreb School of Dental Medicine, Croatia

Despite predictable success and longevity of implant-prosthodontic therapy, biological and technical complications are a clinical reality. The appropriate width of attached mucosa around dental implants ensures peri-implant soft tissue stability, less plaque build-up, lower soft tissue recession rate, and lower mucositis and peri-implantitis incidence. At least 2 mm of attached mucosa has been shown to be a preventive factor in the development of peri-implant diseases. The etiology of the soft tissue recession around implants is related to various factors such as gingival phenotype (thick or thin), insufficient width of the attached mucosa, improperly placed implant in vestibulo-oral inclination, implant placement angle, as well as implant-abutment connection. In order to increase the width of the attached mucosa, various soft tissue augmentations have been proposed. Free gingival graft and connective tissue graft are therapeutic procedures that increase the width of attached mucosa around the implant, relative to the dimension and type of the tissue which needs to be augmented. Prosthodontically driven planning with prosthodontically guided implant placement can improve the aesthetics and function of the implant-prosthodontic replacement, optimal biomechanics of the bone-implant-prosthodontic complex as well as the appropriate volume and dimension of the attached mucosa. The presentation will offer a review of the recent literature on the topic, together with the presentation of implant-prosthodontic clinical cases with both the optimal and insufficient dimensions of attached mucosa ( $\geq 2$  mm).

### P13 ZNAČAJ PRIČVRSNJE SLUZNICE U DUGOROČNOM USPJEHU IMPLANTO-PROTETSKE TERAPIJE

Lovrić NT<sup>1,5</sup>, Prpić V<sup>2,6</sup>, Katanec T<sup>3,5,6</sup>, Ovčarić B<sup>4,6</sup>, Čatić A<sup>2,5,6</sup>.

<sup>1</sup>Specijalizantica stomatološke protetike; <sup>2</sup>Zavod za fiksnu protetiku; <sup>3</sup>Zavod za oralnu kirurgiju; <sup>4</sup>Studentica 6. godine; <sup>5</sup>KBC Zagreb; <sup>6</sup>Sveučilište u Zagrebu Stomatološki fakultet

Usprkos značajnoj uspješnosti, predvidljivosti i dugotrajnosti implanto-protetske terapije, biološke i tehničke komplikacije su klinička realnost. Prisutnost odgovarajuće širine pričvrstne sluznice oko dentalnih implantata osigurava stabilnost periimplantatnih mekih tkiva, smanjeno nakupljanje plaka, manji postotak recesija mekog tkiva i manje incidencije upalnih promjena periimplantatnih tkiva. Prisutnost minimalno 2 mm pričvrstne sluznice pokazalo se kao preventivni faktor nastanka periimplantatnih bolesti. Etiologija nastanka recesija sluznice oko implantata povezana je s različitim čimbenicima kao što su fenotip gingive (debeli ili tanki), nedovoljna širina pričvrstne sluznice, nepravilno postavljen implantat u vestibulo-oralnom smjeru, kut postave implantata te spoj implantata i protetskog nadomjestka. Kako bi se povećala širina pričvrstne sluznice, predložene su različite augmentacije mekih tkiva. Slobodni gingivni transplantat i vezivno tkivni transplantat predstavljaju terapijske postupke za povećanje širine pričvrstne sluznice oko implantata. Protetski vođena ugradnja implantata može unaprijediti estetiku i funkciju implanto-protetskog nadomjestka, optimalnu biomehaniku sustava kost-implantat-protetski nadomjestak, ali i primjerenu zonu pričvrstne sluznice. U ovom će se izlaganju prikazati pregled novije znanstvene literature i prikaz implanto-protetskih kliničkih slučajeva kod kojih je prisutna optimalna širina pričvrstne sluznice ( $\geq 2$  mm) i kliničkih slučajeva bez dovoljne širine pričvrstne sluznice.