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POZVANI PREDAVAČI

I-1 Imedijatno opterećenje implantata

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Visoke stope preživljavanja i uspješnosti implantoprotetskog liječenja postignute klasičnim implantološkim protokolom dovele su do ideje o skraćivanju vremena između ugradnje implantata i opterećenja nadomjeskom. Veliki doprinos u uspješnosti implantata leži u dobrom planiranju, poboljšanim kirurškim i augmentacijskim tehnikama te, najviše od svega, u novim površinama i oblicima implantata. Estetski zahtjevi pokreću ove postupke. U ovom predavanju bit će predstavljen pregled protokola implantacije i opterećenja implantata s privremenim i trajnim nadomjescima. Priprema mekog tkiva privremenim radovima, estetski ciljevi, privremeni nadomjesci te krunice, kako i trajni individualizirani CAD/CAM nadomjesci i nadogradnje također će biti spomenuti. Raspraviti će se pregledi literature na ovu temu, a bit će prikazani i neki slučajevi.

I-2 Indikacije i kontraindikacije za implantate kod starijih pacijenata

Ingrid Grunert
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Protetska rehabilitacija poduprta implantatima danas je rutinska procedura, čak i kod starijih pacijenata. Posebno su mobilne proteze poduprte implantatima uobičajeni način nadomještanja zuba u starijoj dobi. Čak i danas gotovo 25% populacije zapadnih zemalja starije od 65 godina nema zube. Postoje različite koncepcije kod liječenja koje uključuje implantate – o indikacijama, prednostima i nedostacima raspravljat će se u ovom predavanju. Prognoza za implantate kod starijih osoba općenito je ista kao i kod mlađih osoba, no postoje neke kontraindikacije za implantološku terapiju, kao što je ranije liječenje bisfosfonatima. Nadomjesci poduprte implantatima poboljšavaju kvalitetu života pacijenata te se u budućnosti očekuje povećanje implantoprotetičkih tretmana kod starijih osoba.

I-3 Maksilofacijalna rehabilitacija nasljednih i stečenih defekata, protetska i fonetska razmatranja

Agim Islami
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Jedan od glavnih problema kod neoperiranih, ali i operiranih rascjepa tvrdog i mekog nepca je stalna pretjerana nazalna rezonancija zbog činjenice da pacijenti nisu u stanju kontrolirati i preusmjeriti dovoljno zraka iz pluća u usnu šupljinu gdje jezik, zubi i usnice proizvode pravilnu govornu rezonanciju i artikulaciju. Glavni razlog hipernazalnosti je nedostatak tkiva koje nadomješta meko nepce, glavni faktor palatofaringealnog otvora. Prema Bentleyjevim nalazima, nakon faringoplastike Wardwillovom tehnikom, samo oko 51% pacijenata razvija normalni govor. Brojevi povećavaju potrebu za opturatorima koji se koriste kao sredstva za govornu rehabilitaciju takvih pacijenata. Očito je da je veoma važna uloga govornog terapeuta tijekom poslijepoperativne skrbi. Glavni cilj ovih nastojanja je smanjiti hipernazalnost u govoru kod neoperiranih rascjepa nepca odraslih te u slučajevima kada operacija mekog nepca nije postigla očekivanu uspješnost. Govor pacijenata bilježi se pomoću visokofrekventnih mikrofona prije i nakon postavljanja opturатора, a govor se bilježi svaka tri mjeseca u svrhu praćenja napretka terapije. Govor pacijenta analiziran je s obzirom na hipernazalnost, posebno tijekom čitanja rečenica koje sadrže tri nazalna konsonanta (m, n i ng) koji koriste nazalni kavitet kao glavnu rezonancijsku komoru.

INVITED SPEAKERS

I-1 Immediate loading of dental implants

Ljubo Marion
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High survival and success rates of implantoprothetic dental treatment achieved by classical implant protocol led to an idea of shortening the time between implantation and implant loading with restoration. Great contribution to implants success goes to better planning, improved surgical and augmentation techniques and most of all to the new implant surfaces and shapes. Aesthetical demands of population drive these procedures. Presented will be an overview of implantation and implant loading protocols with the emphasis on immediate implantation after tooth extraction and immediate loading of implant with temporary and permanent restorations. Soft tissue preparation by temporaries, aesthetic goals, temporary abutments and crowns and permanent individual CAD CAM abutments and crowns will be presented. Discussed will be the literature review of the topics and presented some cases.

I-2 Implant indications and contraindications in elderly patients

Ingrid Grunert
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Implant supported prosthetic rehabilitation has become a routine procedure, even in elderly patients. Especially implant supported overdentures are a common way of restoration in the higher ages. Even today about 25% of the population older than 65 years are edentulous in western countries. There are different concepts in implant supported treatments – their indications, advantages and disadvantages will be discussed. The prognosis for implants in elderly patients is in general the same as in younger age groups. But there may be some contraindications to implant therapy, like previous treatment with bisphosphonates. Implant retained rehabilitations bring life quality to the patient. There will be an increase in implant supported treatment of the older patients in future.

I-3 Phonetic Considerations

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Maxillofacial Rehabilitation of Acquired and Hereditary Defects, Prosthetic and One of major problems of unoperated, even for operated cleft hard and soft palate is the consistent excessive nasal resonance because the patients are unable to control and divert sufficient airflow from the lungs into the oral cavity, where the tongue, the teeth and the lips produce the proper speech resonance and articulation. The main reason of the hypernasality is the lack of sufficient tissue which will replace the missing soft palate, which is the most important factor of palatopharyngeal closure. According to the findings of Bentley, after the pharyngoplasty using Wardwill technique, normal speech had developed in only 51% of patients. This figure rises the need for using the obturators, as a means of speech rehabilitation of such patients. Obviously, the help of speech therapist is of great importance in postoperative care. The main purpose of this work is to decrease the hypernasality speech in unoperated cleft palates of the adults and in the cases when the operation of soft palate restoration didn't show the expected success. The speech of the patients is recorded with high resolution microphones prior and after the placement of the obturator, the speech is then recorded every three months, in order to follow the progress of the therapy. The voice of the patients was recorded for hypernasality, especially while reading the sentences consisting mainly of three nasal con-

Preciznija mjerenja količine nazalnosti korišten je Nasal View System koji proizvodi Tiger Electronics Inc. (Seattle, WA, SAD), a temelji se na radu Awana (1996, 1997). Nasal View je program koji koristi Windows/PC operativni sustav, a omogućava mjerenja govora visoke rezolucije pomoću zvučne kartice kompatibilne s operativnim sustavom Windows. Mjerenja nazalnosti prikazuju se na histogramu kao prosječni, maksimalni, minimalni i srednji postotak nazalnosti glasa. Operacija rascjepa nepca ne može uvijek postići željeni cilj. Perzistentna nazalnost uzokovat će mnoge patnje i fiziološke probleme mladim pacijentima, osim ako tim za postoperativnu skrb ne uključuje protetičara, specijalista za zvuk te govornog terapeuta.

I-4 Zavarivanje dentalnih legura laserom

Ikuya Watanabe

I Odjel za znanost o biomaterijalima, Baylor koledž za stomatologiju, Dallas (SAD)

Lasersko spajanje je praktična metoda povezivanja metalnih konstrukcija nadomjestaka. Budući da se laserska energija može koncentrirati na malo područje, moguće je popraviti slomljene konstrukcije smolama koje u potpunosti izgaraju. Dodatna prednost laserskog spajanja je da se njime može spajati bilo koja dentalna legura. Posebno je lasersko spajanje korisno kod spajanja titana i njegovih legura, budući da imaju veoma visoku reaktivnost s plinovima iz zraka kao što su kisik i dušik, posebno na visokim temperaturama. Stoga se lasersko spajanje titana uglavnom provodi u argonskom štitu. Posljednjih deset godina proveli smo mnogobrojne istraživačke projekte koji su se bavili laserskim spajanjem, a odnosili su se na prodor lasera u dentalne legure, svojstva spojeva dentalnih legura (uključujući magnetske legure i titanske legure) te na deformacije metalnih konstrukcija usljed spajanja laserom. Nedavno smo pronašli da lasersko tretiranje površine titana poboljšava svojstva kontaminirane strukture te pojačava mehaničku snagu titanske konstrukcije. U ovom predavanju bit će predstavljeni neki od radova koji se bave laserskim spajanjem dentalnih legura te kliničkom primjenom laserskog spajanja. Dodatno, predavanje će predstaviti i lasersko tretiranje površine titana koje poboljšava njegova mehanička svojstva.

USMENA IZLAGANJA

U-1 Depresija, somatizacija i anksioznost u pacijentica s temporomandibularnim poremećajem (TMP)

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Svrha istraživanja bila je utvrditi moguće razlike u stupnjevima depresije, somatizacije i anksioznosti između akutnih i kroničnih TMP pacijentica, te da li postoji razlika u odnosu na zdrave ispitanice. U istraživanje je bilo uključeno 90 pacijentica; 60 od njih su bile TMP pacijentice koje su dolazile u Stomatološku polikliniku, dok je preostalih 30 došlo na redovni kontrolni pregled i nisu imale TMP. Pacijentice su bile starosne dobi od 22 do 67 godina, prosječna dob je bila $38,5 \pm 12$ godina. Sve pacijentice su popunile DKI/TMP protokol i tri psihološka testa (Profil indeksa emocija, Ljestvica somatizacije i Ljestvica nedavnih životnih događaja). Analizom DKI/TMP protokola i psiholoških testova uočeno je da kronične pacijentice imaju više rezultate na skalama depresije u usporedbi s akutnim pacijenticama ($p < 0.01$); akutne pacijentice izvještavaju o većem stupnju anksioznosti u odnosu na zdrave; dok pacijentice koje imaju više vrijednosti na ljestvicama depresije naginju somatizacijama i izvještavaju o većem broju stresnih događaja u posljednjih šest mjeseci. Bezuvjetno je dokazano da TMP pacijenti pokazuju više vrijednosti na skalama depresije, somatizacije i anksioznosti u usporedbi sa zdravim pacijentima, što upućuje na to da psihološki faktori mogu igrati važnu ulogu u kombinaciji sa smanjenom tolerancijom na bol i povećanom tolerancijom na stres.

U-2 Estetska korekcija gornjih lateralnih inciziva - prikaz slučaja

Ivone Uhač, Zoran Kovač, Vesna Fugošić, Vedrana Braut, Sunčana Simonić-Kocijan, Petra Tariba

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Pacijentica stara 21 godinu dolazi u specijalističku ordinaciju stomatološke protetike zbog nezadovoljstva oblikom gornjih lateralnih inciziva. Kliničkim se pregledom

sonants: m, n, and ng, which use the nasal cavity as the primary resonating chamber. For the more precise measurement of the amount of nasality speech, we have used Nasal View System produced by Tiger Electronics Inc. (Seattle, WA), which has developed this system based on the work of Awan (1996, 1997). The Nasal View is a PC/Windows based system, which provides the recording of high-resolution speech signals using Windows compatible sound cards. Nasality measurements are displayed in the histogram and show the average, maximum, minimum and median percentages of the nasality voice. The operation of cleft palate itself cannot always achieve the desired goal. The persistent nasality will still cause a lot of suffering and physiological problems to the young patients, unless in the team of postoperative care is not involved prosthodontist, sound specialist and speech therapist.

I-4 Laser welding of dental alloys

Ikuya Watanabe

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Laser welding is a convenient method to connect metal frameworks of prostheses. Since laser energy can be concentrated into small areas, it is possible to fix broken metal frameworks with combustible denture base resins. Another advantage of laser welding is that any kind of dental alloy can be connected by laser welding. Particularly, laser welding is beneficial for welding of titanium and its alloys because they have extremely high reactivity with ambient gasses, such as oxygen, nitrogen, at high temperatures. Therefore, laser welding of titanium is normally conducted under the argon shielding. In the past decade, we have conducted numerous research projects regarding laser welding such include laser penetration to dental alloys, joint properties of dental alloys (including magnetic alloys and titanium alloys), and distortion of metal frameworks by laser welding. Recently, we found that laser surface treatment on cast titanium refines the surface structures contaminated by investment materials and improves the mechanical strength of cast titanium metal frameworks. In my lecture, I would like to introduce some research studies of laser welding for dental alloys and clinical applications of laser welding. In addition, my lecture will also introduce the laser surface treatment on cast titanium surface to enhance its mechanical properties.

ORAL PRESENTATIONS

U-1 Depression, somatization and anxiety in female patients with temporomandibular disorders (TMD)

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The aim of this research was to determine the possible differences in degrees of depression, somatization and anxiety between the acute and chronic female patients with temporomandibular disorders (TMD), and whether these differences exist in healthy female patients. Ninety female patients were involved in this research; 60 of them were TMD patients of the Dental Polyclinic, while other 30 females came for a routine recall visit and had no problem related to TMD. Patients were aged 22 to 67 years, the average age being 38.5 ± 12 years. All patients were asked to fill in the RDC/TMD protocol and three psychological tests (Emotions Profile Index, Somatization Scale and life Events Scale). Following the analysis of the RDC/TMD protocol and psychological tests, it was determined that the chronic female patients had higher depression and somatization scores in comparison with the acute patients ($p < 0.01$); the acute patients self-perceive higher levels of anxiety in relation to the control group; furthermore, the patients reporting higher levels of depression were more inclined to somatization and had experienced a greater number of stress events in the past six months. It is beyond doubt that patients suffering from the TMD's exhibit higher levels of depression, somatization and anxiety compared to the healthy ones, which proves that physiological factors may play a predisposing role in combination with reduced level of body tolerance to pain, and a decreased tolerance to stress.

U-2 Esthetic correction of upper lateral incisors - case report

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A 21 year-old female patient sought help in a prosthodontic dental clinic unsatisfied with shape of her upper lateral incisors. The clinical examination determined slight

utvrđuje lagano odstupanje u obliku gornjeg lijevog lateralnog inciziva, dok je odstupanje u obliku desnog gotovo beznačajno. Subjektivni dojam pacijentice je neusklađen s objektivnim nalazom. Zubi su potpuno zdravi, bez ispuna, boje A2 s izraženom transparentnošću incizalno. Planom terapije predviđa se izrada estetskih keramičkih ljuski. Registriraju se otisci i izrađuju studijski modeli na kojima se planira preparacija i dijagnostičkim navoštavanjem oblikuju buduću ljusku. Planiranom preparacijom obuhvatit će se isključivo vestibularna stijenka, aproksimalno do kontaktne točke, cervikalno će se izraditi zaobljena stepenica širine 0,4 mm, te incizalno završiti preparacija zakošenjem. Ljuske se izrađuju u laboratoriju pres tehnikom uz naknadno bojenje. Dovršeni nadomjestak ima maksimalnu debljinu od 0,5 mm, preparacija je u potpunosti smještena u caklini, kao i svi marginalni rubovi preparacije. Cementiranje se provodi adhezivnom tehnikom.

U-3 Evaluacija različitih metoda za određivanje nagiba protetske plohe

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Uvod: Određivanje ispravnog smjera protetske plohe nužno je prilikom protetske rehabilitacije, budući da se tako osigurava stabilnost proteze. Cilj: Usporediti točnost triju metoda za određivanje nagiba protetske plohe: a/ paralelizam s Camperovom ravninom, b / paralelizam s plohom koja povezuje papilu incizivu i hamularne udubine, i c / protetska ploha završava u razini eminencije piriformis. Materijali i metode: Osamdeset eugnatih ispitanika fotografirani su s Foxovom ravninom u ustima. Modeli gornje čeljusti montirani su u artikator te su obavljena mjerenja. Rezultati: Camperova ravnina i Foxova ravnina (predstavlja okluzijsku ravninu) nisu paralelne ($x = 3,52$ stupnjeva, $P < 0,05$); ravnina između incizalnih bridova donjih središnjih sjekutića i eminencije piriformis također nisu paralelne ($P < 0,05$). Ravnina papila inciziva-hamularne udubine i Foxova ravnina gotovo su paralelne ravnine ($x = 0,34$ stupnjeva, $P > 0,05$). Zaključak: Nagib umjetne protetske plohe trebao bi se određivati temeljem paralelizma s ravninom papila inciziva-hamularne udubine, što je točnije nego prema Camperovoj liniji ili eminenciji piriformis.

U-4 Implantoprotetska terapija djelomične bezubosti u gornjoj čeljusti

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U prikazu slučaja opisana je implantoprotetska terapija djelomično bezubog pacijenta u gornjoj čeljusti. Pacijent je imao nefunkcionalne fiksoprotetske radove te je prema učinjenom ortopantomogramu pacijentu bilo indicirano vađenje zuba 13. Zbog nedovoljnog volumena kosti učinjena je augmentacija grebena pomoću Bio-Oss i Bio-Gide. Nakon cijeljenja od tri mjeseca implantiran je u područje 13 NobelReplace Tapered Groovy implantat. Zub 24 je ekstrahiran i imedijatno je implantiran dentalni implantat uz augmentaciju kosti. Došlo je do odbacivanja toga implantata. Napravljen je individualno oblikovan privremeni nadomjestak indirektnom tehnikom. Materijal DC-Tell, staklom ojačan poliamid, izrezan je pomoću CAD/CAM tehnologije. Zubi 16, 25 i 26, naknadno su ekstrahirani te su imedijatno stavljani NobelReplace Tapered implantati u područje 16 i 26. Nakon cijeljenja od šest mjeseci napravljen je završni rad od metalne keramike u dva dijela gdje su zubi 16, 13, 11 i 22 bili nosači jednog mosta, a zubi 23 i 26 nosači drugog mosta. Sanacijom djelomične bezubosti pomoću dentalnih implantata, augmentacije kosti, imedijatne implantacije, odgođene implantacije i mostovima na implantatima i postojećim zubima pacijenta je u potpunosti vraćena estetika i funkcija.

U-5 Implantoprotetska terapija Kennedy klase I u gornjoj čeljusti

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U prikazu slučaja opisana je implantoprotetska terapija djelomično bezubog pacijenta u gornjoj čeljusti. Prema učinjenom ortopantomogramu i kliničkom pregledu pacijentu je indicirano vađenje zaostalih korijenova u području 16, 17, 25, 26 i 27. Nakon multiplih ekstrakcija ustanovljen je nedovoljan volumen kosti u vertikalnoj i horizontalnoj dimenziji maksile obostrano. U regiji 16, 17 indicirana je augmentacijska tehnika elevacije dna maksilarnog sinusa, te imedijatna implantacija Nobel Bio

shape deviation of the left upper lateral incisor. The right upper lateral incisor was found to be almost normally shaped. The patient's objections were exaggerated compared to diagnosed condition. Both incisors were completely healthy and with no fillings. The colour of the teeth was A2 with notable incisal transparency. It was decided to provide the patient with porcelain veneers. Impressions were taken to get diagnostic cast on which tooth preparation planning and diagnostic waxup were performed in order to design porcelain veneers. Only vestibular wall proximal to contact point was included in the preparation. 0.4 mm thick chamfer preparation was performed cervically. The preparation was finished with a 45° bevel incisally. Porcelain veneers were fabricated in the laboratory using press technique with additional colouring. The final veneer was 0.5 mm thick. Tooth preparation and preparation margins were completely placed in enamel. Adhesive cementation technique was used.

U-3 Evaluation of different methods in determining the inclination of the occlusal plane

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Introduction: The correct orientation of occlusal plane is important in prosthodontic rehabilitation as it supports the stability of dentures. Aim: To compare accuracy of three methods for establishment of the occlusal plane inclination: a) parallelism with the Camper's plane, b) parallelism with the incisive papilla-hamular notch plane, and c) termination at the level of the retromolar pad. Materials and methods: Eighty eugnat subjects were photographed with the Fox Plane. Maxillary casts were mounted in the articulator and the measurements were performed. Results: Camper's plane and Fox plane (representing occlusal plane) were not parallel ($x = 3.52$ degrees, $p < 0.05$); line between incisal edges of the lower central incisors and the retromolar pad were also not parallel ($p < 0.05$). Incisive papilla-hamular notches plane and Fox plane were almost parallel ($x = 0.34$ degrees, $p > 0.05$). Conclusion: The inclination of the artificial occlusal plane should be established using the parallelism with the Incisive papilla-hamular notches plane rather than using the parallelism with the Camper's plane or termination at insertion of pterigomandibular fold at the retromolar pad.

U-4 Implant-prosthodontic treatment of partially edentulous maxilla

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This case report describes implant-prosthodontic treatment of a patient with a partially edentulous maxilla. The patient had a nonfunctional fixed prosthodontic work, and according to the taken orthopantomogram, extraction was indicated of tooth 13. Due to insufficient bone volumen, alveolar ridge augmentation was done using Bio-Oss and Bio-Gide. After a three month of healing period, a NobelReplace Tapered Groovy implant was placed into site 13. Tooth 24 was extracted and an implant was placed immediately into the extraction site with simultaneous bone augmentation. The implant was rejected. An individually designed temporary restoration was made using an indirect technique. DC-Tell material, a glass reinforced polyamide, was milled using CAD/ACM technology. Teeth 16, 25 and 26, were later extracted and NobelReplace Tapered implants were placed immediately into sites 16 and 26. After a six month healing period, the two-partial definite metal ceramic restoration was made, where teeth 16, 13, 11 and 22 supported one bridge, and teeth 23 and 26 supported the second bridge. Restoration of partial edentulous maxilla with dental implants, bone augmentation, immediate implantation, delayed implantation and bridges supported by implants and the patient's existing teeth allowed esthetics and function to be fully restored.

U-5 Implant-prosthodontic treatment of maxillary Kennedy class I

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This case report describes an implant-prosthodontic treatment of a partially edentulous patient in maxilla. According to orthopantomogram and clinical examination, extraction of the remaining roots in the area 16, 17 and in the area 25, 26, 27. Insufficient bone volume in the vertical and horizontal dimension on the both sides of the maxilla was established after multiple extractions. In the area 16, 17 maxillary sinus floor elevation with augmentation was indicated, as well as immediate placement of a No-

care implantata (5,0x13mm za područje 16, te 5,0x13mm za područje 26) nakon čega se čekalo 6 mjeseci da se završi proces oseointegracije. U regiji 25,26,27 pristupilo se augmentacijskoj tehnici elevacije dna maksilarnog sinusa s odgođenom implantacijom. Nakon 6 mjeseci pristupilo se implantaciji u navedenoj regiji. Ugrađeni implantati su Nobel Biocare, u području 25 ugrađen je implantat 4,1x10mm, području 26 (4,1x10mm), te području 27 (5,0x10mm). Nakon implantacije pričekalo se još tri mjeseca da se završi proces oseointegracije navedenih implantata. U obje augmentacijske tehnike elevacije dna maksilarnog sinusa korišten je ksenogeni nadomjesni materijal (Bio-Oss, Geistlich), te kolagena membrana (Bio-Gide, Geistlich). Poslije cijeljenja za tri mjeseca, nakon završenog procesa oseointegracije, napravljen je završni rad od metalokeramike gdje su navedeni implantati opskrbljeni metalokeramičkim krunicama, svaki implantat za sebe. Sanacijom djelomične bezubosti pomoću dentalnih implantata, augmentacije kosti, imedijatne implantacije, odgođene implantacije i krunicama na implantatima i postojećim zubima, pacijentu je u potpunosti vraćena estetika i funkcija.

U-6 Implantoprotetsko zbrinjavanje složenih protetskih slučajeva

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Suvremeni aspekti implantološke terapije podrazumijevaju funkcijsku i estetsku rehabilitaciju izgubljenih zuba te tvrdih i mekih tkiva. Za uspjeh, predvidivost i dugotrajnost implantoprotetske rehabilitacije nužno je izraditi precizan plan terapije i pažljivo odabrati materijale i tehnike za izradu protetskih radova. Imedijatna ili odgođena ugrađnja zubnih implantata, odabir kirurške tehnike, predprotetsko oblikovanje mekih tkiva invazivnim i neinvazivnim tehnikama, uporaba titanskih ili estetskih nadogradnji te metalokeramičkih ili bezmetalnih krunica i mostova samo su neki od niza čimbenika koji utječu na ishod implantoprotetske terapije. Utjecaj navedenih čimbenika prikazan je kroz niz složenih implantoprotetskih slučajeva. Prikazani su slučajevi od implantoprotetskog zbrinjavanja gubitka jednog zuba u estetskoj zoni do slučajeva sanacije potpuno bezube čeljusti protetskim radovima na implantatima prema konceptu "All-on-six". Također su prikazani estetski i funkcijski učinci titanskih nadogradnji u kombinaciji s metalokeramičkim krunicama kao i cirkonoksidnih nadogradnji u kombinaciji s bezmetalnim keramičkim sustavima na bazi aluminij-oksida (WOL-CERAM Alumina) i cirkon-oksida (Lava 3M). Zaključno se može reći da se protetski visokozahjevni klinički slučajevi mogu riješiti primjenom suvremenih "evidence based" metoda i materijala temeljenih na primjeni zubnih implantata kao nosača protetskih radova.

U-7 Ispitivanje starenja cirkonijeve oksidne keramike

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Cirkonijeva oksidna keramika je potpuno keramički sustav koji se obrađuje CAD/CAM tehnologijom. Svrha rada bila je upoznati se s mikrostrukturom i procesom starenja Y-TZP-a čime bi se dobile nove spoznaje vezane uz njegovu kliničku primjenu. CAD/CAM tehnologijom pripremljeni su uzorci 5% Y-TZP-a, bijeli i obojeni (žuti). Uzorci su potom žareni na zadanoj temperaturi (1350°C). Dio uzoraka sinteriranih na 1350°C sterilizirano je u autoklavu kroz 2,5 sati kako bi se simuliralo starenje. Na uzorcima napravljene su snimke XRD-om koje su dodatno obrađene Rietveldova analizom. Rezultati analiza su pokazali da se uzorci sinteriranjem mijenjaju da se bijeli i žuti razlikuju po homogenosti površine i količini onečišćenja. Promjene se vide i na autoklaviranim uzorcima. Potpuno sinterirani uzorci imaju isključivo tetragonsku fazu. Autoklaviranjem ne dolazi do vidljive fazne transformacije. Dokazano je da se uzorci razlikuju između šarži i sadrže više onečišćenja nego što je očekivano. Onečišćenja mogu utjecati na starenje uzorka kao i na vezu cirkonij-oksidne keramike i fasete. Veliki neuspjeh cirkonij-oksidna keramika doživjela je u medicini baš zbog osjetljivosti u proizvodnom procesu što je potkrijepljeno velikim brojem literaturnih podataka. Međutim, našem radu nije dokazano starenje uzorka inducirano autoklaviranjem. Potrebna su daljnja ispitivanja cirkonijeve oksidne keramike kako bi se osigurala klinička i funkcijska trajnost protetičkih radova od te keramike.

bel Biocare implant (5,0x13 mm for the area 16, and 5,0x13 mm for the 26 area), after which a 6 month waiting period was needed for the process of osseointegration to complete. In the area 25, 26, 27 maxillary sinus floor elevation with augmentation and with postponed implantation was applied. Nobel Biocare implants were placed after 6 months, in the area 25 an implant of 4.1x10 mm, in the area 26 an implant of 4.1x10 mm and in the area 27 an implant of 5.0x10 mm. After implant placement another 3 month waiting period was needed for the process of osseointegration to complete. Xenogenic restorative material (Bio-Oss, Geistlich) was used in both maxillary sinus floor elevation with augmentation techniques, as well as a collagen membrane (Bio-Gide, Geistlich). After the healing period of three months, as the process of osseointegration was completed, the final metal-ceramic restoration was fabricated, whereby the aforementioned implants were restored with metal-ceramic crowns, each implant separately. By restoration of partial toothlessness by means of dental implants, bone augmentation, immediate implantation, postponed implantation and implant-supported crowns and crowns on the existing teeth, the patient fully regained esthetics and function.

U-6 Implant prosthodontics in complex cases

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Contemporary aspects of implant prosthodontics include both functional and aesthetic rehabilitation of oral cavity including restoration of lost teeth, hard and soft tissues. In order to achieve successful, predictable and long-lasting implant prosthodontic rehabilitation, it is necessary to establish precise therapy plan and to select appropriate materials and techniques for implant-supported prosthodontic restorations. Immediate or delayed implantation, selection of surgical technique, invasive and non-invasive pre-prosthodontic soft tissue management, use of titanium or ceramic based dental implant abutments, porcelain-fused-to-metal or metal-free crowns and bridges are some of the factors influencing the outcome of implant prosthodontic therapy. Influence of those factors is shown in series of complex implant prosthodontic cases. Cases ranged from single tooth loss in aesthetic zone to completely edentulous jaw restored using all-on-six concept are presented. Moreover, both aesthetic and functional outcome of titanium based dental implant abutments with porcelain-fused-to-metal crowns and zirconium based abutments with all-ceramic systems such as WOL-CERAM or Lava 3M are shown. To conclude, it is possible to manage complex and highly demanding prosthodontic cases using contemporary evidence based materials and methods which include use of dental implants as supporting structure for prosthodontic restorations.

U-7 Investigation of aging process of zirconia ceramics

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Zirconia ceramics as new dental ceramics gave significance to the CAD/CAM technology and its applications in dental practice. The aim of the study was investigation of microstructure and aging process of Y-TZP, providing new information relevant to its clinical application. The 5% Y-TZP specimens, white and colored (yellow), were prepared using the CAD/CAM technology. The prepared specimens were afterwards fired at firing temperature (1350°C). A half of the specimens sintered at 1350°C was autoclaved for 2.5 hours in order to simulate aging. The XRD recordings and Rietveld's analysis of the specimens were performed. The analyses showed that white and yellow specimens differed regarding inclusions of impurity. Those differences were also determined in autoclaved specimens. Specimens showed exclusively tetragonal phase, with no signs of monoclinic phase. Autoclaving did not cause phase transformation. The difference of specimens was determined between different charges. This finding suggests impurities in specimens. Those impurities might directly influence the specimen aging and reduce the quality of the zirconia-layering ceramics interface. Zirconia suffered considerable failure in medical applications because of the sensitivity of its production process. However, in our study autoclaving did not induce aging of zirconia. Further investigations of zirconia ceramic systems are needed in order to ensure clinical and functional durability of prosthodontic appliances based on this material.

U-8 Karakterizacija laserskih i elektrolučnih spojeva Co-Cr legura

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U današnjoj protetskoj praksi spajanje dentalnih legura se sve češće provodi laserom i elektrolučno tj TIG-om. Svrha ovog rada bila je ocjena kvalitete spojeva Co-Cr legura zavarenih navedenim tehnologijama. Ispitivanja su provedena na odljevima 3 kobalt-kromove legure za skelete proteza: Wisil M (Austenal, Köln, Njemačka); I-MG (Interdent Celje, Slovenija); Brealloy F-400 (Bredent, Senden, Njemačka). Provedena su istraživanja makro- i mikrostrukture zavarenih spojeva, te su ispitana osnovna mehanička svojstva. Istraživanje je bilo usmjereno na ocjenu preklapanja točkastih zavara, pojavu i raspored toplih i hladnih pukotina, provarenost te na međusobni odnos izgleda lica zavara i odgovarajuće mikrostrukture u poprečnom presjeku. Dobiveni rezultati dokazuju povezanost postupaka i parametara spajanja s ispitivanim veličinama. Iako je spojeve izradio isti zubni tehničar s istim parametrima za laser, odnosno za TIG, razlike između uzoraka očituju se u obliku, dimenzijama i izgledu zavara, te provarenosti. Te razlike uzrokuju rasipanje vrijednosti izmjerenih mehaničkih svojstava spojeva a time posredno i smanjuju kvalitetu protetskog rada. Zaključno, uzimajući u obzir analizirane parametre, tehnologija zavarivanja laserom je pokazala makro- i mikroskopski kvalitetniji spoj od elektrolučnog zavarivanja.

U-8 Characterization of Co-Cr alloys joints made by laser and TIG

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In today's dental practice different joining methods for dental materials have been used. Nowadays the most common way of joining dental alloys in prosthodontics are laser and tungsten inert gas welding (TIG). The purpose of this study was to evaluate the quality of joints of Co-Cr alloys made by these technologies. Tests were conducted on as-cast of three cobalt-chromium alloys for removable prosthodontic appliances: Wisil M (Austenal, Cologne, Germany); I-MG (Interdent Celje, Slovenia); Brealloy F-400 (Bredent, Senden, Germany). This research included analysis of macro- and microstructure of welded joints, and investigation of some basic mechanical properties. The focus was on the evaluation of overlapping weld beam, the shape and dimension of hot and cold cracks, penetration depths and the relation between the face of welds and its microstructure in cross-section. The results obtained in these research showed correlation between joining methods and tested parameters. Although all joints were made by the same dental technician with the same parameters for laser and TIG equipment, the differences between the shape, size and appearance of the weld, and the penetration depths were obvious. These differences caused the dissipation of the value of the measured mechanical properties and thus indirectly affect the quality of the prosthodontic appliance. According to the obtained results in this research, the laser welding technology has shown better macro- and microscopic structure compared to the tungsten inert gas welding.

U-9 Kvaliteta života ovisna o oralnom zdravlju kod implantoloških pacijenata s različitim suprastrukturama

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Protetska terapija mijenja kvalitetu života u protetskih pacijenata. Svrha istraživanja bila je ispitati utjecaj različitih vrsta implanto-protetske terapije, dobi i spola na promjenu kvalitete života koja ovisi o oralnom zdravlju. Ukupno je sudjelovalo 60 ispitanika (18 do 70 godina), kojima su ugrađena 122 implantata (Kohno implantati, Sweden & Martina). Od njih je 38 ispitanika bilo muškog (63%), a 22 ženskog spola (37%). Trideset dvoje pacijenata (53%) dobilo je lateralni most ili krunicu, 4 (7%) prednji most ili krunicu, 14 (23%) semicirkularni most te 10 (17%) pokrovnu protezu. Svi ispitanici su ispunili OHIP-49 upitnik prije i dva mjeseca nakon završene terapije. Statističke metode obuhvatile su deskriptivnu statistiku, t-test za zavisne i nezavisne uzorke i ANOVU. Zaključeno je da implantoprotetska terapija značajno poboljšava kvalitetu života i oralno zdravlje. Kvaliteta života podjednako je poboljšana i kod muškaraca i kod žena, osim u kategoriji "psihička uznemirenost" gdje je značajno veće poboljšanje zabilježeno kod žena zbog veće zabrinutosti stanjem prije terapije. Najveće poboljšanje implantoprotetskom terapijom zabilježeno je kod pacijenata koji su dobili protetske radove na implantatima u anteriornoj regiji (uključivši i cirkularni most), u odnosu na pacijente s lateralnim mostovima na implantatima i pokrovnim protezama na implantatima. Uspješnost implantoprotetske terapije ne ovisi o čeljusti u koju se implantati ugrađuju. Najveće poboljšanje kvalitete života nakon implantoprotetske terapije pokazali su pacijenti stariji od 60 godina u sljedećim podskupinama OHIP upitnika: hendikep i socijalna nesposobnost.

U-9 Oral health related quality of life (OHRQoL) in implant patients with different prosthodontic suprastructures

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Oral Health Related Quality of life may be changed by means of prosthodontic therapy. The aim was to study influence of different implanto-prosthodontic therapies, age and gender on the oral health-related quality of life (OHRQoL). Sixty patients participated (18 to 70 years; 38 (63%) men, and 22 (37%) women) and received a total of 122 implants (Kohno implants, Sweden & Martina). Thirty two patients (53%) received fixed partial denture (FPD) or single crowns in the lateral part of the jaws, 4 (7%) received FPD in anterior part of the jaws, 14 (23%) received semicircular FPD and finally, 10 (17%) received implant-supported overdentures. All participants filled in the OHIP-49 questionnaire before and 2 month after the therapy. Statistical methods comprised descriptive statistics, t-test for dependent and independent samples and ANOVA. It was concluded that implant-prosthodontic therapy significantly improved OHRQoL. The OHRQoL was equally improved in both gender, except for the OHIP subscale: "psychological discomfort", with women improving OHRQoL significantly higher than men, due to the greater concern prior the therapy. The greatest improvement has been observed in the group of patients treated in the anterior region (including semicircular FPDs) compared to those treated in the lateral region and/or treated with implant supported overdentures. The success of the therapy did not depend on the jaw (maxilla, mandible). The highest improvement of the OHRQoL after the therapy was observed in the group of patients older than 60 years, for the OHIP subscales: "handicap" and "social disability".

U-10 Neuromuskularna stomatologija

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Neuromuskularna stomatologija (NMS) objektivno evaluira kompleksne odnose između zuba, temporomandibularnih zglobova i mastikatornih mišića sa ciljem postizanja okluzije koja se zasniva na optimalnim odnosima mandibule i kostiju glave, tzv. neuromuskularna okluzija. Neuromuskularna stomatologija (NMS) u području temporomandibularnih zglobova, (TMZ-a) mastikatornih mišića i mehanizama CNS-a, slijedi generičke fiziološke i anatomske zakonitosti koje su primjenjive na cijeli muskuloskeletni sustav. To je terapijski modalitet stomatologije koji se objektivno fokusira na korekciju malpozicije čeljusti i TMZ-a. Neuromuskularna stoma-

U-10 Neuromuscular Dentistry

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Neuromuscular dentistry (NMD) objectively evaluates the complex relationships between teeth, temporomandibular joints and masticatory muscles with the aim to achieve an occlusion, which is based on optimal relations between the mandible and skull, i.e. neuromuscular occlusion. Neuromuscular dentistry (NMD) in the area of temporomandibular joints, masticatory muscles and CNS mechanisms, follows the generic physiological and anatomical laws which are applicable to all musculoskeletal systems. This is therapeutic modality of dentistry objectively focused on correction of jaw malpositions and TMJ. Neuromuscular dentistry acknowledges the

tologija prepoznaje višestruke oblike muskuloskeletnih okluzijskih znakova i simptoma s obzirom na njihove odnose prema posturalnim problemima koji involviraju i donju čeljust i cervikalno područje. Neuromuskularna stomatologija nastoji istražiti izvor problema malpozicije, razjašnjavanjem odnosa involviranih tkiva, koja uključuju mišiće, zube, temporomandibularne zglobove i živce. Ukratko, neuromuskularna stomatologija i suvremene tehnologije daju objektivne podatke i razumijevanje prijašnjih mehaničkih modela okluzije. Neuromuskularna stomatologija koristi kompjutoriziranu instrumentaciju kao što su sustavi za bilježenje čeljusnih kretnji (Jaw Motion Analysis - JMA) ili čeljusnih vibracija (Joint Vibration Analysis (JVA) za mjerenje mišićne aktivnosti pomoću elektromiografije (EMG) i bilježenje zvukova u TMZ-u pomoću sonografije (Electro-Sonography - ESG). Površinska elektromiografija (SEMG) se koristi za verifikaciju stanja prije- tijekom i nakon terapije, prije i nakon primjene Transkutane električne stimulacije (TENS-a). Pomoću ovih metoda stomatolog može odrediti položaj "fiziološkog mirovanja" kao početni položaj pri određivanju zagriža. Elektromiografija se može primijeniti u potvrđivanju položaja mirovanja/homeostatske mišićne aktivnosti čeljusti prije određivanja zagriža. Položaj mirovanja ne promatra se samo kao položaj mandibule prema kranijumu, nego i u odnosu na položaj glave prema tijelu, supra i infrahioidnim mišićima i položaju hioidne kosti. Pomoću suvremenih metoda NMS-a moguće je odrediti da li su simptomi koje pacijent ima uzrokovani lošim položajem donje čeljusti, te ako je tako, koji je terapijski optimalni položaj i odnos gornje i donje čeljusti. Zaključno-neuromuskularna stomatologija je područje stomatologije koje ne uključuje samo zube nego i objektivnu evaluaciju statusa i funkcije čeljusnih mišića i zglobova – prije, za vrijeme i nakon tretmana- kako bi se postigli optimalni rezultati.

U-11 Protetski aspekti biološke širine

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Rubna prilagodba nadomjestka je ključna za njegovu kompatibilnost s parodontalnim pričvrstnim strukturama. Parodontalni pričvrstni aparat se koronalno od ruba alveolarne kosti sastoji od 1 mm gingivnog vezivnog tkiva i 1 mm spojnog epitela. Ova pričvrstna zona se naziva biološka širina. Koronalno od spomenutih struktura se nalazi gingivni sulkus koji je klinički dubok 2-3 mm. Ako nadomjestak ne ostavlja prostor za ove normalne anatomske strukture, dolazi do kronične, rubne upale. Cilj predstavljene studije bio je istražiti povezanost između intaktnih i protetski restauriranih donjih prvih i drugih kutnjaka s obzirom na aproksimalni gubitak kosti. Analizirano je ukupno 128 ortopantomograma pacijenata Zavoda za parodontologiju (Stomatološki fakultet, Zagreb). Mjerenja su izvođena pomoću pomične mjerke i negatoskopa, na 91 restauriranom i 78 intaktnih kutnjaka. Aproksimalni gubitak kosti je definiran kao udaljenost od caklinskocementnog spojišta do ruba alveolarne kosti. Restaurirani zubi su pokazali statistički veći gubitak kosti mezijalno ($p < 0,001$) u usporedbi s intaktnim zubima, dok razlika u gubitku kosti distalno nije nađena. Mezijalni gubitak kosti je bio najizraženiji kod restauriranih zubi 37 i 47 ($p < 0,05$). Preparacija koja je cirkumferentno smještena na istoj razini vrlo vjerojatno narušava biološku širinu jer je parodontni pričvrstak aproksimalno smješten više koronalno nego na vestibularnim i lingvalnim površinama. Iako je na ovom uzorku utvrđena razlika u visini kosti između restauriranih i intaktnih zubi, subgingivalno smješteni rubovi krunica ne moraju dovesti do ozljede parodontnih tkiva. Međutim, iz tog razloga je potrebno razumijevanje prostornih međunosova supralveolarnih struktura, odnosno biološke širine.

U-12 Računalno vođena implantoprotetska terapija

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Računalno vođena implantoprotetska terapija predstavlja veliki korak naprijed u smislu planiranja kako kirurškog tako i protetskog dijela implantoprotetske terapije, a naglasak je na velikom skraćivanju perioda između insercije implantata do postavljanja suprakonstrukcije na iste, bilo da se radi o privremenom protetskom rješenju ili o završnoj restauraciji. S obzirom na to da se planiranje izvodi u specijalnom programu na računalu, tehnika je izuzetno precizna, tijek terapije je predvidljiv, a krajnji funkcionalni i estetski učinak može biti savršen. Sam kirurški zahvat je u odnosu na konvencionalne metode mnogo manje invazivan za pacijenta, pri čemu je posebno važno to što uobičajenih postoperativnih tegoba gotovo da i nema. Pacijenti se doslovce isti dan mogu vratiti svojim poslovnim i socijalnim obvezama, bez potrebe za bolovanjem. Protetika je do detalja isplanirana unaprijed, te pacijent doslovce nakon jedan sat proveden u ordinaciji može otići zadovoljan svojim novim osmijehom.

multi-facted musculoskeletal occlusal signs and symptoms as they relate to postural problems involving the lower jaw and cervical region. Neuromuscular dentistry recognizes the need to solve the root of the misalignment problems by understanding the relationships of the tissues involved, which include muscles, teeth, temporomandibular joints, and nerves. In short, neuromuscular dentistry and technology add objective data and understanding to previous mechanical models of occlusion. Neuromuscular dentistry uses computerized instrumentation to measure the patient's jaw movements via Jaw Motion Analysis (JMA), or Joint Vibration Analysis (JVA), muscle activity via electromyography (EMG) and temporomandibular joint sounds via Electro-Sonography (ESG). Surface EMG's are used to verify pre-, mid- and post-treatment conditions before and after ultra-low frequency Transcutaneous Electrical Nerve Stimulator (TENS). By combining these computerized methods the dentist is able to locate a "physiological rest" position as a starting reference position to find a relationship between the upper and lower jaw during the bite registration. Electromyography can be used to confirm rested/homeostatic muscle activity of the jaw prior to taking a bite recording. The rest position is monitored not only as position of the mandible to the cranium but also as the relation to the head and body, suprahyoid and infrahyoid muscles to the hyoid bone. By using modern methods in NMD it is possible to determine if the symptoms which patient demonstrate are caused by the jaw misalignment, and if so, which is the optimal treatment position and upper and lower jaw relation. In conclusion, neuromuscular dentistry is a part of dentistry, which involves not only the teeth, but also objective evaluation of status and function of masticatory muscles and jaws pre- during and post- treatment to achieve the optimal results.

U-11 Prosthodontic aspects of biological width

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The marginal fit of a restoration is the key factor to its compatibility with the periodontal attachment structures. The periodontal attachment apparatus, progressing coronally from the alveolar crest, consists of about 1 mm of gingival connective tissue plus about 1 mm of junctional epithelium. This attachment zone is known as biological width. Coronal to the mentioned structures is a gingival sulcus that is clinically 2-3 mm in depth. If the restoration does not leave room for these normal anatomic features, a chronic, marginal inflammation occurs. The aim of the presented study was to investigate the relationship between intact and prosthetically restored mandibular first and second molars, regarding the interproximal bone loss. A total of 128 orthopantomograms from patients registered at Department of Periodontology (School of Dentistry, Zagreb) were available for analysis. Measurements were performed on 91 restored and 78 intact molars, using a caliper and a negatoscope. Interproximal bone height was defined as a distance from the cemento-enamel junction to the alveolar crest. Restored teeth showed statistically more bone loss mesially ($p < 0.001$) compared to intact teeth, while no differences were found for the bone loss distally. Regarding restoration, the most significant differences for the mesial bone loss were found for the teeth 37 and 47 ($p < 0.05$). A preparation that lies at the same level circumferentially will most likely violate interproximal biological width, since the periodontal attachment is interproximally located more coronally than on the vestibular and lingual surfaces. Although the differences in a bone height between intact and restored molars were found, even subgingivally located crown margins don't have to cause injury to periodontal tissues. Nevertheless, this demands understanding of the spatial relationships of the supraalveolar structures (biological width).

U-12 Computer guided implant prosthodontics

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Computer guided implant prosthodontics is a huge advantage in both planning of the surgical part and prosthetic stage of therapy, with the accent on shortening the period of time between the insertion of the implants and the placement of the prosthetic suprastructure on the implants which can be a provisional or final restorator. Since the planning is done with a special computer program the technique is very accurate, treatment is predictable with the final functional and esthetic outcome nearing perfection. Compared to conventional surgical protocols this method is less invasive with no standard postoperative issues. Patients are able to return to their social and business obligations without need for sick leave. The prosthetic therapy is planned ahead in detail with the patient being able to leave our office after an hour with a satisfied smile on his face.

U-13 Radiološka dijagnostika čeljusnoga zgloba s elektroničkom analizom okluzijskih odnosa - prikaz slučajaTomislav Badel, Nikša Dulčić, Sonja Kraljević Šimunković, Ivan Krolo
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Suvremena dijagnostika funkcijskih poremećaja nezaobilazno obuhvaća dijagnostiku stanja čeljusnih zglobova (TMZ) i okluzijskih odnosa. Najbolja radiološka metoda snimanja TMZ-a je magnetska rezonancija (MR). Elektronička kvantitativna analiza pomoću T-Scan II sustava pouzdana je i ponovljiva metoda analize okluzijskih dodira. Prikazan je slučaj 38-godišnje pacijentice s tegobama u oba TMZ-a, jačim na lijevoj strani. Simptomi su bili osjećaj otečenosti te bolovi u oba TMZ-a uz otežano i bolno otvaranje usta i osjećaj pritiska u ušima. Protetsku opskrbu krunicama u donjoj i mostom u gornjoj čeljusti lateralno lijevo, starih 4 mjeseca, povezuje s nastankom i pojačavanjem inteziteta simptoma. Kliničkim pregledom (dinamičkim kompresijama i dinamičkim translacijama) utvrđeno je škljocanje u oba TMZ-a, lijevo jače izraženo. Aktivno otvaranje usta iznosilo je 53 mm. Kod pasivnih kompresija i translacija osjećala je bol i napetost u lijevom TMZ-u. Bolnost u vrijeme pojave simptoma na analogno-vizualnoj ljestvici (0-10) ocijenila je 8. Istrošenost zubnih ploha upućivala je na bruksističku aktivnost. Laterotruzijske kretnje bile su vođene prednjim zubima desno i očajnicima lijevo s balansom na zubima 17 i 47 desne neradne strane. MR-om potvrđen je poremećaj čeljusnog zgloba bilateralni pomak zglobne pločice u lijevom te djelomični pomak u desnom TMZ-u s repozicijom u položaju otvorenih usta. Analiza pomoću T-Scan II sustava pokazala je, usprkos neravnomjernoj distribuciji zubnih dodira i njihovom malom broju te velikoj jakosti, centralno smještenu rezultantu sila zagriža u maksimalnu interkuspidaciju. Međutim pri lijevoj i desnoj laterotruzijskoj kretnji postoje jaki interferencijski okluzijski dodiri na neradnim stranama, a vrijeme diskuzije u obje laterotruzijske kretnje duže je od 0,5 s. MRI dijagnostika čeljusnoga zgloba s elektroničkom analizom okluzijskih odnosa pokazala se važnom za objašnjenje kliničkih simptoma i znakova funkcijskog poremećaja stomatognatskog sustava i planiranju daljnje privremene te trajne protetske terapije.

U-14 Stomatološki materijali i alergijska reakcijaSadeta Šečić¹, Esad Asotić², Slobodan Trninić¹, Aida Saračin², Sanja Hadžić¹
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Pojavnost alergijskih reakcija na različite materijale u usnoj šupljini predstavlja problem kako za pacijenta tako i za stomatologa. Svi protetski nadomjesci su pod utjecajem korozivnih procesa i to otpuštanjem iona i nastankom korozivnih kompleksa koji mogu senzibilizirati organizam. Svrha rada je prikazati slučaj osjetljivosti na nikal u pacijentice koja ima protetski rad koji se sastoji od deset pojedinačnih porculanskih navlaka. Manifestacija alergijske reakcije se ogleda u izraženom stupnju upalno promijenjene okolne sluznice i blagim krvarenjem. U svrhu potvrde alergijske reakcije na nikal urađen je alergološki test. Pristupilo se protetskoj rehabilitaciji zamjenom postojećeg protetskog rada sa cirkonijevim oksidnim keramičkim krunicama. Periodičnim pregledima ne uočavaju se promjene zbog kojih je pacijentica potražila pomoć, te se može zaključiti da suvremeni stomatološki materijali mogu odgovoriti zahtjevima struke zahvaljujući novim tehnologijama.

U-15 Terapija implantatima poduprtim mobilnoprotskim nadomjescimaDavor Illeš
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Opskrba pacijenata mobilnim protetskim nadomjescima uvođenjem dentalnih implantata pada u drugi plan. No postoje slučajevi u kojima problem bezubosti nije moguće ili nije poželjno riješiti fiksnim protetskim nadomjestkom. Dijagnostika i prepoznavanje slučajeva kod kojih mobilni nastavak poduprt implantatima predstavlja optimalno rješenje nije jednostavna te često zahtijeva pažljivu evaluaciju svih čimbenika bitnih za izradu i preživljavanje takvog nadomjestka u ustima. Brojni autori predlažu rješenja koja bi bila jednostavna i primjenjiva u različitim slučajevima. Svaki slučaj zaseban je i složen skup čimbenika koji diktira smjernice optimalne terapije. Rješenja slučajeva potpune i djelomične bezubosti bit će prikazani s posebnim osvrtom na čimbenike koji dovode do njihove implementacije. Pregled suvremenih spoznaja o primjenjivosti takvih terapijskih postupaka sugerira da fiksna implanto-protetska terapija nije uvijek najbolje rješenje te je nužan sinergizam suvremenih postupaka i tradicionalnih iskustava u rješavanju problema bezubosti.

U-13 Radiologic diagnostics of jaw joint and electronic analysis of occlusal relationships - case reportTomislav Badel, Nikša Dulčić, Sonja Kraljević Šimunković, Ivan Krolo
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Modern diagnostics of functional disorders inevitably includes diagnosis of the state of temporomandibular joints (TMJs) and occlusal relationships. The best radiologic method of recording TMJs is magnetic resonance imaging (MRI). Electronic quantitative analysis by means of the T-Scan II system is a reliable and reproducible method of analysis of occlusal contacts. This is a case report of a 38-year-old female patient with problems in both TMJs, more severe on the left side. The symptoms included a feeling of swelling and pain in both TMJs with difficult and painful mouth opening and a feeling of pressure in the ears. She associated her prosthetic restoration, consisting of crowns in the lower jaw and a bridge in the upper jaw laterally on the left side, made 4 months before that, with occurrence and intensification of symptoms. During passive compressions and translations she felt pain and stress in the left joint. Pain during occurrence of symptoms she rated with 8 on the visual analog scale (0-10). Wear of the tooth surfaces implied bruxism activity. Laterotrusive movements were guided by anterior teeth on the right and canine teeth on the left with balance on the 17 and 47 tooth on the right nonworking side. MRI confirmed a bilateral TMJ disorder: complete disc displacement in the left and partial disc displacement in the right TMJ with reposition in the open mouth position. Analysis by means of the T-Scan II system showed, despite uneven distribution of tooth contacts and their small number and high intensity, a centrally placed resultant of bite force into maximal intercuspitation. However, there were strong interferential occlusal contacts on the nonworking sides during left and right laterotrusive movement, and disclusion time during both laterotrusive movements was longer than 0.5 s. This report showed the importance of radiologic diagnostics of TMJ with electronic analysis of occlusal relationships for explanation of clinical symptoms and signs of functional disorders of the stomatognathic system and for planning of further temporary and permanent prosthetic treatment.

U-14 Tissue hypersensitivity to dental materialsSadeta Šečić¹, Esad Asotić², Slobodan Trninić¹, Aida Saračin², Sanja Hadžić¹
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Incidence of tissue hypersensitivity to the different materials in the mouth cavity is the problem for both patient and dentist. All prosthodontic restorations are under the impact to corrosive processes by releasing the ions and creation of the corrosive complexes, which may sensitize the body. The purpose of this work is to present the case of the sensibility to nickel in patient with the prosthodontic restoration, which consists of ten individual porcelain crowns. Manifestation of the tissue hypersensitivity is in the expressed level of changed surrounding lining by inflammation and slight bleeding. For the purpose of the confirmation of the allergic reaction to nickel we have made the hypersensitivity test. We have approached to the prosthodontic rehabilitation by replacement of the present restoration with zirconia all ceramic crowns. Periodical examinations does not show changes for which the patient asked for help, so it is possible to conclude that modern dental materials may respond to the requirement of the profession due to the new technologies.

U-15 Removable implant-supported prosthodontic treatmentDavor Illeš
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Introduction of dental implants diminished the necessity for mobile prosthodontic appliances. However there are the cases in which problem of edentulism can not be solved or it isn't prudent to solve using methods of fixed prosthodontics. To be able to choose adequate implant supported prosthodontic treatment extensive diagnostics and patient evaluation is necessary. Numerous authors suggest various solutions which are supposed to be simple and usable in various cases. Every patient, every case is unique and consists of many factors which are important for choosing optimal therapy. Solutions for partial and total edentulism will be shown and discussed. Modern literature suggests that fixed implant supported therapy can not simply be used for every case and that synergy between modern and traditional methods is needed for solving the problem.

U-16 Utjecaj različitih postupaka obrade na kvalitetu površine metalokeramičkih materijala

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U ovom istraživanju proučavan je utjecaj različitih postupaka obrade i korozivnog medija na površinu metalokeramičkih uzoraka. Prema uputama proizvođača učinjeni su metalokeramički uzorci (glinična keramika, IPS Classic, Ivoclar-Vivadent, Schaan, Liechtenstein napečena na Ni-Cr leguru, Wiron 99, Bego Germany) dimenzija 9,0 x 9,0 x 1,2 mm. Jedan uzorak je glaziran. Površina jednog neglaziranog uzorka je polirana sa srednje grubim i potom finim dijamantnim svrdlom 20s (Komet Gebr. Brasseler GmbH and Co KG Lemgo-D), a nakon toga s gumicom za poliranje (EXA Cerapol 0301G Edenta AG Dentalprodukte Switzerland) još 20s. Svi uzorci su potom uranjeni u 4% octenu kiselinu 16h na 80°C (ISO 6872). Površinska hrapavost uzoraka prije i poslije uranjanja u korozivni medij analizirana je pomoću mikroskopa atomskih sila (MultiMode AFM, Veeco, Digital Instruments, Santa Barbara, USA), a veličina skeniranog područja bila je 50 x 50 x 2µm. Rezultati su pokazali da su vrijednosti površinske hrapavosti keramike visoke i variraju značajno za različite načine obrade površine. Glazirana površina glinične keramike je znatno manje hrapava nego neglazirana. U usporedbi s glaziranjem poliranje neglazirane površine nije dovelo do smanjenja hrapavosti do zadovoljavajuće razine. Nakon uranjanja u korozivni medij prosječna površinska hrapavost (Ra) se smanjila za sve uzorke, a polirani neglazirani uzorak je i dalje imao najviše vrijednosti Ra. Unutar ograničenja ovog istraživanja može se zaključiti da se poliranje zubne glinične keramike u usporedbi s glaziranjem nije pokazalo dovoljno učinkovito u postizanju prihvatljive razine površinske hrapavosti. Svakako su potrebna daljnja ispitivanja utjecaja različitih postupaka obrade i protokola poliranja na kvalitetu površine keramike.

U-16 Influence of different surface treatments on surface quality of metal ceramic dental restorative materials

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In this study the effects of different surface treatments and corrosion media on the surface of metal ceramic restorative dental restorative materials was investigated. Metal-ceramic plates (9.0x9.0x1.2 mm) composed of feldspathic ceramics (IPS Classic, Ivoclar-Vivadent, Schaan, Liechtenstein) and Ni-Cr alloy (Wiron 99, Bego Germany) were prepared according to the manufacturer's instructions. One of the specimens was glazed. The surface of one unglazed specimen was polished with medium and fine diamond burr (Komet Gebr. Brasseler GmbH and Co KG Lemgo-D) for 20 seconds and afterwards with rubber cup (EXA Cerapol 0301G Edenta AG Dentalprodukte Switzerland) for 20 seconds. All of the samples were immersed in 4% acetic acid at 80°C and kept there for 16 h (ISO 6872). The surface topography before and after immersion in the corrosive medium was examined by atomic force microscope (MultiMode AFM, Veeco, Digital Instruments, Santa Barbara, USA). The scan area was 50x50x2µm. It was observed that the roughness values of the ceramic surfaces were high and varied significantly for different surface treatment procedures. Glazing decreased the surface roughness significantly in comparison to unglazed surface. However polishing of the unglazed surface did not produce an adequate level of smoothness. After immersion in the corrosive medium the average surface roughness (Ra) was reduced for all samples, but the unglazed polished specimen still had the highest Ra values. In conclusion polishing of dental ceramics, within the limitations of this study, did not prove to be as effective in achieving an acceptable level of surface roughness as glazing. However further studies of different treatment procedures and polishing protocols should be made.

POSTER IZLAGANJA

P-1 Analiza strukture geometrije mandibule pomoću različitih numeričkih metoda

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Razvoj tehnologije u području biomedicinskih dijagnostičkih uređaja omogućava postavljanje preciznijih dijagnoza kao i izradu simulacija za različitu namjenu. Jedne od važnijih analiza u području biomedicine postaju metode koje su uspješno implementirane i opisane u nizu inženjerskih problema i studija slučajeva. To su metode konačnih razlika (FDM - finite difference method), konačnih elemenata (FEM - finite element method) i konačnih volumena (FVM - finite volume method). Primjenom navedenih metoda poznatih u literaturi osigurava se kvaliteta u smislu pouzdanosti dobivenih rezultata. Spomenute metode omogućavaju izradu različitih vrsta analize i simulacija koje mogu biti korištene u nekoliko slučajeva: planiranju i projektiranju izrade implantata, analizi postojećeg kliničkog stanja te planiranju rekonstrukcija koštanih defekata, izrade epiteza i opturatora.

P-1 Analysis of mandible structure geometry by different numerical methods

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Technology development in the field of biomedical diagnostic devices enables precise diagnosis and development of simulations for different purposes. Some of the most important analysis tools in biomedicine are becoming methods that have been successfully implemented and described in a series of engineering problems and case studies. These are the finite difference method (FDM), the finite element method (FEM) and the finite volume method (FVM). Applying the above methods, well known in the literature, ensures quality in terms of reliability of the results. Mentioned methods enable the formulation of different types of analysis and simulation that can be used in several cases - the planning and design of implants, analysis of existing clinical condition and planning the reconstruction of bone defects, making of epitehis and obturators.

P-2 Donji treći molari u fiksno protetskoj terapiji

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Unatoč stavu većine ortodontata i gnatologa da se preventivno izvade treći kutnjaci, taj je zub vrlo često jedini distalni nosač fiksnog rada. Cilj rada je utvrditi pojavnost i stanje trećih donjih kutnjaka na slučajno odabranom uzorku od 113 ortopantomograma. Pregledom RTG snimaka utvrđeno je da se radi o 64 (56,7%) ženskih i 49 (43,3%) muških ispitanika u dobi od 27 do 74 godine (x=54,1). Nađena su 3 (2,6%) retinirana umnjaka, 19 (16,8%) izvađenih. Od toga 11 (57,8%) desnih i 8 (42,2%) lijevih umnjaka. Endodontski je bilo liječeno 10 (8,8%) zuba. Dokazano je da su 29 (25,6%) umnjaka nosači mostova: 11 (37,9%) lijevih i 11 (37,9%) desnih, odnosno 7 (24,4%) obostranih. Kako je prvi kutnjak izvađen kod najvećeg broja ispitanika, postoji indikacija u 76 dijagnoza da se izradi fiksno protetski nadomjestak koji će osigurati očekivanu biološku i funkcijsku trajnost provedene terapije.

P-2 Lower third molars in fixed prosthodontic therapy

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According to the opinion of most orthodontists and gnathologists third molars should be preventively extracted but this tooth has often been the last abutment tooth in fixed prosthodontic therapy. The aim of this study was to establish prevalence and state of third molars in randomly selected sample of 113 panoramic radiographs. Panoramic radiographs of 64 (56.7%) women and 49 (43.3%) men, aged from 27 to 74 years were examined. The results revealed: three third molars were impacted, 19 (16.8%) were extracted (11 (57.8%) on the right and 8 (42.2%) on the left side). Ten (8.8%) third molars were endodontically treated. Twenty nine third molars (25.6%) were used as abutment teeth in fixed restorations. As in the majority of subjects the first molar was extracted, the results revealed that in 76 cases the fixed restorations were indicated to provide the expected biological function and durability of therapy performed.

P-3 Estetska kompatibilnost dvaju različitih materijala korištenih u rekonstrukciji bezmetalnim protetskim nadomjestcima - prikaz slučajeva

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Postoji mnogo slučajeva kada se istovremeno moraju koristiti dva različita materijala kako bi se postigla estetska ujednačenost u frontalnoj regiji. Rezultat često nije zadovoljavajući s obzirom na različita svojstva korištenih materijala. Pacijent dolazi u našu kliniku s neadekvatno saniranim zubalom u interkaninom području te nedostajućim lijevim očnjakom. Indicirana je terapija ljuskama za centralne incizive kako bi se sačuvalo što više tvrdog zubnog tkiva te bezmetalna keramička krunica na desnom lateralnom incizivu. S obzirom na to da pacijent odbija preporučenu implantoprotetsku terapiju, kako bi se nadoknadio nedostajući očnjak, izrađen je četveročlani keramički most s cirkonijevom oksidnom jezgrom (Lava, Ivoclar, Schann, Liechtenstein). Nakon završene terapije, učinjena je procjena lijevog i desnog lateralnog sjekutića spektrofotometrom (SpectroShade™ Micro, MHT Optic Research AG, 8155 Niederhasli, Switzerland) kako bi se dokazalo je li moguće postići estetsku kompatibilnost dvaju materijala. Dokazano je da su materijali korišteni u našem slučaju visoko kompatibilni s obzirom na boju i translucenciju.

P-3 Esthetic compatibility between two different types of metal free restorations - case report

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There are various situations in which, in order to regain esthetic harmony in the frontal region, different materials are to be used simultaneously. The result is not often satisfactory due to different material properties. A patient presented to our clinic with inadequate restorations in the upper intercanine segment, as well as a missing tooth 23. Preparation for ceramic veneers was indicated for the teeth 11, 21 in order to preserve as much sound tissue as possible and a full ceramic crown on the tooth 12. For replacement of the missing canine it was decided to use zirconia-based milled ceramics (Lava, Ivoclar, Schann, Liechtenstein) four-unit bridge due to patient's unwillingness to undergo implant treatment. Upon the completion of the indicated treatment, teeth 12 and 22 were evaluated by means of a spectrophotometer (SpectroShade™ Micro, MHT Optic Research AG, 8155 Niederhasli, Switzerland) in order to demonstrate whether it was possible to reach aesthetic compatibility between the pressed ceramics and zirconia-based ceramics used. Materials used in this case proved to be highly compatible in respect to colour and translucency.

P-4 Estetsko zbrinjavanje prednjih zuba gornje čeljusti uporabom tople prešane litijeve disilikatne staklene keramike

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U prikazu slučaja opisana je fiksno-protetska terapija potpuno keramičkim nadmjestkom (IPS e.max Press, Ivoclar, Liechtenstein) diskoloriranih prednjih zuba gornje čeljusti. Zbog velike razlike boje avitalnog zuba 11, koji je bio tamniji i vitalnog zuba 21, koji je bio svjetliji, od ostalih zuba odlučeno je pristupiti izradi fiksno-protetskog nadmjestka. Zubi 12 i 22 bili su sanirani velikim ispunima, pa je odlučeno i njih uljučiti u završni rad. Preparacija je napravljena za potpuno keramičke krunice. Napravljen je individualno oblikovan privremeni nadmjestak indirektno-direktnom tehnikom, pomoću termoplastične šablone. Završni rad je napravljen od IPS e.max Press keramike.

P-4 Esthetic care of maxillary anterior teeth with pressed lithium disilicate glass-ceramic

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This case report describes fixed-prosthetic treatment of discolored upper frontal teeth with an all ceramic restoration. Due to large differences in color of the non-vital upper right central incisor being darker, and the vital upper left central incisor being lighter than the remaining teeth, we decided to proceed with fixed prosthodontic restoration. Both lateral incisors had large fillings, therefore we decided to include them into the definite prosthodontic restoration. Preparation was made for an all ceramic crowns. Individual temporary restoration was made using indirect-direct technique with the help of a thermoplastic template. The final restoration was made with IPS e.max Press ceramics.

P-5 Gingivne asimetrije i odstupanja u pacijenta pri protetskom estetskom zahvatu na gornjim zubima

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Gingivne asimetrije i odstupanja vrlo su čest nalaz koji je moguće dijagnosticirati jedino temeljem kliničkog pregleda. Uzroci ovih pojava najčešće su pasivno nicanje, različiti obrasci trošenja zubne strukture, traume koje utječu na nicanje zuba, položaj zuba u zubnom luku, parafunkcijske navike te pretjerano četkanje zubi. Odabir zadovoljavajuće metode zahvata ovisi o pričvrstloj gingivi, zubnoj strukturi, vestibularnoj dubini, udaljenosti od gingivnog ruba do vrška koštane strukture, nagibu korijena i položaju zuba te interproksimalnoj razini alveolarne kosti u slučaju postojanja recesije. Klinički i radiološki nalaz određuju iznos uklanjanja mekih i tvrdih tkiva pri postizanju estetskog rezultata. Ponovno uspostavljanje pravilne biološke širine te prikaz zadovoljavajuće duljine kliničke krune pridonosi odličnom kliničkom, biološkom i estetskom ishodu zahvata. U radu je prikazan slučaj pacijenta s gingivnim asimetrijama i odstupanjima kojem su tijekom protetskog estetskog zahvata posebnom tehnikom parodontno-kliničkog zahvata uz prethodnu detaljnu analizu, dijagnostičko navoštavanje i izradu plastičnog uzorka ponovno uspostavljeni gingivna simetrija i sklad.

P-5 Gingival asymmetries and discrepancies in patient undertaking prosthodontic esthetic treatment in maxillary teeth

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Gingival asymmetry and discrepancies are common occurrence that are only diagnosed upon clinical observation. In their etiology the altered passive eruption, different patterns of tooth wear, traumas that modify tooth eruption, tooth positioning in the dental arch, parafunctional habits and extrem tooth brushing should be considered. The selection of an adequate method of treatment depends on adequacy of attached gingiva, tooth structure, vestibular depth, the distance from the gingival margin to the crest of the bone, root angulation and tooth positioning and interproximal level of the alveolar bone when recession is present. Clinical and radiographic examinations dictate the necessary removal of soft and hard tissues to achieve the esthetic result. The reestablishment of a new and correct biologic width and the exposure of the correct length of the clinical crown leads to excellent clinical, biologic and esthetic outcomes. This case describes a patient with gingival asymmetries and discrepancies. Prior to prosthodontic esthetic treatment in maxillary teeth a special technique of periodontal surgery using wax-up and mock-up was established, achieving new gingival symmetry and harmony.

P-6 Gubitak zuba i opskrba protetskim nadmjestcima osoba starije dobi u Zagrebu

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Prosječni životni vijek znatno se produžio u gotovo svim zemljama svijeta, pa tako i u Hrvatskoj. Osobe starije od 65 godina osim problema vezanih uz opće zdravstveno sta-

P-6 Tooth loss and prosthodontic restoration supply in the elderly in Zagreb

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The average length of life has been significantly prolonged in almost all countries of the world, including Croatia. Individuals older than 65 years besides problems related to general health, also have different problems related to oral health. Frequent

nje, također imaju i različite probleme vezane za oralno zdravlje. Česti problemi vezani uz stomatološko protetsko zbrinjavanje starijih su iz: različite kliničke slike djelomične bezubosti, potpuna bezubost, stari i dotrajali protetski nadomjesci, karijes i nedostatna oralna higijena. Istraživanje gubitka zuba i opskrbe protetskim nadomjescima obavljeno je na skupini od 1826 osoba starije životne dobi štićenika domova umirovljenika na području grada Zagreba. Ispitanici su podijeljeni u 6 dobnih skupina (65-69, 70-74, 75-79, 80-84, 85-89, 90 i više godina). Klinički pregled proveden je sondom i ogledalom u improviziranom zubarskom stolcu. Potpuna bezubost utvrđena je kod 33,6% ženskih i 23,9% muških ispitanika. Istraživanjem je potvrđen statistički značajan porast bezubosti u odnosu na dob ispitanika. Tako je primjerice broj ekstrahiranih zuba u najmlađoj dobnj skupini (65-69 god.) iznosio 15 kod žena i 16 kod muškaraca, a u najstarijoj životnoj skupini (90 i više god.) 27 kod žena i 25 kod muškaraca. Gornju potpunu protezu posjedovalo je 45% žena i 35% muškaraca, a gornju parcijalnu protezu 10% ispitanika podjednako u oba spola. Gornji mostovi pronađeni su u 27% ženskih i 30% muških ispitanika. Donju potpunu protezu posjedovalo je 33% žena i 26% muškaraca, a donju parcijalnu protezu 16% ženskih i 13% muških ispitanika. Donji mostovi pronađeni su u 21% ženskih i 24% muških ispitanika. Zaključno se može istaknuti da je veći broj protetskih nadoknada pronađen u gornjoj čeljusti, a da je donja čeljust češće ostala protetski nezbrinuta.

problems associated with prosthetic dental care of elderly are: different clinical features of partial edentulism, full edentulism, old and wear out prosthetic restorations, caries and insufficient oral hygiene. Investigation of tooth loss and prosthetic supply was carried out on a group of 1826 elderly residents of old folks' homes in the city of Zagreb. Examinees were divided into 6 age groups (65-69, 70-74, 75-79, 80-84, 85-89, 90 and over). Clinical examination was carried out with a mirror and probe in an improvised dental chair. Full edentulism was determined at 33.6% female and 23.9% of male examinees. The research has confirmed a statistically significant increase edentulism in relation to the age of the examinees. For example, the number of extracted teeth in the youngest age group (65-69y) was 15 in women and 16 in men and in the oldest age group (90 and more years), 27 in women and 25 in men. Upper complete denture owned 45% of women and 35% of men, and the upper partial denture 10% of examinees equally in both genders. Upper bridges were found in 27% women and 30% of men. Lower complete denture owned 33% of women and 26% of men and lower partial denture 16% women and 13% of men. Lower bridges were found in 21% women and 24% men examinees. Finally it may be noted that a larger number of prosthetic appliances was found in the upper jaw while in the lower jaw prosthetic treatment was more often neglected.

P-7 Implantoprotetska rekonstrukcija gubitka gornjeg centralnog inciziva - prikaz slučaja

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Pacijent star 23 godine dolazi u specijalističku ordinaciju stomatološke protetike s frakturom lijevog centralnog inciziva nastalom zbog ozljede prilikom sportske aktivnosti. Kliničkim i rentgenskim pregledom utvrđuje se fraktura u srednjoj trećini korijena te se indicira ekstrakcija. Radi dehiscijencije vestibularne stijenke alveole neposredno nakon ekstrakcije provodi se augmentacija autogenim koštanim transplantatom uzetog s ramusa mandibule. Nakon 6 mjeseci, tijekom kojih pacijent nosi privremeni mobilni nadomjestak, postavlja se implantat koji se imedijatno opterećuje privremenom krunicom. Krunica se redovito kontrolira te prilagođava kako bi dobili optimalno oblikovanje okolnih mekih tkiva. Sljedi definitivna protetska rekonstrukcija cirkonijevom oksidnom keramičkom krunicom postavljenom na istovrsnu nadogradnju.

P-7 Implant-prosthodontic reconstruction of a missing upper central incisor - case report

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A 23-year old patient sought help in a prosthodontic dental clinic with fractured left upper incisor. The fracture occurred during his sport activity. Middle third root fracture was diagnosed after clinical and x-ray examination, and the tooth had to be extracted. Shortly after extraction, augmentation with autologous bone transplant taken from mandibular ramus was performed because of dehiscence of vestibular alveolar wall. The patient was provided with temporary mobile prosthodontic device during a period of six months after which the implant was planted and immediately loaded with a provisional crown. The patient was frequently examined to adjust the provisional crown thus ensuring optimal modelling of surrounding soft tissue. The therapy ended providing the patient with a ceramic zirconium-oxide crown which was fixed on the existing abutment.

P-8 Lokalna mišićna osjetljivost - prikaz slučaja

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U radu je predstavljen slučaj dvadesetjednogodišnje pacijentice koja se javila na Zavod za stomatološku protetiku Stomatološkog fakulteta u Zagrebu žaleći se na opću osjetljivost lijeve strane lica. Bol se pojačavala kod žvakanja i bila je prisutna desetak dana. Daljnje ispitivanje otkrilo je da je pacijentica i ranije imala slične bolne epizode koje su se javljale vezano uz ispite na fakultetu. Kliničkim pregledom utvrđeno je da interincizalno otvaranje bez nelagode iznosi 20 mm. Funkcijska manipulacija pokazala je da postoji bol s lijeve strane lica pri desnoj laterotruzijskoj kretnji uz otpor, dok se kod lijeve laterotruzijske kretnje bol ne javlja. Prilikom protruzijske kretnje uz otpor nije bilo bolova, no bol se javila prilikom protruzije uz otpor s unilateralm separatorom. Otvaranje uz otpor ponovno je bilo bolno. Pregled temporomandibularnog zgloba bio je negativan na bol i zvukove. Bili su vidljivi znakovi umjerenog trošenja zuba, vjerojatno kao posljedica parafunkcijske aktivnosti. Pacijentici je dijagnosticirana lokalna mišićna osjetljivost zbog povećanog emocionalnog stresa povezanog s ispitima na fakultetu. Parafunkcijska aktivnost bila je kontributivni čimbenik, vjerojatno povezan s emocionalnim stresom. Pacijentici je objašnjen odnos između stresa i simptoma koje je imala. Krenulo se s vježbama istezanja te je pacijentici nakon tjedan dana izrađena stabilizacijska udlaga u položaju centrične relacije za nošenje noću. Savjetovano joj je da ograniči pokrete čeljusti do granice boli i kad je to moguće kontrolira parafunkcijsku aktivnost. Na kontrolnom pregledu nakon 5 tjedana interincizalno otvaranje bez nelagode iznosilo je 50 mm. Još su bili prisutni umjereni bolovi pri protruziji uz otpor s unilateralm separatorom. Na kontrolnom pregledu nakon 6 mjeseci simptoma više nije bilo.

P-8 Local muscle soreness - case report

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This paper presents a case of a 21-year-old female patient that was referred to the Department of Prosthodontics, School of Dental Medicine in Zagreb with a chief complaint of generalized muscle soreness of the left side of her face. The pain was accentuated with chewing and it had been presented for approximately 10 days. In discussing the problem she revealed that this type of pain had been present on other occasions in connection with her examinations at the University. The maximum comfortable opening was measured at 20 mm. The functional manipulation: the pain was induced during right lateral movement against resistance, while there was no pain during left lateral movement against resistance. During protrusion against resistance no pain occurred, but the pain was induced during protrusion against resistance with unilateral separator. Opening the mouth wide increases the pain. The TMJ examination was negative for pain or sounds. There were signs of moderate tooth wear. Local muscle soreness was suspected secondary to increased emotional stress associated with examinations at the University. Parafunctional activity was probably associated with emotional stress. The patient was made aware of the relationship between emotional stress and symptoms she was experiencing. Passive exercises were instituted to regain maximum opening, and occlusal stabilization appliance in the centric relation position was fabricated and worn overnight. Simple emotional stress therapy was employed. After 5 weeks period the maximum comfortable opening was measured at 50 mm. Pain was still present during protrusion against resistance with unilateral separator. When she returned in 6 months, the symptoms were no longer present.

P-9 Oralna rehabilitacija pomoću potpunih proteza u pacijentice s ekstremno resorbiranim mandibularnim grebenom - prikaz slučaja

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Uvod: Resorpcija rezidualnog grebena kronična je i kontinuirani proces koji uvijek dovodi do formiranja neadekvatog ležišta za potpune proteze. U takvim slučajevima posebnu pozornost moramo usmjeriti na to gdje i kako ekstenzirati rubove proteza te kako napraviti zadovoljavajući funkcijski otisak. Svrha: Rehabilitirati potpuno bezubu pacijenticu s ekstremnom resorpcijom ležišta donje čeljusti pomoću potpunih proteza. Materijali i metode: Pacijentica (68 godina) dolazi zbog izrade novih potpunih proteza jer su stare nezadovoljavajuće. Njeni vertikalni međučeljusni odnosi bili su smanjeni za više od 8 mm, mandibula rotirana u smjeru suprotno kazaljke na satu s posljedničnim mandibularnim pseudoprogmatizmom. Mandibularni rezidualni greben bio je zbog resorpcije gotovo negativan te je u frontalnom podjezičnom naboru najistaknutija formacija bila hvatište m.genioglossusa: spina musculi genioglossi. Ta formacija može pružiti dobru potporu protezi te se zbog te činjenice iskoristila za prednju horizontalnu ekstenziju pomoću mandibularnog lingvalnog ruba proteze. Horizontalna ekstenzija u području prednjeg sublingvalnog prostora nije uobičajena u kliničkoj praksi, a kod navedene pacijentice ekstremna resorpcija grebena učinila je da hvatište genioglossusa bude najviša točka prednjeg dijela mandibule. Bukalni prostor prema linea obliqua externi također pruža mogućnost ekstenzije za vestibularni rub proteze. On je kod pacijentice bio najizbočeniji jer je alveolarni greben bio negativan. Nakon preciznih funkcijskih otisaka, određeni su međučeljusni odnosi (provjera horizontalne relacije utvrđena je metodom gotskog luka), modeli su preneseni u S.A.M. 2 artikator, postavljeni su umjetni zubi, a nakon probe proteze u ustima konačna proteza predana je pacijentici. Nova proteza omogućila je pacijentici bolji izgled, normalne međučeljusne odnose, a ekstenzija rubova proteze omogućila je adekvatnu retenciju i stabilizaciju donje proteze. Međutim za još veće poboljšanje retencije i stabilizacije pacijentici je dodatno predložena ugradnja mini-implantata. Zaključak: Temeljitom analizom ležišta donje proteze i analizom aktivnosti mišića oko proteze, došli smo do zaključka da je moguće rubove proteze horizontalno ekstenzirati na spinu m. genioglossi u prednjem podjezičnom prostoru. Tako je povećana retencija i stabilizacija donje totalne proteze, te je omogućeno uspostavljanje odgovarajućih međučeljusnih odnosa.

P-10 Oralna rehabilitacija u pacijenta s ograničenim financijskim mogućnostima - prikaz slučaja

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Uvod: Ponekad je pacijentima gotovo nemoguće napraviti potpunu oralnu rehabilitaciju fiksnim radovima zbog njihovih ograničenih financijskih mogućnosti. Svrha: Napraviti oralnu rehabilitaciju kod jednog pacijenta sa nekoliko izgubljenih zuba u gornjoj čeljusti i sniženim zagrizom te novim radom uspostaviti normalne međučeljusne odnose. Materijali i metode: Pacijent (37 godina) došao je u stomatološku ordinaciju po stručno mišljenje specijalista protetike. Nedostajala su mu 2 frontalna zuba, kao i nekoliko distalnih zubi u gornjoj čeljusti. Pacijent je također, u gornjoj čeljusti imao znatan broj zuba nosača i dvije krunice, koje nisu bile adekvatne. U mandibuli je nedostajao samo posljednji molar. Analizom vertikalnih međučeljusnih odnosa u ustima pacijenta i analizom u poluprilagodljivom artikatoru došli smo do zaključka da bi semicirkularni metal-keramički ili cirkon-keramički fiksnoprotetski rad u gornjoj čeljusti bio najbolji izbor terapije. Nažalost, pacijent to nije mogao priuštiti pa je odlučeno da se fiksnoprotetski rad izradi od Pd-Ag legure. Posljednji molari nisu bili uključeni u terapiju mostom zbog ograničenih financijskih sredstava. Nakon preparacije zuba za fiksnoprotetski rad, uzeli smo otiske, izlili modele u tvrdog sadri, odredili smo međučeljusne odnose, a kontrolu horizontalne relacije napravili smo metodom gotskog luka. Rad je završen, a nakon njegova cementiranja u ustima pacijenta, izgubljeni su kontakti na okluzalnim plohama posljednjih molara, što je bilo očekivano zbog podizanja vertikalne relacije. Kako bi se ponovno uspostavili okluzalni kontakti, na posljednjim molarima u gornjoj čeljusti izrađeni su kompozitni overlay-i. Neadekvatan ispun donjeg umnjaka također je zamijenjen. Zaključak: Oralna rehabilitacija napravljena je pomoću Ag-Pd fiksnoprotetskog rada u gornjoj čeljusti i dva kompozitna overlay-a. Time su zadovoljene okluzijske potrebe (podizanje zagriža) i estetski zahtjevi. Dva kompozitna overlaya i financijski prihvatljiva legura za fiksni rad omogućile su rehabilitaciju pacijenta s ograničenim financijskim mogućnostima.

P-9 Oral rehabilitation in a patient with complete dentures and extremely resorbed mandible - case report

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Introduction: Residual ridge resorption (RRR) is a chronic and continuous process which always leads to the formation of the unfavourable denture bearing area. In such cases special attention must be directed towards the analysis where and how to extend denture flanges and how to obtain satisfactory functional impression. Aim: To rehabilitate one fully edentulous patient with extreme resorption in the mandible by means of complete dentures. Materials and Methods: One female patient, 68 years old came to ask for the old and unfavourable complete denture replacement. Her vertical occlusal relationship was decreased for more than 8 mm, her mandible had rotated in a contra clockwise direction with a consequent mandibular pseudoprogmatism. The mandibular residual alveolar ridge was almost negative and in the frontal sublingual fold the most prominent formation was the insertion of the muscle genioglossus: spina of the genioglossus muscle. It offered good support to the denture flange, therefore this formation was used for the horizontal frontal sublingual extension of the mandibular lingual denture flange. A possibility of the horizontal extension in the frontal sublingual fold is not common in a clinical practice, but extreme residual ridge resorption led to the prominence of genioglossus spinae, which become the most prominent formation in the frontal part of the mandibular denture bearing area. However, buccal fold towards the linea obliqua externa also offered extension for the buccal flange. After the precise functional impressions, the appropriate jaw relationship were established (horizontal jaw relationship was verified by the gothic arch tracings), casts were transferred into the S.A.M. 2 articulator, artificial teeth were set, the try-in denture was carefully checked in the patient's mouth and the final denture was delivered to the patient. The new denture allowed the patient to have much better appearance, normal jaw relationship and denture flange extensions allowed adequate retention and stability for the mandibular complete denture. However, the patient is still considering the recommendation for the mini implant-supported overdenture. Conclusion: Thorough analysis of the denture bearing area and the activity of the muscles surrounding the denture flanges allow denture extension thus increasing both, the retention and the stability of complete dentures, also enabling the establishment of adequate jaw relationship. Thus, horizontal extension of a frontal lingual mandibular denture flange was obtained.

P-10 Oral rehabilitation in a patient with limited income resources: a case report

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Introduction: Sometimes it is really difficult to provide sufficient therapy to a patient with the need for a fixed partial denture (FPD) complete oral rehabilitation, due to the patient's financial limitations. Aim: To provide oral rehabilitation to a patient with several teeth lost in the maxillary jaw with the collapsed bite (decreased vertical jaw relations) and a need for an increase of the occlusal relationship. Materials and Methods: One male patient, 37 years old came to ask for the prosthodontist's help. Two frontal teeth were missing in the upper jaw, and some lateral teeth, as well. The patient also had considerable tooth wear and 2 crowns, which had been incorrect, in the upper jaw. In the mandible only the second molar was missing. Analysis of the vertical jaw relationship in the patient's mouth and the analysis in the semi-adjustable articulator revealed that semicircular maxillary metal-ceramic or zircon-ceramic FPD would be the method of choice. Unfortunately, patient could not afford that, so it was decided to rehabilitate patient with FPD made from Pd-Ag alloy. The last molars were not included in the FPD due to financial limitations. After teeth preparation for the FPD, the impressions were made and the casts were poured in the hard stone. The gothic arch tracing was made to verify horizontal jaw relationship, and vertical jaw relationship was determined, as well. The new FPD was finished and cemented. That caused the distal molar teeth to lose the occlusal contact, as expected. It was decided to make composite overlays over the last maxillary molars to establish occlusal contacts. One incorrect filling of the mandibular wisdom tooth, was replaced, as well. Conclusion: The oral rehabilitation was provided with the maxillary Ag-Pd FPD and two composite overlays. The occlusal and the esthetic rehabilitation was satisfactory. Two composite overlays and affordable dental alloy made possible to rehabilitate a patient with limited financial resources.

P-11 Ortodontsko protetska rehabilitacija pacijenta s patološkom okluzijom

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U stomatologiji se pridaje velika važnost suradnji među kolegama različitih specijalistika i multidisciplinarnom pristupu svakom pacijentu. Ovdje ćemo prikazati slučaj pacijentice (stare 44 godine) kojoj je predložena oralna rehabilitacija kombinacijom ortodontske i protetske terapije. Kod pacijentice je dijagnosticirana primarna kompresija s protrudiranom frontom i klasom III/L. Izražena je patološka okluzija s dubokim zagrizom i traumatizacijom palatinalne sluznice donjim incizivima te nedostatak zuba 14, 16, 24 i 25. Ortodont je proveo liječenje fiksnom ortodontskom napravom kojom je retrudirana gornja fronta i podignut zagriz u razdoblju od dvije godine. Zbog retruzije gornje fronte s lijeve strane gornje čeljusti smanjio se međuprostor između postojećih zuba 8 mm. Nakon ortodontskog liječenja izrađeni su peteročlani metal-keramički most s desne strane gornje čeljusti (nosači 13, 15, 17) i četveročlani most s lijeve strane (nosači 26, 27, 28). Suradnjom specijalista ortodontije i protetike postignuta je zadovoljavajuća oralna rehabilitacija.

P-12 Ortodontskoprotetska rehabilitacija osoba s hipodontcijom

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Oligodontiju (multipla aplazija) ubrajamo u anomalije broja zuba, a definirana je kao kongenitalni nedostatak 6 ili više zametaka zuba, isključujući treće molare. Prevalencija oligodontije varira između 0,25 i 0,8%. Posljedice nedostatka zubi su mnogobrojne, a ovise o broju i vrsti zuba koji nedostaju. Najčešće se javljaju kao poremećaji funkcije (govorne, mastikatorne) i estetike. Kod osoba s oligodontijom potrebno je staviti naglasak na rano dijagnosticiranje anomalije i pažljivo planiranje terapije s ciljem davanja optimalne zubne skrbi djece i adolescenata. Ove uvjete moguće je zadovoljiti jedino interdisciplinarnom suradnjom (ortodont, pedodont, oralni kirurg i protetičar). U radu je prikazan slučaj pacijenta M.T. kojemu je u dobi od 17 godina pregledom i analizom ortopantomograma ustanovljeno nepostojanje zametaka jedanaest trajnih zubi (isključujući treće molare) u obje čeljusti, tj. šest zubi u gornjoj čeljusti i pet zubi u donjoj čeljusti (15, 13, 12, 22, 23, 25, 33, 31, 43, 45, 47), uz perzistirajuća tri mliječna zuba u gornjoj čeljusti (53, 62 i 63) i dva mliječna zuba u donjoj čeljusti (73; 83). Kod pacijenta je započeta terapija fiksnom ortodontskim aparatom u obje čeljusti. Pravilnim vođenjem zubi u obje čeljusti pokušao se dobiti optimalni raspored zubi za protetsku rehabilitaciju. Nakon završene fiksne ortodontske terapije pristupilo se protetskoj rehabilitaciji, koja se sastojala od izrade keramičkog mosta u gornjoj i donjoj čeljusti. U gornjoj čeljusti keramički most je sačinjavalo sedam fasetiranih članova (16, 14, 11, 21, 24, 26) i četiri fasetirana međučlana (15, 12, 22, 25). U donjoj čeljusti fiksnu mosnu konstrukciju sačinjavalo je šest fasetiranih članova (34, 32, 41, 42, 44, 46) i tri fasetirana međučlana (33, 43, 45). Rad je izrađen od Ivoclar Design keramike nanese na metal Rermanium CS.

P-13 Otpuštanje iona kobalta, kroma i nikla iz CoCrMo uzoraka finalno poliranih na dva načina

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Uvod: Metalni ioni otpuštaju se iz svih dentalnih legura; kvaliteta i kvantiteta otpuštenih iona ovisi o sastavu legure, hrapavosti površine i o veličini površine u kontaktu s vlažnim strukturama usne šupljine. Količina otpuštenih iona ne ovisi samo o postotku elementa u leguri, katkad se ioni otpuštaju i kad su prisutni samo u neznatnim količinama, pa čak i ako ih proizvođač ne spominje u deklaraciji. Svrha: Izmjeriti količinu otpuštenih iona Co, Cr i Ni iz CoCrMo legure ovisno o različitim završnim načinima poliranja i to u različite otopine koje imitiraju uvjete u usnoj šupljini. Materijal i Metode: Izliveni CoCrMo uzorci (8x8x2 mm) (Wironit®, extra hard, Bego, Germany) bili su ili samo elektropolirani (EP = 5 samples) ili EP i još polirani cromo rotirajućom četkom (BB = 5 samples). Uzorci su uronjeni u 3 otopine koje su simulirale slinu (fosfatni pufer pH 6), dentobakterijski plak (pH 3,5) i kiselinu (fos-

P-11 Orthodontic and prosthodontic rehabilitation of a patient with malocclusion

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Great importance in dentistry is given to collaboration among colleagues of different specialties and multi-disciplinary approach to each patient. This case will show a patient (44 years old) who needed both orthodontic and prosthodontic treatment to achieve a satisfactory oral rehabilitation. The patient was diagnosed with a primary crowding with upper anterior teeth protrusion and class III/L. Pathological occlusion with lower vertical dimension was manifested and palatal mucosa was traumatized by lower incisors. Patient also lacked four lateral teeth in the upper jaw (14, 16, 24 and 25). With fixed orthodontic appliance during the period of two years, the upper anterior teeth retrusion was achieved and vertical dimension was lifted. Due to the retrusion of the upper anterior incisors, the interim area was reduced by 8 mm. After the orthodontic treatment had been finished, fixed prosthetic restorations were made. On the right side of the upper jaw a metal-ceramic five unit bridge was made (13, 15, 17 as abutments) together with a four unit metal-ceramic bridge on the left side of the upper jaw (26, 27, 28 as abutments). With collaboration of orthodontic and prosthetic specialists a satisfactory oral rehabilitation was achieved.

P-12 Orthodontic and prosthodontic rehabilitation in patients with hypodontia

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Oligodontia (multiple aplasia) is a part of tooth anomalies which involve numbers of teeth. It is defined as a congenital deficiency of 6 or more teeth missing, excluding the third molars. The prevalence of the oligodontia is between 0.25-0.8%. The consequences of the missing teeth are numerous, depending on the number and the type of the tooth missing. Mostly we have a deficient function (speech, chewing) and esthetics. The early detection of the anomaly in persons with oligodontia is of the utmost importance, coupled with a carefully planned therapy, especially in the case of the child and adolescence patients. These conditions are going to be met only through the multidisciplinary cooperation (orthodontics, pedodontics, oral surgery, prosthodontics). The case report shows a patient, age 17, was diagnosed through examination and X-rays, to have 11 permanent teeth germs missing (excluding the third molars), in both the upper and lower jaw, 6 of them in the upper and 5 in the lower jaw (15, 13, 12, 22, 23, 25, 33, 31, 43, 45, 47). He also had three deciduous teeth persistent in the upper (53, 62, 63) and 2 in the lower jaw (73, 83). We started the therapy with the fix orthodontics in the both jaws. Regular extractions were done to maintain the optimal teeth configuration for the prosthetics rehabilitation. The prosthetic rehabilitation was done after the orthodontic therapy ended, and it was accomplished with two ceramic bridges in the both jaws. The upper jaw had a ceramic fixed bridge of 7 faceted carriers (16, 14, 11, 21, 24, 26) and 4 faceted in-betweens (15, 12, 22, 25). In the lower jaw we had a 6 faceted carriers (34, 32, 41, 42, 44, 46) and 3 faceted in-betweens (33, 43, 45). Both bridges were made of Ivoclar Design ceramics on the Rermanium CS metal construction.

P-13 Cobalt, chromium and nickel ion release from CoCrMo alloy samples with different final polishing procedures

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Introduction: Metal ions have been released from all dental alloys, however quantity and quality of the released ions is dependent on the alloy's composition, the surface roughness and the contact area with the moist oral structures. The quantity of the ions released from an alloy is not dependent only on the quantity (percentage) of the element in the alloy; sometimes ions may be released even if they are present in small amounts, or even if they are not declared by the manufacturer. Aims: To explore the quantity of the Co, Cr and Ni ion release from the CoCrMo dental alloy depending on different final polishing procedure into different solutions mimicking oral conditions. Materials and Methods: The cast CoCrMo alloy (8x8x2 mm) (Wironit®, extra hard, Bego, Germany) were either only electropolished (EP = 5 samples) or EP and finally polished by a black rotating brush (BB = 5 samples). The samples were

fatni pufer pH 3,5) kroz 7 i 30 dana na 37 °C. Kvantiteta otpuštenih iona Co, Cr i Ni u otopine (mg/l) utvrđena je pomoću Perkin Elmer atomskog apsorpcijskog spektrofotometra (AAS) AAnalyst 700 (USA). Results: Bili su otpušteni ioni Co i Cr, ali nisu nađeni ioni Ni. Više iona otpušteno je u otopine niže pH vrijednosti ($p < 0,05$). Zaključak: Wironit®, extra hard (Bego) predstavlja leguru bez nikla. Konačno poliranje nije utjecalo na otpuštanje iona Co i Cr, ali su pH vrijednost i sastav otopine imali značajan utjecaj.

immersed in three solutions simulating saliva (phosphate buffer pH 6), dentobacterial plaque (pH 3.5) and acid (phosphate buffer pH 3.5) for 7 and 30 days at 37 °C. The quantity of Co, Cr and Ni ions released into the solutions (mg/l) were detected by Perkin Elmer atomic absorption spectrophotometer (AAS) AAnalyst 700 (USA). Results: Both, Co and Cr ions were released, but no Ni ions were found. More ions were released into the solutions of lower pH value ($p < 0,05$). Conclusion: Wironit®, extra hard (Bego) is the Ni-free alloy. Final polishing procedure did not affect Co and Cr ion release, but the pH value and the composition of the immersion solution showed significant influence.

P-14 Posljedice gubitka potporne zone i protetska opskrba - prikaz slučaja

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Nedostatak žvačnog centra ili svih distalnih zuba uzrokuje velika i brza trošenja preostalih žvačnih jedinica. Kroz dugi niz godina, incizalni bridovi prednjih zuba pretvaraju se u okluzalne plohe dok se zubi ne potroše gotovo do ruba gingive. Terapija je opsežna, dugotrajna i često vrlo skupa. Prezentacija obuhvaća prikaz dvaju sličnih slučajeva u kojima je napravljena potpuna protetska rehabilitacija. Odnosi antagonističkih zuba potpuno onemogućavaju protetsko zbrinjavanje bez podizanja zagriba, rekonstrukcije okluzije i određivanja nove protetske ravnine. Preostali zubi gotovo uvijek trebaju endodontske tretmane, nadogradnje i krunice. Abradirani frontalni zubi su devitalizirani i izrađene su im individualne lijevane nadogradnje. Pacijentici u prvom slučaju izrađen je semicirkularni metalkeramički most kojim je protetska ravnina ispravljena. Pacijentu u drugom slučaju izrađen je također most u gornjoj čeljusti te kombinirani rad sa vario kuglama (Bredent GmbH & Co.KG, Weissenhorner Str. 289250 Senden, Germany) u donjoj. Ukoliko skuplji tretmani kao implantati i augmentacije kosti ne dolaze u obzir, klasični metalkeramički radovi kombinirani sa skeletiranim protezama i ankerima u potpunosti će zadovoljiti estetske i funkcijske kriterije. U oba slučaja postignuta je značajna estetska promjena podizanjem vertikalne dimenzije donje trećine lica.

P-14 Consequences of missing teeth in the distal region and its prosthodontic restoration - case report

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Longterm lack of posterior teeth causes fast wear of dental mass in the remaining teeth. As time passes, incisors become short with flat chewing surfaces. Therapy in such cases is vast, longlasting and often very expensive. This presentation includes two similar case reports which include complete oral rehabilitation. The bearing of antagonistic teeth is such that prosthetic work can not be done without bite elevation and reconstruction of occlusion. The remaining teeth most often need endodontic treatment, core buildup and crowns. The patient in the first case received a complete metalceramic bridge in the upper jaw, whereas the patient in the second case also got a bridge in the upper jaw, followed by a bridge and the partial denture in the lower jaw. Attachments used were Vario-Kugel-Snap (Bredent GmbH & Co.KG, Weissenhorner Str. 289250 Senden, Germany). In situations where costly treatment such as implants and bone augmentation are not an option, classic metalceramic crowns and partial dentures with attachments will satisfy both esthetic and functional criteria. In both cases considerable esthetic improvement was achieved.

P-15 Postizanje kompozicije i estetike osmijeha parodontno-kirurškim zahvatom te izradom potpuno keramičkih krunica

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Pretjerana vidljivost gingive te nesklad gingivne arhitekture vrlo su čest nalaz u odraslih osoba, a veliki ih je broj znanstvenika već opisao u literaturi. U ovom je slučaju prikazana pacijentica na kojoj je provedena preprotetska ortodontska terapija u svrhu promjene položaja gornjih prednjih zubi te parodontno-kirurški zahvat u svrhu remodelacije pričvrstnog aparata, uspostavljanja pravilne biološke širine te postizanja idealnih dimenzija zubi. Gornji su prednji zubi nakon ortodontskog i parodontnog zahvata zbrinuti cirkonij-oksidnim potpuno keramičkim krunicama čijim je oblikom, položajem i bojom postignut estetski sklad s gornjom usnicom te istovremeno uspostavljen pravilan osmijeh.

P-15 Optimizing smile composition and esthetics with periodontal surgery and all-ceramic crowns

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Excessive gingival display and disproportion of gingival architecture are frequently seen in adults and have been described in the literature by several authors. This article describes how the adjunctive orthodontics can reposition the maxillary anterior teeth and periodontal plastic surgery can remodel the attachment apparatus, reestablish the correct biologic width and expose the correct dimensions of teeth. Following the orthodontics and periodontal plastic surgery the maxillary anterior teeth were supplied with zirconium oxide all-ceramic crowns accomplishing the esthetic harmony with the upper lip by their shape, position and colour, achieving at the same correct smile.

P-16 Procjena retencijske sile kod potpune proteze

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Svrha ovog istraživanja bila je ispitati vrijednosti retencijske sile adhezije kod za pripremljenih akrilatnih ploča. Metode: mjerenje je napravljeno u laboratoriju Sveučilišta Strojstva i brodogradnje u Zagrebu. Ispitivanje uzoraka je pokazalo vrijednost retencijske adhezijske sile između dvaju paralelnih uzoraka s različitim ili istim dimenzijama. Mjerenje je učinjeno s dinamometrom, čija je mjerna oprema posebno pripremljena za ove svrhe. Takav mjerni uređaj je u mogućnosti mjeriti retencijsku adhezijsku silu akrilatne baze ploča različitih veličina. Preciznost mjerenja vrijednosti sile adhezije uglavnom odgovara preciznosti dobivenoj mjerenjem istih na dinamometru. Sljedeće varijable ispitane su na ovom uzorku: promjer akrilatne baze, promjer baze proteze, koncentracija sline između dvaju ispitivanih uzoraka, debljina akrilatne ploče i brzina uzoraka aberacija. Rezultati: Mjerenje vrijednosti retencijske adhezije su izražene u Newtonima (N). Rezultati su statistički obrađeni i sljedeće vrijednosti su postignute: aritmetički centar, standardna devijacija, minimalne i maksimalne vrijednosti, koeficijent varijabilnosti. Mjerenje vrijednosti retencijske adhezijske sile su u korelaciji s površinom pregledanih uzoraka, koncentracijom sline i

P-16 Assessment of retention forces in complete dentures

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Objective: The purpose of this research was to examine the values of retention adhesion by totally extended surfaces. Methods: Measurements have been done in the laboratory of the University of Mechanic Engineering and Shipbuilding University in Zagreb. Examined samples showed the value of retention adhesion between two parallel samples with various or the same dimension. Measurements were performed with dynamometer, the measuring equipment especially prepared for these purposes. Measuring equipment is capable to measure retention adhesion of acrylic base plates varied in dimension. Precision of measuring of adhesion force mostly correspond to precision when you read of the results on dynamometer. The following variables have been examined on this particular sample: diameter of acrylic plate, diameter of base plate, saliva concentration between two examined samples, the thickness of acrylic plate and rapidity of samples aberration. Results: Measuring values of retention adhesion are represented. The results are statistic elaborated and the following values have been reached: arithmetic centre, standard deviation, minimal and maximal values, coefficient of variability. Measured values of retention adhesion were in correlation with surface

briznom uzoraka aberacija. Zaključci: Prosječna vrijednost zadržavanja adhezije za ispitivane uzorke je 21,36 N. Najveća sila retencije 37,24 N omogućava koncentracija siline od 2,5%, površine od 38,48 cm² pregledanih uzoraka i debljine 3 mm.

of examined samples, saline concentration and rapidity of samples aberration. Conclusions: Average value of retention adhesion for examined samples is 21.36 N. The highest retention force of 37.24 N has been reached by saline concentration of 2.5%, surface of examined sample 38.48 cm² and by thickness of 3 mm.

P-17 Smještaj gingivnih zenita na gornjim prednjim zubima

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Gingivni zenit predstavlja najapikalniju i najvišu točku kliničke krune zuba. Njegov je položaj određen anatomijom korijena, caklinsko-cementnog spojišta te koštanim vrškom alveole, gdje je gingiva najzupčastija. Gingivni je zenit najčešće smješten distalno od uzdužne linije koja se spušta sredinom kliničke krune zuba. Kanini predstavljaju iznimku od ovog pravila i njihov je zenit smješten nešto medijalnije ili na samoj sredini gingivnog ruba zuba. Izgled gingivnih tkiva predstavlja važnu ulogu u estetici gornjih prednjih zubi, naročito pri estetskoj oralnoj rehabilitaciji izradom estetskih keramičkih ljusaka ili potpuno keramičkih krunica. Ovaj klinički slučaj prikazuje postupke mjerenja i analize položaja gingivnih zenita gornjih prednjih zubi kao sastavnog dijela preprotetskog zahvata.

P-17 Location of gingival zeniths in maxillary anterior teeth

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The zenith points present the most apical points of the clinical crowns; which are the height of contour. Their positions are dictated by the root-form anatomy, cementoenamel junction and the osseous crest, where the gingiva is scaloped the most. The zenith points are generally located just distal to a line drawn vertically through the middle of each anterior tooth. The canines are one exception to that rule, as their zenith points are placed more centrally or on the the mid-line of the tooth margin. The appearance of gingival tissues plays an important role in the esthetics of the maxillary anterior teeth, specially during esthetic anterior oral rehabilitation - in case of porcelain laminate veneers and all-ceramic crowns. This case presents the protocol of measurement and analysis of the location of gingival zeniths in the maxillary anterior teeth as the part of preprosthetic treatment.

P-18 Staklom infiltrirane aluminijske oksidne keramičke krunice u estetskom zbrinjavanju prednjih zuba

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Uvod: Pacijent (35 godina, Klasa II, bez gornjeg desnog očajnika) posjetio je ordinaciju sa željom poboljšanja izgleda zuba. Materijali i postupci: Staklom infiltrirane aluminijske oksidne keramičke krunice (alumina krunice) su odabrane kao najbolja opcija za promjenu oblika i položaja gornjih prednjih zuba. Otisak gornjih zuba je uzet prije terapije. Medijalna linija, okluzijska linija, gingivna razina i frontalni nagib gornjih prednjih zubi analizirana je na fotografijama i modelima u artikulatoru. Model je navošten kako bi se ispravili oblik, volumen i os zuba. Plastična folija je otisnuta preko navoštenog modela i koristit će se za intraoralnu izradu kompozitnog uzorka (mock-up). Folija je ispunjena s kompozitnim materijalom za izradu privremenih krunica. Na ovaj način plan terapije je bio prezentiran pacijentu. Korekcija razine gingive i izbjeljivanje svih zuba su provedeni prije brušenja zuba. Silikonski ključ navoštenog modela je korišten za kontrolu pri brušenju. Primjenjena je tehnika dvostrukih konaca i korekturni otisak. Prvo su izrađene jezgre kruna od staklom infiltrirane aluminijske oksidne keramike (Vita In-Ceram Alumina). Nakon kontrole dosjeda, krunice su završene u keramici. Rezultat: Krunice su pozicionirane i provjereni su marginalni dosjed, os zuba, oblik, veličina i boja, kao i okluzijski kontakti. Pacijent je bio zadovoljan estetikom, te su se krunice cementirale kompozitnim cementom. Zaključak: Prikaz ovog slučaja pokazuje da su konačni ishod i visoki estetski standard rezultat detaljno pripremljenog plana zahvata. Staklom infiltrirane aluminijske oksidne keramičke krunice su osigurale pouzdanu i učinkovitu proceduru estetskog zahvata na prednjim zubima.

P-18 Glass infiltrated alumina-based all ceramic crowns for the esthetic treatment of anterior teeth

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Introduction: A man (35 years) with a Class II and missing maxillary right canine came to dental office to improve his appearance. Materials and Methods: The glass infiltrated alumina-based all-ceramic crowns (alumina crowns) were selected as the best treatment option to redefine shape and alignment of maxillary frontal teeth. The impression of the maxillary teeth was obtained prior to treatment. Medial line, occlusal line, level of gingival margin and frontal plane alignment of maxillary anterior teeth were analyzed on photos and casts in articulator. Waxup was made in order to correct the shape, volume and axes of teeth. A plastic foil was pressed over waxup model and used for a mock-up. It was filled partially with liquid resin and applied to teeth until the resin was cured. This way the treatment result was presented to the patient. The correction of the gingival contour and the bleaching of all teeth have been done prior the tooth structure was reduced. Silicon index from waxup was used for control of reduction of tooth structure. Double cord technique and two-step putty wash impression technique was obtained. At first, the glass infiltrated alumina core was produced (Vita In-Ceram Alumina). After fitting was checked, cores were veneered with porcelain. Result: Crowns were positioned to verify marginal adaptation, alignment, shape, size and color, as well as occlusal contacts. The patient was satisfied with the esthetics and the restorations were luted using dual-curing resin cement. Conclusion: This case report shows that the final result and high esthetic standards are result of a detailed plan of treatment. Glass infiltrated alumina-based all-ceramic crowns offer a reliable and effective procedure for esthetic treatment of anterior teeth.

P-19 Temporomandibularni poremećaj uzrokovan sportskom traumom – prikaz slučaja

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Temporomandibularni poremećaji (TMP) je skup dijagnoza vezanih za funkcijske poremećaje značajnih mišića i/ili čeljusnih zglobova. Etiologija je multikauzalna, a trauma uzrokovana športom, navodi se kao jedan od mogućih uzroka nastanka simptoma TMP. Rezultat su makrotrauma i mikrotrauma značajnog sustava. U radu je opisan je klinički slučaj 27-godišnjeg mladića, koji je traumom čeljusnog zgloba zadobio u prometnoj nesreći u dobi od 6 godina, kad je slomio ključnu kost i navodi luksaciju lijevog čeljusnog zgloba. Bolesnik navodi da mu se čini, da mu se nakon tog događaja promijenio zagriz. Nadalje, sa 11 godina, u nogometnoj igri, zadobiva udarac zbog kojeg su devitalizirani gornji sjekutići 11 i 21. 2000. godine je frakturirao 11 i zub je morao biti izvađen. Gubitak 11 je nadoknađen izradom privjesnog mosta na zubu 21 s krilnim sidrištem na zub 12. 2009. godine frakturirao je i zub 21. Od tada osjeća povremenu bol u području ranije ozljede lijevog zgloba. Bolesnik je trenutno zbrinut privremenim fiksno protetskim nadomjestkom i u pripremi je za implantoprotetsku završnu terapiju. Snimanjem čeljusnih zglobova magnetskom rezonancijom potvrđen je temporomandibularni poremećaj – anteriorni pomak zglobne pločice u lije-

P-19 Temporomandibular disorder caused by sport-related trauma - case report

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Temporomandibular disorders (TMDs) are a set of diagnosis-related functional disorders of masticatory muscles and/or temporomandibular joints (TMJs). Etiology is multicausal and trauma (macrotraumatism) caused by sports is one of the possible causes of the symptoms of formation of TMD. This paper describes a clinical case of a 27-year-old male patient who suffered trauma to the TMJ in a car accident at the age of 6. He broke his clavicle and mentioned a luxation of one TMJ. The patient stated that he felt that after this event his bite changed. Furthermore, at the age of 11, during a football game, he received a kick which devitalized his upper teeth, 11 and 21. In 2000, the tooth 11 was fractured and it had to be extracted. Loss of the tooth 11 was recovered with the cantilever bridge to the tooth 21, with tooth anchorage with occlusal rest to the 12. In 2009, the 21 was fractured. Since then, he has been feeling occasional pain in the region of the earlier left TMJ injury. The patient is cared for by temporary fixed prosthetic supplement in preparation for the final prosthetic implant therapy. Magnetic resonance imaging (MRI) of TMJs confirmed the TMD - anterior disc displacement in his left TMJ with the repositioning of the open mouth position. Current symptomatology related to sports injuries described - clicking and pain in

vom zglobu s repozicijom u položaju otvorenih usta. Sadašnja simptomatologija vezana je za opisanu sportsku ozljedu – škljocanje i bol u lijevoj čeljusnoj zglobov. U svrhu preveniranja komplikacija, planiranje liječenja treba biti što stručnije i ispravnije. Ovakva športska ozljeda ima izravno štetno biomehaničko djelovanje na čeljusne zglobove i na bazu lubanje. Ozljeda bi se mogla spriječiti da je pacijent koristio individualni štitičnik za zube koji bi trebao biti nezaobilazno sredstvo prevencije orofacijalnih ozljeda, a dugoročno značiti smanjenje troškova liječenja.

P-20 Usporedba ponovljivosti metoda registracije centrične relacije

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Literatura o centričnoj relaciji je obilna, a definicija i metode određivanja centrične relacije otprilike su proturječna. Studija je provedena da bi se statistički odredio najponovljiviji položaj mandibule pomoću tri metode određivanja centrične relacije. Odabrane su tri metode registracije centrične relacije koje se najčešće spominju u literaturi: bimanualna manipulacija mandibule s jig-om (Dawsonov hvat), vođenje brade s jig-om i tehnika Power centrika. Za ovu studiju bilo je odabrano 20 odraslih dobrovoljaca (10 ženskih i 10 muških) prosječne dobi 23,72±5,14 godina. U povijesti bolesti nije bilo vađenja zubi, temporomandibularnog poremećaja ili ortodontskog liječenja. Modeli su bili montirani u artikulatorku (SAM 2P) uz pomoć obraznog luka i silikonskog registrata u maksimalnoj interkuspidaciji. Mehanički trodimenzionalni indikator položaja mandibule (MPI) bio je montiran na artikulatorku omogućujući operatoru da analizira položaje mandibule u 3 prostorne osi (x, anteroposteriorni; y, superoinferiorni; z, mediolateralni pomak). Svaka metoda registracije centrične relacije bila je zabilježena 4 puta za svakog ispitanika (na početku, 1 sat, 1 dan i 1 tjedan približno u isto vrijeme dana). Registrati su prenošeni u artikulatorku, a podaci su bilježeni uporabom modificiranog stereomikroskopa koji je kompatibilan s indikatorom položaja mandibule. Varijabilnost unutar ispitanika varira od 0,02 mm (desna x-os za bimanualnu metodu) do 2,0 mm (lijeva z-os za metodu vođenja bradom). Da bi se upozorilo na najmanje promjenjivu (najponovljiviju) metodu provedena je usporedba F-testom. Bimanualna manipulacija bila je najkonzistentnija pokazujući između 11,10 (p=1) i 0,578 (p=0,005) puta manju promjenu od metode vođenja bradom (najmanje konzistentna). Ponovljivost tehnike Power centrika bila je između druge dvije metode. Rezultati ove studije pokazali su da od tri metode registracije centrične relacije, metoda bimanualne manipulacije pozicionira kondil u centričnu relaciju s konzistentnijom ponovljivošću od preostale dvije metode uz napomenu da je metoda vođenja bradom bila najmanje konzistentna.

P-21 Utjecaj kroničnog stresa i okluzijske interferencije na bol maseteričnog mišića u štakora

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Temporomandibularni poremećaj (TMP) je zajednički naziv za niz kliničkih stanja muskuloskeletalnog i zglobnog tkiva. Etiologija TMP je višezročna i nedovoljno razjašnjena. Cilj istraživanja bio je istražiti učinak kroničnog stresa, okluzijske interferencije te njihov zajednički učinak na bol masetera. Istraživanje je provedeno na 28 muških Wistar štakora. Životinje su podvrgnute kroničnom stresu, okluzijskoj interferenciji ili su izložene objema spomenutim procedurama. Po završetku spomenutih procedura životinje su podvrgnute formalinskom testu, te je očitana bolnost masetera po opisanom modelu ponašanja. Razlika u ponašanju između kontrolne skupine i skupine s okluzijskom interferencijom, te skupine izložene kroničnom stresu nije pokazala statističku značajnost (p>0.05). Naprotiv, bolni odgovor životinja podvrgnutih objema spomenutim procedurama bio je značajno povišen (p<0.01). Podaci dobiveni istraživanjem sugeriraju da jedino kombinacija okluzalne interferencije i kroničnog stresa utječe na pojačanje boli maseteričnog mišića.

P-22 Utjecaj različitih čimbenika na iznos resorpcije rezidualnog grebena kod nositelja potpunih proteza tijekom petogodišnjeg razdoblja

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Resorpcija rezidualnog grebena (RRR) je kontinuirani proces remodelacije kosti. Resorpcija je veća tijekom prvih mjeseci i traje nekoliko godina nakon ekstrakcije zuba, iako se može nastaviti tijekom cijelog života. Maksimalni i mandibularni greben

the left TMJ. In order to prevent treatment complications, planning should be as expert and accurate as possible. Such a sports injury has a direct adverse biomechanical effect on the TMJs and the base of the skull. The injury could be prevented by the use of individual patient mouthguard that should be an obligatory means in prevention of orofacial injuries and a long-term means of reducing treatment costs.

P-20 Comparison of the replicability of centric relation registration methods

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The literature on centric relation is vast, and the definition and methods of attaining centric relation records have always been controversial. This study was conducted to determine statistically the most repeatable mandibular position of 3 centric relation methods. Three centric relation recording methods commonly reported in the literature were selected: bimanual mandibular manipulation with a jig (Dawson's grasp), chin point guidance with a jig, and Power centric. Twenty healthy adult volunteers (10 females and 10 males), with an average age of 23.72±5.14 years and no history of extractions, temporomandibular disorder, or orthodontic treatment, were selected for the study. Accurate casts were mounted on an articulator (SAM 2P) by means of a facebow and maximum intercuspation silicone registration record. A mechanical 3-dimensional mandibular position indicator was mounted on the articulator enabling the operator to analyze the mandibular positions in 3 spatial axes (x, anteroposterior; y, superoinferior; z, mediolateral shift). Each centric relation method was recorded four times on each subject (at baseline, 1 hour, 1 day, and 1 week at approximately the same time of day). Records were transferred to the articulator, and data were recorded using a stereomicroscope modified to accept the mandibular position indicator. Variability within subjects ranged from 0.02 mm (right-side x axis for the bimanual method) to 2.0 mm (left-side z axis for the chin point). To indicate the least variable (most repeatable) method a comparison was made using the F-test. The bimanual method was the most consistent, showing between 11.10 (p = 1) and 0.578 (p = 0.005) times less variation than the chin point method (the least consistent). The repeatability of the Power centric method was somewhere between the other 2 methods. The results of this study showed that of the three centric relation methods evaluated, the bimanual manipulation method positioned the condyles in the centric relation with a more consistent repeatability than the other two methods, whereas the chin point guidance was the least consistent method.

P-21 Influence of chronic stress and occlusal interference on masseter muscle pain in rat

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Temporomandibular disorder (TMD) is a collective term that involves various clinical conditions of musculoskeletal and joint tissue. The etiology of TMD is poorly understood, but it is recognized to be multifactorial. This study aimed to investigate the individual effects of chronic stress and occlusal interference, as well as their combined influence on masseter muscle pain. Experiments were performed on 28 male Wistar rats. Animals were submitted to chronic stress procedure, exposed to occlusal interference, or exposed to both mentioned procedures. At the end of the procedure animals were submitted to orofacial formalin test, and nociceptive behavioral response was evaluated. Statistically significant difference of nociceptive behavioral response in chronically stressed rats and in the animals with occlusal interference in comparison to the control group were not obtained (p>0.05). In contrast, nociceptive behavioral response was significantly increased in rats submitted to both of experimental procedures (p<0.01). These findings suggest that only combination of occlusal interference and chronic stress influence masseter muscle pain.

P-22 Influence of different factors on the rate of residual ridge resorption in complete denture wearers during five years of denture wearing

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Residual ridge resorption is continuous process of bone remodeling. It progresses most rapidly during the first few months and lasts throughout life. The ratio of maxillary to mandibular alveolar resorption is reported to be 1:4, especially in the anterior

resorbira se u omjeru 1:4, posebno u prednjem dijelu gornje i donje čeljusti. Do sada, etiologija RRR nije razjašnjena. Svrha ovoga rada bila je analizirati iznos resorpcije rezidualnog grebena u pet različitim područja obiju čeljusti, na postraničnim telerengenogramima kod nositelja potpunih proteza tijekom petogodišnjeg razdoblja. Postranični telerengenogrami su napravljeni odmah nakon predaje proteza i nakon pet godina nošenja. Prilikom snimanja, korišten je isti kefalostat i svi telerengenogrami su bili snimljeni s protezama u položaju maksimalne interkuspudacije. Istraživanje je provedeno na trideset i jednom pacijentu [13 muškaraca (prosječne starosti 64 godine, raspon dobi od 58 do 80 godina) i 18 žena (srednja dob 68 godina, raspon dobi od 56 do 83 godine)] tijekom pet godina. Rezultati su pokazali značajnu RRR tijekom razdoblja od pet godina. Promatrane varijable kao što su indeks tjelesne mase i nošenje proteza noću nisu imale značajan utjecaj na iznos resorpcije ($p > 0,05$), dok je vrijeme bezubosti imalo značajan utjecaj ($p < 0,05$) na iznos resorpcije rezidualnog grebena. Za zaključiti je da je vrijeme bezubosti jedan od najvažnijih čimbenika koji pridonose težini resorpcije alveolarne kosti.

or part. So far, the etiology of RRR has not been clarified. The aim of this study was to analyse the rate of residual ridge resorption in five different regions of both jaws, on lateral cephalograms of complete denture wearers, during a five-year period. Lateral cephalometric radiographs were made immediately after initial placement of the dentures and after five years of denture wearing. The same cephalostat was used throughout and all films were exposed with the teeth in the position of the maximum intercuspation. Thirty-one patients [13 males (mean age 64 years, age range 58 to 80 years) and 18 females (mean age 68 years, age range 56 to 83 years)] were presented for the 5-year follow up. The results revealed significant RRR during period of five years. Observed variables such as body mass index and night time wearing of dentures had no significant influence on the rate of resorption ($p > 0,05$), while duration of edentulousness had a significant influence ($p < 0,05$) on the rate of residual ridge resorption. In conclusion, the duration of edentulousness is one of the most important factors contributing to the severity of alveolar bone loss.

P-23 Važnost položaja mentalnog otvora u planiranju suvremenih protetskih nadomjestaka

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Uvod: Znanje o položaju mentalnog otvora (foramen mentale) i mandibularnog kanala od velike je važnosti u oralnoj kirurgiji i protetici. Nelagodne smetnje može izazvati pritisak potpune i djelomične pokrovne proteze, zatim nasjedanje implantata na foramen mentale te pritisak uzrokovan oteklinom, hematomom ili ožiljkom. Oštećenjem mandibularnog kanala ili foramena mentale može se ozlijediti n. alveolaris inferior, n. mentalis ili krvne žile. To može uzrokovati krvarenje, paresteziju, reducirani osjet, pojačanu i bolnu osjetljivost ili kompletan gubitak osjeta u području zubi, donje usnice i okolnog tkiva. Svrha istraživanja je bila odrediti veličinu i položaj otvora foramen mentale. Metoda: Istraživanje je rađeno na uzorku od 50 odraslih donjih čeljusti, za koje je bio poznat parametar spola. Bili su različitog dentalnog statusa - bezubi, djelomično ili potpuno ozubljeni. Mjerenja su rađena na lijevoj i desnoj strani. Mjereni su parametri koji opisuju oblik i položaj otvora foramen mentale: meziodistalni i kraniokaudalni promjer, udaljenost: foramen mentale - gornji rub donje čeljusti, rub alveole zuba, okluzalni rub zuba, donji rub donje čeljusti, sredina donje čeljusti, angulus mandibule. Rezultati: Položaj otvora foramen mentale određen je sljedećim prosječnim vrijednostima: udaljenost foramen mentale od gornjeg ruba donje čeljusti $10,91 \pm 3,89$ mm, donjeg $13,09 \pm 1,57$ mm, okluzalnog ruba zuba $23,02 \pm 2,68$ mm, sredine $25,82 \pm 2,46$ mm, angulusa donje čeljusti $65,21 \pm 4,44$ mm. T-Test je pokazao da postoje statistički značajne razlike između lijeve i desne strane za udaljenost lijevog i desnog foramena mentale od sredine donje čeljusti ($p < 0,05$). Oneway Anova test pokazao je da se za udaljenost foramena mentale od gornjeg ruba kosti statistički značajno razlikuju mjerenja ovisno o tome imaju li pacijenti zube ili ne. Zaključak: Poznavanje položaja foramen mentale predstavlja vrlo zahtjevan i odgovoran dijagnostički pristup prije samog planiranja protetskog ili implanto-protetskog zbrinjavanja u donjoj čeljusti.

P-23 The importance of mental foramen position in modern prosthodontic suprastructure planning

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Introduction. Knowledge about mental foramen position and mandibular channel is of great importance in oral surgery and prosthetics. Pressure of full and partial denture, implant pressure on the foramen mentale and pressure caused by swelling, hematoma, or scar, can cause uncomfortable interferences. Damage of mandibular channel or foramen mentale can hurt n. alveolaris inferior, n. mentalis or blood vessels. This may cause bleeding, paresthesia, reduced sensation, increased and painful sensitivity or complete loss of sensation in the teeth, lower lip and surrounding tissue. Purpose of this research was to determine the size and position of foramen mentale. Method: The research was done on a sample of 50 adult mandibles (parameter of sex known). They had different dental status - teeth partially, completely or toothless. The measurements were made on the left and right side. The measured parameters describe the shape and position of foramen mentale: - Horizontal and vertical diameter, - Distance: foramen mentale - superior border of the mandible, the most incisal part of the tooth, inferior border, midline, angulus. Results: The position of foramen mentale is determined by these average values: distance to superior border 10.91 ± 3.89 mm, inferior 13.09 ± 1.57 mm, to the most incisal part of the tooth 23.02 ± 2.68 mm, midline 25.82 ± 2.46 mm and to the angulus 65.21 ± 4.44 mm. T-test showed there were statistically significant differences between left and right side for the distance of foramen mentale to the midline of the jaw ($p < 0.05$). Oneway Anova test showed the measurements of distance of the foramen mentale from the superior border vary significantly depending on patient's dental status. Conclusion: Knowing the position of foramen mentale is a very demanding and responsible diagnostic approach before the actual planning of prosthetic or implanto-prosthetic therapy in the mandible.

P-24 Vođeno implantoprotetsko zbrinjavanje planirano na modelu

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U implantoprotetskom zbrinjavanju je posljednjih godina vidljiv trend kompjutorski vođenog postavljanja implantata i izrade protetske suprakonstrukcije. Pomoću ove metode kliničar postavlja implantate na prethodno planiranu poziciju, pomoću kirurške šablone, precizno u sve tri dimenzije, uz predvidljiv konačni protetski rezultat. Planiranje se radi na računaru pomoću CT snimke čeljusti pacijenta te se informacije šalju elektroničkim putem u tvornicu koja tada izrađuje kiruršku šablonu. Ova metoda je sigurna, brza, minimalno invazivna te je izrada protetskog nadomjestka moguća čak i prije samog kirurškog zahvata. Vođeno implantoprotetsko zbrinjavanje planirano na modelu pruža sve ove prednosti uz dodatno skraćivanje vremena od prvobitnog planiranja do postavljanja implantata. To se postiže izradom šablone u zubnom laboratoriju, bez CT snimke, smanjujući troškove samog postupka i stomatologu i pacijentu. Ova metoda je idealno rješenje kod gubitka jednog zuba ili parcijalne bezubosti gdje nisu ugrožene okolne vitalne anatomske strukture.

P-24 Model based guided implant prosthodontic treatment

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 Private dental practice

The trend in modern implant prosthodontic treatment is computer guided implant placement, along with the production of prosthetic restoration. With this method the clinician places implants in pre-planned positions, with the aid of a surgical guide, precisely in all three dimensions with a predictable final prosthetic result. The planning is done on a computer, based on a CT scan of the patient, the information is then sent electronically to a factory which makes the surgical guide. This method is safe, fast, minimally invasive and allows the final restoration to be made prior to the surgical procedure. Model based guided implant prosthodontic treatment has all these benefits along with shortening the time from start of treatment planning to the insertion of the implants. This is achieved with the production of the surgical guide in a local laboratory, without a CT scan, reducing the costs for both the clinician and the patient. This method is the ideal solution for replacing a single lost tooth or treating partial edentulism when the surrounding anatomical structures aren't

USMENA IZLAGANJA MEDICINSKIH SESTARA

ORAL PRESENTATIONS OF DENTAL ASSISTANTS

S-1 MRSA i u izvanbolničkoj sredini

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MRSA je bakterija punog naziva Methicillin rezistentni *Staphylococcus aureus* (zlatni stafilocok). Prirodno mu je prebivalište čovjekova koža: ruke, nos, pazuh i prepona. Osoba koja ima bakteriju ne mora razviti infekciju, ali je može prenijeti na drugu osobu. Takva se osoba naziva kliconoša. MRSA se širi rukama zdravstvenih radnika, manje predmetima, rijetko zrakom. Infekcija MRSA-om nastaje kada bakterija dospje u tkivo imunološki kompromitirane osobe, gdje može izazvati teške infekcije kože i mekih tkiva. Najviše su ugrožene starije osobe i bolesnici koji boluju od teških kroničnih bolesti, bolesnici izloženi invazivnim medicinskim postupcima i pacijenti koji su često pod antibiotskom terapijom. Sojevi MRSA-e vodeći su uzročnici bolničkih infekcija, ali u posljednjih nekoliko godina imaju veliko značenje i u izvanbolničkim sredinama. Za razliku od višestruko otpornih bolničkih MRSA sojeva, izvanbolnički su otporni uglavnom na betalaktamske antibiotike (penicilini, cefalosporini). Infekcija MRSA-om dobivena od osobe koja nije ležala u bolnici, nije bila izložena kateterizaciji i dijalizi ili drugim invazivnim medicinskim zahvatima nazivamo CA MRSA (engl. Community, Acquired). Smatra se da je od svih klinički tretiranih MRSA, njih oko 10% preneseno izvan bolnice. Izvanbolnička MRSA manifestira se u obliku mnogobrojnih akni, kožnih vriedova i apscesa koji su bolni, crveni i sadrže gnoj. Ukoliko streptokok prođe u krvotok može izazvati tešku upalu pluća, srčanih zalistaka i dr. a koju je vrlo teško liječiti. Bolnička i izvanbolnička MRSA prenosi se običnim fizičkim kontaktom (ruke), a iz nosa ili pluća (kapljicama). Zbog toga je nužno dobro educirati zdravstveno osoblje i ispravno prakticirati higijenske navike i zakonom propisane "Standardne mjere zaštite" (SMZ). Pranje ruku najvažnija je mjera u prevenciji MRSA-e. Kontrola širenja MRSA-e provodi se epidemiološkom obradom: praćenjem incidencije, traženjem kliconoštva (brisevi ruku,nosa) i tipizacijom izolata (fagotipizacija, molekularne metode). Kliconoštvo se uspješno liječi u nosu nanošenjem mupivacina u parafinskoj bazi 3x dnevno/ 5 dana, na koži kupkama u detergenskom dezinficijensu (klorheksidin). Koliko je prevencija infekcija koje se prenose u zdravstvenim ustanovama važna, vidljivo je i iz činjenice što SZO ove godine promovira aktivnosti vezane uz sigurnost pacijenata i sprečavanja "hospitalnih infekcija" pod sloganom "Clean Care is Safer Care" (higijenski produžena skrb je sigurnija).

S-2 Prvi susret s totalnom protezom - uloga medicinske sestre

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Suvremeno društvo, zbog demografskih promjena vezanih za starenje stanovništva, očituje se sve većim brojem pacijenata kojima je u protetskoj terapiji potrebna izrada totalnih proteza. Medicinska sestra u stomatološkoj ordinaciji treba biti educirana za pristup, komunikaciju i skrb o pacijentu starije životne dobi koji se prvi put susreće s totalnom protezom. Poznavajući probleme vezane uz starenje koji su medicinske, psihološke, socijalne ili financijske prirode, pristup takvom pacijentu mora biti, prije svega, profesionalan i etičan. Komunikacija koja često može biti otežana zbog ostalih medicinskih dijagnoza kao što su oslabljen sluh, demencija, otežan govor, također treba biti prilagođena takvom pacijentu. Sama skrb uključuje pomoć prilikom svih faza izrade totalne proteze, od ulaska u ordinaciju ako se radi o ljudima koji se otežano kreću, smještaja na stomatološki stolac sve do pomoći i asistiranja stomatologu u svim postupcima koji se primjenjuju. Upućivanje i komunikacije ne smiju biti usmjereni samo na administrativnu proceduru već i na psihološku pomoć ljudima koji se prvi put u životu susreću s tim ortopedskim pomagalom, a može se povezati sa sestrinskim dijagnozama kao što su: anksioznost, neupućenost, poremećaj socijalne interakcije i sl. Posebnu pozornost potrebno je posvetiti pri upućivanju o održavanju i postupcima s totalnom protezom koja uključuje upute o učenju govora, žvakanju te higijeni, i redovitim kontrolama kod stomatologa. Prilikom davanja savjeta i uputa možemo se koristiti i pisanim uputama te reklamnim materijalima o sredstvima za održavanje proteze, no usmena komunikacija i ispravan profesionalni pristup medicinske sestre sigurno može pomoći da naš pacijent bez obzira na svoju dob, strahove i otpor prema tom pomagalu prihvati i uspješno se služi totalnom protezom.

S-1 MRSA outside the hospital environment

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Methicillin-resistant *Staphylococcus aureus* (MRSA) is a bacterium responsible for several difficult-to-treat infections in humans. MRSA is staphylococcus aureus bacteria that is resistant to a large group of antibiotics called the beta-lactams. Many people have this bacteria on their skin, nose, armpits and in their groins. The person infected with this bacteria doesn't have to develop the disease, and he is called a carrier of infectious disease. Hospital staff who do not follow proper sanitary procedures may transfer bacteria from patient to patient, rarely the bacteria is transferred through the objects and through the air. The most compromised population are elderly people and also hospital patients with open wounds, invasive devices, and weakened immune systems are at greater risk for infection than the general public. Different types of MRSA is especially troublesome in hospital-associated infections, but last couple of years it has become a problem also outside of the hospital environment. MRSA is often sub-categorized as community-acquired MRSA (CA-MRSA) and it comes from patients who were not treated in hospitals, and there are about 10% of those infections. MRSA has evolved an ability to survive treatment with penicillins and cephalosporins. MRSA infections in the community are usually manifested as skin infections, such as pimples and boils, and occur in otherwise healthy people. If the infection enters the blood stream it could be spread on heart or lungs and those infections are difficult to treat. MRSA infections are spread with hands and also from the nose or from the lungs. It is advised to educate hospital staff to practice safety hygiene measurements and the most important thing is washing hands properly. Epidemiological services take control of MRSA infections. The carriers of infectious disease are well treated with mupivacin 3 times a day/ 5 days, and with chlorhexatydine on their skin. To show the importance of hospital-associated infections, the WHO is very active in taking safety measurements for patients, and it runs a campaign Clean Care is Safer Care.

S-2 The patient's first encounter with complete dentures-the role of the nurse

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In modern society, as a consequence of demographic changes due to the older population, we face a greater number of patients who need a complete denture as a prosthodontic therapy. The nurse in the dental practice has to be educated for the approach, communication and care of the older patient faced with wearing complete dentures for the first time. Knowing the problems of getting older that are medical, psychological, social and financial in their nature, the approach to such a patient has to be professional and ethical above all. Communication may be more difficult due to other medical diagnosis such as hearing impairment, dementia, speaking difficulties and has to be adjusted to such a patient. Care itself includes help during the manufacturing of the complete denture, from the time the patient enters the surgery, if dealing with patients that have difficulties in mobility, by helping him in his seat and assisting the dentist during treatment procedures. Aid and communication shouldn't be limited only to administrative procedures, rather it should include psychological help to people encountering this orthopedical appliance for the first time and therefore the nurse's ability to diagnose: anxiety and disturbances in social interactions are helpful. Special attention should be directed towards instructing patients how to learn to speak with, chew with clean their complete dentures and to remind them of their follow-up appointment. By giving them an advise we can use a written form or advertising materials about cleaning devices but the nurse's oral communication and the correct professional approach can help that our patient regardless of his age, fears and resistance to wearing complete dentures so he accepts them and successfully uses them.