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Pretkongresne radionice

W1 CBCT RADIONICA

Mudrak J.

Zavod za Dentomaksilofacijalnu radiologiju, Sveučilište u Freiburgu; Privatna ordinacija, Ludwigsau, Njemačka

Cilj predavanja je definirati osnovne bazične korake u CBCT dijagnostici. U prvom dijelu, prikazat će se osnovni alati korišteni u uređivanju 3D prikaza, fokusirajući se na osnovne anatomske strukture: strukture glave i vrata, s naglaskom na strukture povezane s dento-maksilofacijalnom regijom. U nastavku će se ti koncepti koristiti za interpretaciju i raspravljati kako ispravno tumačiti CBCT snimke uz sistematizirane primjere iz prakse. U svim koracima, raspravljat će se o razlozima za CBCT dijagnostiku, na način da se opravda klinička dobrobit, kako za terapeuta tako i za pacijenta. Završno, radionicom će se prikazati upotreba predstavljenih koncepata u kliničkoj praksi.

Radni plan:

- Principi interpretacije u uređivanju CBCT snimaka, analiza CBCT snimaka
- Analitička dijagnostička razmatranja za endo/perio/protetsko/ortodontsku implantologiju
- Napredne analize snimki u traumatologiji, dijagnostici tumora i sindroma
- Načela interpretacije

W2 UMIJEĆE PODIZANJA DNA SINUSA – PREDVIDLJIVI LATERALNI I KRESTALNI PROTOKOL LIJEČENJA

Molnar B.

Zavod za parodontologiju, Sveučilište Semmelweis, Budimpešta, Mađarska

Podizanje dna sinusa je često korištena metoda u posteriornoj bezuboj gornjoj čeljusti. Krestalni pristup je ostvariv s minimalno invazivnim postavljanjem implantata, dok se lateralni pristup koristi kod izrazite pneumatizacije maksilarnih sinusa. Ova će radionica pružiti pregled rekonstruktivnih strategija, kao i rješavanja komplikacija tijekom podizanja dna sinusa.

Pozvani predavači

I1 TVRDO I MEKO-TKIVNE KOREKCIJE OKO ZUBI I IMPLANTATA – JESU LI NAM POTREBNI KOST I KERATINIZIRANA TKIVA ZA DUGOROČNU STABILNOST?

Windisch P.

Zavod za parodontologiju, Sveučilište Semmelweis, Budimpešta, Mađarska

U današnje vrijeme, pacijenti zahtijevaju estetska, uglavnom fiksno-protetska rješenja sa ili bez ugradnje implantata. Alveolarna kost je struktura ovisna o zubima - svaka ekstrakcija zuba rezultira s resorpcijom alveolarne kosti. Današnje kirurške tehnike za prezervaciju ili augmentaciju alveolarnoga grebena prate biološke principe za postizanje jednoga rezultata: odražavanje ili povećanje volumena alveolarnoga grebena s harmoničnim konturama mekoga tkiva. Razina i model resorpcije je individualan kod svake osobe, ali kod svakoga prepoznatljiv kao rezultat fiziološke pregradnje koštanoga tkiva. Sklonost izraženoj resorpciji kosti je još veća kod parodontnih defekata, posebice kada nedostaje bu-

Pre-Congress Hands-on Training Courses

W1 CBCT WORKSHOP

Mudrak J.

Department of Dento-Maxillo-Facial Radiology, University of Freiburg; Private Clinic, Ludwigsau, Germany

The objective of the lecture is to define the basic steps to work with CBCT imaging. In the first session, the basic tools used in 3D image editing will be described and shown, focusing on the basic anatomic structures to be observed in an image: the head and neck structures covered in details, with emphasis on the dentomaxillofacial related structures. In the sequence, these concepts will be transferred to the reporting technique and the correct sequence on how to report CBCT images will be disclosed by using clinical examples in a systematized manner. In all steps, the rationale for indicating the use of a CBCT image will also be discussed, in such a way that imaging will not only be a profitable tool, but also provides benefits to the patient. To finalize, a workshop showing how to apply, in the practice, the topics covered in the lecture, will be offered."

Workshop Agenda:

- Interpretation principles in CBCT image editing, CBCT image analyses
- Analytic diagnostic considerations for endo/perio/prosthodontic/ortho/implantology
- Advanced image analyses for Traumatology, Tumors, Syndroms
- Principles of reporting

W2 STATE OF THE ART OF SINUS FLOOR ELEVATION – PREDICTABLE LATERAL AND CRESTAL TREATMENT PROTOCOLS

Molnar B.

Department of Periodontology, Semmelweis University, Budapest, Hungary

Sinus floor elevation is a frequently applied treatment approach for the reconstruction of the posterior edentulous maxilla. The crestal approach is feasible with minimally invasive simultaneous implant placement, whereas the lateral approach might be applied for the reconstruction of extensively pneumatized maxillary sinuses. The present workshop provides an overview of reconstructive strategies, as well as complication management during sinus floor elevation procedures.

Invited speakers

I1 HARD- AND SOFT TISSUE CORRECTIONS AROUND TEETH AND IMPLANTS - DO WE NEED BONE AND KERATINISED TISSUES FOR LONG TERM STABILITY?

Windisch P.

Department of Periodontology, 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. The tendency for advanced resorption is even more increased around deep periodontal defects, especially when the buccal alve-

kalni kortikalis. Rekonstrukcija periimplantatnoga tvrdoga i mekoga tkiva je obvezna za dugotrajan i estetski rezultat. Efikasnost primijenjenoga kirurškoga protokola u odstranjanju parodontnoga defekta susjednih zubi je također od velikoga značaja za postizanje zadovoljavajućih meko i tvrdo-tkivnih uvjeta i definiranja periimplantatnih tvrdih tkiva uz proksimalnu krestalnu kost susjednih zubi. Predavanje će obuhvatiti kirurške pristupe rekonstrukcije izgubljenoga tvrdoga i mekoga tkiva uporabom 3D planiranja (maxgraf[®] bonebulider, botiss), socket preservation-a, GBR-a, tehnika vestibuloplastike uz uporabu resorptivnih (Jason[®] membrane, botiss) i neresorptivnih membrana (permamem[®], botiss) u kombinaciji sa slobodnim vezivnim grafovima ili ksenogenim matriksima (mucoderm[®], botiss).

12 DUGOROČNA STABILNOST NAKON TVRDO I MEKO-TKIVNE REKONSTRUKCIJE OKO ASTRATECH DENTALNIH IMPLANTATA

Molnar B.

Zavod za Parodontologiju, Sveučilište Semmelweis, Budimpešta, Mađarska

Manjak volumena alveolarnoga grebena čest je problem u implantologiji. Trodimenzionalni gubitak tvrdih i mekih tkiva može rezultirati gubitkom funkcije, estetike i mogućnosti održavanja. Kirurška rekonstrukcija meko i tvrdo-tkivnih anomalija može predstavljati zahtjevan klinički scenarij. Predavanje će prikazati uspješne rekonstrukcije horizontalnih i vertikalnih defekata alveolarnoga grebena s dugoročnom stabilnošću oko AstraTech dentalnih implantata.

13 SUOČAVANJE S NOVIM ESTETSKIM ZAHTJEVIMA PACIJENATA: MINIMALNO INVAZIVNA IMPLANTOLOGIJA

Dubnov A.

Stomatološka ordinacija Dubnova, Kiev, Ukrajina
Međunarodno sveučilište Katalonije, Barcelona, Španjolska

U novo doba oralne implantologije, liječnici se susreću s pomicanjima granica. Današnji pacijenti zahtijevaju brza i pouzdana rješenja. Oralni kirurzi imaju na raspolaganju veliki broj tehnika i materijala. Pod pritiskom nisu samo mladi specijalisti. Sve je popularniji koncept imedijatne ugradnje implantata. Odgođena konvencionalna, na dokazima temeljena ugradnja implantata se sve više čini presporom. Međutim, je li moguće sve napraviti u jednom postupku? Je li ova tehnika pouzdana i dugotrajna? Trebamo li mijenjati protokole samo na temelju pacijentovih želja? Predavanje će se fokusirati na minimalno invazivnim kirurškim tehnikama koje imaju za cilj pojednostaviti liječenje i ostvariti pouzdani ishod liječenja. Raspravljat će se mogu li uvjeti i kvaliteta tkiva garantirati manji postotak komplikacija i veći uspjeh na dulje staze. Obratit ćemo pozornost na metode meko i tvrdo-tkivne augmentacije tijekom različitih faza implantološkoga liječenja: nakon ekstrakcije zuba, prije ugradnje implantata, tijekom prve faze ugradnje, u vrijeme otvaranja implantata, postavljanja sulkus formera i nakon postavljanja protetskoga dijela rada. Predavanje će uključivati foto i video dokumentaciju i obratiti pozornost na implantatne smanjenja promjera te minimalno invazivno liječenje.

14 CEMENTIRANE NASUPROT VIJCIMA FIKSIRANE IMPLANTATIMA PODUPRTE RESTAURACIJE

Nissan J.

Zavod za oralnu rehabilitaciju i implanto-protetiku, Rabin Medical Center, Beilinson Campus, Petah Tikva, Izrael; Zavod za oralnu rehabilitaciju, Stomatološki fakultet, Sveučilište u Tel Avivu, Izrael

Restauracije na implantatima mogu se pričvršćivati vijcima ili cementirati na nadogradnje (abutmente). Cilj ovoga predavanja jest usporediti dugotrajnost i komplikacije jednoga i drugoga načina pričvršćivanja restauracija na implantate u djelomično bezuboj čeljusti. Rezultati kliničkih i laboratorijskih istraživanja će pokazati razliku između dva načina pričvršćivanja. Opisat će se prednosti, nedostaci, potencijalna rješenja i klinički naputci za dugoročnu stabilnost restauracija na implantatima.

15 CBCT I ESTETSKA DENTALNA MEDICINA – KLINIČKI PRISTUP

Mudrak J.

Zavod za dentomaksilofacijalnu radiologiju, Sveučilište u Freiburgu; Privatna ordinacija, Ludwigsau, Njemačka

Oralna radiografija se prvi put koristila tjednima nakon inicijalnog otkrića W.C. Roentgen-ovih X-zraka i njihove mogućnosti prolaska kroz ljudsko tkivo 1985. godine. Danas je uporaba X zraka integralni dio kliničke dentalne medicine. Intraoralna snimka i ortopan su osnovne tehnike snimanja u dentalnoj medicini i često jedine potrebne za otkrivanje dentalne patologije. Druge ekstraoralne radiološke pretrage su kranioگرامi, koji se uglavnom koriste u ortodontiji. Sve ove konvencionalne tehnike su dostupne u digital-

olar plate has been destroyed. Reconstruction of sufficient periimplant hard- and soft tissue conditions is inevitable to achieve long-term tissue stability and aesthetics. The efficacy of the applied surgical protocols to eliminate periodontal defects at adjacent teeth is also of high importance to achieve favourable soft- and hard tissue conditions and to level off periimplant hard tissues to the proximal crestal bone of adjacent teeth. The lecture will present surgical approaches to reconstruct lost alveolar hard- and soft tissues applying 3D planning (maxgraf[®] bonebulider, botiss), socket preservation-, guided bone regeneration- and vestibuloplasty techniques utilising resorbable (Jason[®] membrane, botiss) and non-resorbable (permamem[®], botiss) membranes in combination with connective tissue grafts or xenograft matrices (mucoderm[®], botiss).

12 LONG TERM STABILITY FOLLOWING HARD- AND SOFT TISSUE RECONSTRUCTION AROUND ASTRA TECH DENTAL IMPLANTS

Molnar B.

Department of Periodontology, Semmelweis University, Budapest, Hungary

Alveolar ridge deficiencies are common drawbacks in implant dentistry. Three-dimensional loss of hard- and soft tissues may result in conditions with impaired function, esthetics and cleansibility. The surgical reconstruction of such hard- and soft tissue anomalies may represent demanding clinical scenarios. The present lecture reports on the successful reconstruction of horizontal and vertical ridge defects resulting in long term tissue stability around Astra Tech dental implants.

13 FACING THE NEW AESTHETIC REQUESTS OF THE PATIENTS: THE MINIMALLY INVASIVE IMPLANT SURGERY

Dubnov A.

Dubnova dental clinic llc Kiev, Ukraine; International University of Catalonia, Barcelona, Spain.

In the new era of oral implantology, doctors face the new frontiers. Novel patient demands fast and reliable results in every case. Oral surgeons have a great variety of techniques and materials to choose from. Not only young specialist may feel intricate. Fast growing immediate extraction and implant placement trend gains our market. Staged and highly evidence based approach seems to be too slow and too time-consuming. However, is it possible to do everything in one surgery? Is the technique reliable and long lasting enough? Should we switch our protocols according to our patients' wishes? Lecture will focus on minimally invasive surgical techniques which intend to make the treatment more easy-going and gains more stable results. We will discuss if tissue conditions and quality may guarantee less complications and more success in the long run. We will focus on the methods of soft and hard tissue augmentation during different stages of implant treatment: at the time of tooth extraction, before the initial implant placement, during the first stage of the implant surgery, at the time of implant opening and healing abutment placement or after the prosthetic components are already installed. The lecture will include photo and video materials to visualize the treatment options. The lecture will focus on reduced diameter implants and minimally invasive treatment.

14 CEMENTED VERSUS SCREW - RETAINED IMPLANT-SUPPORTED RESTORATIONS

Nissan J.

Oral Rehabilitation and Implant-Prosthodontics, Rabin Medical Center, Beilinson Campus, Petah Tikva, Israel; Department of Oral Rehabilitation, School of Dental Medicine, Tel Aviv University, Israel

Implant supported restorations can be attached to implants with screws or can be cemented to abutments which are secured to implants. The purpose of the presentation is to compare the long-term outcome and complications of cemented versus screw-retained implant restorations in partially edentulous patients. Clinical and laboratory studies will show the difference between the two common types of restoration. Advantages, disadvantages, potential solutions and clinical tips will be emphasized in order to achieve a long-term implant-supported restoration.

15 CBCT AND ESTHETIC DENTISTRY – A CLINICAL APPROACH

Mudrak J.

Department of Dento-Maxillo-Facial Radiology, University of Freiburg; Private Clinic, Ludwigsau, Germany

Oral radiography was first used within weeks after the initial discovery of X-radiation and its ability to penetrate human tissues by W.C. Roentgen in 1895. Today the use of X-radiation is an integral part of clinical dentistry. Intraoral and panoramic radiographs are the basic imaging techniques used in dentistry and are quite often the only imaging techniques required for the detection of dental pathology. Other extraoral examinations include cephalograms, which are used mainly for orthodontic assessment. All these conven-

nom formatu, uz one zasnivane na filmu. Bez obzira na tehniku, konvencionalna radiografija omogućava 2D prikaz složenih 3D struktura. Uspješna oralna rehabilitacija zahtjeva precizno predoperativno kirurško planiranje. Potreba za uporabom naprednih tehnika snimanja zasniva se na individualnoj procjeni kliničara, kliničkoj situaciji i informacijama potrebnim kliničaru. Proučavajući snimke, posebnu pozornost valja obratiti na anatomske strukture koje bi mogle ograničavati ciljani postupak. Važno je procijeniti stanje čeljusti i zubi i napraviti protetski plan kako bi smjestili implantat u točnu poziciju. U današnje vrijeme, CBCT ima važnu ulogu u implantologiji. Od 1990-ih (Arai i sur.), CBCT je postajao sve češće primjenjivan u stomatologiji. CBCT pruža relativno manje zračenje u odnosu na klasičan CT (Ludlow i Ivanovic 2008), mogućnost 3D rekonstrukcije u kombinaciji s virtualnim planiranjem pozicioniranja implantata te je vjerojatna još veća uporaba u budućnosti. Danas je na tržištu više od 20 software-skih programa koji kliničaru omogućuju planiranje pozicioniranja u virtualnoj stvarnosti koristeći slikovne 3D podatke. Često se u laboratoriju izrađuju splintovi i proteze koji se koriste za stjecanje snimke za planiranje pozicioniranja. Nakon software-skoga planiranja, izrađuju se vodilice za bušenje perforacijom ili fiksacijom utora u pravilnoj poziciji. U ponekim sustavima, radiološka vodilica i kirurški model su drugačiji (stereolitografski izrađeni) subjekti, koji se temelje na istim podacima i zauzimaju istu poziciju unutar usne šupljine pacijenta. Tijekom cjelokupnoga procesa, od izrade splinta, skeniranja, planiranja i izrade kirurških vodilica i samoga kirurškoga zahvata, mora se pažljivo slijediti procedura. Cilj predavanja je procijeniti uporabu CBCT-a u dentalnoj medicini, procijeniti njegovu točnost i reproducibilnost u pre-, peri- i post-operativnoj fazi liječenja te ukazati na njegove pogodnosti za pacijenta, kliničara i dentalni laboratorij.

tional imaging methods are available in digital format, in addition to a film-based system. Regardless of the technique, plain radiography provides only a two-dimensional (2D) view of complicated three-dimensional (3D) structures. Successful oral rehabilitation requires accurate preoperative surgical planning. The use of dedicated imaging techniques is to assist therapeutic planning, based on the patient's need, determined by the clinical presentation and professional judgment and defined by the individual clinician's need for information. Specific considerations should be paid to clinical complexity, regional anatomic structures, potential risk of complications and aesthetic considerations in the location of implants. For the prosthetic treatment, it is important to predict the condition of the jaws, the teeth as well as the position of a future implant in the jaw, as accurately as possible. Nowadays, cone beam computed tomography (CBCT) plays a vital role in modern oral implant surgery. Since the 1990s (Arai et al. 1999) CBCT is becoming more commonly used in dentistry. It offers a relatively lowered radiation dose compared to classic computed tomography (CT) (Ludlow & Ivanovic 2008), the possibility of three-dimensional (3D) reconstruction in combination with virtual implant planning, and is supposed to become even more widespread in the future. More than 20 software programs are on the market today (Neugebauer et al. 2010), which enable the practitioner to plan an implant's prospective position in a virtual reality environment using digital 3D image data. Often, lab-side resin splints or duplicated prosthesis are used during image acquisition for the implant planning procedure. After the software based planning process, drilling guides are manufactured by perforation and fixation of guiding sleeves in the intended position and angulation. In some systems, the radiological guide and the surgical template are two physically different (stereolithographic manufactured) subjects, which are nevertheless based on the same image data and intended to have exactly the same position inside the patient's mouth. During the whole process, from the production of the splint, the scanning, the planning, the production of the drilling guide to the surgical intervention itself, all the steps have to be followed carefully in the right order. The purpose of this presentation is to evaluate the use of CBCT in dentistry, to evaluate its accuracy and reproducibility in the pre – peri - and postoperative surgical treatment, and to show the benefits for the patient, the clinician and the dental laboratory.

16 IMEDIJATNO PROTETSKO ZBRINJAVANJE PERIIMPLANTATNOGA MEKOGA TKIVA: SUVREMENI KONVENCIONALNI I DIGITALNI PROTOKOLI

Trimpou G.

Zavod za oralnu kirurgiju i implantologiju, Fakultet oralne i dentalne medicine, Sveučilište J.W. Goethe u Frankfurtu, Njemačka

Izgled mekoga tkiva je ključan u dentalnoj implantologiji, međutim harmonijska integracija protetskoga dijela implantata nije uvijek predvidljiva. Cilj ove prezentacije jest predstaviti protetske intervencije prije, tijekom i nakon ugradnje implantata za postizanje optimalnoga estetskoga rezultata.

16 IMMEDIATE PROSTHETIC MANAGEMENT OF THE PERIIMPLANT SOFT TISSUE: CURRENT CONVENTIONAL AND DIGITAL PROTOCOLS

Trimpou G.

Department of Oral Surgery and Implantology, Faculty of Oral and Dental Medicine at J.W. Goethe-University Frankfurt am Main, Germany

The soft tissue appearance is a key factor for success in implantology, however a harmonious integration of the implant restored teeth is not always predictable. Focused both on conventional and digital workflows this presentation aims to introduce prosthetic interventions before, during and directly after implant insertion for optimization of the esthetic outcome.

17 UGRADNJA DENTALNIH IMPLANTATA POD KUTEM U CILJU IZBJEGAVANJA AUGMENTACIJE U KOMBINACIJI S IMEDIJATNIM OPTEREĆENJEM NA REDUCIRANOM BROJU IMPLANTATA

Neugebauer J.

Zavod za oralnu kirurgiju i implantologiju, Sveučilište u Kölnu, Njemačka; Privatna ordinacija, Landsberg am Lech, Njemačka

Pacijenti s parodontnom bolešću često odbijaju liječenje radi straha od mobilnoga ili neugodnoga protetskoga rada. Također, tehnike augmentacije često rezultiraju s postoperativnom neugodom i dužim oporavkom. Ugradnja implantata za fiksno-protetske restauracije, bez augmentacijskih tehnika, zahtjeva detaljno predoperativno planiranje i minimiziranje mogućnosti komplikacija, pogotovo kada je u planu imedijatna ugradnja implantata. Imedijatno opterećenje implantata ugrađenih pod kutem zahtjeva određene komponente koje su optimizirane za tu namjenu. Posljednjih godina, kliničko iskustvo je pokazalo kako pomoćna fotodinamska terapija značajno smanjuje rizik od komplikacija prilikom cijeljenja. Trodimenzionalno planiranje i prefabricirane komponente mogu biti presudne za dugotrajnost i stabilnost ishoda kada je u planu imedijatno opterećenje. Augmentacijski postupci su često nepotrebni te izostanak dodatnih kirurških intervencija izaziva veće prihvaćanje kod pacijenta. SKY fast & fixed-System, zajedno s Helbo-Disinfections je pouzdana metoda za bezubog i djelomično ozubljenog pacijenta, u donjoj i gornjoj čeljusti.

17 ANGLED IMPLANT PLACEMENT TO AVOID GRAFTING PROCEDURES IN COMBINATION WITH IMMEDIATE LOADING ON A REDUCED NUMBER OF IMPLANTS

Neugebauer J.

Department for Oral Surgery and Implantology, Cologne University, Germany; Private Clinic, Landsberg am Lech, Germany

Parodontal compromised patients refuse dental treatment, due to the fear of removable and uncomfortable prosthetic reconstruction. Also, the proposed grafting techniques often result in unknown post-operative discomfort. The placement of implants for fixed restorations, without grafting procedures, requires a detailed preoperative planning and the possibility of reducing the possibilities for complications, especially when planning an immediate implant placement. Immediate loading with tilted implants requires components that are optimized for angulated implant treatment. In the last few years, clinical experience has proved that the adjunctive antimicrobial photodynamic treatment significantly reduces the risk of wound healing disturbances. When planning to immediately load, three-dimensional planning and prefabricated components can be a prerequisite for a long-term stable restoration. Comprehensive augmentation procedures are often not necessary, which will result in better acceptance of the patient, due to the reduced number of surgical procedures. The SKY fast & fixed-System, in combination with the Helbo-Disinfections, is a reliable procedure for the edentulous or nearly edentulous patient, in the mandible and maxilla when using a fixed implant borne superstructure.

18 ESTETIKA TEMELJENA NA BIOLOGIJI – PREVLAĐAVANJE KONVENCIONALNIH OGRANIČENJA

Barbetsas A.

Privatna ordinacija za parodontologiju i implantologiju, Atena, Grčka

svakodnevno implantolozi koji nastoje postići izvrsnu estetiku moraju se nositi s višestrukim nedostacima regenerativnih tehnika i tehnika prezervacije mekoga tkiva. Iskustvo je pokazalo kako je postizanje izvrsnoga estetskoga rezultata nepredvidljivo, posebice u slučajevima nedostatka više zubi. Predavanje će provesti publiku kroz značajnu literaturu kako bi se upoznali s biološkim principima koji uvjetuju ishode estetskoga cijeljenja tkiva nakon ekstrakcije zuba. Nakon navedenoga biti će prikazana „Socket-Shield“ tehnika kao potencijalno rješenje kompromisa kojega su kliničari bili prisiljeni prihvatiti, u slučajevima kada se očekivalo i zahtijevalo savršenstvo. Primjena bioloških principa može nam omogućiti prevladavanje konvencionalnih ograničenja.

Usmena izlaganja**01 UPORABA ALOGENIH KOŠTANIH BLOKOVA U REGENERACIJI ALVEOLARNOGA GREBENA**Blašković M^{1,2}, Čabov T¹, Kovač Z³.¹Katedra za oralnu kirurgiju, Medicinski fakultet, Sveučilište u Rijeci;²Poliklinika Blašković; ³Katedra za stomatološku protetiku, Medicinski fakultet, Sveučilište u Rijeci

U usporedbi s ostalim biomaterijalima, autologna kost je jedini materijal koji posjeduje osteoinduktivna, osteoinduktivna i osteogena svojstva, stoga se smatra zlatnim standardom. Unatoč tome, posjeduje i neke nedostatke: dva kirurška polja (donorsko mjesto i mjesto koštanoga defekta), visoki morbiditet, ograničena količina autologne kosti koje se može sakupiti intraoralno i produženo vrijeme trajanja zahvata. Uporabom alogenih koštanih blokova možemo smanjiti vrijeme trajanja zahvata i morbiditet. Također, na raspolaganju nam je neograničena količina biomaterijala pa smo u mogućnosti regenerirati i opsežne defekte alveolarne kosti. U prikazu slučaja pacijentice s potpuno bezubom maksilom i izrazitim koštanim horizontalnim defektom, korišteni su alogeni koštani blokovi kako bi omogućili ugradnju implantata i izradu fiksno protetskog rada.

02 IMPLANTOPROTETSKA REHABILITACIJA NAKON REKONSTRUKCIJE ORALNIH DEFEKATA MIKROVASKULARNIM FIBULARNIM REŽNJEMCerović R¹, Rogić M¹, Kovač Z².¹Katedra za maksilofacijalnu kirurgiju, Medicinski fakultet Sveučilišta u Rijeci;²Katedra za stomatološku protetiku, Medicinski fakultet Sveučilišta u Rijeci

Defekti čeljusnih kostiju i okolnoga mekoga tkiva koji nastaju u onkološkoj i traumatskoj maksilofacijalnoj kirurgiji veliki su kirurški izazov. Jedan od uobičajenih načina rekonstrukcije takvih defekata je pomoću mikrovaskularnoga fibularnoga režnja. Ovakav način rekonstrukcije osigurava donekle dobru funkcionalnu i estetsku rehabilitaciju, naime i funkcija disanja i hranjenja su zadovoljene, ali je u takvih pacijenata nemoguće napraviti i klasičnu stomatološku protetsku rehabilitaciju. Dapače, u slučaju rekonstrukcije maksile pomoću ovoga režnja, nije moguće napraviti niti obturator protezu, koja omogućava ozubljanje i bolji estetski rezultat. Fibula je s druge strane kost koja ima odličan oseointegracijski potencijal i pomoću dentalnih implantata može se osigurati vrlo dobra protetska rehabilitacija i nakon ovakvih, vrlo mutilantnih operativnih zahvata ili traume. Naravno, odabir dentalnih implantata, njihovo postavljanje, i kasniji izbor i izrada protetskog nadomjestka nisu jednostavni i zahtijevaju prilično implantološko iskustvo i vještinu od strane kirurga i protetičara. U ovom radu prikazujemo tri pacijenta kod kojih smo nakon rekonstrukcije mandibule i maksile pomoću fibularnoga režnja proveli implantoprotetsku rehabilitaciju i na taj način bitno popravili njihovu kvalitetu života.

03 JE LI IDIOPATSKA OSTEOSKLEROZACIJA ČELJUSTI KONTRAINDIKACIJA ZA UGRADNJU DENTALNIH IMPLANTATA?Đanić P¹, Brajdić D¹, Biočić J¹, Salarić I¹, Macan D¹, Bajan T², Perić B¹,¹Klinika za kirurgiju lica, čeljusti i usta, Klinička bolnica Dubrava, Stomatološki fakultet Sveučilišta u Zagrebu; ²Privatni zubotehnički laboratorij, Zagreb

Brojne studije navode da je dugoročan uspjeh dentalnih implantata preko 96%. Na uspjeh implantoprotetske terapije utječu faktori vezani uz pacijenta, te faktori vezani uz kirurški postupak i protetsku rehabilitaciju. Jedni od ključnih faktora za uspjeh su kvaliteta i kvantiteta kosti koji su narušeni kod kompromitirane kosti. Na kvalitetu kosti ne možemo utjecati, ali možemo individualnim pristupom uz primjenu jednostavnih tehnika smanjiti mogućnost nastanka neželjenoga neuspjeha. Cilj ove prezentacije je prikazati im-

18 AESTHETICS BASED ON THE USE OF BIOLOGY - OVERCOMING THE CONVENTIONAL LIMITS

Barbetsas A.

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On an everyday basis, implantologists that continuously strive for aesthetic excellence, have to deal with the multiple limitations of the hard and soft tissue preservative and regenerative techniques. It seems that achieving a perfect aesthetic result, especially in cases of multiple missing teeth, is at least not predictable. The lecture will initially guide the audience through the most important parts of the literature toward the understanding of the biological principles that govern the outcomes of a post-extraction aesthetic case. The Socket – Shield technique will then be introduced as an alternative that could be a solution to the compromise that clinicians have been forced to accept, when treating cases that require perfection. Using Biology can help us to overcome the conventional limits.

Oral Presentations**01 THE USE OF ALLOGENIC BONE BLOCKS IN ALVEOLAR RIDGE REGENERATION**Blašković M¹, Čabov T², Kovač Z³¹Polyclinic Blašković, Rijeka; ²Department of Oral Surgery, University of Rijeka School of Medicine; ³Department of Prosthodontics, University of Rijeka School of Medicine, Rijeka, Croatia

Compared to other biomaterials, the autologous bone is the only material which possess osteoinductive, osteoconductive and osteogenetic characteristics, thus is considered the gold standard. Nevertheless, there are some shortcomings associated with the use of autologous bone grafts: two surgical sites (the donor and the defect site), high morbidity, limited amount of autogenous bone available and long surgical time. The use of allogenic bone block can reduce the surgical time and the morbidity. Furthermore, unlimited amount of allogenic bone can allow the regeneration of extensive alveolar bone defects. In the latter case presentation, the extensive bone defect located in the edentulous maxilla was regenerated with the use of allogenic bone block to enable the placement of implants and the fabrication of a screw retained bridge.

02 IMPLANT-PROSTHODONTIC REHABILITATION AFTER THE RECONSTRUCTION OF ORAL DEFECTS WITH A MICROVASCULAR FIBULAR FLAPCerović R¹, Rogić M¹, Kovač Z²¹Department of Maxillofacial Surgery, University of Rijeka School of Medicine; ²Department of Prosthodontics, University of Rijeka School of Medicine, Rijeka, Croatia

Defects of the jaws and the surrounding soft tissues, often seen in maxillofacial oncology and traumatology, present a big surgical challenge. One of the most used reconstruction methods is by using a microvascular fibular flap. This method ensures good functionality, aesthetics, feeding and breathing, however, it is not possible to achieve a classis prosthodontic rehabilitation. Furthermore, maxillary defects reconstructed with this method cannot be prosthodontically rehabilitated even by an obturator prosthesis. On the other hand, fibula graft has a great oseointegration potential and combined with dental implants it is possible to achieve a satisfying prosthetic rehabilitation, even after these distorting procedures. Certainly, the selection of dental implants, their placement, selection and the production of the prosthodontic restorations are not simple and demand an experienced surgeon and prosthodontist. We will present three patients which had their mandible and maxilla reconstructed with a fibular graft and prosthodontically rehabilitated using dental implants as anchorages.

03 IS AN IDIOPATHIC OSTEOSCLEROSIS OF JAW CONTRAINDICATION FOR DENTAL IMPLANT PLACEMENT?Đanić P¹, Brajdić D¹, Biočić J¹, Salarić I¹, Macan D¹, Bajan T², Perić B¹,¹Department of Oral and Maxillofacial Surgery, University Hospital Dubrava, University of Zagreb School of Dental Medicine; ²Private dental laboratory, Zagreb, Croatia

Numerous clinical studies have stated that long-term survival of dental implants is above 96%. There are different factors related to implant failures that can be divided in patient related factors, surgical factors and prosthodontics factors. One of the key factors for success is bone quality and quantity that can be inadequate in compromised bone. We cannot improve the bone quality, but with individual approach and implementation of simple techniques we can reduce the risk of implant failure. The aim of this presentation is

plantoprotetsku rehabilitaciju pacijenta s opsežnom idiopatskom sklerozacijom uz primjenu jednostavnih koraka koji omogućavaju dugoročni uspjeh kod ovako kompromitirane kosti. U prezentaciji ćemo prikazati slučaj 21 godišnjega zdravoga pacijenta koji se javio u ambulantu Zavoda za oralnu kirurgiju zbog potrebe za alveotomijom impaktiranih zubi 14,15 u svrhu pripreme za ugradnju dentalnih implantata. Pacijent je od 2005. g. praćen od strane stomatologa i ortodonta radi otežanog nicanja zubi 13,14,15 zbog opsežne idiopatske sklerozacije kosti. Nakon kliničkoga pregleda i analize RTG snimki i CBCT-a odlučeno je učiniti biopsiju kosti i alveotomije zubi 14 i 15 u općoj endotrahealnoj anesteziji. Radiološki je sklerozacija zahvaćala gotovo cijelu desnu maksilu mezijalno od zuba 12 do zuba 16 u punoj širini i visini bez ekspanzije kortikalisa. Intraoperativno se odustalo od alveotomije zuba 15 jer bi isto rezultiralo opsežnim koštanim defektom. Histopatološki nalaz potvrdio je dijagnozu idiopatske sklerozacije. Nakon 2 mjeseca urednoga cijeljenja ugrađena su 3 implantata (Astra tech®, Syrona Dentsply, Njemačka) pri čemu je korišten protokol za tvrdnu kost. Izborom implantata, protokola za ugradnju i korištenjem sterilne fiziološke otopine ohlađene na 5°C smanjili smo stres na kost prilikom ugradnje implantata. Nakon 6 mjeseci urednoga cijeljenja radiološki je potvrđena uredna oseointegracija i pacijent je opskrbljen individualnim CAD-CAM hibridnim cirkon oksidnim keramičkim mostom na vijak. Jednogaodišnje praćenje je pokazalo odličnu i stabilnu estetsku i funkcijku implantoprotetsku rehabilitaciju.

O4 IMEDIJATNO POSTAVLJANJE IMPLANTATA U KRONIČNU PERIAPEKSNU LEZIJU KORIŠTENJEM FAKTORA RASTA – PRIKAZ 2 SLUČAJA

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Uvod: Postavljanje implantata na mjesto kutnjaka jedan je od najuobičajenijih i najpredvidljivijih postupaka danas. Konvencionalna terapija akutno inficiranoga kutnjaka tipično zahtijeva određeni broj koraka kao što su ekstrakcija zuba, zbrinjavanje infekcije, koštani transplantat i postavljanje kolagene membrane, dodatni period cijeljenja kako bi se postigla zadovoljavajuća regeneracija kosti te zatim postavljanje implantata. Imedijatno postavljanje implantata zahtijeva kiretažu, čišćenje cjelokupnoga prostora do zdrave kosti i primarnu stabilnost. Lokalna aplikacija plazme bogate faktorima rasta (PRGF) kombinirane s koštanim transplantatom (BioOss), može ubrzati regeneraciju koštanih defekata i poboljšati oseointegraciju. **Slučaj 1:** Pacijent star 36 godina kojemu je dijagnosticirana periapeksna lezija na mjestu donjega desnoga prvoga kutnjaka. Plan terapije je uključivao ekstrakciju zuba, kiretažu alveole, irigaciju postekstrakcijske alveole tekućim dijelom plazme bogate faktorima rasta (PRGF) te imedijatno postavljanje implantata. Koštani defekt oko implantata ispunjen je frakcijom 2 PRGF-a u koju je umješan koštani transplantat Bio-Oss. Nakon 3 mjeseca cijeljenja napravljan je privremeni protetski nadomjestak. Nakon 6 godina praćenja, rentgenska snimka pokazuje minimalni gubitak kosti. **Slučaj 2:** Pacijent je osjećao bol i oteklinu u području desnoga gornjega drugoga sjekutića. Rentgenska snimka je pokazivala periapeksnu cističnu promjenu. Terapija je uključivala ekstrakciju, kiretažu alveola, imedijatno postavljanje implantata i regeneraciju kosti korištenjem plazme bogate faktorima rasta (PRGF). Prikazani su rezultati nakon 3 godine. **Zaključak:** PRGF predstavlja prekretnicu u stimulaciji i regeneraciji koštanoga i mekog tkiva. Najveća prednost je brže i predvidljivije cijeljenje. Kada faktori rasta preplave oštećeno mjesto, regeneracija kosti i mekog tkiva se drastično povećava. Imedijatno postavljanje implantata u kombinaciji s PRGF-Endoret tehnologijom može se smatrati učinkovitim i predvidljivim izborom za rehabilitaciju postekstrakcijske inficirane alveole.

O5 TRANSKRESTALNE TEHNIKE SINUS LIFTA

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Implantološka terapija često je komplicirana u gornjoj čeljusti zbog opsežne resorpcije kosti koja je ponekad posljedica pneumatizacije maksilarnoga sinusa nakon gubitka zuba. U ovom predavanju upoznati ćemo se sa klasičnim i alternativnim tehnikama koje se koriste u svrhu podizanja dna maksilarnoga sinusa sa i bez augmentacije atrofičnoga grebena. Podizanje dna maksilarnoga sinusa (engl. Sinus lifting, sinus floor elevation) operativna je tehnika premještanja dna maksilarnoga sinusa prema kranijalno uz augmentaciju sinusne šupljine s ciljem stvaranja dovoljne koštane mase potrebne za ugradnju implantata. Metode podizanja dna maksilarnoga sinusa možemo podijeliti na otvorene i zatvorene tehnike, odnosno lateralni i transkrestalni pristup. U ovom predavanju posvetit ćemo pažnju samo na tehnike transkrestalnoga pristupa od osnovnih do naprednih tehnika prema kronološkom razvoju kao što su tehnika po Summers-u, modificirane tehnike po Summers-u, tehnika prema Cosci-u, balloon tehnika i DIVA tehnika (dynamic implant valve approach). U

to present an implant rehabilitation of a patient with a large idiopathic osteosclerosis and to describe some important and simple steps that can improve early and long-term survival of dental implants. A 21-year old healthy male was referred to the Department of Oral and Maxillofacial surgery for a surgical removal of the impacted first and second upper right premolars before implant placement. Patient was regularly followed from 2005 by his dentist and orthodontist due to the difficulty in eruption of permanent dentition (teeth 13,14,15) and idiopathic osteosclerosis. After clinical examination and analysis of radiographs and CBCT, we decided to perform bone biopsy and surgically remove the impacted teeth 14,15 in general anaesthesia. Radiographs showed a large sclerotic bone area in the right maxilla that spread from the upper right incisor to the upper right first molar, spreading throughout the spongiosa without bone expansion. Intraoperatively, it was decided not to extract the upper right second premolar because of the consequential large bone defect. Result of histopathology examination confirmed revealed the idiopathic osteosclerosis of the jaw. After two months, three implants (Astra tech®, Syrona Dentsply, Germany) were inserted using the high-density bone protocol. Choice of dental implants, protocol for highly dense bone and cooling the sterile saline to 5°C reduced the potential bone stress during implant placement. Six months after healing, a panoramic radiograph was taken to confirm good osseointegration and individual fixed screw-retained CAD-CAM zirconia oxide ceramic hybrid abutment-bridge was fabricated. One year later, the implant-prosthetic rehabilitation proved both clinically and radiographically satisfactory in function and aesthetics.

O4 IMMEDIATE IMPLANT PLACEMENT INTO FRESH EXTRACTION SOCKET WITH CHRONIC PERIAPICAL LESION USING GROWTH FACTORS – REPORT OF 2 CASES

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Background: Replacing a molar with one implant is one of the most common and predictable procedures today. Conventional treatment for an acutely infected molar typically requires number of steps, such as tooth extraction, infection treatment, bone grafting and collagen membrane placement, additional healing period for sufficient bone regeneration and then implant placement. Immediate implant placement requires curettage, cleaning of the whole area to the healthy bone level and primary stability. Local application of scaffold-like preparation rich in growth factors (PRGF) combined with graft bone (BioOss) can accelerate bone regeneration in artificial defects and improve osseointegration. This procedure results in a better experience for the patient and a surgeon, furthermore it reduces the healing time.

Case 1: 36-year-old male patient was diagnosed with a periapical lesion around the lower right first molar. The treatment plan included tooth extraction, socket curettage, immediate post-extraction socket irrigation with a liquid containing growth factors PRGF and immediate implant placement. A bone defect around the implant was filled with PRGF fraction 2, mixed with a bone graft (BioOss). After three months of healing, we made a permanent prosthetic restoration. During a six-year follow-up, x-ray showed minimum bone loss. **Case 2:** Patient felt pain and swelling around the maxillary right second incisor. X-ray revealed a periapical cystic lesion. Treatment included extraction, socket curettage, immediate implant placement and PRGF bone regeneration. A three-year follow-up will be presented. **Conclusion:** PRGF presents a cutting-edge aid in bone grafting. The biggest advantage is that it enables quick and reliable healing. As growth factors flood the grafting site, bone and tissue regeneration dramatically increase. Immediate implant placement, combined with PRGF Endoret technology can be considered as an effective and predictable treatment option for the rehabilitation of fresh post extraction infected socket.

O5 TRANSCRESTAL SINUS LIFT TECHNIQUES

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Implant therapy is often complicated in the upper jaw due to bone resorption, which is a result of tooth extraction and maxillary sinus pneumatization. This review is to introduce conventional and alternative transcrestal sinus lift techniques without and with sinus cavity augmentation. Sinus lifting (sinus floor elevation) is a technique in which the maxillary sinus floor is elevated in cranial direction and bone augmentation is performed in order to create sufficient bone volume for implant placement. The following techniques will be described chronologically, Summers technique, modified Summers technique, Cosci technique, balloon technique and DIVA technique (Dynamic Implant Valve Approach). We will explain the protocol and mention the necessary instruments for each technique. Special attention will be paid on the invasiveness for the patient, the success of the technique, its complexity and the indication.

pregledu tehnika biti će opisan protokol izvođenja i potreban instrumentarij. Osim pregleda tehnika obratiti ćemo pozornost i na invazivnost pojedinih tehnika za pacijenta, uspješnost tehnika, jednostavnost tehnika i indikacije za pojedine tehnike. Zaključno, dobiti će se uvid koju je tehniku preporučljivo odabrati u pojedinim slučajevima.

06 PODIZANJE DNA MAKSILARNOGA SINUSA UZ PRIMJENU TROMBOCITIMA OBOGAĆENOGA FIBRINA I ISTOVREMENA UGRADNJA DENTALNIH IMPLANTATA

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Uvod: Distalna bezubost maksile i pneumatizacija maksilarnoga sinusa dovode do gubitka vertikalne dimenzije alveolarne kosti. U tom slučaju pristupamo podizanju dna maksilarnoga sinusa. Razlikujemo otvorenu, zatvorenu i balon tehniku. Kod otvorene tehnike, podizanje Schneiderove membrane izvodi se kroz fenestru na bukalnoj stijenci alveolar-noga grebena. Ako je visina kosti alveolar-noga grebena veća od 5 mm, ugradnja dental-nih implantata može se izvesti unutar istoga zahvata, a ukoliko je visina kosti manja od 5 mm implantati se ugrađuju nakon 6-8 mjeseci. **Prikaz slučaja:** Pacijentu (67 godina) s apsolutnom indikacijom za implantoprotetsku terapiju jednostrane distalne bezubosti gornje čeljusti, planirana je ugradnja tri implantata u regijama 14, 15, 16 te izrada fiksnog protetskog nadomjestka. Analizom CBCT-a utvrđena je visina kosti područja implantacije od 2 mm, 2,5 mm i 5 mm te širina grebena od 4,5 mm. Desni maksilarni sinus podignut je otvorenom tehnikom. Dobiveni prostor ispod Schneiderove membrane ispunjen je ksenogenim materijalom (Cerabone) pomiješanim s trombocitima obogaćenim fibrinom (PRF). Radi bolje epitelizacije, ispod minimalno traumatiziranoga periosta, bukalni defekt prekriven je autolognom PRF-membranom. Istovremeno su u područjima 16, 15 i 14 ugrađena tri implantata dužine 10 mm i promjera 4,3 mm te je rana primarno sašivena. Nakon godinu dana, pri otvaranju implantata izmjerena je stabilnost Osstell-om za sva tri implantata. Kvocijent stabilnosti implantata (ISQ) iznosio je 80, 83 i 85 što upućuje na visoku razinu oseointegracije. **Zaključak:** Trombocitima obogaćen fibrin pojačao je osteoinduktivna svojstva ksenogenoga materijala, pridonio cijeljenju i mineralizaciji augmentiranoga dijela te dobroj oseointegraciji implantata. Unatoč visini kosti od svega 2 mm, radiološkom procjenom denziteta kortikalne ploče hrpta alveolar-noga grebena (D1) uz adekvatnu kiruršku tehniku moguća je imedijatna ugradnja implanta i na grebenu nižem od 5 mm. Bolju stabilnost ugrađenih implantata postigli smo kombinacijom PRF-a i ksenogenoga materijala.

07 UČINAK MIKROKAPSULIRANIH GRANULA S BILJNIM EKSTRAKTIMA U GELU NA POSTOPERATIVNO CIJELJENJE NAKON PODIZANJA DNA MAKSILARNOGA SINUSA I IMEDIJATNE UGRADNJE DENTALNIH IMPLANTATA – SPLIT MOUTH CONTROLLED KLINIČKA STUDIJA

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Uvod: Bakterijska flora, koja čini zubni plak, predstavlja primarni i najodgovorniji čimbenik u etiologiji parodontnih bolesti i oralnih upala. Bakterije, činioci biofilma postaju agresivne i izazivaju uništavanje tkiva, bilo izravno kroz enzimske reakcije i bakterijske toksine, ili indirektno izazivajući upalnu reakciju tkiva. Kemijska sredstva koja se temelje na klorheksidinu, trikloksanu i cetilpiridinijevom kloridu su učinkovita, ali i agresivna jer koriste strategiju niske specifičnosti, znatno oštećujući većinu bakterija i uzrokujući neravnotežu cijeloga oralnoga ekosustava. Neki od učinkovitih prirodnih ekstrakata koji se koriste u usnoj šupljini su ulje avokada, manuka ulje, propolis i ekstrakti iz sjemenki grejpa. Inovativna složena tehnologija enkapsulacije prirodnih ekstrakata omogućava veću učinkovitost proizvoda i duže oslobađanje aktivnih tvari tijekom prodora mikrokapsula unutar mekih tkiva. **Svrha rada:** Svrha ove kliničke studije bila je procijeniti i usporediti učinkovitost mikrokapsuliranih prirodnih ekstrakata sadržanih u gelu na cijeljenje kirurške rane nakon otvorene tehnike podizanja dna maksilarnoga sinusa i imedijatne ugradnje dentalnih implantata. **Materijali i metode:** U studiju je bilo uključeno deset pacijenata s apsolutnom indikacijom za obostrani otvoreni sinus lift (distalna bezubost ili potpuna bezubost gornje čeljusti s rezidualnom kosti alveolar-noga grebena u molarnoj regiji od 2-4 mm). Svi ispitanici su potpisali informirani pristanak za sudjelovanje u istraživanju. Ispitanicima je učinjen obostrani zahvat podizanja maksilarnoga sinusa tehnikom lateralnoga prozora, augmentacija kombinacijom PRF-a i ksenogenoga košanoga nadomjestka te imedijatno ugrađena dva dentalna implantata. Ispitanici su podijeljeni u dvije skupine po principu slijepog odabira. Jedna strana (kontrolna) u svakoga pacijenta poslijeoperacijski je tretirana prema rutinskom protokolu poslijeoperacijske njege (klorheksidinski gel). Pacijentu je rečeno da s vatenim štapićem premaže ranu 3 puta dnevno. Nakon zahvata

06 SINUS LIFT USING PLATELET RICH FIBRIN WITH IMMEDIATE DENTAL IMPLANT PLACEMENT

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Introduction: Tooth loss and maxillary sinus pneumatization lead to loss of the vertical dimension of the alveolar bone. In these cases, sinus floor elevation is indicated. There are several techniques, as direct, indirect and balloon sinus lift technique. In the direct sinus lift, the Schneider's membrane is elevated through the small window opened on the buccal sinus wall. If the alveolar bone height is greater than 5 mm, sinus lift and implant placement can be done simultaneously, if bone height is less than 5 mm, implants are placed after 6-8 months. **Case Report:** A patient (67 years old) with partially edentulous maxilla was a candidate for placing three implants in regions #14, 15, 16. CBCT analysis revealed bone height of 2 mm, 2.5 mm and 5 mm in the planned implantation areas and 4.5 mm alveolar ridge width.

The direct sinus lift was performed and xenogenic graft material with platelet rich fibrin (PRF) placed into the elevated sinus. A buccal bone window was covered by autologous PRF membrane. Simultaneously three implants were placed in the areas #16, 15 and 14, with a diameter of 4.3 mm and lengths of 10 mm. The wound was closed primarily. One year later, the stability of implants was measured using Osstell™. The implant stability quotient (ISQ) was 80, 83 i 85 indicating a high level of osseointegration. **Conclusion:** PRF had increased the osteoinductivity of xenogenic bone graft, had contributed to the wound healing, mineralization and thus to the osseointegration of implants. Despite the bone height of only 2 mm and radiologically assessed density of the alveolar ridge cortical plate (D1), with adequate surgical technique, it is possible to perform a sinus lift and place dental implants simultaneously. The combination of PRF and xenogenic material had improved the implant stability.

07 EFFECT OF MICROENCAPSULATED GRANULES CONTAINING NATURAL INGREDIENTS ON POSTOPERATIVE GRANULATION AFTER OPEN SINUS LIFT SURGERY AND IMMEDIATE IMPLANTATION OF DENTAL IMPLANTS - SPLIT MOUTH CONTROLLED CLINICAL STUDY

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Introduction: Bacterial flora, which makes dental plaque, is the primary and most responsible factor in the etiology of periodontal disease and oral inflammation. Bacteria, biofilm factors become aggressive and cause destruction of the tissue, either directly through enzymatic reactions and bacterial toxins, or indirectly inducing inflammatory tissue response. Chemical agents based on chlorhexidine, triclosan and cetylpyridinium chloride are effective, but also aggressive, because they use a low specificity strategy, significantly damaging most of the bacteria and causing an imbalance of the entire oral ecosystem. Some of the effective natural extracts used in the oral cavity are avocado oil, manuka oil, propolis and grape seed extracts. Innovative complex encapsulation technology of natural extracts allows greater product efficacy, longer releasing of active substances during the penetration of microcapsules within soft tissues. **Purpose:** The purpose of this clinical study was to evaluate and compare the effectiveness of microencapsulated natural extracts contained in gel in healing of surgical wounds after open maxillary sinus lift and implantation of dental implants. **Materials and Methods:** Ten patients with absolute indications for bilateral sinus lift surgery (distally toothless jaw or toothless upper jaw with residual bone, 2-4 mm high in the molar region) were included in the study. All respondents signed an informed consent for participation in the study. Each patient was scheduled for bilateral maxillary sinus lifting by using a lateral window technique, followed by PRF augmentation, xenogenic bone placement, and final placement of two dental implants. For each patient, single blind criteria was used in the postoperative wound treatment approach. One side (control site) was postoperatively treated according to a routine protocol which required patients to treat the wound with a chlorhexidine gel 3 times a day; whereas the other side

na drugoj strani (testnoj) pacijenti su po istim uputama premazivali postoperacijsku ranu gelom s mikrokapsuliranim granulama prirodnih ekstrakata (GingiNat, LoB Foundation, Paris, France). Ispitanici nisu znali koriste li testni ili kontrolni premaz. Pacijenti su za ovu studiju ispunjavali prethodno pripremljeni upitnik u kojem su ocjenjivali poslijeoperacijsku bol, osjet neugodnog zadaha, nakupljanje bakterijskoga plaka kao i subjektivnu brzinu cijeljenja na Likertovoj skali. Isti upitnik je ispunjavao i terapeut na kontrolnom pregledu tri dana nakon zahvata. **Rezultati:** Neželjeni učinci u razdoblju oporavka nisu zabilježeni. Rezultati su pokazali statistički značajnu razliku u poslijeoperativnom razdoblju oporavka između testne i kontrolne skupine ($p < 0,001$) u korist mikrokapsuliranoga gela. Prema rezultatima Likertove ljestvice, testna strana s GinGinatom pokazala je manje nakupljanje plaka, nedostatak neugodnog zadaha, smanjenu poslijeoperacijsku bol te brže cijeljenje ($p < 0,001$), u odnosu na stranu gdje je korišten klorheksidinski gel. **Zaključak:** Rezultati ove kliničke studije pokazali su bolje cijeljenje kirurške rane, kao i jači analgetski učinak nakon primjene mikrokapsuliranih granula s prirodnim ekstraktima u usporedbi sa standardnim klorheksidinskim gelom.

08 STABILNOST IMPLANTATA NAKON LATERALNOGA PODIZANJA DNA SINUSA MJERENA ISQ-OM – PRELIMINARNI REZULTATI

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Uvod: Ugradnja dentalnih implantata u posteriorne regije s izraženom resorpcijom alveolarnoga grebena predstavlja veliki izazov. Prisutnost maksimalnoga sinusa i resorpcija alveolarnoga grebena nakon gubitka zuba dovodi do smanjena volumena kosti i nemogućnosti ugradnje implantata bez postupka augmentacije. Lateralno podizanje dna sinusa (LPDS) je visoko predvidljiv postupak koji se može kombinirati s istovremenom ugradnjom implantata, time skraćujući vrijeme liječenja. Određivanje koeficijenta stabilnosti implantata (*engl.* implant stability quotient, ISQ) je dostupna i jednostavna metoda za procjenu stabilnosti istoga. Samo mjerenje primarne stabilnosti je zahtjevno, uzrokuje stres implantata i komprimira njegovu stabilnost. **Cilj:** Predstaviti preliminarnu rezultate istraživanja s mjerenjem ISQ-a dentalnih implantata postavljenih zajedno u LPDS. **Materijali i metode:** 12 dentalnih implantata postavljeno je u tri zdrave pacijentice istovremeno u LPDS. Alveolarni greben je bio viši od 3mm kod ugradnje 7 implantata (prosječno 5,4)(grupa 1, G1), a kod 5 manji od 3mm (prosječno 1,44mm)(grupa 2, G2). Deproteinizirana goveda kost i kolagene membrane su korištene kao materijali za augmentaciju u LPDS. ISQ je mjereno pomoću Osstell-a odmah nakon ugradnje implantata i 4 mjeseca nakon osseointegracije. Rezultati su statistički izraženi pomoću t-testa sa stupnjem značajnosti $p < 0,005$. **Rezultati:** Svi implantati su se osseointegrirali. Srednja vrijednost ISQ-a u G1, odmah nakon ugradnje, iznosila je 57, a u G2 39. Nakon 4 mjeseca, u G1 iznosila je 67, a u G2 55. Statistički značajna razlika pronađena je za primarnu stabilnost u G1 ($p = 0,002$) nakon ugradnje implantata. Ista nije pronađena u vrijednostima ISQ-a između dvije skupine nakon 4 mjeseca od ugradnje implantata ($p = 0,065$). **Zaključak:** Visina alveolarnoga grebena igra veliku ulogu u postizanju primarne stabilnosti tijekom ugradnje implantata, ali nakon osseointegracije, sama visina nije se pokazala statistički značajnim čimbenikom za stabilnost implantata.

09 PROCJENA OSEOINTEGRACIJE DENTALNIH IMPLANTATA MJERENJEM ZASJENJENJA PODRUČJA INTERESA NA RVG SNIMKAMA

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Uvod: Radiološka dijagnoza je neizostavan parametar u planiranju i praćenju implantoprotske terapije te omogućuje procjenu kvalitete i kvantitete kosti. Svrha ovoga kliničkoga ispitivanja je praćenje promjene razine sivila u regijama interesa na kosti oko implantata pomoću specijaliziranoga računalnoga programa za kompjuteriziranu analizu na sukcesivnim RVG snimkama. **Materijali i metode:** U istraživanju je sudjelovalo 60 ispitanika podijeljenih u dvije skupine kojima je gubitak jednoga zuba u premolarnoj regiji gornje čeljusti nadomješten ugradnjom dentalnoga implantata Nobel Replace Tapered Groovy (Nobel Biocare, Gothenburg, Sweden). Ispitanicima u prvoj skupini implantat je ugrađen imedijatno, dok su drugoj skupini ispitanika implantati ugrađeni u formiranu alveolnu kost standardnom odgođenom tehnikom. Metal keramička krunica postavljena je 4-6 mjeseci nakon ugradnje implantata u kojem razdoblju implantati nisu bili funkcijski opterećeni. Računalnim su se programom mjerile digitalne snimke svakoga ispitanika regije interesa (veličine 0,5 mm x 0,5 mm i veličine 0,5 mm x 1,5 mm) na sedam mjesta oko implantata kroz tri puta (nakon ugradnje, 4-6 mjeseci nakon ugradnje, odnosno postavljanja suprastrukture i nakon godinu dana). Rezultati zasjenjenja su se uspoređivali s Osstell testom i kliničkim parametrima za dodatnu provjeru računalnoga programa. **Rezultati:** Promjene razine zasjenjenja su između skupina ispitanika bile statistički značajne

(test site) required patients to treat the wound with the gel containing microcapsulated granules based on natural extracts (GingiNat, LoB Foundation, Paris, France). In order to assess postoperative healing, patients were asked to fill out a questionnaire which evaluated postoperative pain, unpleasant feeling, plaque and bacteria accumulation and subjective rate of delivery by using Likert scale. The same questionnaire was filled out by a therapist at the check-up screening. **Results:** No adverse effects in the recovery period were recorded. The results showed a statistically significant difference in the postoperative recovery period in the test vs. control group ($p < 0,001$) in favor of the microcapsulated gel. According to the Likert scale, results showed that the tested gel showed less plaque accumulation, lack of unpleasantness, reduced postoperative pain and faster healing ($p < 0,001$) as opposed to the side where chlorhexidine gel was used. **Conclusion:** The results of this clinical study showed significantly improved healing of surgical wounds and a stronger analgesic effect after application of microcapsulated granules with natural extracts compared to standard chlorhexidine gel.

08 IMPLANT STABILITY AFTER LATERAL SINUS FLOOR ELEVATION BY MEANS OF ISQ MEASUREMENT- PRELIMINARY RESULTS

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Introduction: Placing dental implants in posterior regions in severely resorbed alveolar ridges is challenging procedure. Presence of maxillary sinus and alveolar ridge resorption after tooth loss leads to decreased bone volume and inability to place dental implants without bone augmentation. Lateral sinus floor elevation (LSFE) is highly predictable procedure that can be combined with simultaneous implant placement, shortening the treatment time.

Measurement of implant stability quotient (ISQ) is only available tool for quantifying implant stability. Measuring of primary stability during implant insertion is challenging, overstresses the implant and compromises its stability. **Aim:** Is to present a preliminary result of a study measuring ISQ of dental implants inserted simultaneously with LSFE. **Materials and methods:** In three healthy female patients, we inserted 12 dental implants simultaneously with LSFE. With the insertion of 7 implants residual alveolar ridge was more than 3mm, (average 5,4), group 1 (G1) and with 5 implants less than 3mm (average 1.4), group 2 (G2). Deproteinized bovine bone mineral with collagen membranes were used for augmentation after LSFE. ISQ was measured immediately after implant insertion and 4 months after osseointegration with Osstell. The results were statistically verified using t-test with significance level $p < 0,005$. **Results:** All implants osseointegrated uneventfully. Mean ISQ at the time of implant insertion in G1 was 57 and in G2, 39. Measurements after 4 months were for G1, 67 and for G2, 55. Statistically significant difference for primary implant stability was reached in G1 ($p = 0,002$) after implant insertion. No statistically significant difference between the two groups in the ISQ values was found after 4 months ($p = 0,065$). **Conclusion:** Height of the alveolar ridge played important role in achieving primary stability during implant insertion but did not showed statistically significant difference on implant stability after osseointegration period.

09 DENTAL IMPLANTS OSSEOINTEGRATION ASSESSMENT BY EVALUATING THE SHADING AREAS OF INTEREST ON THE RVG IMAGES

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Introduction: Radiological diagnosis is an indispensable parameter in planning and monitoring implant-prosthetic therapy which allows the estimation of bone quality and quantity. The aim of this research was to test the possibility of using a specialized software for digital RVG images analysis in order to find the areas of interest on the successive images and measure the average values of shading areas around the implants. **Materials and methods:** One hundred and eighty digital radiographs from 60 patients were processed, divided in two groups of 30, that had lost a tooth in the maxillary premolar region and replaced it with a NobelReplace™ Tapered Groovy (Nobel Biocare, Gothenburg, Sweden) dental implant. The first group consisted of patients who received immediate implant placements following tooth extraction, while the other group of patients received their implant placements in the healed sites. All patients received metal ceramic crowns four to six months after the implant placement. The implants were not exposed to functional loading prior to crown placement. The computer program was used to measure digital images of each patient's area of interest (sizes 0.5 mm x 0.5 mm and 0.5 mm x 1.5 mm) on seven positions around the implant at three time periods (after the implant placement, 4-6 months after the placement of implant suprastructure and after one year). To verify

($p < 0,001$), u smislu veće promjene zasjenjenja kod imedijatno ugrađenih implantata u odnosu na odgođenu implantaciju. Promjene razine zasjenjenja su korelirale s vrijednostima Osstell testa i parodontološkim indeksima. Pokazalo se da je za precizniji prikaz zasjenjenja kosti preporučljivo koristiti veću regiju interesa (0,5 mm x 1,5 mm) u odnosu na manju (0,5 mm x 0,5 mm). **Zaključak:** Imedijatna tehnika ugradnje dentalnih implantata pokazala je značajniju promjenu razine sivila tijekom godinu dana praćenja u usporedbi s odgođenom tehnikom. Analizirajući regije interesa ustanovljeno je da je cervikalno područje oko implantata najpodložnije promjeni razine sivila nakon funkcijskog opterećenja.

the computer program evaluation, the results of shading areas were compared using the Osstell test and clinical parameters. **Results:** Changes in the levels of shading between the subjects were statistically significant ($p < 0.001$). Greater shading effect was noticed in immediate implantation than the one in delayed implantation cases. Changes in the shading level correlated with Osstell test values and periodontal indexes. It has been suggested to use a larger area of interest (0.5 mm x 1.5 mm) in relation to the smaller (0.5 mm x 0.5 mm) one, for a more accurate view of bone shading. **Conclusion:** Immediate dental implant placement technique showed a more significant change in gray levels during the one-year follow-up, compared to the delayed technique. Analyzing the regions of interest, it was found that the cervical region around the implant is most likely to change the gray levels after functional loading.

O10 IMPLANTO-PROTETSKA REHABILITACIJA PACIJENTA S MULTIFRAGMENTNOM BILATERALNOM FRAKTUROM KORPUSA MANDIBULE I VIŠESTRUKIM AVULZIJAMA ZUBA

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Uvod: Maksilofacijalna trauma može rezultirati gubitkom zuba unatoč najvećim naporima u zadržavanju i održavanju traumatiziranih zuba. Gornji i donji prednji zubi imaju veću predispoziciju za traumatsku ozljedu, a njihov gubitak može rezultirati značajnim estetskim i funkcijskim problemima. U slučaju kada se traumatizirani zubi indiciraju za ekstrakciju radi loše prognoze, planiranje rekonstrukcije može započeti u ranoj fazi. **Prikaz slučaja:** Tridesetogodišnji pacijent se javio u Zavod za oralnu kirurgiju KBC Zagreb zbog implantoprotetske rehabilitacije nakon multifragmentne bilateralne frakture korpusa mandibule i avulzije zubi 31,32,33 te 21 uzrokovane traumom u tučnjavi. Četiri mjeseca pred dolazak u Zavod pacijent je bio zaprimljen u Hitnoj službi Klinike za kirurgiju lica, čeljusti i usta, KB Dubrava, zbog sumnje na frakturu korpusa i alveolarnoga grebena mandibule te avulzije 4 zuba. Na MSCT pregledu donje čeljusti opisana je multifragmentna fraktura korpusa mandibule bilateralno parasimfizealno, uz anteriorni pomak koštanih fragmenata te također i multifragmentna fraktura alveolarnoga nastavka premaksile lijevo. Dan poslije učinjena je repozicija i osteosinteza mandibule pločicama 2.0 i 1.2 te je poslijeoperacijski postavljen kompozitno-žičani splint. Dva mjeseca nakon operacije uklonjen je splint te zubi 41 i 42 koji su bili označeni stupnjem 3 mobilnosti. Četiri mjeseca nakon isplanirana je implanto-protetska terapija koja je uključivala postavljanje dva implantata u području 33, 42 te 21. U prvoj kirurškoj fazi uklonjena je osteosintetska pločica sa simfize te su ugrađena dva implantata u donjoj čeljusti i jedan implantat u gornjoj čeljusti u položaju prethodne traume središnjega sjekutića. Pet mjeseci nakon ugradnje implantata završena je protetska rehabilitacija. Protetska reabilitacija počela je analizom studijskih modela u artikulatu i planiranjem konačne protetske terapije. Obzirom na kliničku situaciju, pacijentu je predložena izrada pojedinačne metal-keramičke krunice na implantatu u položaju 21 te metal-keramičkoga mosta nošenoga implantatima u položajima 33 i 42. Oba protetska rada retinirana su vijcima. Nakon predaje protetskih radova, učinjena je kontrolna rentgenska snimka koja potvrđuje ispravnost dosjeda protetskih komponenti. **Zaključak:** Implanto-protetska rehabilitacija uspješna je i predvidljiva terapija u zbrinjavanju bolesnika nakon maksilofacijalne traume.

O10 IMPLANTOPROSTHETIC REHABILITATION OF A PATIENT WITH A MULTIFRAGMENTAL BILATERAL FRACTURE OF THE MANDIBULAR CORPUS AND MULTIPLE TOOTH AVULSIONS

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Introduction: Maxillofacial trauma can result in tooth loss despite the efforts in retention and maintenance of traumatized teeth. The upper and lower front teeth have a greater predisposition to traumatic injury and their loss can result in significant aesthetic and functional problems. **Case report:** A 30-year-old patient was referred to the Department of Oral Surgery due to the implant-prosthodontic rehabilitation after a multi-fragmental bilateral mandibular fracture and avulsions of the teeth #31,32,33 and 21 caused by a bar fight. Four months before he was admitted to the Oral and Maxillofacial Surgery, University Hospital Dubrava due to the suspected fracture of the corpus and the alveolar ridge of the mandible and the avulsion of four teeth. The MSCT examination of the lower jaw showed a multi-fragmental bilateral fracture of mandibular corpus, with anterior displacement of the bone fragments, as well as the multi-fragmental fracture of the left alveolar process. The day after, repositioning and osteosynthesis of the mandible was performed using 2.0 and 1.2 plates and postoperatively, composite-wire splint was placed. Two months after the operation, teeth #41 and #42 were extracted, as they were marked with mobility grade 3. Four months after, implant-prosthodontic therapy was planned with the placing of two implants in region #33, 42 and 21. In the first surgical stage, the osteosynthetic plate was removed and two implants were placed in the lower jaw and one implant in the upper jaw. Five months after placing of implants, prosthodontic rehabilitation was completed. Prosthodontic rehabilitation began with the study model analysis in the articulator and by planning of the final prosthodontic therapy. Considering the clinical situation, single metal ceramic crowns on the implant at position #21 and metal ceramic bridge on the implants at positions 33 and 42 were proposed. Prosthodontic supra-structures were fixed with screws to the implants. A control x-ray image was taken to confirm the correctness of the prosthodontic components. **Conclusion:** Implant-prosthodontic rehabilitation is a successful and predictable therapy in treatment of patients after maxillofacial trauma.

O11 IMPLANTO-PROTETSKA REHABILITACIJA NAKON TRAUME ZUBA U FRONTI – PREZERVACIJA ALVEOLE PRIMJENOM FAKTORA RASTA I BIOLOŠKOM OSTEOTOMIJOM – PRIKAZ SLUČAJA

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U današnje doba moderne stomatologije, kirurško zbrinjavanje estetske zone predstavlja specifičan izazov. Najveći problem kliničaru predstavljaju predvidljivost i dugotrajnost, povezani sa zdravljem tkiva, postavom implantata, prokrvljenošću okolnoga tkiva kao i njegovoj debljini, protetskoj sanaciji i odsutnosti eventualne upale. Korištenje biokompatibilnih materijala u svrhu augmentacije potpornoga tkiva je uglavnom neophodni dio kirurške rekonstrukcije da bi se zadovoljila funkcija i estetika implantoprotetskoga rješenja. Svi biokompatibilni materijali na tržištu zadovoljavaju određene specifikacije koje su potrebne za uspješni završni rezultat, izuzev autolognoga transplantata koji zadovoljava sve uvjete donorskoga tkiva. Postoje više tehnika uzimanja donorskoga tkiva koji u većini slučajeva zahtijeva otvaranje još jednog operativnoga polja. Poštedna metoda uključuje sakupljanje autologne kosti prilikom tzv. biološke osteotomije. Biološka preparacija/osteotomija pri maloj brzini svrdla bez hlađenja je tehnika koja olakšava prikupljanje autologne kosti tijekom preparacije; na ovaj način se velika količina autologne kosti može koristiti

O11 IMPLANT-PROSTHODONTIC REHABILITATION AFTER DENTAL TRAUMA IN THE AESTHETIC ZONE – SOCKET PRESERVATION WITH PRGF AND BIOLOGICAL OSTEOTOMY

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In today's era of modern dentistry, surgical approach in the aesthetic zone gives an advanced challenge for the clinician. The biggest issue is the predictability and durability of the end result, combined with tissue health, implant placement, blood flow, thickness of the tissue, prosthodontics and lack of inflammation. The use of biocompatible materials for augmentation and tissue support are often an important asset in tissue reconstruction for achieving good aesthetic and implant-prosthodontic result. All bio-compatible materials on the market meet some of the requirements for a successful result, but the autologous bone transplants meet all of the requirements. There are multiple techniques for harvesting autologous bone which in most cases require opening of another surgical area. Creating an artificial socket with a biological drill presents a less invasive method for harvesting autologous bone. The bio-drill uses small rpm with no irrigation, so it can harvest all of the bone removed before the implant placement. The speed is set to 50 - 125 rpm, which does not raise the temperature of the bone above 29°C. By this, the bone keeps the

kao autotransplantant. Svrha biološke preparacije je upotreba posebnih svrdala koja imaju svrhu sakupljanja autogene kosti s mjesta preparacije. Brzina okretanja svrdala je znatno manja, od 50-125 rpm. Takva brzina omogućava zagrijavanje kosti iznad 29°C te omogućava održavanje vitalnosti stanica kosti koja je narušena za vrijeme klasične preparacije alveole. Autologna kost se onda može koristiti u korekciji defekta alveolarnoga grebena zajedno s plazmom obogaćenom faktorima rasta. Prednost autogene kosti je što sadrži žive stanice te omogućava bržu angiogenezu te s time i uspostavu nove cirkulacije i manji gubitak transplantirane kosti kao i bolju predvidljivost i rezultat kirurškoga zahvata. Time nadopunjava osteokonduktivnu, osteoinduktivnu i osteogenu funkciju materijala za augmentaciju. Prikazujemo slučaj prezervacije alveole područja 21 nakon vađenja zuba s prethodnom anamnezom traume, uz augmentaciju kombinacijom ksenografa i plazme obogaćene faktorima rasta (PRGF) u prvoj fazi te biološkom osteotomijom pri ugradnji implantata (BTI) u drugoj fazi, uz temporarizaciju.

012 ORTODONTSKO-IMPLANTO-PROTETSKO ZBRINJAVANJE TRAUMATSKE OZLJEDE GORNJEGA SREDIŠNJEGA SJEKUTIČA – PRIKAZ SLUČAJA

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Traumatske ozljede tvrdih zubnih tkiva u djece i adolescenata, unatoč napretku terapijskih tehnika i postupaka, i dalje predstavljaju ozbiljan terapijski problem u slučajevima u kojima dolazi do izravnog ili neizravnog gubitka jednog ili više zubi. Budući da su fiksno-protetski i implantoprotetski terapijski postupci kontraindicirani prije završetka rasta i razvoja, klinički se slučajevi zbrinjavaju višefazno. U nekim kliničkim slučajevima ne dolazi do gubitka jednog ili više zubi izravnim djelovanjem traume, nego do gubitka zuba dolazi neizravno, kao posljedica naknadno nastalih kliničkih komplikacija poput vanjske resorpcije korijena, vertikalne ili horizontalne frakture i sličnih stanja koje zahtijevaju vadenje. Prikazujemo klinički slučaj, s multidisciplinarnim pristupom, koji uključuje ortodontsku te implanto-protetsku terapiju. Muški pacijent, rođen u rujnu 1998. godine, započeo je s ortodontskom terapijom u veljači 2013. godine. U studenome 2014. godine stradao je u prometnoj nezgodi kao pješak, pri čemu je zadobio nekomplikirani prijelom zuba 11 i komplikirani prijelom zuba 21 koji je zahtijevao endodontsko liječenje te klasičnu restorativnu nadoknadu kompozitnim materijalima. Ortodontska terapija završila je u veljači 2015. godine. U travnju 2016. dolazi do komplikacija sa zubom 21 na kojem je uočen višefragmentni vertikalni prijelom korijena s fenestracijskim defektom bukalne stijenke alveole. Terapijski pristup sastojao se u ortodontski poptomognutoj i kontroliranoj ekstrakciji zuba 21 na kojem je prethodno napravljena nadogradnja pomoću kompozitnog kolčića ojačanog staklenim vlaknima te privremene akrilatne CAD/CAM krune. Ekstruzija zuba učinjena je fiksnom ortodontskom napravom, s bravicom na privremenoj krunici zuba 21. Sila ekstruzije postignuta je ljepljenjem bravice 1 mm apikalnije uz 4 tjedna aktivne ekstruzije, te 4 tjedna stabilizacije. Nakon kliničke procjene položaja preostalog dijela korijena zuba 21 te CBCT snimke i potvrde količine i gustoće novostvorene kosti, započelo se s implanto-protetskim zbrinjavanjem gubitka zuba 21. Imedijatno je postavljen dentalni implantat Ankylos c/x (Sirona Dentsply, Njemačka) te imedijatno unutar 24 sata, izrađena privremena akrilatna CAD/CAM krunica na privremenoj PEEK nadogradnji. U rujnu 2017. godine, završena je ortodontska terapija te na zubu 11 izrađena privremena akrilatna CAD/CAM ljuska, a na implantatu u položaju 21, nova akrilatna CAD/CAM krunica. Ovakvim je pristupom osiguran estetski i funkcijski zadovoljavajući protetski rad koji može biti u funkciji do završetka rasta i ravoja i izrade konačnih protetskih radova.

013 FIKSNI ILI MOBILNI PROTETSKI RAD?

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Implanto protetska rehabilitacija bezube gornje čeljusti jedan je od najzahtjevnijih izazova u protetskoj terapiji zbog velikoga broja čimbenika, kako estetskih tako i funkcijskih, koje protetski rad treba zadovoljiti. Fiksni i mobilni implanto protetski radovi predstavljaju dvije opcije i dva dizajna koje primjenjujemo u rehabilitaciji bezube maksile. Budući da klinička slika i estetski zahtjevi variraju kod svakog pacijenta, potrebno je više vremena posvetiti u planiranju budućega protetskoga rada i pomno provesti dijagnostičke postupke, kako bismo bili sigurni da ćemo moći udovoljiti zahtjevima pacijenta i u konačnici ima-

cell stability and vitality which is not the case in the classic approach, due to high rotation irrigation and kinetic energy. Autologous bone can then be used in combination with growth factors for alveolar bone corrections. The advantage of autologous bone is that it contains live donor cells, which help achieving faster angiogenesis and reduce the overall bone loss. Furthermore, it provides better end-results, predictability and long-term stability of the surgical field. The autologous bone has an osteo-conductive, osteo-inductive and osteogenic properties as a donor material for bone augmentation. We will present a case of a socket preservation in the upper first incisor region after trauma, using the combination of xenograft and growth factors (PRGF) in the first phase, and bio-drill, implant and temporary crown placement in the second phase.

012 ORTHODONTIC-IMPLANT-PROSTHODONTIC TREATMENT OF THE TRAUMATIC UPPER-CENTRAL INCISOR INJURY - CASE REPORT

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Despite the advancement of therapeutic techniques and procedures, traumatic hard tissue injuries in children and adolescents still represent a serious therapeutic problem, especially the cases of direct or indirect loss of one or more teeth. In such traumatic injuries, we usually encounter clinically simple and complicated tooth crown fractures, less commonly root fractures, subluxations and tooth avulsions. Since fixed-prosthetic and implant-prosthetic therapeutic procedures are not indicated before a certain age i.e. before the end of growth and development, treatment often consists of several phases. Most often, cases with loss of one or more teeth are prosthetically treated by mobile-prosthetic appliances, as a transitional solution till the end of growth and development, when it will be possible to implement the final prosthetic therapy. Sometimes, the loss of one or more teeth is not the result directly from trauma, but indirect, as a consequence of subsequent complications, such as external root resorption, vertical or horizontal fractures and similar conditions requiring extraction. Prior to tooth extraction, it is necessary to elaborate the therapeutic plan in detail, primarily in terms of temporary and final prosthetic restoration, as well as the timing and dynamics of their implementation. We will present a case with a multidisciplinary approach, involving orthodontic therapy and implant prosthetics. A male patient, born in September 1998, started the orthodontic therapy in February 2013. In November 2014, he had been in a car accident as a pedestrian, which resulted in an uncomplicated fracture of the upper right first incisor and a complicated tooth fracture of the upper left first incisor, which required endodontic treatment and classical restoration with composite materials. Orthodontic therapy ended in February 2015. In April 2016, there was a complication with the upper left first incisor. A multi-fragmental vertical fracture of the tooth root, with a fenestration defect of the buccal alveolar wall was observed. The therapeutic approach consisted in orthodontically assisted and controlled extraction of the upper left first incisor that was previously restored with a prefabricated glass-fiber-reinforced composite post and a temporary acrylic CAD/CAM crown. The tooth extrusion was performed by a fixed orthodontic device, a bracket on the temporary crown of the upper left first incisor. The extrusion force was achieved by gluing the bracket 1 mm more apically. Active extrusion lasted 4 weeks and another 4 weeks the stabilization phase. After the clinical evaluation of the tooth position, CBCT imaging and confirmation of the adequate new bone density and volume, implant-prosthetic treatment was initiated. Immediately after the placement of an ANKYLOS c/x implant, temporary acrylic CAD/CAM crown on temporary PEEK abutment was provided for the next 24 hours. In September 2017, orthodontic therapy was completed and a temporary acrylic CAD/CAM veneer was placed on the upper right first incisor and a new acrylic CAD/CAM crown on the implant at position #21. This approach enabled an aesthetically and functionally satisfying prosthetic restoration, which will be able active until the end of bone growth, when finally, the definite prosthetic restoration will be provided.

013 FIXED OR REMOVABLE PROSTHETIC RESTORATION?

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Implant rehabilitation of the edentulous maxilla remains one of the most complex restorative challenges because of the number of variables that affect both the aesthetic and functional aspect of the prosthesis. Among the prosthesis designs used to treat the edentulous maxilla there are fixed or removable implant-supported restorations. Since the aesthetic requirements and preoperative situation of each patient varies, considerable time must be spent on accurate diagnosis to ensure that patients' desires are satisfied and predictable outcomes are achieved. The purpose of this lecture is to compare the treatment op-

ti predvidljivi ishod protetske rehabilitacije. Cilj predavanja je usporediti postupke izrade i dizajna fiksnih i mobilnih protetskih radova nošenih implantatima na bezuboj maksili. Naročito će biti istaknuta važnost planiranja i dijagnostičkih postupaka prije donošenja odluke o vrsti i dizajnu protetskoga rada. Neki od kriterija će moći poslužiti kliničarima u svakodnevnoj praksi kao smjernice prilikom donošenja odluke o vrsti (fiksna ili mobilna) protetskoga rada.

tions and prosthesis designs for the edentulous maxilla. Emphasis will be placed on diagnosis and treatment planning. Criteria will be given to guide the practitioner in deciding whether a fixed or removable restoration should be placed.

O14 UTJECAJ ANTIMIKROBNE FOTODINAMSKJE TERAPIJE (APDT) I SVJETLOSNO-AKTIVIRAJUĆE DEZINFEKCIJE (LAD) NA KONTAMINIRANE TITANSKE I CIRKONSKE IMPLANTATE – IN VITRO STUDIJA

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Uvod: Periimplantitis je upalni proces koji zahvaća meka i tvrda tkiva oko implantata, rezultirajući gubitkom potpornoga tkiva. Mikroorganizmi koji nastanjuju površinu implantata smatraju se inicijalnim uzrokom periimplantitisa. Cilj liječenja periimplantitisa je zaustavljanje upalnoga procesa i gubitka koštanoga tkiva. Cilj istraživanja je procijeniti i usporediti utjecaj antimikrobne fotodinamske terapije i svjetlosno-aktivirajuće dezinfekcije na kontaminiranu površinu dentalnih implantata. **Materijali i metode:** Istraživanje se temeljilo na 144 sterilna dentalna implantata, od kojih su 72 implantata bila titanska i 72 od cirkona. Implantati su kontaminirani s bakterijskom suspenzijom i inkubirani u anaerobnim uvjetima 72h. Naknadno, implantati su podijeljeni u 6 skupina i tretirani narednim redoslijedom. Skupine 1 i 2 su tretirane s dva PDT uređaja. Implantati u skupini 3 (LAD) su tretirani pomoću modificiranog LED svjetla. Skupina 4 je tretirana pomoću fotosenzitivnog bojila, skupina 5 s 0,2% otopinom klorheksidina, a skupina 6 nije bila tretirana i služila je kao negativna kontrolna skupina. Nakon liječenja, implantati su postavljeni u Eppendorf tubice s PBS-om. Tubice su vortexirane te je 0,1ml uzet iz svake tubice i postavljen u posude s Brucella agarom. Nakon 72h mjerene su jedinice koje tvore kolonije (eng. Colony Forming Units, CFU). **Rezultati:** Kada se međusobno uspoređuju, cirkonski implantati su pokazali statistički značajno manju bakterijsku kontaminaciju od titanskih. Skupine 1 i 2 su pokazale najveću bakterijsku redukciju ($p < 0.05$) kod titanskih implantata. Statistički značajna redukcija bila je vidljiva u skupinama 1,2,3 i 5. **Zaključak:** aPDT može predstavljati zadovoljavajuću alternativu za dekontaminaciju titanskih i cirkonskih dentalnih implantata. LAD je, s druge strane, bio djelotvoran samo kod cirkonskih dentalnih implantata.

O14 THE EFFECT OF ANTIMICROBIAL PHOTODYNAMIC THERAPY (APDT) AND LIGHT-ACTIVATED DISINFECTION (LAD) ON CONTAMINATED TITANIUM AND ZIRCONIA IMPLANTS - IN VITRO STUDY

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Background: Peri-implantitis is an inflammatory process affecting the soft and hard tissue around an osseointegrated implant, resulting in the loss of supporting bone. Microorganisms living on the implant surface are considered to be the initial cause of peri-implantitis. The goal of treating peri-implantitis is to stop the inflammatory process and the bone loss that occurred as a result of the disease. Aim of this study was to evaluate and compare the effect of antimicrobial photodynamic therapy and light-activated disinfection on contaminated dental implants. **Materials and Methods:** The study was performed on 144 sterile dental implants of which 72 titanium and 72 zirconia dental implants. The implants were contaminated with a bacterial suspension and incubated in anaerobic conditions for 72h. Then the implants were divided into 6 groups and treated accordingly. Group 1 and 2 were treated using two different PDT devices. The implants belonging to Group 3 (LAD) were treated using modified red LED light. Group 4 was treated using only photosensitive dye, Group 5 using 0.2 % chlorhexidine solution and Group 6 was left untreated and served as a negative control group. After treatment the implants were put into Eppendorf tubes containing PBS, they were vortexed and 0.1 ml was taken out of each tube and placed in Brucella agar plates. After 72h colony forming units (CFUs) were counted. **Results:** When compared to each other, the zirconia dental implants showed significantly less bacterial contamination than the titanium dental implants. Group 1 and 2 showed the largest bacterial reduction ($p < 0.05$) for the titanium dental implants. As for the zirconia dental implants, statistically significant reduction was seen in Group 1, 2, 3 and 5. **Conclusion:** In conclusion, aPDT can be a successful alternative tool for decontaminating both titanium and zirconia dental implants. LAD on the other hand was effective only for the zirconia dental implants.

O15 BIACOM™ - OD IDEJE DO RAZVOJA HRVATSKOGA TiMg IMPLANTATA

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Svrha rada je predstaviti logiku ideje te tijek i razvojne faze inovativnoga proizvoda s potencijalom primjene u dentalnoj implantologiji. Titanij i titanijev legure koriste se za izradu dentalnih implantata prvenstveno zbog svoje biokompatibilnosti i dobrih mehaničkih svojstava. Međutim, ovi materijali imaju i određenih nedostataka od kojih su najvažniji visoka cijena proizvodnje, složenost površine koja je ključan čimbenik bioaktivnosti, te "stress shielding" efekt koji predstavlja problem u mehanici heterogenoga sustava krutih tijela različitih mehaničkih značajki u kontaktu pod opterećenjem. Kreiranje metalnoga kompozita TiMg teorijski je moglo unaprijediti sve navedene značajke gradivnoga materijala implantata, te bi takav kompozit mogao biti postignut metalurgijom praha s obzirom na nemogućnost lijevanja Mg u Ti. Biti će prikazani postupci izrade TiMg metalnog kompozita, i razvojne faze koje su činili različiti statički i dinamički testovi, biokorozijski testovi uzoraka materijala i *in vivo* testovi izrađenih implantata i njihovi rezultati. Ovo istraživanje rezultiralo je stvaranjem novoga materijala za dentalne implantate BIACOM™ - bioaktivnoga metalnoga kompozita.

O15 BIACOM™ - FROM AN IDEA TO DEVELOPMENT OF CROATIAN TiMg IMPLANT

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Engineering and Naval Architecture

The aim was to present the idea, logic and research and development workflow phases of a new innovative material with application potential in dental implantology. Titanium and its alloys have been used in production of dental implants foremost due to their biocompatibility and adequate mechanical characteristics. However, these materials have also certain downsides, most important being high production cost, surface complexity as a key factor in bioactivity, and the stress shielding effect. The stress shielding effect presents a significant problem in mechanics of heterogeneous bodies in contact under loading. Creation of a TiMg metal composite in theory could improve all the aforementioned characteristics of dental implant material. Due to inability of Mg to alloy with Ti, such composite material would have to be produced through the powder metallurgy. This paper will present the production steps of the TiMg metal composite and R&D phases, which consisted of various static and dynamic loading tests, biocorrosion tests, *in vivo* tests of produced experimental implants, and their results. This research had resulted in development of a new material for dental implants BIACOM™ - bioactive metal composite.

Poster prezentacije

P1 ZNANJE O DENTALNIM IMPLANTATIMA STARIJEGA HRVATSKOGA STANOVNIŠTVA S OZBIROM NA DOB I SPOL ISPITANIKAKranjčić J¹, Mikuš A², Žabarović D^{3,5}, Peršić S³, Kovačić I³, Čelebić A^{3,4}, Juroš I⁵, Vojvodić D^{1,5}¹Zavod za fiksnu protetiku, Stomatološki fakultet Sveučilišta u Zagrebu;²Stomatološka poliklinika Zagreb; ³Zavod za mobilnu protetiku, Stomatološki fakultet Sveučilišta u Zagrebu; ⁴Klinika za stomatologiju, Klinički bolnički centar Zagreb; ⁵Klinički zavod za stomatološku protetiku, Klinička bolnica Dubrava, Zagreb

Svrha: Retencijom proteze na dentalnim implantatima (DI) kod izrazito resorbiranih alveolarnih grebena pozitivno se utječe na funkcionalnost proteza, ali i na zadovoljstvo pacijenata protezama. Stoga je svrha istraživanja bila ispitati znanje o DI starijega hrvatskoga stanovništva s obzirom na dob i spol ispitanika. **Ispitanici i postupci:** Ispitivani uzorak činio je 301 ispitanik – nositelj potpune proteze u dobi od 60 do 99 godina, prosječne starosti 74 godine. Od toga su 202 (67%) ispitanika činile osobe ženskoga, a 99 (33%) ispitanika osobe muškoga spola. Istraživanje je provedeno u domovima za starije i nemoćne osobe. Osim što su odgovarali na pitanja o osobnim podacima (dob i spol), ispunili su upitnik na temelju kojeg se procijenilo njihovo znanje o DI. Statistička analiza podataka provedena je na razini značajnosti od $p < 0,05$. **Rezultati:** Ispitanici su podijeljeni u četiri dobne skupine: do 65 godina - 67 ispitanika (22,3%), od 66 do 75 godina - 88 ispitanika (29,2%), od 76 do 85 godina - 84 ispitanika (27,9%), te stariji od 85 godina - 62 ispitanika (20,6%). Dob ispitanika statistički je značajno utjecala na znanje o DI ($p < 0,05$). Većina ispitanika mlađih od 65 godina čula je za DI, za mogućnost retencije potpunih proteza DI te vjerovala u uspješnost retencije potpunih proteza DI ($p < 0,05$). Stariji ispitanici smatrali su da se ugradnja dentalnih implantata obavlja pod općom anestezijom uz hospitalizaciju ($p < 0,05$). Kada bi im financijska situacija dozvolila, samo bi većina ispitanika starosti do 65 godina pristala na takav zahvat ($p < 0,05$). S obzirom na spol, žene su u većem broju pokazale strah od postupka ugradnje DI ($p < 0,05$). **Zaključak:** Dob ispitanika utječe na znanje o DI. Stariji ispitanici slabije su informirani o DI i mogućnostima implantoproteske terapije. Spol ispitanika ne utječe na znanje o DI, osim na strah od postupka ugradnje DI koji se češće javlja u žena.

P2 IMEDIJATNA IMPLANTACIJA UZ PRIMJENU AUTOLOGNOGA VEZIVNOGA TRANSPLANTATAJerković D¹, Đanić P², Brajdić D³, Biočić J², Grgić N³, Bajani T⁴, Macan D².¹Privatna ordinacija Dr. Mario Mendeš, Makarska; ²Zavod za oralnu kirurgiju, Klinika za kirurgiju lica, čeljusti i usta, Klinička bolnica Dubrava, Stomatološki fakultet Sveučilišta u Zagrebu; ³Dom zdravlja Bjelovar; ⁴Dentalni laboratorij, Zagreb

Imedijatna implantacija je tehnika kojom se neposredno nakon vađenja zuba u ekstrakcijsku alveolu ugrađuje implantat kako bi se skratilo vrijeme liječenja, broj zahvata, očuvale koštane stijenke, omogućilo bolje cijeljenje mekoga tkiva te u konačnici dobio zadovoljavajući estetski rezultat. Glavna načela imedijatne implantacije podrazumijevaju postojanje adekvatne kvantitete i kvalitete bukalne kosti te biotipa tkiva, trodimenzionalno pozicioniranje uz postizanje primarne stabilnosti implantata, izbor implantata, te adekvatna rezervacija koštanoga prostora između implantata i okolne kosti. Uspješnost same terapije je jednako predvidljiva kao i odgođena implantacija, te iznosi od 93 do 100%. Cilj ovoga postera je prikazati implantoprotetsku rehabilitaciju pacijenta uz primjenu autolognoga vezivnoga transplantata kod imedijatne implantacije koji omogućuju dugoročni estetski i funkcijski uspjeh. Prikazujemo slučaj 33-godišnjeg zdravog pacijenta koji se javio u ambulantu zbog prijeloma palatinalnoga dijela krune zuba 25. Kliničkim pregledom i analizom CBCT-a uočio se prijelom krune i korijena endodontski liječenoga zuba 25 s nedostatkom tvrdoga zubnoga tkiva do 5 mm ispod razine marginalne gingive i gubitkom palatinalnoga krotikalisa od 2 mm. Zub nije bilo moguće protetski restaurirati, te je predložena imedijatna implantacija uz primjenu autolognoga vezivnoga transplantata. Zub amo atraumatski izvadili bez odizanja reznja kako bi se minimalizirala resorpcija kosti uz maksimalno očuvanje okolnoga mekoga tkiva. Ležište implantata smo ispreparirali palatinalno, te ugradili implantat (Astra tech®, Syrona Dentsplay, Njemačka) dimenzija 4.0x11 mm uz postizanje primarne stabilnosti. Prostor između implantata i bukalne kosti, te palatinalni koštani defekt ispunili smo ksenograftom (Bio-Oss®, Geistlich, Švicarska). Nakon uzimanja vezivnoga transplantata s nepca isti smo fiksirali uz pomoć gingiva formera, te postavili preko implantata i ksenografta u cilju zaštite koštanoga nadomjestka i augmentacije mekoga tkiva. Nakon 3 mjeseca urednoga cijeljenja pacijent je opskrbljen individualiziranom CAD-CAM hibridnom abutment cirkon-oksidsnom kreamičkom krunicom na

Poster presentations

P1 KNOWLEDGE ABOUT DENTAL IMPLANTS AMONG THE ELDERLY CROATIAN POPULATION CONSIDERING AGE AND GENDERKranjčić J¹, Mikuš A², Žabarović D^{3,5}, Peršić S³, Kovačić I³, Čelebić A^{3,4}, Juroš I⁵, Vojvodić D^{1,5}¹Department of Fixed Prosthodontics, University of Zagreb School of Dental Medicine; ²Zagreb Polyclinic of Dental Medicine; ³Department of Removable Prosthodontics, University of Zagreb School of Dental Medicine; ⁴Department of Prosthodontics, University Hospital Centre Zagreb; ⁵Department of Prosthodontics, University Hospital Dubrava, Zagreb, Croatia

Aim: Retention of complete removable dental prosthesis (CRDP) on dental implants (DIs) in highly resorbed alveolar ridges affects positively on CRDP functionality, as well as on the patient's satisfaction with CRDP. Therefore, the aim of this study was to examine the knowledge on DIs among elderly Croatian population considering age and gender. **Participants and methods:** The study included 301 participants – respondents with CRDP from 60 to 99 years of age, with an average age of 74 years of age. There were 202 (67%) female participants and 99 (33%) male participants. The study was performed among residents of the elderly care homes. Participants answered the questions about personal data (age and gender) and completed the questionnaire designed to assess their knowledge on DIs. The results were statistically analysed with a significance level of $p < 0.05$. **Results:** The participants were divided in four age groups: 67 participants (22.3%) were younger than 65 years of age, 88 (29.2%) were aged between 66 and 75 years, 84 (27.9%) were aged between 76 and 85 years, while 62 (20.6%) were older than 85 years. Age significantly affected the participants' knowledge on DIs ($p < 0.05$). The most of participants younger than 65 years of age had heard about DIs and about the possibility of retaining CRDP using DIs ($p < 0.05$). Also, they had believed that Dis could improve the retaining possibilities of CRDP ($p < 0.05$). Older participants believed that the placement of DIs is performed under general anaesthesia with the required hospitalization ($p < 0.05$). A majority of younger than 65 years of age would accept DIs placement if their financial situation would allow it ($p < 0.05$). Regarding gender, female participants were more afraid of the DIs placement procedure ($p < 0.05$). **Conclusion:** Knowledge on DIs is affected by participants' age. Older participants were poorly informed about DIs and the possibilities of implant-prosthodontic therapy. Gender doesn't affect participants' knowledge on Dis, but female participants were more afraid of DIs placement procedure.

P2 IMMEDIATE DENTAL IMPLANT PLACEMENT WITH AUTOGENOUS CONNECTIVE TISSUE GRAFTJerković D¹, Đanić P², Brajdić D³, Biočić J², Grgić N³, Bajani T⁴, Macan D².¹Private practice Dr. Mario Mendeš, Makarska; ²Department of Maxillofacial and Oral Surgery, University Hospital Dubrava, School of Dental Medicine University of Zagreb; ³Health Center Bjelovar; ⁴Dental laboratory, Zagreb, Croatia

Immediate dental implant placement is a technique in which, immediately after tooth extraction, an implant is placed into the fresh extraction socket in order to reduce treatment time, number of interventions, preserve bony walls, enhance soft tissue healing and finally, to achieve an aesthetically satisfactory result. The main principles of immediate implantation imply the existence of adequate quantity and quality of the buccal plate and tissue biotype, three-dimensional positioning with primary implant stability, choosing the adequate implant design and adequate preservation of the bone area between the implant and the buccal plate. The success rate of the therapy itself is equally predictable as delayed implantation, ranging from 93 to 100%. The aim of this poster is to present implant-prosthodontic rehabilitation of the patient, using the autogenous connective tissue graft with immediate implantation, which provided a long-term aesthetic and functional result. We will present a case of a 33-year-old healthy patient who came to the Department of Oral Surgery with a fracture of the palatal part of the tooth crown of the upper left second premolar. Clinical examination and CBCT analysis revealed a fracture of the crown and root of an endodontically treated upper left second premolar, a lack of hard tissue up to 5 mm below the level of the marginal gingiva and the 2mm loss of palatal cortical bone. It was not possible to prosthetically restore the tooth and immediate dental implant placement with the use of autogenous connective tissue transplant was proposed. The upper left second premolar was removed atraumatically, without lifting the flap, in order to minimize bone resorption and preserve the surrounding soft tissue. A 4.0x11 mm dimension implant (Astra tech®, Syrona Dentsplay, Germany) was placed and primary stability achieved. The space between the implant and the buccal plate and the palatal bone defect was filled with xenograft material (Bio-Oss®, Geistlich, Switzerland). After taking the connective tissue graft from the palate, the graft was fixed with a gingiva former and placed over the implant to protect the xenograft material and to augment the soft tissues. After

vijak. Jednogodišnje kliničko i radiološko praćenje pokazalo je stabilnu i zadovoljavajuću estetsku i funkcijsku rehabilitaciju.

three months of healing, the patient was supplied with an individualized CAD-CAM hybrid abutment zirconium-oxide ceramic screw crown. One year later, clinical and radiological monitoring revealed a stable and satisfying aesthetic and functional rehabilitation.

P3 IMEDIJATNO POSTAVLJANJE DENTALNIH IMPLANTATA U MOLARNOJ REGIJI DONJE ČELJISTI

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Imedijatna postava dentalnih implantata je dobro dokumentirani postupak koji se rabi posljednjih 30 godina i označava postavu implantata u svježju postekstrakcijsku alveolu. Glavne prednosti ovoga postupka su smanjeni broj kirurških postupaka i skraćeno ukupno vrijeme liječenja što psihološki pozitivno utječe na pacijenta. Zubni karijes najviše zahvaća zube u stražnjim dijelovima čeljusti te dovodi do preranoga gubitka tih zuba. Ovi zubi su višekorijenski te čine poseban izazov prilikom vađenja i imedijatne implantacije. Ta nam je regija također zanimljiva zbog poroznije kosti kao i vitalnih struktura poput mandibularnoga kanala. Atramaatsko vađenje zuba izrazito je bitno kako bi se sačuvalo što više kosti te tako omogućio povećan kontakt kosti i površine implantata. Izrazito bitno je ne oštetiti koštani septum jer je upravo on glavni nositelj primarne stabilnosti implantata. Kontraindikacije za imedijatnu implantaciju su prisutnost purulencije te nedostatak kosti koja bi omogućila primarnu stabilnost implantata. S obzirom da je promjer implantata često manji od promjera alveoli, nakon implantacije postoji praznina između alveolarne kosti i implantata. Ukoliko je promjer „pukotine“ veći od 2 mm potrebno je koštanim nadomjestkom augmentirati prostor kako bi se održao volumen tkiva jer fiziološku resorpciju nije moguće zaustaviti. Uporaba membrane za tkivnu regeneraciju je neophodna kako bi se spriječilo urastanje vezivnoga tkiva u augmentat. Položaj implantata u alveoli u kontekstu zadovoljavajuće protetske opskrbe nakon cijeljenja, potrebno je pažljivo planirati kako bi se omogućila izrada kvalitetnoga protetskoga nadomjestka koji zadovoljava pacijentove funkcijske i estetske zahtjeve. Uz pravilnu indikaciju imedijatna implantacija predstavlja pouzdanu tehniku koju možemo koristiti na obostrano zadovoljstvo pacijenta i terapeuta, stoga prikazujemo nekoliko uspješnih slučajeva implantoprotetske rehabilitacija u molarnoj regiji donje čeljusti.

P3 IMMEDIATE IMPLANT PLACEMENT IN THE MOLAR REGION OF THE LOWER JAW

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Immediate dental implant placement is a well-documented procedure that has been for 30 years and implies immediate implant placement in the extraction socket. The main advantages of this procedure are reduced number of surgical procedures and reduced total treatment time which has a psychologically positive effect on the patient. Dental caries most commonly affects posterior teeth of the jaws and leads to premature teeth loss. These teeth have several roots, which presents a special challenge when it's necessary to perform the extraction and immediate implant placement. This region is also interesting because of the porous bone and vital structures, such as the mandibular canal. Atraumatic extraction of the tooth is essential to preserve as much bone as possible, thus enabling the increased contact between bone and implant surface. It is extremely important not to damage the bone septum as it will enable primary implant stability. Contraindications for implant placement are presence of purulence and insufficient bone level to provide primary implant stability. Since implant diameter is often smaller than the socket diameter, after implantation there is a gap between the alveolar bone and the implant. If the diameter of the "gap" is greater than 2 mm, it is necessary to fill the area with material to maintain the volume of the tissues, as physiological resorption cannot be stopped. The use of membranes for tissue regeneration is necessary to prevent penetration of fibrous tissue into the graft. The position of the implant in the socket, in the context of satisfying prosthetic rehabilitation after healing, needs to be carefully planned to enable designing an ideal prosthodontic replacement, that will meet the patient's functional and aesthetic requirements. When following the indications, immediate implantation is a reliable technique that can be satisfactory both for the patient and the therapist. We will present several successful cases of implant-prosthodontic rehabilitation in the molar region of the lower jaw.

P4 UPOTREBA MUCOGRAFTA KOD IMEDIJATNE IMPLANTACIJE

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Mucograft® (Geistlich Biomaterials GmbH, BadenBaden, Njemačka) je resorptivni materijal zamišljen kao alternativna autolognim transplantatima u augmentaciji mekoga tkiva. Primjenjuje se kao materijal za prekrivanje recesija zubi i dentalnih implantata i za regeneraciju pričvrstne gingive. Mucograft se sastoji od matriksa građenoga od kolagena tipa I i III. Sastoji se od dva funkcijska sloja, jednoga kompaktnoga, koji zaštićuje graft i adheirira za tkivo i drugoga poroznoga dijela koji stabilizira krvni ugrušak, promiče migraciju stanica, omogućava ranu uspostavu vaskularizacije te ubrzava cijeljenje mekoga tkiva. Termin imedijatna implantacija se odnosi na ugradnju dentalnoga implantata odmah nakon ekstrakcije zuba. Resorpcija kosti nakon ekstrakcije zuba najizraženija je u vestibularnome dijelu alveole, u području tzv. „Bundle Bone“-a. Bundle Bone je kost koja omeđuje zubnu alveolu, prosječne je debljine 0,8mm, ovisna o zubnome tkivu i prima krvnu opskrbu iz parodonta. Imedijatna implantacija je postupak osmišljen u cilju smanjivanja opsega resorpcije Bundle Bone-a, a postotak preživljavanja implantata ugrađenih ovim putem se bitno ne razlikuje od onih ugrađenih ranom ili odgođenom implantacijom. Jedan od potencijalnih nedostataka imedijatne implantacije jest nedostatak mekoga tkiva. Koštana i mekotiivna augmentacija su metode izbora za uspostavljanje funkcije i estetike koštanih i mekotiivnih struktura oko implantata u dužem vremenskom razdoblju. Prikazujemo nekoliko slučajeva imedijantne implantacije uz uporabu Mucografta. Raspravljamo o indikacijama za uporabu Mucografta te prednosti, nedostatke i čimbenike rizika imedijantne implantacije.

P4 MUCOGRAFT WITH IMMEDIATE IMPLANT PLACEMENT

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Mucograft® (Geistlich Biomaterials GmbH, BadenBaden, Germany) is a resorbable material designed as an alternative to autologous soft tissue transplants. It is used for covering gingival recessions and dental implants and for the soft tissue regeneration. Mucograft is composed out of the matrix which is made of collagen type I and III. It has two functional layers, one compact, that protects the graft and adheres to the tissues, and the porous one, which stabilizes the blood clot, promotes the cell migration, enables early angiogenesis and fastens the soft tissue healing. The term immediate implant placement refers to immediate implant placement in the alveolar socket after tooth extraction. Bone resorption after tooth extraction is most prominent in the vestibular part of the alveolar socket, in the "Bundle Bone" region. Bundle Bone is bone which surround the socket, with an average thickness of 0.8mm, dependant on the tooth tissue and the blood supply from the periodontal ligament. Immediate implant placement was initially thought of as a method that could prevent the Bundle Bone resorption. One of the possible down sides of the immediate implant placement is the lack of soft tissue. Hard and soft tissue augmentation are treatments that can ensure a long-term stability and aesthetics of the tissues around the implant. We will present a few immediate implant placement cases with soft tissue augmentation using the Mucograft membrane. We will discuss the indications for augmentations with Mucograft and the advantages, disadvantages and risk factors associated with immediate implant placement.

P5 PRAĆENJE IMPLANTOPROTETSKE TERAPIJE IMEDIJATNIM OPTEREĆENJEM U DUGOGODIŠNJEG PUŠAČA

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U današnje vrijeme pacijenti su sve više osviješteni i upućeni što se tiče mogućnosti izrade zubnih nadomjestaka. Kod slučajeva gdje je najčešće iz parodontoloških razloga potrebno izvaditi sve zube, pacijenti se sve češće odlučuju za implantoprotetsku rehabilitaciju. Zbog svih komplikacija koje nošenje mobilne proteze tijekom razdoblja osseointegracije donosi, imedijatno opterećenje implantata vrlo je privlačno rješenje. Osim što pacijen-

P5 MONITORING THE IMPLANT-PROSTHODONTIC THERAPY WITH IMMEDIATE LOADING IN A LONG-TERM SMOKER

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Nowadays, patients are more and more aware of the possibilities of dental replacements. In cases where, mostly for periodontological reasons, all the teeth have to be extracted, patients are increasingly opting for implant-prosthodontic rehabilitation. Because of all the possible complications that wearing of a mobile denture during the osseointegration period could bring, the immediate implant loading presents an attractive solution. Be-

tu omogućava da u manje od 24 sata nakon ekstrakcije zuba i implantacije dobije fiksni privremeni protetski nadomjestak, također sprječava veliku resorpciju kosti koja se javlja nakon ekstrakcije. Pušenje znatno utječe na imunološku reakciju organizma smanjujući aktivnost obrambenih stanica, a istovremeno pojačavajući stvaranje čimbenika upale. Negativno utječe i na cijeljenje nakon kirurških zahvata. U pušača je također primijećeno da imaju lošiju oralnu higijenu za razliku od nepušača što predstavlja dodatni čimbenik rizika za uspješnost terapije. Prije samoga zahvata vrlo je važno informirati pacijenta o mogućim negativnim ishodima ili neuspjehu terapije te ga potaknuti na prestanak pušenja. Prikazujemo slučaj imedijatnog opterećenja četiri implantata u gornjoj i donjoj čeljusti u starije osobe, ujedno i pušača te praćenje implantoprotetskoga rada tijekom četiri godine.

P6 ESTETSKI IZAZOVI STABILNOSTI MEKIH TKIVA OKO ZUBNIH IMPLANTATA – PRIKAZ SLUČAJA

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Stabilnost keratiniziranoga tkiva oko vrata implantata preduvjet je stabilnosti kosti i dugoročne estetike. Ako postoji nedostatak takvoga tkiva, slobodni gingivni transplantat (SGT) nužan je da bi se postigla stabilnost tkiva i dobra estetika. Međutim, sam transplantat nekad može stvoriti estetske izazove zbog njegovoga oblika, boje i teksture. Prikazujemo slučaj 45 godišnje pacijentice kojoj je potrebna cjelokupna oralna rehabilitacija. Dva poststranična mosta nošena implantatima isplanirana su u maksili i mandibuli. Četiri implantata, 3,75 mm široki i 10 mm dugi (MIS Implant Technologies GmbH, Minden, Germany), postavljeni su na mjesta 14, 17, 24 i 27. Nakon razdoblja cijeljenja od 6 mjeseci primijećen je nedostatak keratiniziranoga tkiva oko vrata implantata 14 i 24 te je napravljen SGT s nepca na oba implantata. Oba transplantata su uspješno zacijelila te je izrađena protetska metal-keramička supstruktura na konfekcijskim bataljcima. Nakon godinu dana procijenjena je stabilnost tkiva, visina kosti te estetika tkiva. Stabilnost je bila zadovoljavajuća s minimalno 2 mm keratinizirane gingive oko vrata implantata. Gubitak kosti je bio oko 0,5 mm. Estetika tkiva, međutim, nije bila u potpunosti zadovoljavajuća zbog različite boje transplantiranoga tkiva u odnosu na okolnu gingiva, posebice na implantatu 14. Zaključno, korištenjem SGT moguće je postići stabilnost tkiva, ali su mogući estetski problemi ako transplantat postavljamo u estetskog zoni.

P7 PRIMJENA „SOCKET SHIELD“ TEHNIKE U SVRHU OČUVANJA KOŠTANOGA VOLUMENA I CRVENO BIJELE ESTETIKE

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„Socket shield“ tehnika podrazumijeva djelomičnu ekstrakciju zuba uz ostavljanje ploče bukaloga dijela zdravoga korijena 1-2 mm ispod ruba bukalne alveolarne kosti, te imedijatnu implantaciju. Ovom tehnikom čuva se parodontni ligament i bukalna alveolarna kost što u konačnici daje iznimne estetske rezultate. Volumetrijske analize u petogodišnjoj studij pokazuju stabilnu razinu kosti bez prisutnosti upale oko implantata. S obzirom na nedovoljno podataka o praćenju navedene tehnike, ne preporuča se korištenje u svakodnevnoj implantološkoj praksi. Prikazujemo pacijenticu (38 g.) u postupku zamjene dotrajalih keramičkih krunica na gornjim središnjim i lateralnim sjekutićima. Nakon skidanja keramičke krune sa zuba 22, dijagnosticirao se duboki palatinalni karijes koji nije moguće liječiti konzervativno. S obzirom na visoke estetske zahtjeve i potrebu za imedijatnim nadomještanjem zuba, plan terapije se temelji na izradi imedijatnih privremenih krunica na zubima 12, 11, 21, djelomičnu ekstrakciju korijena zuba 22 te imedijatnu ugradnju implantata XIVE Dentsply uz primjenu „socket shield“ tehnike u regiji zuba 22. Također, postupak uključuje i imedijatno nefunkcijsko opterećenje implantata.

P8 „SOCKET SHIELD“ TEHNIKA (PARCIJALNA EKSTRAKCIJA ZUBA) - PRIKAZ SLUČAJA

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Jedan od većih izazova u implantoprotetskoj terapiji, nadoknada je zuba u estetskoj zoni. Posljedica vađenja zuba gubitak je marginalne kosti poznate kao „bundle bone“ zbog čega dolazi do negativne konture alveolarnoga grebena vestibularno što se nepovoljno reflek-

sides allowing the patient to receive a fixed temporary prosthetic replacement within less than 24 hours after tooth extraction and dental implant placement, it also prevents large bone resorption occurring after extraction. Smoking has a significant effect on the immune response, by reducing the activity of defense cells while simultaneously increasing the formation of inflammatory factors. It also negatively affects healing after surgical procedures. It has been implied that smokers have poorer oral hygiene habits than non-smokers, which is an additional risk factor for the successful therapy. Prior to the procedure, it is very important to inform the patient about the possible negative outcomes or possible failures of the therapy and stimulate him/her to stop smoking. We will present a case with immediate loading of four implants in the upper and lower jaw in an elderly patient, a smoker, and show a four years follow-up.

P6 AESTHETIC CHALLENGES IN TISSUE STABILITY AROUND DENTAL IMPLANTS – CASE REPORT

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Stable keratinized tissue around the implant neck is a prerequisite for bone stability and long-term aesthetic results. If there is a lack of such tissue, free gingival grafts (FGG) are necessary to obtain tissue stability and favourable aesthetics. However the graft itself can provide aesthetic challenges due to its shape, colour and texture. We report of a 45-year-old female patient who came to our office with a need for a full mouth reconstruction. Two implant supported lateral fixed partial dentures (FPD) were planned in the maxilla and mandible. Four 3.75mm wide and 10mm long implants (MIS Implant Technologies GmbH, Minden, Germany) were placed in positions 14, 17, 24, and 27. After 6 months of healing we observed a lack of keratinised tissue around implants 14 and 24. A FGG was taken from the palate to both implant sites. Both grafts survived and prosthetic restorations were made using stock abutments and porcelain-fused-to-metal FPD's. After one year, tissue stability, bone height and aesthetics were evaluated. Tissue stability was satisfactory with a minimum 2 mm of keratinized gingiva around the implant neck. Bone loss was also within the expected levels, with less than 0.5 mm of bone loss. However, the tissue aesthetics was not completely satisfactory, as the grafted tissue showed different coloration from the surrounding gingiva, especially at the site 14. In conclusion, with FGG it is possible to achieve good tissue stability, however it can cause aesthetic problems when placed in the aesthetic region.

P7 IMPLEMENTATION OF “SOCKET SHIELD” TECHNIQUE FOR PRESERVATION OF BONE VOLUME AND RED – WHITE GINGIVAL ESTHETIC

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Aim of this case report is to show the possibilities of periodontal tissue preservation around the extracted tooth with a „socket shield“ technique. This technique was developed in order to retain the vestibular portion of the root in order to preserve the periodontal ligament and the bundle bone. Immediate provisional loading is needed to obtain the profile of the gingival margin. A 38 years-old female patient with profound caries of maxillary second incisor came to our practice. By following the protocol, the tooth was extracted without incisions and the vestibular portion of the root left 1 mm under the alveolar bundle bone. Dental implant (Xive, Dentsply) was placed and immediately loaded with provisional crown on a temporary abutment. Healing process was controlled for six months. After six months impression was done with a closed tray and the tooth was restored with zirconium crown on zirconium linked titanium abutment. Peri - implant probing during the healing period revealed no periodontal loss of bone and gingival tissue. One year later, the permanent restoration was cemented and no vestibular alveolar bone loss was detected. Gingival tissues around the tooth were healthy with a retained contour of the gingival margin, without any recessions. In summary, the use of socket shield technique saves time and requires no need for multiple surgeries to preserve periodontal tissue around the implant supported tooth. Some studies report minimal vestibular bundle bone loss of in a 5-year follow-up. There are still no long-term studies on the topic, are thereby everyday use is still not recommended.

P8 “SOCKET SHIELD” TECHNIQUE (PARTIAL TOOTH EXTRACTION) - CASE REPORT

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One of the major challenges in implant-prosthodontic therapy is tooth restoration in the aesthetic zone. The result of tooth extraction is loss of the marginal bone known as „bundle bone“, which reflects with a negative vestibular contour of the alveolar crest and a poor

tira na estetski rezultat. Predložene su različite tehnike očuvanja ili nadoknade volumena kosti, no niti jedna u potpunosti ne sprječava gubitak alveolarnoga koštanoga ruba. U zadnje vrijeme kao obećavajuća metoda izbora, pokazuje se tehnika parcijalne ekstrakcije zuba (engl. PET - partial extraction therapy) koju su prvi put opisali Hürzeler i sur. 2010. godine. Došli su do zaključka da zadržavanje vestibularne stijenke korijena zuba čuva postojanost maginalne kosti te da zaostati dio korijena ne interferira s osseointegracijom imedijatno postavljenoga implantata. 22-godišnji pacijent javlja se radi traumatske ozljede zuba 11. Kliničkim i radiološkim pregledom ustanovi se fraktura krune i korijena zuba koja nije povoljna za protetsku sanaciju zbog nedostupnih rubova preparacije protetskoga rada. Postavi se indikacija za ekstrakciju zuba, a kao potpuno terapijsko rješenje predlaže se parcijalna ekstrakcija zuba uz imedijatnu implantaciju. Zahvat se izvede prema smjernicama Hürzeler i sur., a prostor između implantata i preostale vestibularne stijenke se augmentira spongiozno-kortikalnim-kolagenim gelom. Zbog nedovoljne primarne stabilnosti (ISQ 61) odabere se kasno opterećenje implantata. Nakon 6 mjeseci klinički je vidljivo potpuno očuvanje konture alveolarnoga grebena, a na CT presjecima uredan 3D položaj implantata, stabilna vestibularna kortikalna kost i odsustvo patoloških zbivanja. U ovom prikazu slučaja primjena tehnike parcijalne ekstrakcije zuba u kombinaciji s imedijatnom ugradnjom implantata, pokazala se kao obećavajuće estetsko i funkcionalno rješenje kod implantoprotetske sanacije gubitka zubi u estetskoj zoni. Ključne riječi: tehnika parcijalne ekstrakcije zuba, socket shield tehnika, imedijatna ugradnja implantata.

P9 JEDNOFAZNI SINUS LIFT KOD EKSTREMNOG GUBITKA KOSTI – PRAĆENJE SLUČAJA TIJEKOM 3 GODINE

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Artidental d.o.o., Kastav

Klasični kirurški protokol podizanja dna sinusne šupljine kod visine rezidualne kosti manje od 3mm, nalaže da se prvo pristupa augmentaciji, a tek nakon 6 - 9 mjeseci implantiranju. No, posjedujemo li određena znanja, vještine i instrumentarij, moguće je spojiti ta dva zahvata u jedan. Time olakšavamo pacijentu izlažuci ga samo jednom invazivnom zahvatu te skraćujemo ukupno vrijeme implanto-protetske terapije. Cilj ove prezentacije je pokazati da se, neovisno o visini kosti, može istovremeno regenerirati kost i implantirati u lateralnom području maksile te da takva terapija ostaje stabilna i tijekom vremena. Prikazujemo slučaj pacijenta kod kojeg su 2014. ugrađeni implantati na manje od 3mm rezidualne kosti uz istovremeno podizanje dna sinusne šupljine. Pacijent je praćen tijekom godina te se na kontrolnim snimkama jasno vidi uspješnost terapije i kroz vrijeme čime se pokazuje opravdanost izbora terapije.

P10 ALL-ON-4 MODIFIKACIJE TEHNIKE

Bogadi I.
Dental Implant Centar dr. Popadić, Rovinj

All-on-4™ poznato je kliničko rješenje za sanaciju totalne bezubosti. Ono maksimalno koristi prisutnu količinu koštanoga tkiva i omogućava imedijatno opterećenje koristeći 4 implantata (2 angulirana implantata u bočnom dijelu čeljusti i 2 ravna implantata u prednjem dijelu čeljusti). All-on-4 tehnika indicirana je kod bezubih čeljusti s dovoljnom količinom preostale kosti (maksila – 5 mm širine i 10 mm visine, mandibula – 5 mm širine i 8 mm visine) uz primarnu stabilnost implantata od 35 Ncm. Kao imedijatni protetski nadomjestak koristi se akrilni most koji može imati do 12 zuba te se na taj način omogućava potrebna funkcija, restauracija punoga zubnoga luka i estetika. Prednost ove tehnike nad ostalim implantoprotetskim rješenjima je korištenje kosti samo u frontalnoj regiji bez potrebe za augmentacijom kosti, brza isporuka funkcionalne i estetske suprakonstrukcije niske cijene, imedijatna funkcija manje od 24 h, standardizirani protokol itd. Ovakva tehnika osim navedenih osnovnih uvjeta zahtjeva i iskustvo operatera. U ovom izlaganju iznijet ćemo tri kratka slučaja All-on-4 tehnike koji prikazuju standardni protokol, kompjuterski vodenu implantaciju kod uznapredovale resorpcije alveolarnoga grebena, te modificiranu tehniku bez odizanja režnja (flapless). Svaki od pojedinih protokola indiciran je za pojedine slučajeve. Odluka koji protokol kada koristiti donosi se na temelju procjene invazivnosti, anksioznosti pacijenta, zdravstvenoga stanja pacijenta i analize CT snimka (količina preostale kosti).

aesthetic outcome. Various techniques for preserving or replacing bone volume were proposed, but none of them completely prevented the loss of the alveolar crest. Recently, as a promising method, the technique of partial extraction therapy (PET) was presented. It was described for the first time by Hürzeler et al. in 2010. They came to the conclusion that retaining the vestibular wall of the tooth root would maintain the stability of the marginal bone and that the residue of the root does would not interfere with the osseointegration of the implant. A 22-year-old patient came to a dental office with traumatic injury of the upper right first incisor. Clinical and radiological examination revealed a fracture of the crown and root which was not suitable for prosthetic therapy. Tooth extraction was indicated, and as a complete therapeutic solution, partial extraction of the tooth with immediate implant placement was suggested. The surgery was performed according to the guidelines of Hürzeler et al., and the space between the implant and the remaining vestibular wall of the tooth was augmented by spongiusum cortical-collagen gel. Due to insufficient primary stability (ISQ 61), late implant loading was selected. After 6 months, clinical outcome showed completely preserved vestibular contour of the alveolar crest in upper right first incisor region, and CT scans showed a neat 3D implant position, stable vestibular cortical bone and absence of pathological signs. The use of socket shield technique in combination with immediate implant placement proved to be a promising aesthetic and functional solution for implant-prosthodontic rehabilitation in the aesthetic zone in this case report.

P9 SINGLE-STAGE SINUS LIFT IN EXTREME BONE LOSS - A 3-YEAR FOLLOW-UP

Varljen Nikolić N, Nikolić M.
Artidental LLC, Kastav, Croatia

The classic surgical procedure for sinus lift when the height of the residual bone is less than 3mm first implies an augmentation and after 6-9 months dental implant placement. However, if we possess certain knowledge, skills and instruments, it is possible to combine these two procedures into one. This facilitates the patient by exposing him/her to only one invasive procedure and shortens the total treatment time. The aim of this presentation is to show that, regardless of the bone height, it is possible to simultaneously regenerate the bone and insert an implant in the lateral maxillary area and to prove that such a therapy remains stable over time. We will present a case where the sinus lift augmentation has been performed simultaneously with implant placement in less than 3mm of residual bone in 2014. The patient had been monitored over the years and the control x-ray images showed a successful therapy outcome over time, proving the justifiability of the therapy itself.

P10 ALL-ON-4 – TECHNIQUE MODIFICATIONS

Bogadi I.
Dental Implant Prosthetic Centre Dr. Popadić, Rovinj, Croatia

All-on-4™ is a well-known clinical solution for edentulous jaw, created by Paulo Maló and Nobel Biocare. Technique uses immediate loading on 4 implants (two placed straight and two under 35°) in the frontal part of jaw, where we almost always find a sufficient amount of bone for implant placement. Implant placement is followed by impression taking, intermaxillary relationship registration and placing of the acrylic bridge. On this poster, three brief case reports will be presented describing standard, modified flapless, and computer-guided protocols. Standard All-on-4 Technique Standard protocol begins with radiological analysis and planning, followed by the surgical part, ie. flap elevation, surgical template placement, implant site preparation, implant placement and MU abutment placement. In our first case, it was necessary to extract the teeth and make the alveolar ridge leveling. Standard technique could have been considered invasive for the patient due to extensive incision and flap elevation. Bleeding could have also made surgery more difficult. Modified All-on-4™ Surgical part of the flapless protocol is different from the incision stand point. Instead of the incision that follows the top of the alveolar ridge, a flapless set is used to remove mucosa just above the implant. The rest of the protocol corresponds to the standard one. This protocol is useful in patients who are expected to have extensive bleeding, risk patients and patients with viral infection diseases such as hepatitis C, where we don't want to increase the risk of bleeding and infection. The bone volume condition must be fulfilled. This approach requires an experienced clinician. Computer-guided implantation is the technique that gives the operator maximum security. Implant planning is performed entirely on the basis of a CT scan in Nobel Clinician software. During the planning, the desired implant position, implant type and desired MU abutments are selected. The system creates a virtual template that is created by a 3D print in Nobel Biocare facilities and sent to the address in a few days. The template is fixed to the jaw with pins and implantation is followed according to the plan. As the previous, this technique is then performed without raising the flap and indicated in patients as in the previous case. The technique ensures maximum comfort for the patient. The selection of the technique is based on the assessment of invasiveness, patients' health status, anxiety and price.

P11 IMPLANTO-PROTETSKA REHABILITACIJA U ORTODONTSKIH PACIJENATA

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Najčešći izvor nezadovoljstva kod implanto-protetskih pacijenata je neadekvatna estetika i funkcionalnost samoga rada, poglavito u estetskoj zoni. Rizik za neuspjeh se povećava ukoliko postoji neadekvatno stanje mekih i/ili koštanih tkiva u regiji planiranog implanto-protetskog nadomjestka prije samog zahvata te ukoliko se prije ne učine potrebni oralno-kirurški zahvati za korekciju istih. Napretkom ortodontskih tehnika i sve većom interdisciplinarnom suradnjom ortodont – oralni kirurg moguće je adekvatno pripremiti prostor, koštanoj osnovi i meka tkiva kako bi se izbjegli neuspjesi te se s minimalnim brojem kirurških intervencija dobio zadovoljavajući rezultat. Na posteru će biti prikazani slučajevi u kojima se multidisciplinarnim pristupom riješio nedostatak prostora za inserciju implantata, pomakom zuba pripremilo koštano ležište za implantaciju, korištenje dentalnih implantata kao sidrišta za pomak zuba te rehabilitacija onkološkog pacijenta suradnjom ortodonta, maksilofacijalnog i oralnog kirurga. Suradnjom ortodonta i oralnog kirurga tijekom ortodontske terapije moguće je znatno lakše postići zadovoljavajuće rezultate implantoprotetske terapije u ortodontskih pacijenata.

P12 KIRURŠKO-ORTODONTSKO LIJEČENJE S PROTETSKOM REHABILITACIJOM – PRIKAZ SLUČAJA

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Cilj ove prezentacije je prikazati multidisciplinarni pristup oralne rehabilitacije pacijentice koja je htjela izbjeći brušenje preostalih zdravih zubi. Dvadeset-sedmo godišnja djevojka javlja se u ambulantu oralne kirurgije Klinike za kirurgiju lica, čeljusti i usta KB Dubrava zbog ortodontski indicirane alveolotomije impaktiranoga zuba 44. Radiološkom analizom uoči se trajna dentacija s impaktiranim zubom 44, nedostatkom zuba 46 te rastavljeno složenim odontomom u regiji 44 kao usputnim slučajnim nalazom. Zbog nedostatka zuba 46 vidljiva je mezoangulacija zuba 47 i 48 s vertikalnom resorpcijom kosti uz mezoaproksimalnu stijenku zuba 47, dok je zub 45 inkliniran u prostor zuba 44. Ortodontskim planom terapije predviđene su alveolotomija zuba 44, mezijalizacija zuba 45 te uspravljanje zubi 47 i 48 uz otvaranje prostora za implantoprotetsku sanaciju regije 45. Terapija je započela s alveolotomijom impaktiranoga zuba te djelomičnim odstranjivanjem odontoma. U razdoblju od mjesec dana nakon operacije pacijentica je počela osjećati blagu hiposteziiju u inervacijskom području desnoga mentalnoga živca koja uz potpurnu terapiju vitaminima B kompleksa u potpunosti prolazi. Zatim se postavi fiksni ortodontski aparat koji u razdoblju od dvije godine uspravi angulirane zube 48, 47 i 45. Nakon ove faze, uklone se ostaci odontoma kroz kavitet napravljen implantološkim svrdlima, pritom čuvajući bukalni i lingvalni kortikalni. Rezultat cjelokupnoga liječenja s ukupnim trajanjem od otprilike tri godine je ortodontski sanirana dentacija i individualna hibridna krucna (titan-cirkon) fiksirana vijkom na poziciji zuba 45. **Zaključak:** Suvremeni trendovi i mogućnosti zbrinjavanja protetskih pacijenata koji žele najkvalitetnija rješenja po pitanju nadoknade izgubljenih zubi, ali i očuvanja zdravlja preostalih zubi i pripadajućih potpornih struktura, vrlo često zahtijevaju od izabranog stomatologa interdisciplinarni pristup više specijalista različitih stomatoloških grana.

P13 IMPLANTO-PROTETSKA REHABILITACIJA PACIJENATA S OBOSTRANIM RASCPJEM USNICE I NEPCA

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Dentoalveolarna rehabilitacija pacijenata s rascjepom usnice i nepca predstavlja poseban klinički izazov. Uobičajeni oblici rehabilitacije fiksno protetskom i/ili ortodontskom terapijom danas zamjenjuju dentalni implantati. Muški pacijent (28 g.) s obostranim rascjepom usnice i nepca odbija uobičajeni način rehabilitacije mostom ili djelomičnom protezom te inzistira na ugradnji dva implantata. Prije početka terapije učinio se MSCT koji pokazuje veoma tanke koštane mostičke obostrano u području rascjepa. Koštani mostić na

P11 IMPLANT-PROSTHODONTIC REHABILITATION IN ORTHODONTIC PATIENTS

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The most often displeasure within implant-prosthodontic rehabilitation in patients is aesthetics and its function. Risk becomes even higher when there is an inadequacy of soft and bone tissues in the region of the planned implant-prosthodontic substitute and when no surgical treatment adjustments are made. Improvement of orthodontic techniques and greater interdisciplinary cooperation between an orthodontist and an oral surgeon has led to better achievements in preparing adequate space, soft and bone tissues, in avoiding possible treatment failures and providing satisfying results with minimal number of surgical interventions. In this poster presentation we will show a few cases with a multidisciplinary approach. We will depict how we treated lack of space needed for implant placement, how we prepared the bone walls by moving a tooth using dental implants as an anchorage for tooth movement and how we rehabilitated an oncologic patient all with a multidisciplinary cooperation between orthodontist, maxillofacial surgeon and oral surgeon. Collaboration between an orthodontist and an oral surgeon during orthodontic therapy enables an easier achievement of a satisfactory implant-prosthodontic therapy result in orthodontic patients.

P12 SURGICAL-ORTHODONTIC TREATMENT WITH PROSTHETIC REHABILITATION – CASE REPORT

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The goal of this study is to show oral rehabilitation of a patient who refused preparation of the remaining healthy teeth. A 27-year-old female patient was referred by her orthodontist to the Department of Oral Surgery, Clinic for Oral and Maxillofacial surgery, University Hospital Dubrava for the surgical extraction of the impacted tooth 44. A panoramic x-ray revealed an impacted first lower right premolar, the absence of the first lower right molar, mesioangulation of the second and third lower right molars; vertical periodontal defect of the mesial wall of the second lower right molar, while the second lower right premolar was inclined into the position of the first lower right premolar. Furthermore, a random finding was a compound odontoma in region 44. The orthodontic therapy plan was: surgical extraction of the first lower right premolar, mesial translation of the second premolar, angulation correction of the second and third molar and creating a space for an implant placement in the second premolar position. The therapy started with a surgical extraction of impacted first premolar with a partial extraction of the compound odontoma. Post-operative complication was hypoesthesia in the innervation field of the right mental nerve which completely resolved with additional vitamin B therapy. In the second stage, fixed orthodontic appliance was set and in the period of two years second molar, third molar and the second premolar were aligned. Afterwards, a second surgical procedure was carried out in which the odontoma residues were removed through the osteotomy made by implant drills while preserving the facial and lingual cortical bone. The result of the therapy, which lasted all together three years, are orthodontically aligned teeth and implant at the second premolar position with an individual screw-retained hybrid crown (titanium-circonia). **Conclusion:** Contemporary trends and the possibilities of prosthetic rehabilitation for patients who want high-quality solutions for the replacement their lost teeth and want to preserve the remaining healthy teeth and alveolar structures demand a multidisciplinary approach requiring the collaboration of various dental specialists.

P13 IMPLANT-PROSTHODONTIC REHABILITATION OF A PATIENT WITH A BILATERAL CLEFT LIP AND PALATE

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Dentoalveolar rehabilitation in patients with cleft lip and palate represents a clinical challenge. Conventional treatment options, dental bridges and/or orthodontic treatment are nowadays being increasingly replaced by dental implants. A 28-year-old male patient with a bilateral cleft lip and palate that rejected conventional rehabilitation with fixed prosthesis, insisted on placing of two dental implants. Prior to treatment MSCT was performed and narrow alveolar bone bridges at the cleft positions revealed. Firstly, one bone block

desnoj strani nalazi se palatinalno, a na lijevoj strani vestibularno. Prvo je augmentirana alveolarna kost. Odignut je jedan koštani blok s ramusa mandibule, podijeljen u 2 dijela i pomiješan sa zrcima ksenografta te augmentiran kao vestibularni onlay grafit desno i palatinalni onlay grafit lijevo. Za vrijeme cijeljenja augmentirane kosti pacijentu je učinjen privremeni metal keramički Maryland most. Šest mjeseci kasnije postavljena su dva implantata u augmentiranu kost. U završnoj fazi terapije 3 mjeseca nakon postave implantata funkcijski su opterećeni metal-keramičkim krunicama. Oblik i volumen kosti i mekoga tkiva bili su zadovoljavajući što je bitan preduvjet za zadovoljavajući funkcijski i estetski rezultat. Na kontrolnim RTG snimkama nema znakova koštane resorpcije i prisutno je zadovoljavajuće koštano cijeljenje.

from the mandibular ramus was harvested, split and mixed with particulate xenograft and positioned as an onlay vestibular graft on the right side and as onlay palatal graft on the left side. During the healing period, patient was treated with a metal-ceramic Maryland bridge. Six months later two dental implants were placed at the augmented sites. Three months after, implants were loaded with metal ceramic crowns. Bone and soft tissue volumes were satisfactory what was necessary to achieve an appropriate functionally and aesthetic result. X-ray showed no signs of bone resorptions and satisfactory bone healing.

P14 MINIMALNO INVAZIVNA REKONSTRUKCIJA VERTIKALNOGA DEFEKTA U FRONTALNOJ REGIJI- PRIKAZ SLUČAJA

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Koštani defekti nastali kao posljedica resorpcije kosti u frontalnoj regiji povezani s vertikalnom frakturom korijena zuba predstavljaju veliki izazov za operatera. Koštani defekti veći od 3 mm zahtijevaju augmentaciju kako bi se dobio adekvatni volumen kosti za daljnju implanto-protetsku rehabilitaciju. Pacijent je poslan u Zavod za oralnu kirurgiju zbog vertikalne frakture gornjega desnoga lateralnoga sjekutića. Zub je bio u procesu endodontskoga liječenja dvije godine zbog nemara pacijenta, što je dovelo do frakture krunice zuba ispod razine gingive. Uvidom u CBCT snimku i ortopantomogram, dogovorena je „socket shield“ tehnika, gdje se vestibularna stijenka korijena zuba ostavlja kako bi se zadržala razina vestibularne kosti, što bi omogućilo imedijatnu implantaciju. U toku operacije, nakon što je uklonjen frakturirani dio zuba, uočen je vestibularni koštani defekt te smo se odlučili primijeniti GBR tehniku, uz korištenje kolagene membrane, PRF membrane te osteokonduktivne ksenogene kosti. Korijen zuba je ekstrahiran te su uklonjene upalne granulacije. Umjetna kost je pomiješana s PRF membranom radi boljšega osteokonduktivnoga djelovanja te je apliciran u pripremljeni koštani defekt. Prema obliku defekta izmodelirana je kolagena membrana koja je zatim rehidratizirana PRF-om i postavljena preko koštanoga defekta. Preko kolagene membrane postavljene su PRF membrane kako bi tijekom cijeljenja hidratizirale kolagenu membranu. Gingiva je sašivena na način da u potpunosti prekriva membranu što pospješuje uspješnost augmentacije. Po završetku operacije postavljena je privremena krunica. Šavovi su uklonjeni nakon deset dana. Šest mjeseci nakon augmentacije ponovljeni su CBCT i ortopantomogram, uočena je zadovoljavajuća razina novostvorene kosti i postavljen implantat. Implantat je četiri mjeseca nakon implantacije testiran RFA metodom. Dobivena je vrijednost od 80, što je označavalo veliku stabilnost implantata te je implantat protetski opterećen metal keramičkom krunicom.

P14 MINIMALLY INVASIVE RECONSTRUCTION OF THE VERTICAL DEFECT IN THE FRONTAL REGION- CASE REPORT

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Bone defects caused by bone resorption in the frontal region related to vertical fracture of the tooth root represent a great challenge for the clinician. Bone defects greater than 3mm require augmentation in order to obtain an adequate volume of the alveolar bone for the implant-prosthetic rehabilitation. The patient was referred by his dentist to the Department of Oral Surgery because of a vertical fracture of the upper right lateral incisor. The tooth had been endodontically treated for two years due to the negligence of the patient, which led to the tooth crown fracture below the gingiva level. After reviewing the CBCT and the panoramic X-ray, we decided to treat the patient using the „socket shield technique“, which would consider leaving the vestibular wall of the tooth root in order to maintain the level of the vestibular bone and enable immediate implantation. During the operation, after the removal of the fractured part of the tooth, a vestibular bone defect was observed. We decided to use the GBR technique, using a collagen membrane, PRF membrane and osteoconductive xenogenic bone. The root was extracted and granulation tissue was removed. The artificial bone was mixed with PRF membrane for better osteoconduction and was applied to the prepared bone defect. The collagen membrane was shaped according to the shape and size of the defect. Afterwards, a rehydrating aPRF was placed over the bone defect. PRF membranes were positioned over the collagen membrane in order to hydrate the collagen membrane during the healing process. Gingiva was sutured to cover the whole membrane, which improved the success of augmentation. After surgery, temporary crown was placed. The stitches were removed after ten days. Six months after augmentation, CBCT and panoramic x-ray showed satisfactory levels of newly formed bone tissue and enabled an implant placement. Four months after implantation, the implant was tested using the RFA method. A value of 80 indicated high stability, a thereby the implant was loaded with a metal ceramic crown.