80. Anniversary of the Department of Maxillofacial and Oral Surgery, University of Zagreb School of Medicine and School of Dental Medicine, University Hospital Dubrava, Zagreb
14. Congress of Croatian Society of Maxillofacial, Plastic and Reconstructive Head and Neck Surgery
8. Congress of Croatian Society of Oral Surgery
With International Participation
December 6-7, 2019, Zagreb, Croatia

80. godišnjica Klinike za kirurgiju lica, čeljusti i usta Medicinskog i Stomatološkog fakulteta Sveučilišta u Zagrebu, Kliničke bolnice Dubrava, Zagreb
14. kongres Hrvatskoga društva za maksilofacijalnu, plastičnu i rekonstrukcijsku kirurgiju glave i vrata HLZ-a
8. kongres Hrvatskoga društva za oralnu kirurgiju HLZ-a
S međunarodnim sudjelovanjem
6.-7. prosinca 2019., Zagreb

State of the Art Lecture

A1 MODERN TECHNOLOGIES IN CANCER RESEARCH – OPPORTUNITIES FOR ACADEMIC INSTITUTIONS

Ivan Đikić
Goethe University Frankfurt, Germany, Max Planck Institute for Biophysics, Frankfurt and Genentech Inc South San Francisco, CA USA,

Cancer heterogeneity is defined as a non-uniform distribution of genetically distinct cell subpopulations within cancer sites or during cancer development. Heterogeneity is a major cause of therapy resistance and, thus, vital for combinatorial therapy planning and efficacy. I will present the organisation and opportunities for translational activities in the Frankfurt Cancer Institute based on experiences acquired in Genentech. In particular, integrated efforts to understand and better treat tumour resistance via a state-of-the-art technologies including proteomic, chemogenomic and genetic approaches will be elaborated. We have established the Quantitative Mass Spectrometry Unit for multiplexed exploration of cancer samples as well as monitoring multiple pathways. In addition, a new technology (3Cs) for the production of multiplex CRISPER reagents was developed and together with the establishment of the Structural Genomics Consortium in Frankfurt enables to use combinatorial screens (chemical and multiplex Crisper/Cas9) to deeper explore the basis of cancer heterogeneity and therapy resistance.

Uvodno predavanje

A1 SUVREMENE TEHNOLOGIJE U ISTRAŽIVANJU TUMORA – PRILIKE ZA AKADEMSKE INSTITUCIJE

Ivan Đikić
Goethe Sveučilište Frankfurt, Njemačka; Max Planck Institut za biofiziku, Frankfurt i Genentech Inc South San Francisco, CA USA

Heterogenost tumora definira se kao neujednačena raspodjela genetski različitih staničnih subpopulacija unutar mjesta tumora ili tijekom razvoja tumora. Heterogenost je glavni uzrok otpornosti na terapiju i, prema tome, ključna za planiranje i učinkovitost kombinatorne terapije. Predstavit ću organizaciju i mogućnosti translacijskih aktivnosti u frankfurtskom institutu za tumore na temelju iskustava stečenih u Genentechu. Posebno, integrirani napori za razumijevanje i bolje liječenje otpornosti tumora pomoću vrhunskih tehnologija i posljednjih dostignuća uključujući proteomske, kemogenomske i genetičke pristupe. Osnovali smo Jedinicu za kvantitativnu masenu spektrometriju za višestruko istraživanje uzoraka tumora kao i za nadgledanje multiplih signalnih putova. Pored toga, razvijena je nova tehnologija (3C) za proizvodnju multipleksnih CRISPER reagensa, a zajedno s osnivanjem Konzorcija strukturne genomike u Frankfurtu omogućava nam korištenje kombinatornih zaslona (kemijski i multipleksni Crisper / Cas9) za dublje istraživanje temelja heterogenosti tumora i otpornosti na terapiju.

Keynote Lectures

K1 SINONASAL CANCERS: PROGRESS, CHALLENGES, AND FUTURE DIRECTIONS

Ehab Hanna
Head and Neck Center, University of Texas MD Anderson Cancer Center, Houston, USA

The outcomes of patients with cancers of the sinonasal and skull base regions have improved significantly over the last 40 years. This improvement may be attributed to better diagnostic capability including endoscopy and high-resolution imaging. Significant prog-

Plenarna predavanja

K1 SINONASALNI KARCINOMI: NAPREDAK, IZAZOVI I BUDUĆE SMJERNICE

Ehab Hanna
Centar za glavu i vrat, Sveučilište Teksas, MD Anderson centar za tumore, Houston, USA

Ishodi liječenja bolesnika s malignim tumorima sinonazalnoga područja i područja baze lubanje značajno su se poboljšali u posljednjih 40 godina. To poboljšanje može se pripisati boljim dijagnostičkim mogućnostima, uključujući endoskopiju i slikovne prikaze viso-

ress has also been achieved in modern craniofacial surgery, minimally invasive approaches such as endoscopic and robotic surgery. Major advances have also been made in adjuvant therapy of cranial base tumors including the integration of neoadjuvant chemotherapy, intensity modulated radiation therapy (IMRT), proton therapy and stereotactic radiosurgery. These advances, their impact on treatment outcome, current limitations, and future directions are presented.

ke rezolucije. Značajan napredak postignut je i u modernoj kraniofacijalnoj kirurgiji, minimalno invazivnim pristupima poput endoskopske i robotske kirurgije. Veliki napredak postignut je i u adjuvantnoj terapiji tumora baze lubanje, uključujući integraciju neoadjuvantne kemoterapije, modulaciju jačine zračenja (IMRT), protonsku terapiju i stereotaktičku radiokirurgiju. Prikazani su ovi napreci, njihov utjecaj na ishod liječenja, trenutna ograničenja i smjernice za ubuduće.

K2 ADVANCES IN THE MANAGEMENT OF HEAD AND NECK SARCOMAS

Nicholas Kalavrezos
Head and Neck Centre, University College London Hospital, UK

Sarcomas are malignant neoplasms of mesenchymal origin that comprise less than 1% of all cancers. They demonstrate aggressive biological behaviour, with the majority being locally invasive with significant potential for metastasis. Sarcomas are generally divided into bone sarcomas (BS) and soft tissue sarcomas (STS). The overall annual incidence of BSs is 8/10^6. On average 38 BSs of the skull and facial skeleton are diagnosed in England annually. These account for 10% of all BS. There is a male predilection and a bimodal age-specific distribution (second and third decade). Osteosarcomas, Ewing sarcoma and chondrosarcoma are the main histological subtypes. The overall annual incidence of STSs is 30/10^6, with slight male predominance and the estimated median age at presentation is 65 years. On average 190 STSs of the head and neck region are diagnosed annually in England, accounting for 9% of all soft tissue sarcomas. They are histologically diverse with more than 50 described subtypes. Of all adult sarcomas, only 5–15% occurs in the head and neck region, with 5-year survival rates ranging from 27% to 84% in various studies. The mainstay of treatment for BS is radical surgery, preceded by neo-adjuvant chemotherapy for high grade tumours. This treatment model is an extrapolation of the management applied to long bone sarcomas especially in limb-sparing surgery. The aim of neo-adjuvant chemotherapy in BS of the head and neck is twofold: elimination of distant -lung predominantly- metastases and improvement of local control by reducing the need for large uninvolved soft tissue excision margins at the primary tumour site, which in many cases is difficult due to the complex anatomy of the head and neck region. The role of radiotherapy in head and neck BS is limited, with the exception of Ewing sarcomas. However, radiotherapy is appropriate for the management of residual disease in cases of positive resection margins, when surgical re-excision is not feasible, or when the lesion recurs in anatomically inaccessible areas. Treatment for head and neck STS varies, depending on the specific histopathological type, grade and extent of the tumour. The threshold for using neo-adjuvant chemotherapy may be lower than in soft tissue sarcomas of the extremities, given the challenges of achieving local control. Radical radiotherapy is appropriate for similar indications as for BS. Surgery is implemented in the management of STS in order to maximise the chances of disease control. The role of surgery in STS depends on the resectability of the disease. Its timing -prior or after radiotherapy- depends mainly upon the specific reconstructive aims and the healing potential of radiotherapy - treated tissues. The management strategy is planned and reviewed within a specific sarcoma multidisciplinary setting with radiological, histopathological, oncological and surgical expertise. This presentation reports a cohort of patients with head and neck sarcomas managed by the same surgical and medical team over a period of 15 years. We describe our experience and the evolution of surgical concepts adapted to the histopathological patterns and biological behaviour of these distinct groups of non-epithelial head and neck malignancies.

K2 NAPRECI U LIJEČENJU SARKOMA GLAVE I VRATA

Nicholas Kalavrezos
Centar za glavu i vrat, University College London Hospital, Ujedinjena kraljevina

Sarkomi su maligne novotvorine mezenhimalnoga podrijetla koje čine manje od 1% svih malignoma. Pokazuju agresivno biološko ponašanje, a većina je lokalno invazivna sa značajnim potencijalom metastaziranja. Sarkomi se dijele na sarkome kosti (BS) i sarkome mekoga tkiva (STS). Ukupna godišnja incidencija BS je 8/10^6. U prosjeku se u Engleskoj godišnje dijagnosticira 38 BS skeleta lubanje i lica. Oni čine 10% svih BS. Nastanku su skloniji muškarci i postoji bimodalna distribucija specifična za dob (drugo i treće desetljeće). Osteosarkomi, Ewingov sarkom i hondrosarkom glavni su histološki podtipovi. Ukupna godišnja incidencija STS-a je 30/10^6, s neznatnom dominacijom muškaraca, a procijenjena srednja dob pri predstavljanju je 65 godina. U Engleskoj se prosječno godišnje dijagnosticira 190 STS regije glave i vrata, što čini 9% svih sarkoma mekoga tkiva. Histološki su raznoliki s više od 50 opisanih podvrsta. Od sarcoma u odraslih osoba, samo 5–15% javlja se u predjelu glave i vrata, pri čemu je stopa preživljavanja u pet godina u rasponu od 27% do 84% u raznim studijama. Glavna metoda liječenja BS je radikalna operacija, a za tumore visokoga stupnja prethodi neoadjuvantna kemoterapija. Ovaj model liječenja je ekstrapolacija tretmana koji se primjenjuje za sarkome dugih kostiju, posebno u operaciji koja štedi udove. Cilj neo-adjuvantne kemoterapije kod BS glave i vrata je dvostruk: uklanjanje pretežno udaljenih plućnih metastaza i poboljšanje lokalne kontrole smanjenjem potrebe za velikim ekscizijama tumorom nezahvaćenoga mekoga tkiva na primarnom mjestu tumora, što je kod mnogih slučajeva otežano zbog složene anatomije glave i vrata. Uloga radioterapije u BS glave i vrata je ograničena, s izuzetkom Ewingovih sarkoma. Međutim, radioterapija je prikladna za liječenje zaostale bolesti u slučajevima pozitivnih resekcijskih rubova, kad nije izvediva ponovna kirurška ekscizija ili kada se lezija ponavlja u anatomsko nepristupačnim područjima. Liječenje sarkoma mekih tkiva glave i vrata varira ovisno o specifičnom histopatološkom tipu, stupnju i opsegu tumora. Prag korištenja neo-adjuvantne kemoterapije može biti niži nego kod sarkoma mekih tkiva ekstremiteta, s obzirom na izazove lokalne kontrole bolesti. Indikacije za radikalnu radioterapiju su slične kao za BS. Kirurško liječenje STS provodi se kako bi se povećale šanse za kontrolu bolesti. Uloga kirurgije u STS ovisi o resektabilnosti bolesti. Određivanje vremena operacije - prije ili poslije radioterapije - ovisi uglavnom o specifičnim rekonstruktivnim ciljevima i potencijalu za ozdravljenje tkiva nakon radioterapije. Strategija liječenja planira se i raspravlja u okviru specifičnoga multidisciplinarnoga ekspertnoga tima radiologa, patologa, onkologa i kirurga. Prikazuje se skupina pacijenata sa sarkomom glave i vrata liječenih navedenim kirurškim i medicinskim timom tijekom razdoblja od 15 godina. Opisali smo svoje iskustvo i evoluciju kirurških koncepata prilagođenih histopatološkim obrascima i biološkom ponašanju različitih skupina ovih ne-epitelnih malignoma glave i vrata.
www.londonheadandneck.org

K3 THE TWO FACES OF INNOVATION IN MAXILLO-FACIAL SURGERY, TRENDS AND IMPLICATIONS

Henri Thuau
Centre for Oral and Maxillofacial Surgery, Winterthur, Switzerland

Over the past 10 years, as a result of technological advances, Maxillofacial Surgery has considerably evolved. Reality and virtuality are now intertwined, while the investments in healthcare provisions are steadily increasing. Higher Surgical Training must encompass these new developments, as well as maintain traditional training requirements. The establishment of an evidence-based management rationale, as well as a sound balance between clinical skills, perioperative flexibility is of paramount importance, bearing in mind the training, medicolegal and healthcare budget implications. The challenges facing the clinician nowadays will be illustrated; the current trends and implications will be discussed.

K3 DVA LICA INOVACIJE U MAKSILOFACIJALNOJ KIRURGIJI, TRENDOVI I IMPLIKACIJE

Henri Thuau
Centar za oralnu i maksilofacijalnu kirurgiju, Winterthur, Švicarska

U posljednjih 10 godina, kao rezultat tehnološkog napretka, znatno se razvila maksilofacijalna kirurgija. Sada se isprepliću stvarnost i virtualnost, dok ulaganja u zdravstvenu zaštitu neprestano rastu. Napredna kirurška obuka mora obuhvatiti ova nova dostignuća, kao i održati tradicionalne potrebe za obukom. Realno je uspostavljanje na dokazima utemeljenoga liječenja, kao i čvrste ravnoteže između kliničkih vještina, perioperacijska fleksibilnost je od najveće važnosti, imajući u vidu implikacije na proračun za obuku, medicinsko pravo i zdravstvo. Prikazat će se izazovi s kojima se kliničar danas suočava; raspravljat će se o trenutnim trendovima i implikacijama.

K4 SURGICAL DECOMPRESSION IN THYROID EYE DISEASE: GUIDELINES AND CURRENT EVIDENCE

Manlio Galie'
Department of Cranio Maxillo Facial Surgery, St. Anna University Hospital of Ferrara, Italy

Endocrine Orbitopathy (EO) is the most frequent and important extrathyroidal stigma of Graves' disease. In the active stage of the orbitopathy fibrosis and hypertrophy of the ex-

K4 KIRURŠKA DEKOMPRESIJA KOD ŠTITNJAČOM UZROKOVANE BOLESTI OKA: SMJERNICE I TRENUTNO STANJE

Manlio Galie'
Klinika za kranio-maksilofacijalnu kirurgiju, Sv. Ana Sveučilišna bolnica Ferrara, Italia

Endokrina orbitopatija (EO) je najčešći i najvažniji ekstratiroidni znak Gravesove bolesti. U aktivnom stadiju orbitopatije fibroza i hipertrofija ekstraokularnih mišića mogu dovesti

tra-ocular muscles can lead to visual impairment and diplopia. In the stable phase of the disease surgical treatment by orbital expansion and/or orbital decompression can improve the quality of life and it is indicated for morpho-aesthetic and functional reasons. The surgical technique used should be adapted to the individual patients' needs. In severe cases intraorbital fat removal and bony decompression can be and carried out in one surgical procedure. An integrated global approach by a multidisciplinary team is strongly recommended. Strabismus surgery is a significant part of the overall treatment. The Author suggests general surgical guidelines and an algorithm of treatment in EO.

K5 SALIVARY GLAND TUMORS

Ehab Hanna
Head and Neck Center, University of Texas MD Anderson Cancer Center, Houston, USA

Tumors of the salivary glands are a diverse group of neoplasms with various biologic behaviors, ranging from low-grade indolent tumors to high-grade aggressive malignancy. The lecture will cover the appropriate work up of patients including optimal imaging modalities and the role of fine needle aspiration biopsy. Treatment strategies including surgical approaches, management of the facial nerve, and the indications of elective neck treatment will be presented. The indications and types of adjuvant therapy including radiation and systemic therapy will be discussed. Treatment of patients with unresectable disease will be presented. Finally factors influencing prognosis will be summarized.

K6 MICROVASCULAR MIDFACE RECONSTRUCTION

Michael Rasse
Department of Cranio-Maxillofacial and Oral Surgery, Medical University of Innsbruck, Austria

The midface defect according to the classifications of J.S. Brown or P. Codeiro and E. Santamaria (2000) and its rehabilitation may follow an algorithm consecutive to the classification. The extension of necessary tumour resection may though extend in all directions the classification boundaries. For this reason and patient specific conditions the reconstruction has to be designed individually. Examples are given: For type 1, class1a defect with radial forearm-flap reconstruction. Type 2, class 2a (unilateral maxilla-defect) with scapula-flap (6a old boy with chondrosarcoma, now 23a old with dental rehabilitation). Type 2, class 2b defect (bilateral maxilla defect due to atrophy) with iliac crest reconstruction after elongation of pedicle and prefabrication in the axilla. Type 2, class 2c (bilateral) defect after melanoma resection with scapula reconstruction. Type 3b, class 4a defect (maxilla, orbit) after recurrence of adenoidcystic carcinoma. Latissimus—dorsi-serratus anterior-rib-transplant. Free of recurrence since 8 years. Type 4 defect (right midface, nose and lip) Reconstruction with forehead flap and rib, cheek rotation flap, gracilis flap with facial nerve reconstruction. Free of recurrence since 6 a. Type3 and 4 defect (midface, orbit, anterior and middle skull-base, frontal bone); recurrence of meningeoma; reconstruction with PEEK implant (3-D planning) and 4-peace-fibula-transplant. Tumour free since 4a. The cases should show in examples some of the possibilities executed by the author in midface reconstruction.

K7 DEVELOPMENT OF ORTHOGNATHIC SURGERY IN LJUBLJANA SLOVENIA

Andrej Kansky
Department of Maxillofacial and Oral Surgery, University Medical Centre Ljubljana, Slovenia

Orthognathic surgery is predictable field for correction of severe anomalies of facial skeleton which represent the functional and esthetic problem. Among the orthognathic patients in Slovenia the skeletal Class III are predominant, with the retrusion of upper and/or protrusion of lower jaw with different variations. The primary treatment was basically orientated toward occlusion and bilateral sagital split osteotomy (BSSO) was the most popular surgical procedure. In the beginning orthodontic therapy was unpredictable because of mobile orthodontic devices. After 1990 when we introduced preoperative fixed orthodontics preparation, results were immediately much better. We also introduced 3D model planning and rigid fixation for bone stabilization. We performed bimaxillary procedures in more cases; we operated more cases on cleft patients. After 2000 we started with different distraction technique but most applied was rapid maxillary expansion (RME). After 2006 we started to cooperate with snoring lab we began to treat patients with sleep apnea syndrome as well. In cooperation with orthodontists we began to insert orthodontic anchors in children, in order to influence growth in young skeleton. The importance of esthetics conditioned the new knowledge about orthognathic surgery, so we started to do the three-dimensional facial scanning for the soft tissues analysis and we compared the data with traditional method for facial skeletal analysis. The data enabled the analysis of

do oštećenja vida i diplopije. U stabilnoj fazi bolesti kirurško liječenje orbitalnom ekspanzijom i / ili orbitalnom dekompresijom može poboljšati kvalitetu života i indicirano je iz morfo-estetskih i funkcionalnih razloga. Kiruršku tehniku treba prilagoditi potrebama pojedinog pacijenta. U teškim slučajevima uklanjanje intraorbitalne masti i dekompresija kosti mogu se provesti u jednom kirurškom postupku. Preporučuje se integrirani globalni pristup multidisciplinarnog tima. Operacija strabizma značajan je dio cjelokupnog liječenja. Autor predlaže opće kirurške smjernice i algoritam liječenja u EO.

K5 TUMORI ŽLIJEZDA SLINOVNICA

Ehab Hanna
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Tumori žlijezda slinovnica su raznolika skupina novotvorina s različitim biološkim ponašanjem, u rasponu od indolentnih tumora niskoga stupnja malignosti do agresivnih zloćudnih malignoma visokoga stupnja malignosti. Predavanje će obuhvatiti odgovarajuće zbrinjavanje bolesnika, uključujući optimalne slikovne prikaze i ulogu aspiracijske biopsije tankom iglom. Bit će predstavljene strategije liječenja, uključujući kirurške pristupe, postupak s ličnim živcom i indikacije za elektivnu disekciju vrata. Predstavit ćemo rasprave o indikacijama i vrstama adjuvantne terapije, uključujući zračenje i sistemsku terapiju. Predstavit će se liječenje bolesnika s neresektabilnom bolesti. Na kraju će biti sažeti čimbenici koji utječu na prognozu.

K6 MIKROVASKULARNA REKONSTRUKCIJA SREDNJEGA LICA

Michael Rasse
Klinika za kranio-maksilofacijalnu i oralnu kirurgiju, Medicinsko sveučilište Innsbruck, Austria

Defekt srednjega lica prema klasifikacijama J.S. Brown ili P. Codeiro i E. Santamaria (2000) i njegova rehabilitacija mogu slijediti algoritam dosljedan klasifikaciji. Potrebna širina resekcije tumora može se proširiti u svim smjerovima granice klasifikacije. Iz toga razloga i zbog specifičnih stanja pacijenta rekonstrukcija mora biti osmišljena pojedinačno. Prikazujemo primjere:tip 1, klasa 1a defekt rekonstruiran radijalnim podlaktičnim režnjem. Tip 2, klasa 2a (jednostrani maksilarni defekt) sa skapularnim režnjem (6a dječak s hondrosarkomom, sada dobi od 23 godine sa zubnom rehabilitacijom). Tip 2, klasa 2b (bilateralni defekt maksile zbog atrofije) rekonstruiran s režnjem kriste ilijake nakon izduživanja peteljke i prefabrikacije u aksili. Tip 2, klasa 2c (bilateralno) defekt nakon resekcije melanoma rekonstruiran skapulom. Tip 3b, klasa 4a defekt (maksila, orbita) nakon recidiva adenoidcističnoga karcinoma. Latissimus - dorsi-serratus anterior-rebro-transplantat. Bez recidiva 8 godina. Tipa 4 defekt (desna sredina srednjega lica, nos i usna) Rekonstrukcija s čeonim režnjem i rebrom, rotacijski obrazni režanj, gracilis režanj s rekonstrukcijom ličnoga živca. Bez recidiva 6 godina. Tipa 3 i 4 defekt (srednje lice, orbita, prednja i srednja baza lubanje, frontalna kost); recidiv meningeoma; rekonstrukcija s PEEK implantatom (trodimenzionalno planiranje) i četrorodjelnim fibula transplantatom. Bez tumora 4 godine. Slučajevi bi u primjerima trebali pokazati neke mogućnosti koje je autor izvršio u rekonstrukciji srednjega lica.

K7 RAZVOJ ORTOGNATSKE KIRURGIJE U LJUBLJANI, SLOVENIA

Andrej Kansky
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Ortognatska kirurgija je predvidljiva disciplina za korekciju teških anomalija kostura lica, koje predstavljaju funkcijski i estetski problem. Među ortognatskim bolesnicima u Sloveniji prevladava skeletna klasa III, s retruzijom gornje i/ili protruzijom donje čeljusti s različitim varijacijama. Primarno liječenje bilo je u osnovi orijentiranp na okluziju, a najpopularniji kirurški postupak bio je obostrana sagital split osteotomija (BSSO). U početku je ortodontska terapija bila nepredvidljiva zbog uporabe mobilnih ortodontskih naprava. Nakon 1990. godine kada smo uveli fiksnu ortodontsku preoperativnu pripremu, rezultati su odmah bili puno bolji. Također smo uveli 3D planiranje i čvrstu fiksaciju za stabilizaciju kostiju. U više slučajeva izveli smo bimaksilarnu korekciju, operirali smo više slučajeva s rascjepom. Nakon 2000. godine započeli smo s različitom tehnikom distrakcije, ali najviše se primijenila brza maksilarna ekspanzija (RME). Nakon 2006. godine započeli smo suradnju s laboratorijom za istraživanje hrkanja, a počeli smo i liječiti pacijente sa sindromom apneje u snu. U suradnji s ortodontima počeli smo umetati ortodontska sidra u djece kako bismo utjecali na rast mladoga skeleta. Važnost estetike uvjetovala je nova saznanja o ortognatskoj kirurgiji, pa smo počeli raditi trodimenzionalno skeniranje lica za analizu mekih tkiva i usporedili smo podatke s tradicionalnom metodom za analizu skeleta lica. Podaci su omogućili analizu lica kao cjeline, prije i poslijeoperativno. Nove tehnologije poput skeniranja površine lica s digitalnom podrškom omogućuju nam nova sa-

face as a unit, pre and postoperatively. New technologies as facial surface scanning with digital support allow us new knowledge about facial characteristics. With 3D planning in different software, we try to make our surgery predicable, safe and with low morbidity.

K8 SUCCESSFUL MANAGEMENT OF FEW SEVERE CASES IN MAXILLOFACIAL PRACTICE - MY APPROACH

Slave Naumovski
Clinic for Maxillofacial Surgery, Skopje, North Macedonia

Therapeutic goals for maxillofacial surgery are not only directed towards the correction of deformities but also to provide the optimal functional and esthetic effect that result in patient's satisfaction. The paper presents surgical options for the correction of few severe cases from the everyday practice that has good functional and aesthetic results. We include: 1. Large pleomorphic adenoma – Pleomorphic adenoma is the most common type of all salivary gland tumors. Although uncommon, cases of giant pleomorphic adenomas have been described in the medical literature, the majority involving the parotid gland. This paper describes an unusual case of a giant adenoma arising in the parotid gland, including para and retropharyngeal area, the biggest and most difficult ever in my practice. 2. Mandibular mycrogenia (congenital cutaneous ankylosis TMJ) - using MEDPOR implants (biocompatible porous polyethylene material suitable for rapid fibrovascularization and integration with surrounding tissue) high esthetic outcome was achieved. 3. Mandibular midline defect [Andy Gamp deformity - after large oblique resection of polycystic tumor (ameloblastoma) of mandible] – the case was solved using autologous split rib transplant fixed with Titanium plate. All three surgical approaches gave good functional and aesthetic results.

K8 USPJEŠNO LIJEČENJE NEKOLIKO ZAHTJEVNIH MAKSILOFACIJALNIH SLUČAJEVA – MOJ PRISTUP

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Terapijski ciljevi maksilofacijalne kirurgije nisu usmjereni samo na korekciju deformiteta, već i na pružanje optimalnoga funkcijskoga i estetskoga učinka koji rezultira zadovoljstvom pacijenta. U radu su predstavljene kirurške mogućnosti liječenja nekoliko zahtjevnih slučajeva iz svakodnevne prakse s dobrim funkcijskim i estetskim rezultatima. Prikazujemo: 1. Veliki pleomorfni adenom - Pleomorfni adenom najčešća je vrsta svih tumora žlijezda slinovnica. Iako su neuobičajeni, slučajevi gigantskih pleomorfnih adenoma opisani su u medicinskoj literaturi, a većina ih uključuje parotidnu žlijezdu. Prikazujemo neobičan slučaj gigantskog adenoma parotidne žlijezde, uključujući para i retrofaringealno područje, najveći i najteži u mojoj praksi. 2. Madibularna mikrogenija (kongenitalna kožna ankiloza TMJ) - upotrebom implantata MEDPOR (biokompatibilni porozni polietilenski materijal pogodan za brzu fibrovaskularizaciju i integraciju s okolnim tkivom) postignut je dobar estetski ishod. 3. defekt prednjega središnjega dijela donje čeljusti [deformitet Andy Gamp - nakon resekcije velikoga policističnoga ameloblastoma mandibule] - slučaj je riješen pomoću autologne transplantacije rebra fiksiranoga s titanijskom pločom. Sva tri operacije rezultirale su dobrim funkcijskim i estetskim rezultatom.

K9 THE SIGNIFICANCE OF ORAL HPV MANIFESTATIONS - OVER OR UNDERESTIMATED ENIGMA?

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During the last decade different *Human papillomavirus* (HPV)-associated lesions such as condylomata acumianta et plana, penile, scrotal, and anal intraepithelial neoplasias, as well as the extragenital cancers (oral, tonsillar, pharyngeal) have been studied a little bit more extensively. Oral HPV infections have been linked to sexual behaviour, but recent evidence supports their horizontal, mouth–to–mouth transmission. Most HPV infections in infants are acquired vertically from the mother during the intrauterine period, during delivery, or later via saliva. The best–known benign clinical manifestations of HPV infection are oral condylomata and focal epithelial hyperplasia. Persistent HPV infection is mandatory for HPV–associated malignant transformation. However, progression of HPV–induced lesions to malignancy requires additional cofactors. Until now, there is substantial evidence that a subset of oral cancers and other head and neck cancers might be causally associated with HPV infection. Thus, clinically, we speak today about the full spectrum of oral HPV infections – from asymptomatic infections to benign, potentially malignant oral lesions, and squamous cell carcinoma. More than 35 types of HPV might infect the oro-genital tract; types 16 and 18 inducing about 70% of high-grade intraepithelial genital neoplasias, such as penile, anal, scrotal, vulvar, vaginal etc. (thus not only cervical), and HPV 6 and 11 causing 90% of anogenital warts. A prophylactic vaccine that targets these types should thus substantially reduce the burden of HPV-associated clinical diseases. Ultimately, within the spectrum of therapeutic options for condylomata, no method is really superior to others; recurrences occurred in 30-70% of cases. We definitely need the HPV vaccination programme to get rid of one of the oldest and up to now unsolved problems of mankind. Since HPV is transmitted by sexual intercourse, managing both partners is necessary in order to eliminate the virus in the population. Approaches to this include prophylactic vaccines such as quadrivalent (4v) and, respectively, nonavalent (9v) HPV vaccine for both men and women. This should be the only way to significantly decrease the numbers of infected persons and prevent associated malignancies. Besides, a proper dermatological training is required as the clinical criterion is still very important and the HPV-induced lesions get quite often misdiagnosed unless managed by the skilled professional. It can be thus concluded that the HPV-genital infections represent a significant issue, and the good co-operation between dermatovenereologists and oral health specialists should definitely be the precondition for the successful management of the HPV-associated diseases.

K9 PRECIJENJENO ILI POTCIJENJENO ZNAČENJE ORALNIH MANIFESTACIJA HPV INFEKCIJA?

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Genitalne infekcije uzrokovane humanim papiloma virusom (HPV) klinički se najčešće manifestiraju kao širok spektar bolesti, od čega posebno ističemo: condylomata acuminata (šiljasti kondilomi), condylomata plana (ravni kondilomi), gigantski kondilom Buschke-Löwenstein, papulosis Bowenoides, kao i razne druge kliničke manifestacije intraepitelnih neoplazija (IN) vanjskog genitalnog sustava (dakle, ne samo cervikalne intraepitelne neoplazije, CIN), poput npr. penilne (PIN), analne (AIN), vulvarne (VIN), skrotalne (SIN), ili vaginalne (VAIN) intraepitelne neoplazije. Studije koje istražuju povezanost HPV-a i karcinoma oro-genitalnog (ali i ekstragenitalnog) sustava (najčešće glans, prepucij, anus, no, sve više i oralna sluznica, orofarinks i tonzile) ukazuju na značenje visokorizičnih tipova HPV u tom smislu. Ove se infekcije najčešće pojavljuju u mladoj, generativno sposobnoj populaciji, te je stoga njihovo uspješno praćenje i liječenje obveza svakog društva koje teži napretku. Fokalna intrapitelna hiperplazija i kondilomi su najčešće manifestacije HPV u oralnoj regiji, no, danas je sve jasnija povezanost visokorizičnih tipova HPV s pojavom premalignih i malignih lezija oralne sluznice, jezika, orofarinksa itd. Svakako treba istaći da još uvijek ne postoji specifično protuvirusno liječenje HPV-genitalnih infekcija, recidivi su česti (30-70%), a raznovrsni terapijski pristupi ponekad vrlo neugodni za bolesnika i zahtjevni za liječnika. Cijepljenje protiv HPV-a definitivno predstavlja značajan pomak u preventivnom pristupu HPV-genitalnim infekcijama, pri čemu, jasno, ne smiju biti zanemareni niti ostali aspekti prevencije poput edukacije, odgovornog spolnog ponašanja i primjene kondoma. Stoga je primarni cilj cijepljenja zaštiti djecu i adolescente oba spola prije prvog mogućeg kontakta s HPV. Rezultati multicentričnih studija o učinkovitosti četverovalentne, danas poglavito i deveterovalentne (9v) HPV vakcine na velikom broju ispitanika nedvosmisleno ukazuju na visoku učinkovitost HPV vakcine. Nikako ne bi trebala postojati cjepiva usmjerena samo na jedan spol, stoga su i muškarci ravnopravni subjekti u programu HPV vakcinacije. S obzirom na sve navedeno, kao i na dostupnost cjepiva protiv HPV-infekcija, danas je HPV cijepljenje oba spola ozbiljan pomak kojim se značajno unaprjeđuje pristup ovom problemu pri čemu timski rad dermatovenerologa i specijalista za oralnu medicinu predstavlja jedini ispravni put.

Residents' Presentations

S1 NEEDLESTICK INCIDENT – UNUSUAL FOREIGN BODY IN THE NECK

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Introduction: Heroin addiction is on the constantly rise, despite bans on production and use in most countries of the world. Due to its easy accessibility and rapid development of addiction, it is particularly fatal because of its spread among the younger population. One way to spread it is through intravenous application. Addicts in the abstinence crisis are breaking down all the fences of logic and rational behavior, so using common accessories helps to spread several infectious diseases. Sometimes, maxillofacial surgeons are also involved in treating the consequences of heroin addiction. *Materials and Methods:* The long-time heroin addict comes to the emergency maxillofacial service because of a foreign body in his neck. It was an insulin needle that broke when trying to applicate narcotics into the jugular external vein. The needle position was located by classic X-ray imaging of the cervical spine and an indication for urgent surgical removal was placed because of the danger of its movement toward the thorax. The incision over the presumed needle position was not successful or other incision made more distally. Therefore, it was decided to do intraoperative X-ray imaging with the pre-placement of multiple needles that served as markers of the needle position. *Results:* Compared to the initial X-ray image, the needle migrated by about 6 cm and was found in the outer part of the sternocleidomastoid muscle through the third incision, immediately adjacent to the upper edge of the clavicle. After removal of the needle, suturing of the surgical wounds followed. Because the needle was reused, we performed tetanus prophylaxis and the next morning the patient was discharged for home care. *Conclusions:* This example also emphasizes the need to fight addiction by all means available, with the involvement of families, specialized medical professionals and the wider community.

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S2 BLOW-OUT FRACTURES

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Introduction: Orbital blowout fractures occur after blunt trauma to the orbit and most commonly involve the orbital floor and/or the medial orbital wall. They are generally more prevalent in men than women, and the most common causes are violence and sports injuries. Most common clinically observed signs and symptoms that strongly suggest the diagnosis of an orbital blowout fracture are orbital pain, periorbital haematoma, subconjunctival haemorrhage, limitation of eye movement and diplopia, enophtalmos, hypoesthesia along the infraorbital nerve distribution and subcutaneous emphysema of the eyelids. The diagnosis is confirmed with MSCT. *Materials and methods:* Medical records of patients treated for blowout fractures in University Hospital Dubrava Department of Maxillofacial Surgery were analyzed. The investigation included all cases examined during the period from 1 January 2016 to 31 December 2018. We collected data about the patients' sex and age, mechanism of injury, clinical presentation, delay from trauma to examination and start of treatment, diagnostic procedures, form and result of treatment and length of follow-up. *Results:* In this study, we compare the outcomes of different forms of treatment, evaluate the median time of follow up and most common complications and discuss the possibilities for improvement. *Conclusion:* The absolute indications for surgical treatment of blow out fractures are limitation of eye movement with diplopia or significant enophtalmos. MSCT scans must include coronal and sagittal sections in order to evaluate the possible herniation of soft orbital tissues through the fracture and into the maxillary sinus. It is essential to recognize the entrapment of inferior rectus muscle in the fracture. Surgical treatment includes release of the entraped or herniated tissue and reconstruction of the orbital floor using titanium or prolene mesh.

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S3 DOG BITES AS SOCIAL AND MAXILLOFACIAL PROBLEM

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Introduction: Bite wounds are a common reason for emergency department admissions, with dog bites dominating. Due to the increasing number of dogs as pets, dog bites have become a major problem in modern society, especially in urban conglomerates. Dog bites in the head and neck region are an increasingly common therapeutic challenge for the maxillofacial surgeon. *Materials and methods:* The frequency of recorded dog bites in the region gravitating to the Clinical Hospital Center Split, sites of exposure to dog attacks, the distribution of bites by age, sex and injured parts of the body, as well as therapeutic

Predavanja specijalizanata

S1 UBODNI INCIDENT – NEOBIČNO STRANO TIJELO U VRATU

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Uvod: Heroinska ovisnost u stalnom je porastu, unatoč zabranama proizvodnje i uporabe u većini država svijeta. Zbog lake dostupnosti i brzog razvoja ovisnosti, osobito je koban zbog njegovog širenja među mlađom populacijom. Jedan od načina njegove primjene je intravenska aplikacija. Narkomani u apstinencijskoj krizi ruše sve ograde logike i razumnog ponašanja, pa koristeći zajednički pribor doprinose širenju više zaraznih bolesti. Ponekad su i maksilofacijalni kirurzi involvirani u liječenje posljedica povezanih s heroinskom ovisnosti. *Materijali i metode:* Dugogodišnji heroinski ovisnik dolazi u hitnu maksilofacijalnu službu zbog stranog tijela u vratu. Radilo se o inzulinskoj igli koja se prelomila pri pokušaju aplikacije narkotika u venu jugularis eksternu. Položaj igle lociran je klasičnom RTG snimkom područja vratne kralježnice i postavljena je indikacija za žurno kirurško odstranjenje, zbog opasnosti od njenog pomicanja prema toraksu. Rez nad pretpostavljenim položajem igle nije urodio plodom, pa niti drugim rezom učinjenim distalnije. Stoga je donešena odluka da se učini intraoperacijska RTG snimka uz prethodno postavljanje više igala koje su poslužili kao markeri pozicije igle. *Rezultati:* U odnosu na inicijalnu RTG snimku igla je migrirala za oko 6 cm i kroz treću inciziju nađena je u vanjskom dijelu MSCM, neposredno uz gornji rub klavikule. Nakon odstranjenja igle, uslijedilo je šivanje operacijskih rana po slojevima. Obzirom da je igla korištena višekratno, sproveli smo antitetaničku profilaksu i slijedeće jutro pacijent je otpušten na kućnu skrb. *Zaključci:* I ovaj primjer apostrofira potrebu borbe protiv ovisnosti svim raspoloživim sredstvima, uz uključivanje obitelji, specijaliziranih medicinskih stručnjaka i šire društvene zajednice.

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S2 BLOW-OUT PRIJELOMI

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Uvod: Blow out prijelomi najčešće zahvaćaju dno i /ili medijalnu stijenku orbite. Nastaju izravnim djelovanjem sile na orbitu tupim predmetom čiji je promjer manji od promjera koštanog ruba orbite. Prema literaturi češći su u muškaraca, a česti uzroci su nasilje i sportske ozljede. U kliničkoj slici javljaju se bol, periorbitalni hematom i edem, subkonjunktivalno krvarenje, poremećaj bulbomotorike s posljedičnim dvoslikama, više ili manje izražen enoftalmus, supkutani emfizem te ponekad hipoestezija u inervacijskom području infraorbitalnog živca. Sumnja na takav prijelom može se postaviti anamnezom i kliničkim pregledom, a dijagnoza se potvrđuje MSCT-om. *Materijali i metode:* Učinjeno je retrospektivno istraživanje u koje su uključeni pacijenti s blow out prijelomom liječeni u Klinici za kirurgiju lica, čeljusti i usta KB Dubrava. Iz bolničkog informatičkog sustava prikupljeni su medicinski podaci o dobi i spolu pacijenata, kliničkoj prezentaciji prijeloma, vremenskom odmaku od ozljede do liječenja, dijagnostičkim postupcima te načinu i ishodu liječenja. *Rezultati:* U analiziranom uzorku, pacijenti su češće bili muškarci mlađe životne dobi. Najčešći uzroci bili su padovi, nasilje i sportske ozljede. Prijelomi su većinom liječeni kirurški, uglavnom rekonstrukcijom titanskom mrežicom. *Zaključci:* Pri snimanju MSCT-a nužno je analizirati koronarne i sagitalne presjeke, kako bi se moglo procijeniti postoji li i u kojem opsegu prolaps tkiva prema maksilarnom sinusu, odnosno postoji li uklještenje mekog tkiva, a osobito donjeg ravnog očnog mišića, u frakturnoj pukotini. Apsolutne indikacije za kirurško liječenje su poremećaj bulbomotorike uz dvoslike i/ili izražen enoftalmus. Kirurško liječenje uključuje oslobađanje intraorbitalnog mekog tkiva i rekonstrukciju koštanog defekta.

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S3 UGRIZI PASA KAO DRUŠTVENI I MAKSILOFACIJALNI PROBLEM

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Uvod: Ugrizne rane čest su razlog posjete bolesnika hitnim službama, a među njima dominiraju ugrizi pasa. Zbog sve većeg porasta broja pasa kao kućnih ljubimaca, ugrizi pasa postali su veliki problem suvremenog društva, osobito u gradskim konglomeracijama. Ugrizi pasa u području glave i vrata sve su češći terapijski izazov za maksilofacijalnog kirurga. *Materijali i metode:* Analizirana je učestalost evidentiranih ugriza pasa u regiji koja gravitira Kliničkom bolničkom centru Split, mjesta izloženosti napadima psa, raspodjela ugriza prema dobi, spolu i ozlijeđenim dijelovima tijela, kao i terapijski postupci s bole-

procedures were analyzed. *Results:* There was a more pronounced incidence of dog bites in the warmer parts of the year, as dogs moved more and increased number of children and adults outdoors. Outcomes are presented depending on the treatment modalities applied. The importance of cooperation with the epidemiological and veterinary services, as well as the necessity of psychological-psychiatric support to the injured in childhood, was emphasized. *Conclusions:* The skill of the surgeon is of primary importance in the treatment of patients with bite wounds. Prevention is essential to educate dog owners and the whole community and the obligation to comply with legal requirements for all pet owners. It would be desirable to tighten the legal criteria for keeping certain breeds of dogs as well as to take effective measures to reduce the number of stray dogs.

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snicima. *Rezultati:* Uočena je izraženija pojavnost ugriza pasa u toplijim dijelovima godine, jer se psi više kreću, a povećan je broj djece i odraslih na otvorenom prostoru. Prikazani su ishodi ovisno o primijenjenim modalitetima liječenja. Naglašena je važnost suradnje s epidemiološkom i veterinarskom službom, kao i nužnost psihološko-psihijatrijskog suporta ozlijeđenicima u dječjoj dobi. *Zaključci:* U liječenju bolesnika s ugriznim ranama od primarne važnosti je vještina kirurga. U prevenciji je od presudne važnosti edukacija vlasnika pasa i čitavog pučanstva te obveza poštivanja zakonskih propisa za sve vlasnike kućnih ljubimaca. Bilo bi poželjno postrožiti zakonske kriterije za držanje nekih pasmina pasa kao i poduzeti učinkovite mjere za smanjenje broja pasa lutalica.

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S4 CORRECTION OF MANDIBULAR MICROGNATHISM WITH CUSTOM-MADE OSTEODISTRACTORS

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Introduction: Distraction osteogenesis is increasingly used for correction of jaw deformities. It is used to perform large advancements because, due to parallel growth and soft tissue surrounding the bones, it guarantees greater stability. *Materials and methods:* Case report of a patient with mandibular hypoplasia which was corrected with custom-made intraoral unidirectional distractor. *Results:* The desired advancement was achieved. Postoperative orthodontic treatment resulted in Angle Class I malocclusion, and improved facial esthetics both *en face* and in profile. *Conclusion:* Custom-made distractor increases precision and facilitates the procedure for the surgeon, owing to the predetermined distraction vector set by the distractor.

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S4 KOREKCIJA MANDIBULARNOG MIKROGNATIZMA INDIVIDUALIZIRANIM OSTEODISTRAKTORIMA

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Uvod: Distrakcijska osteogeneza ima sve veću primjenu u liječenju deformiteta čeljusti. Koristi se u slučajevima kada je potreban veći „advancemet" jer, zbog paralelnog rasta i mekih tkiva uz kosti, garantira veću stabilnost. *Materijali i metode:* Prikaz pacijenta s hipoplazijom mandibule koja je korigirana individualiziranim intraoralnim jednovektorskim distraktorima. *Rezultati:* U pacijenta je dobiven željeni „advancement". Postoperativno je provođena ortodontska korekcija, dobiven zagriz Klase I po Angle-u te poboljšanje estetike kako „en face" tako i u profilu. *Zaključci:* Individualizirani distraktor povećava preciznost te olakšava kirurgu sam operativni zahvat zbog unaprijed isplaniranog i u distraktor zadanog vektora pomaka.

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S5 „FLESH – EATING DISEASE" OF THE SCALP – A RARE DISEASE IN MAXILLOFACIAL SURGERY

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Introduction: Necrotizing fasciitis (NF), known as flesh-eating disease, is a rare and deadly infection of the subcutis, fascia, and / or muscle. The development of infection is preceded by contamination by pathogens due to trauma, skin infection, insect bites, surgical complications, drug injection or intravenous drug use, and hematogenous dissemination is possible. Pathophysiologically NF is characterized by tissue necrosis, which promotes accelerated bacterial propagation and thrombosis of blood vessels and lymphatic systems supplying the skin. The result is local ischemia that damages the cutaneous nerves causing intense pain. *Materials and Methods:* A 66-year-old diabetic man, after unsuccessful incision and antibiotic treatment, was referred to the Maxillofacial Surgery Department of the Clinical Hospital Center Split under clinical picture of a left parieto-temporo-occipital abscess, 14 x 11 cm in size. NF was suspected and the patient underwent emergency surgery. Extensive necrectomy and drainage of rib drains were performed, administered antibiotic (amoxicillin + clavulanic acid and metronidazole), anticoagulant and symptomatic therapy, and chemoculture and material for microbiological and pathohistological processing taken. *Results:* The chemoculture taken at surgery was sterile, and *Klebsiella pneumoniae* and *Staphylococcus aureus* (methicillin sensitive) were isolated microbiologically. The patient had leucocytosis, elevated CRP values (157), and hyperglycaemia (19 mmol / l). Due to the initial progression, several subsequent necrectomies and changes in antibiotics (*ciprofloxacin* per os) were performed. After calming the infection, a reconstruction of the defect is planned. *Conclusions:* NF is a rare infection of the soft tissues of the head and neck. The most effective therapy is surgical debridement at the earliest possible stage, and time to surgery is crucial for survival. The affected tissue is resected regardless of anatomical and functional boundaries. Intensive monitoring of the worsening of the general condition is also important to avoid sepsis.

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S5 „FLESH – EATING DISEASE" VLASIŠTA – RIJETKA BOLEST U MAKSILOFACIJALNOJ KIRURGIJI

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Uvod: Nekrotizirajući fascitis (NF), poznat kao „flesh-eating disease", rijetka je i smrtonosna infekcija potkožja, fascije i/ili mišića. Razvoju infekcije prethodi kontaminacija potkožja patogenom zbog traume, infekcije kože, uboda kukaca, kirurških komplikacija, injekcije lijekova ili intravenske uporabe droga, a moguća je i hematogena diseminacija. Patofiziološki NF karakterizira nekroza tkiva koja potiče ubrzano razmnožavanje bakterija te tromboza krvnih žila i limfnog sustava koji opskrbljuju kožu. Posljedica je lokalna ishemija koja oštećuje kutane živce uzrokujući snažnu bol. *Materijali i metode:* 66-godišnji muškarac, dijabetičar, nakon neuspješnog liječenja incizijom i antibioticima upućen je u Odjel maksilofacijalne kirurgije KBC-a Split pod kliničkom slikom lijevostranog parijeto-temporo-okcipitalnog apscesa veličine 14 x 11 cm. Postavljena je sumnja na NF te je pacijent podvrgnut hitnoj kirurškoj intervenciji. Učinjena je opsežna nekrektomija i drenaža rebrastim drenovima, ordinirana antibiotska (amoksicilin+klavulanska kiselina i metronidazol), antikoagulantna i simptomatska terapija, te uzeta hemokultura i materijal za mikrobiološku i patohistološku obradu. *Rezultati:* Hemokultura uzeta pri operaciji je bila sterilna, a mikrobiološki su izolirani *Klebsiella pneumoniae* i *Staphylococcus aureus* (meticilin osjetljiv). Pacijent je imao leukocitozu, povišene vrijednosti CRP-a (157), te hiperglikemiju (19 mmol/l). Zbog početne progresije urađeno je nekoliko naknadnih nekrektomija i promjena antibiotika (ciprofloksacin per os). Nakon smirivanja infekcije planirana je rekonstrukcija defekta. *Zaključci:* NF je rijetka infekcija mekih tkiva glave i vrata. Najučinkovitija terapija je kirurški debridman u što ranijoj fazi, a vrijeme do zahvata ključno je za preživljavanje. Zahvaćeno tkivo se resecira bez obzira na anatomske i funkcionalne granice. Značajno je i intenzivno praćenje pogoršanja općeg stanja, kako bi se izbjegla sepsa.

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S6 BRANCHIAL CLEFT CYSTS - CLINICAL ROUTINE OR A CHALLENGE?

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Introduction: Branchial cleft cysts (BC) are congenital anomalies of branchial apparatus. The differential diagnosis of tumor masses in the lateral neck region is very heterogeneous. *Aim:* The aim of this study was to present the cases of BC at the Department of Otolaryngology, General Hospital Zadar, over a 10-year period - from 2008 to 2018. *Subjects and methods:* A retrospective study was conducted on 50 subjects treated at General Hospital Zadar. *Results:* In 28 men and 22 women, aged 3–95 years, six BC of the first, 42 BC of the second and two BC of the third/fourth arch were diagnosed. The average BC size was

S6 BRANHIJALNE CISTE VRATA – KLINIČKA RUTINA ILI IZAZOV?

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Uvod: Branhijalne ciste (BC) vrata su prirođene anomalije škržnih lukova. Diferencijalna dijagnoza tumorskih masa u lateralnim regijama vrata vrlo je heterogena. *Cilj istraživanja:* Cilj ovoga rada je prikazati BC vrata na Odjelu za otorinolaringologiju Opće bolnice Zadar, tijekom desetogodišnjeg razdoblja. *Ispitanici i metode:* Provedeno je retrospektivno istraživanje na 50 ispitanika liječenih u Općoj bolnici Zadar, od 2008. do 2010. godine. *Rezultati:* Od 50 bolesnika, 28 je bilo muškog, a 22 ženskog spola (dobi 3-95 godina). Prosječna veličina BC bila je 45 mm. Temeljem prijeoperative obrade i intraoperativnog nalaza šest BC je bilo prvog, 42 drugog, a dva trećeg/četvrtog škržnog luka. U 16 bolesni-

45 mm. Based on preoperative assessment and intraoperative findings, six BCs were first, 42 second, and two third/ fourth branchial arch. In 16 patients, the formation was preoperatively inflamed and antibiotic therapy was administered. One patient underwent preoperative incision of the formation for inflammation. In five patients, the formation extended into the mediastinum. In one patient, a malignant alteration was confirmed, while one patient had bilateral BC. In 49 patients, the treatment was surgical. One patient underwent puncture and sclerotherapy of the formation. Preoperative i.v. antimicrobial therapy was performed in seven patients, and in one patient an incision. One patient underwent neck dissection. In all patients, the diagnosis was confirmed by the pathologist's findings. We find extremely large BCs exceptionally. A 60-year-old female patient developed a painless, progressively growing swelling on the right side of the neck. Clinical examination in region II-IV determined the oval formation of elastic consistency. Extremely large BC are rare. In one 60-year-old female patient, MSCT of the neck showed formation from the level of the hyoid to the upper thoracic aperture, with compression of the central neck structures. The size of the removed formation was 150 x 80 x 65 mm. *Conclusion:* Although BC are primarily benign, these formations are associated with numerous intraoperative complications. A malignant transformation of the BC is also reported. In some cases, BC may be extremely large and may result in compression of the neurovascular structures of the neck.

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ka BC je prijeoperativno bila upaljena. Kod pet bolesnika tvorba se širila u medijastinum. Kod jednog bolesnika potvrđena je maligna alteracija. Kod jednog bolesnika radilo se o bilateralnoj BC. U 49 slučajeva liječenje BC je bilo kirurško. Kod jednog bolesnika terapija je bila punkcija sa sklerozacijom tvorbe. Kod sedam bolesnika provedena je prijeoperativna iv. antimikrobna terapija, te kod jednog bolesnika inzicija. Kod jednog bolesnika učinjena je disekcija vrata. Kod svih bolesnika dijagnoza je potvrđena nalazom patologa. Iznimno nalazimo izuzetno velike BC. Kod jedne 60-godišnje bolesnice javila se bezbolna, progresivno rastuća oteklina s desne strane vrata. Kliničkim pregledom u regiji II-IV utvrđena je ovalna tvorba elastične konzistencije. Punkcijom tvorbe dobila se bistra tekućina. MSCT-om vrata, od razine hioida do gornje torakalne aperture opisana je lateralna cista vrata, uz kompresiju centralnih struktura. U općoj anesteziji je učinjena ekstirpacija cistične tvorbe, uz rezervaciju neurovaskularnih struktura vrata. Dijagnoza bolesti potvrđena je patohistološkim nalazom, a veličina tvorbe iznosila je 150x80x65 mm. *Zaključci:* Iako su BC primarno benignog karaktera, ove tvorbe povezane su s brojnim komplikacijama tijekom operativnog zahvata. Moguća je i zloćudna transformacija BC vrata. Stoga je važna pravovremena obrada bolesnika s postavljanjem dijagnoze i liječenjem.

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S7 CENTRAL GRANULOCELLULAR ODONTOGENIC TUMOR – A CASE REPORT

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Introduction: Central granulocellular odontogenic tumor (CGCOT) of the jaw is an exceptionally rare benign odontogenic neoplasm. Less than 40 cases have been described so far. It is most frequently localized in the posterior parts of the mandible. We present an accidentally discovered CGCOT in the central maxilla. *Case report:* A routine orthopantomography scan performed on a 43-year old female patient accidentally revealed a cystic lesion with sclerotic borders in the anterior part of the right maxilla, measuring 1 cm in diameter, without root resorption of the associated incisor. Pathohistological analysis of the excochleated, sharply demarcated, centrally firm lesion revealed an odontogenic tumor of mixed epithelial and mesenchymal histogenesis. The tumor was composed of nodules of large, polygonal cells with granulated eosinophilic cytoplasms and bland, peripherally located nuclei, with no apparent atypia or mitoses. Trabecula and smaller follicles composed of ameloblast-type epithelial cells with no apparent stellate reticulum were located between the nodules, surrounded by hyalinized fibrous stroma. The lesion was surrounded by an unremarkable thin bony capsule. The diagnosis was central granulocellular odontogenic tumor. There are no signs of residual tumor or recurrence during a 13 year follow-up period. *Discussion:* So far, CGCOT is considered to be a granulocellular form of ameloblastic or central odontogenic fibroma (1). The biological behavior of this tumor is benign, but it can be clinically and radiologically mistaken for a number of benign or malignant cystic lesions of the jaw. A case of malignant CGCOT has also been described (2). Precise pathohistological analysis is vital in deciding on the optimal treatment. *Conclusion:* CGCOT is an extremely rare occurrence, and therefore each case should be analyzed and published, in order to understand the pathogenesis and biological behavior of this tumor better, and to determine whether it should be included as a separate entity in the classification of odontogenic tumors.

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S7 CENTRALNI GRANOCELULARNI ODONTOGENI TUMOR – PRIKAZ SLUČAJA

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Uvod: Centralni granulocelularni odontogeni tumor (CGCOT) čeljusti je izuzetno rijedak oblik benigne odontogene neoplazme. Do sada je opisano manje od 40 slučajeva ovakvih lezija. Najčešće se pojavljuje u stražnjim dijelovima mandibule, a mi prikazujemo slučajno otkriven CGCOT u centralnom dijelu maksile. *Prikaz slučaja:* Rutinskom ortopan-tomografijom 43-godišnjoj pacijentici slučajno je otkrivena cistična promjena sklerotičnih rubova u prednjem dijelu desne maksile, promjera 1 cm, bez resorpcije korijena pripadajućeg sjekutića. Patohistološka analiza ekskohleirane, oštro ograničene, srednje tvrde tvorbe pokazala je da se radi o odontogenom tumoru miješane epitelne i mezenhimalne histogeneze. Tumor je građen od nodularnih nakupina krupnih, poligonalnih stanica s granuliranim eozinofilnim citoplazmama i jednolikim, periferno smještenim jezgrama, bez atipije i mitoza. Između ovih nakupina su tračci i sitnije folikularne nakupine epitelnih stanica tipa ameloblasta, bez izraženog zvjezdolikog retikuluma, oko kojih je hijalinizirana vezivna stroma. Na površini promjene je tanka uredna koštana čahura. Postavljena je dijagnoza centralnog granulocelularnog odontogenog tumora. Nakon 13 godina praćenja, nema znakova rezidualnog tumora ni recidiva. *Rasprava:* CGCOT je do sada smatran granulocelularnim oblikom ameloblastičnog ili centralnog odontogenog fibroma (1). Biološko ponašanje ovog tumora je dobroćudno, ali se klinički i radiološki može zamijeniti s brojnim benignim ili malignim cističnim lezijama čeljusti. Opisan je i slučaj malignog CGCOT (2). Precizna patohistološka analiza neophodna je za izbor optimalne terapije. *Zaključak:* CGCOT se iznimno rijetko pojavljuje, pa je svaki slučaj važno analizirati i objaviti, kako bi se bolje upoznala patogeneza i biološko ponašanje ovog tumora te utvrditi potrebu za uvrštavanjem ovog tipa tumora, kao zasebnog entiteta, u klasifikaciju odontogenih tumora.

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S8 NODULAR FASCIITIS: A CASE REPORT

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Nodular fasciitis is a benign tumor of fibroblastic origin that can occur anywhere in the body while having an incidence of 7-20% in the head and neck area. One of the most common characteristics of nodular fasciitis is the rapid growth and occurrence in adulthood between the ages of 20 and 40, in equal proportions between men and women. Often, clinically and histologically, it can be replaced by malignant tumors precisely because of its propensity for rapid growth and due to cellular atypia and mitotic activity. Numerous difficulties in diagnosing and treating nodular fasciitis in the head and neck region have been reported because it presented certain characteristics resembling sarcoma, pleomorphic adenoma, Burkitt's lymphoma and metastases of an unknown primary tumor in the neck. This is why it is important to properly diagnose this condition to avoid unnecessary surgery. We present the case of a patient who came to our outpatient clinic for a swelling on the right side of the neck and tingling in the right hand. The findings of neck ultrasound and cytological puncture indicated mesenchymal spindle cell tumor of unclear

S8 FASCIITIS NODULARIS: PRIKAZ SLUČAJA

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Nodularni fascitis je benigni tumor fibroblastnog podrijetla koji se može pojaviti bilo gdje u tijelu dok u području glave i vrata ima incidenciju od 7-20%. Jedna od najčešćih karakteristika nodularnog fascitisa je brzi rast i pojavljivanje u odrasloj dobi između 20. i 40. godine života, u podjednakom omjeru kod muškaraca i žena. Nerijetko se klinički i histološki može zamijeniti s malignim tumorima upravo zbog sklonosti brzom rastu te zbog stanične atipije i mitotske aktivnosti. Zabilježene su brojne poteškoće u dijagnosticiranju i liječenju nodularnog fascitisa u području glave i vrata jer se određenim karakteristikama prezentirao nalik sarkomu, pleomorfnom adenomu, Burkittovom limfomu te metastazama nepoznatog primarnog tumora u vratu. Upravo zbog toga od velike je važnosti pravilno dijagnosticiranje ovog stanja kako bi se izbjegli nepotrebni operativni zahvati. Prezentiram slučaj pacijentice koja se javila u ambulantu zbog otekline na desnoj strani vrata te trncima u desnoj ruci. Nalaz UZV-a vrata te citološke punkcije ukazivao je na mezenhimalni tumor vretenastih stanica nejasnog biološkog potencijala dok je na PET-CT-u bio vidljiv patološki metabolizam glukoze u vretenastoj solidnoj tvorbi desne strane vrata te u

biological potential, whereas pathological glucose metabolism in the spindle solid formation on the right side of the neck and in the enlarged lymph node in the right axilla was visible on PET-CT. After radiological examinations, a biopsy of the formation was made, which looked like a malignant macroscopically during the procedure. The pathohistological diagnosis indicated nodular fasciitis and further surgery, which would include neck dissection, was abandoned.
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uvećanom limfnom čvoru u desnoj aksili. Nakon učinjenih radioloških pretraga, obavljena je biopsija tvorbe koja je makroskopski tijekom zahvata izgledala kao zloćudna tvorba. Patohistološka dijagnoza je ukazala na nodularni fascitis te se odustalo od daljnjeg operativnog zahvata koji bi uključivao i disekciju vrata.
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S9 ODONTOGENIC CUTANEOUS FISTULA

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Odontogenic fistula of the face is a rare complication of odontogenic infection and is often difficult to diagnose. It is mainly associated with focus through the root canal from which infection drains into the area of the face or neck. Patients often do not associate the onset of lesion with dental problems, which further complicates diagnosis. For the successful treatment of fistula, odontogenic focus must be treated. We present clinical pictures and therapies of various localizations of extraoral fistulas and compare them with the most common pathological lesions and concomitant differential diagnosis.
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S9 ODONTOGENE FISTULE LICA

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Odontogena fistula lica rijetka je komplikacija odontoge upale i često se teško dijagnosticira. Uglavnom je povezana fokusom preko kanala iz kojeg se upala drenira u područje lica ili vrata. Pacijenti često ne povezuju nastanak promjene s dentalnim tegobama što dodatno otežava dijagnostiku. Za uspješno liječenje fistule potrebno je tretirati odontogeni fokus. U priopćenju ćemo prikazati kliničke slike i terapije različito lokaliziranih ekstraoralnih fistula te iste usporediti s najčešćim diferencijalno dijagnostičkim patološkim procesima.
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S10 OSTEOSARCOMA OF THE MAXILLARY SINUS – A CASE REPORT

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Osteosarcoma is one of the malignant bone tumors that most commonly occur in the extremity long bone metaphyses. They are rare in the head and neck region, accounting for less than 10% of total osteosarcoma and less than 1% of total malignant head and neck tumors. Osteosarcomas of the head and neck have their own specificities that differentiate them from osteosarcoma of the extremities. Given the lack of clear guidelines in the treatment of osteosarcoma in the head and neck region, in our case report we present a multidisciplinary approach and selected treatment modalities performed.
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S10 OSTEOSARKOM MAKSILARNOGA SINUSA – PRIKAZ SLUČAJA

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Osteosarkom spada u zloćudne tumore kostiju koji se najčešće pojavljuju u metafizama dugih kostiju ekstremiteta. U regiji glave i vrata su rijetki te oni čine manje od 10% ukupnog broja osteosarkoma i manje od 1% ukupnog broja zloćudnih promjena glave i vrata. Osteosarkomi glave i vrata imaju svoje specifičnosti koje ih razlikuju od osteosarkoma ekstremiteta. S obzirom na nedostatak jasnih smjernica u liječenju osteosarkoma u području glave i vrata u našem prikazu slučaja želimo prezentirati multidisciplinarni pristup te odabrane modalitete liječenja provedene u pacijentice.
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S11 PROGNOSTIC FACTORS IN SQUAMOUS CELL CARCINOMA OF THE LIP

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Introduction: Squamous cell carcinoma of the lip is a malignant epithelial tumor that most commonly affects the lower lip (95%). Regional metastases are very rare (5 -10%), and their incidence depends on the progression of the carcinoma. *Materials and methods:* We investigated the significance of prognostic factors on the development of regional disease and the success and outcome of treatment of patients treated at the Clinic over a 20-year period. *Results:* The ratio of men to women is 3: 1, but women have a statistically worse survival rate. Higher T status, periosteal invasion, and the absence of a previous precancerous lesion have a negative impact on survival. *Conclusions:* The clinical and histopathologic diameter of the tumor was shown to be the most significant prognostic factor for squamous cell carcinoma of the lip, and a discriminatory tumor diameter of 20 mm was determined.
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S11 PROGNOSTIČKI ČIMBENICI PLANOCELULARNOGA KARCINOMA USNE

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Uvod: Planocelularni karcinom usne je maligni epitelni tumor koji najčešće zahvaća donju usnu (95%). Regionalne metastaze su veoma rijetke (5 -10 %), a njihova učestalost ovisi o uznapredovalosti karcinoma. *Materijali i metode:* Istraživali smo značajnost prognostičkih čimbenika na razvoj regionalne bolesti te uspjeh i ishod liječenja pacijenata liječenih u Klinici u periodu od 20 godina. *Rezultati:* Odnos muškaraca naprema ženama je 3:1, no žene imaju statistički lošije preživljenje. Dokazano je da viši T status, periostealna invazija i nepostojanje prethodne prekancerozne lezije imaju negativan utjecaj na preživljenje. *Zaključci:* Klinički i patohistološki promjer tumora pokazao se kao najznačajniji prognostički čimbenik planocelularnog karcinoma usne, te je određen diskriminantni promjer tumora od 20 mm.
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S12 SYNOVIAL SARCOMA OF THE PHARYNX - A CASE REPORT

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Synovial sarcoma is a rare malignant soft tissue tumor that is characteristic of the younger population. Among all types of sarcomas, synovial sarcoma is represented by 8%. It is most commonly located at the extremities. Synovial sarcoma in the head and neck region is represented by 2.5% among all head and neck sarcomas. In the head and neck region, synovial sarcoma affects mostly middle-aged men. The most common symptom is dysphagia and bleeding. The basic method of metastasis is haematogenous with the lungs being the most common target organs. Considering the lack of protocols for the treatment of synovial sarcoma in the head and neck region, we present a multidisciplinary approach and selected treatment modalities performed.
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S12 SINOVIJALNI SARKOM ŽDRIJELA - PRIKAZ SLUČAJA

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Sinovijalni sarkom je rijedak maligni tumor mekih tkiva koji je karakterističan da zahvaća mlađu populaciju. Među svim vrstama sarkoma, sinovijalni sarkom je zastupljen sa 8%. Najčešće je lociran na ekstremitetima. Sinovijalni sarkom u regiji glave i vrata zastupljen je sa 2.5 % među svim sarkomima glave i vrata. U području glave i vrata, sinovijalni sarkom pogađa najčešće sredovječne muškarce. Najčešći simptom je disfagija i krvarenje. Osnovi način metastaziranja je hematogen s plućima kao najčešćim ciljnim organom. S obzirom na nepostojanje propisanog protokola liječenja sinovijalnog sarkoma u području glave i vrata, u našem prikazu slučaja želimo prezentirati multidisciplinarni pristup te odabrane modalitete liječenja provedene u bolesnika.
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S13 INFLUENCE OF LYMPH NODE RATIO IN HEAD AND NECK SQUAMOUS CELL CARCINOMA PATIENTS

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Introduction. Regional metastases are one of the most important prognostic factors in head and neck squamous cell carcinoma (HNSCC) regarding survival. Lymph node ratio (LNR) represents the percentage of positive nodes in the total number of lymph nodes (LN) harvested during neck dissection. The aim of this study was to determine the impact of LNR in selected HNSCC patients. *Materials and Methods.* Data of patients with HNSCC surgically treated at the Department of Oral and Maxillofacial Surgery, UH Dubrava, Zagreb in time period between 2009 and 2015 were retrospectively collected and analyzed. ROC curve analysis was utilized to set prognostic LNR threshold in terms of maximal sensitivity and specificity. Three-year and 5-year overall survival (OS) and disease-free survival (DFS) were determined by the Kaplan-Meier method. Univariate analysis was conducted to determine the association between LNR and outcomes. *Results.* A total of 194 patients with positive LN were analyzed. The median age was 58 years, with the majority of male patients (83.5%). A total of 29/194 (14.9%) patients had LN conglomerate. For the group of patients without conglomerates, LNR was calculated and they were divided into subgroups with low [115/194 (59.3%)] and high LNR [50/194 (25.8%))] based on the calculated threshold. The median follow-up was 69 months. Patients with lower LNR had higher OS and DFS compared with subgroups of higher LNR and conglomerates. *Conclusion.* Patients with low LNR determined by ROC analysis have a higher rate of OS and DFS compared to the groups with high LNR and conglomerates.
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S13 UTJECAJ OMJERA LIMFNIH ČVOROVA NA DOŽIVLJENJE BOLESNIKA S KARCINOMOM USNE ŠUPLJINE I OROFARINKSA

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Uvod: Metastatski limfnih čvorovi (LČ) u vratu jedan su od najvažnijih prognostičkih čimbenika doživljenja kod karcinoma pločastih stanica glave i vrata. Omjer LČ (OLČ) predstavlja postotak pozitivnih unutar ukupnog broja LČ u promatranom disektatu vrata. *Cilj* ovog istraživanja bio je odrediti utjecaj OLČ na doživljenje u karcinomu usne šupljine i orofarinksa. *Materijali i metode:* Karakteristike bolesnika i bolesti retrospektivno su prikupljene i analizirane. Uključeni bolesnici primarno su kirurški liječeni u Klinici za kirurgiju lica, čeljusti i usta, KB Dubrava u vremenskom razdoblju od 2009. do 2015.godine. Analiza ROC krivulje poslužila je za određivanje granične vrijednost OLČ u odnosu na doživljenje. Trogodišnje i petogodišnje ukupno doživljenje (OS) i doživljenje bez bolesti (DFS) odredilo se Kaplan-Meier-ovom metodom. Univarijatna analiza provedena je kako bi se utvrdila povezanost različitih ishoda s OLČ. *Rezultati:* Ukupno je analizirano 194 bolesnika s patohistološki pozitivnim LČ vrata. Srednja dob iznosila je 58 godina, a većinu bolesnika činili su muškarci (83,5%). Ukupno 29/194 (14,9%) bolesnika imalo je konglomerat LČ. Za skupinu bolesnika bez konglomerata izračunan je OLČ te su oni podijeljeni u podskupine s niskim [115/194 (59,3%)] i visokim OLČ [50/194 (25,8%))] na temelju granične vrijednosti (OLČ >0,13). Srednje praćenje bilo je 69 mjeseci. Bolesnici s manjim OLČ imali su značajno više OS i DFS u usporedbi s podskupinama većeg OLČ i konglomerata. *Zaključak:* Skupina bolesnika s manjim OLČ određenim ROC analizom (omjer LČ <0,13) ima višu stopu OS i DFS u usporedbi sa skupinama s većim OLČ i konglomeratima.
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S14 CHALLENGES IN DIAGNOSTICS AND TREATMENT OF PRIMARY PALATAL MELANOMA

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Introduction: Malignant melanoma arises in skin, eye, and mucosa of respiratory, genitourinary and gastrointestinal tract. Localization in mucosa of oral cavity is extremely rare. Nevertheless, every pigmentation in oral cavity should be considered with extreme precaution. The differential diagnosis of oral pigmented lesions include conditions such as melanotic macules, nevi, smoker's melanosis, amalgam and graphite tattoos, racial pigmentation, vascular blood-related pigments and malignant melanoma. The palate and maxillary gingiva are the most common site of incidence of mucosal melanoma in oral cavity. The cause of oral melanoma or melanoma of any mucosal surface remains unknown. Early diagnosis is of crucial essence, and it's verified by histopathological evaluation. Great majority of authors emphasizes importance of multidisciplinary approach in treatment. Most efficient management is provided by early ablative surgery with wide tumor-free margins. The prognosis for patients with oral malignant melanoma is poor, with the 5-year survival rate at 10-25% and overall survival rate less than 2 years. *Materials and Methods:* We described two of our patients with primary hard palate melanoma. After positive biopsy both were submitted to radical surgical treatment. In order to reduce functional problems immediate reconstruction was made using nasolabial flaps. *Results:* Both of our patients had good postoperative outcome and result with no surgical complications. They had entirely understandable speech and swallowing with no difficulties, which justified immediate reconstruction of postablative defect. One patient died one year after surgery from advanced metastatic disease with good local finding. Second patient died five years after surgery from non-melanoma related disease. *Conclusion:* The goal of this paper was to underline the importance to each and every pigmentation in oral cavity because early diagnosis and early treatment significantly improve survival rate of mucosal melanoma localized in oral cavity.
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S14 IZAZOVI U DIJAGNOSTICI I LIJEČENJU PRIMARNOGA MELANOMA NEPCA

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Uvod: Maligni melanom javlja se u koži, oku i sluznicama dišnog, probavnog i genito-urinarnog sustava. Lokalizacija na sluznicama je rijetka, a na sluznici orofarinksa pojavljuje se iznimno rijetko. Ipak, svaku pigmentaciju u usnoj šupljini treba ozbiljno shvatiti. Diferencijalno – dijagnostički može se raditi o melanocitnim makulama, sluzničnim madežima, pušačkoj melanozi, tetoažama, rasnim pigmentacijama, vaskularnim pigmentacijama, pigmentaciji kod endokrinih bolesti, ali i o malignom melanomu. Najčešća sijela melanoma u usnoj šupljini su tvrdo nepce i gingiva alveolarnog grebena maksile. Etiološki čimbenici nastanka nisu jasni. Rana dijagnoza je jako bitna, a postavlja se histopatološkom evaluacijom. Većina autora naglašava važnost multidisciplinarnog pristupa liječenju. Najučinkovitije liječenje pruža što ranija agresivna ablativna kirurgija. Dvojbena je uloga imedijatne kirurške rekonstrukcije. Prognoza općenito nije dobra. Petogodišnje preživljenje je 10-25%, a prosječno preživljenje je manje od dvije godine. *Materijali i metode:* Prikazana su dva naša pacijenta s melanomom tvrdog nepca. Nakon pozitivnog nalaza biopsije oba su podvrgnuta radikalnom kirurškom zahvatu. U cilju smanjenja postablativnih funkcionalnih tegoba učinjena je imedijatna rekonstrukcija nazolabijalnim režnjevima. *Rezultati:* Oba naša bolesnika imala su uredan poslijeoperacijski oporavak. Oba su imala potpuno razumljiv govor i uredno gutanje, što nam sugerira opravdanost imedijatne rekonstrukcije. Jedan od pacijenata umro je nakon godinu dana od diseminacije bolesti uz uredan lokoregionalni nalaz, a drugi je umro nakon pet godina od bolesti nevezane uz melanom. *Zaključci:* Cilj ovog rada je naglasiti važnost ozbiljnog pristupa svakoj hiperpigmentaciji usne šupljine, jer rana dijagnoza i rano liječenje znatno poboljšavaju izglede za preživljenje.
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S15 THE PROGNOSTIC SIGNIFICANCE OF ELECTIVE NECK DISSECTION IN PATIENTS WITH ADENOID CYSTIC CARCINOMA OF THE HEAD AND NECK

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Introduction. Adenoid cystic carcinoma of the head and neck (ACCHN) is a rare malignant epithelial tumor of the salivary glands. It accounts for 3-5% of head and neck tumors and 10-15% of salivary gland tumors. Adenoid cystic carcinoma (ACC) is the most common malignant tumor of the submandibular and sublingual glands, and the second-most common malignant tumor of the parotid gland and minor salivary glands. ACC typically occurs during adulthood, around the ages of 40 to 60. ACCHN is characterized

S15 PROGNOSTIČKI ZNAČAJ ELEKTIVNE DISEKCIJE VRATA U BOLESNIKA S ADENOIDNIM CISTIČNIM KARCINOMOM GLAVE I VRATA

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Uvod: Adenoidni cistični karcinom glave i vrata (ACKGV) rijedak je zloćudni epitelni tumor žlijezda slinovnica. Čini 3-5% tumora u području glave i vrata te 10-15% tumora žlijezda slinovnica. Najčešći je zloćudni tumor submandibularne i sublingvalne žlijezde, a drugi po učestalosti među zloćudnim tumorima parotidne žlijezde i malih žlijezda slinovnica. Javlja se u osoba srednje životne dobi. ACKGV karakterizira spori rast, perineuralna invazija (PNI), rijetke regionalne metastaze (6-10%), visoki postotak lokalnih recidi-

by slow growth, perineural invasion (PNI), rare regional metastases (6-10%), and a high rate of local recurrence and delayed onset of distant metastases, especially in the lungs. ACCHN is usually surgically treated, while the role of adjuvant radiotherapy remains unclear. The aim of this study was to determine the incidence of occult regional metastases in patients treated with elective neck dissection (END) and the potential impact on adjuvant radiotherapy and overall survival. *Materials and methods.* A detailed review of the available published literature, with reference to END in patients with ACCHN, included 18 papers in this study. The prognostic parameters such as the onset of disease, recurrence and the overall survival were analyzed. *Results.* END was performed in 42.5% of patients with ACCHN. Occult metastases were most common in cancers of the minor salivary glands localized in the oral cavity and oropharynx, located within level I–III of the neck. *Conclusions.* This is the largest study so far that analyzes the role of END in patients with ACCHN with a critical review of all important features of occult neck disease in ACCHN and its potential impact on survival.
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va te kasno pojavljivanje udaljenih metastaza, posebice u pluća. ACKGV se liječi kirurški, dok je uloga adjuvantne radioterapije nejasna. Glavni *cilj* ove studije bio je utvrditi učestalost okultnih regionalnih metastaza u bolesnika liječenih elektivnom disekcijom vrata i potencijalni utjecaj na adjuvantnu radioterapiju i doživljenje bolesnika. *Materijali i metode:* Detaljnim pregledom dostupne znanstvene literature s osvrtom na elektivnu disekciju u pacijenata oboljelih od ACKGV u ovo istraživanje uključeno je 18 studija. Analizirani su prognostički parametri za pojavu recidiva bolesti i ukupno doživljenje bolesnika. *Rezultati:* Od ukupno uključenih bolesnika oboljelih od ACKGV u 42,5% učinjena je EDV-a. Okultne metastaze su najčešće kod karcinoma malih žlijezda slinovnica lokaliziranih u usnoj šupljini i orofarinksu i najčešće u regijama I-III. *Zaključci:* Ovo je dosad najveća studija koja analizira ulogu EDV u bolesnika s ACKGV s kritičkim pregledom svih važnih značajki okultne bolesti vrata u ACKGV te njegov potencijalni utjecaj na doživljavanje.
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S16 RECONSTRUCTION OF PHARYNGEAL AND UPPER OESOPHAGEAL DEFECTS – OUR EXPERIENCE

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Pharyngeal and upper oesophageal defects after ablative oncologic head and neck surgery represent a reconstruction challenge in functional and aesthetic terms. Between 2011 and 2019, 12 patients underwent surgery at the Department of Maxillofacial and Oral Surgery and the Department of Otolaryngology, who underwent either subtotal or total tubular reconstruction of the pharynx using microvascular and regional perforator flaps.
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S16 REKONSTRUKCIJA DEFEKATA ŽDRIJELA I GORNJEGA DIJELA JEDNJAKA - NAŠA ISKUSTVA

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Defekti ždrijela i gornjeg dijela jednjaka nakon ablativne onkološke kirurgije glave i vrata predstavljaju rekonstrukcijski izazov u funkcionalnom i estetskom smislu. U periodu od 2011. - 2019. godine na Zavodu za maksilofacijalnu i oralnu kirurgiju te Klinici za otorinolaringologiju operirano je 12 bolesnika, kojima je učinjena ili subtotalna ili totalna tubularna rekonstrukcija ždrijela upotrebom mikrovaskularnih i regionalnih perforatorskih režnjeva.
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S17 BIMAXILLARY OSTEOTOMY AS SUPPORT IMPLANT-PROSTHETIC REHABILITATION OF EDENTULOUS PATIENT

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Introduction: Orthognathic surgery plays an important role in the occlusal function and appearance of the patient. Successes in modern orthognathic surgery rely on the close collaboration of the maxillofacial surgeon and the orthodontist through all stages of therapy. Bimaxillary osteotomy is a surgical procedure performed in the context of orthognathic surgery to correct jaw deformities. The procedure is mainly performed in younger patients, although there is no age limit. *Materials and methods:* This paper presents a case of a middle-aged patient (60) with skeletal class III and with severe atrophy of the maxilla, maxillary retrognathism and mandibular prognathism. The patient is unable to use any prosthetic replacement for these reasons. A bimaxillary osteotomy was performed with maxilla displacement downward and forward, and at the same time augmentation with a bone graft from Crista Iliaca. *Results:* A satisfactory displacement of the maxilla and mandible was obtained with sufficient bone mass for dental implant placement. Of the 6 dental implants, 1 implant did not integrate, and a definitive prosthetic replacement was made on 5 implants. *Conclusion:* Osteotomy of the maxilla and augmentation with a bone graft can be an excellent solution that enables implant-prosthetic rehabilitation in cases of major atrophy of the maxilla, in cases of maxillary retrognathism, and the only method by which the patient can have teeth.
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S17 BIMAKSILARNA OSTEOTOMIJA KAO POTPORA IMPLANTO-PROTETSKOJ REHABILITACIJI BEZUBOGA PACIJENTA

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Uvod: Ortognatska kirurgija ima važnu ulogu u okluzalnoj funkciji i izgledu pacijenta. Uspjesi moderne ortognatske kirurgije oslanjaju se na usku suradnju maksilofacijalnog kirurga i ortodonta kroz sve faze terapije. Bimaksilarna osteotomija je zahvat koji se izvodi u kontekstu ortognatske kirurgije u svrhu ispravljanja čeljusnih deformiteta. Zahvat se uglavnom izvodi u mlađih pacijenata iako nema postavljene dobne granice. *Materijali i metode:* Prikazujemo pacijenticu srednjih godina (60) sa skeletnom klasom III te s vrlo izraženom atrofijom maksile, maksilarnim retrognatizmom i mandibularnim prognatizmom. Pacijentica iz navedenih razloga nije u mogućnosti koristiti nikakav protetski nadomjestak. Učinjena je bimaksilarna osteotomija uz pomak maksile prema dolje i naprijed te istovremeno augmentacija s koštanim transplantatom s Criste Iliace. *Rezultati:* Dobiven je zadovoljavajući pomak maksile i mandibule uz dovoljno koštane mase za postavljanje dentalnih implantata. Jedan od 6 postavljenih dentalnih implantata nije se integrirao pa je definitivni protetski nadomjestak napravljen na 5 implantata. *Zaključak:* Osteotomija maksile uz augmentaciju s koštanim transplantatom može biti odlično rješenje koje omogućava implanto-protetsku rehabilitaciju u slučajevima velike atrofije maksile, a u slučajevima maksilarnog retrognatizma i jedina metoda kojom se može ozubiti pacijenta.
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S18 USE OF VACUUM-ASSISTED CLOSURE IN HEAD AND NECK RECONSTRUCTION – OUR EXPERIENCE

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Vacuum-Assisted Closure (VAC) is a method of wound treatment using a device that reduces pressure on the wound, creating a vacuum that helps to heal the wound faster in a number of ways. One way is to remove fluid and seroma from the wound area, reduce swelling and inflammation in the tissue, cleanse the wound from detritus and reduce the nutrient agar, and eliminate the bacteria. Consequently, stimulation of growth and regeneration of the granulation tissue and neovascularization occurs. VAC was introduced as a method in 1997 by Morykwas and Argenta and has been widely used in plastic surgery. At our institute, VAC has been routinely used for the last 4 year applicated at the Thiersch skin graft. With its use, Thiersch transplant acceptance is 100%, and complications are reduced and the length of hospital stay after such reconstructive surgery is halved.
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S18 KORIŠTENJE VAC-A U REKONSTRUKCIJI GLAVE I VRATA - NAŠA ISKUSTVA

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„Vacuum-Assisted Closure- (VAC) " je metoda liječenja rana uz korištenje naprave koja smanjuje pritisak na ranu stvarajući uvjete vakuuma koji pomaže u bržem cijeljenju rane na više načina. Jedan način je otklanjanje tekućine i seroma iz područja rane, smanivanje otoka i upale u tkivu, čišćenje rane od detritusa i smanjivanje hraništa za bakterije te samo otklanjanje bakterija. Posljedično dolazi do stimulacije rasta i obnove granulacijskog tkiva te neovaskularizacije. VAC kao metodu uveli su 1997. godine Morykwas i Argenta i od tada se široko primjenjuje u plastičnoj kirurgiji. Na našem zavodu VAC rutinski upotrebljavamo posljednje 4 godine njegovom aplikacijom na kožne presadke po Thierschu. Njegovom upotrebom prihvaćanje presadka po Thierschu je 100%, a komplikacije su smanjene i dužina boravka bolesnika u bolnici nakon takvih rekonstruktivnih operativnih zahvata je prepolovljena.
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S19 DENTIN GRAFT – EVOLUTION IN BONE REGENERATION?

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With the inability to treat larger periapical lesions, tooth extraction remains the only option. In case of major bone destruction, socket preservation with bone substitute is recommended. Autologous bone is still the gold standard in augmentation techniques, but the disadvantage is high resorption of the graft, which is the best to use it in combination with xenogeneic material, which has a minor tendency for resorption and thus preserves the volume of bone. In recent years, the dentin graft of autologous tooth, which has been grinded using a special hard tissue grinder, has been particularly interesting. Researches show that dentin is similar in structure to cortical bone, cement as spongious, while dental enamel is similar to the structure of xenogenic bone materials. The patient was observed at the Department of Periodontology for periodontal treatment, and examination of the orthopantomograph revealed periapical lesion at tooth 46 and tooth extraction was suggested, in combination with socket preservation using autologous hard dental tissue. Tooth extraction 46 and enucleation of the cyst- like formation were performed 4 weeks earlier. On the day of surgery, tooth 16, previously indicated for extraction, was extracted. An incision was made on the edentulous ridge of region 45 and 46, a mucoperiosteal flap was elevated and granulations were removed from the socket, where perforation of the lingual cortical plate was observed. Meanwhile, the extracted tooth was cleaned of soft tissue and caries and then was grinded. The graft was prepared according to a specified protocol and mixed with autologous growth factors obtained by the PRF technique. The mucoperiosteal flap was lengthened by an incision of the periosteum and sutured using a 5-0 mattress and single sutures. Control CBCT was performed 4 months after the procedure to evaluate bone healing.
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S19 DENTINSKI GRAFT – EVOLUCIJA U KOŠTANOJ REGENERACIJI?

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Prilikom nemogućnosti liječenja većih periapikalnih lezija kao jedina mogućnost izbora ostaje ekstrakcija zuba. Kod većih koštanih destrukcija preporučuje se prezervacija alveole koštanim nadomjestkom. Autologna kost zlatni je standard prilikom augmentativnih tehnika, ali mana je velika resorpcija grafta, zbog čega se najčešće koristi u kombinaciji s ksenogenim materijalom koji ima manju sklonost resorpciji te se time prezervira volumen grafta. Zadnjih godina posebno zanimljivim čini se dentinski graft, odnosno autologni zub koji se usitnjava pomoću posebnog mlinca za tvrda zubna tkiva. Istraživanja pokazuju kako je dentin slične strukture kao kortikalna kost, cement kao spongioza, dok je caklina zuba slična strukturi ksenogenog koštanog materijala. Pacijentica se javila na Zavod na parodontologiju radi parodontološke obrade, uvidom u ortopantomogram uočena je periapikalna lezija zuba 46 te je predložena ekstrakcija zuba, uz prezervaciju alveole primjenom autolognog tvrdog zubnog tkiva, zuba koji nema dugoročnu prognozu zbog zahvaćenosti uznapredovalog parodontitisa. Ekstrakcija zuba 46 i enukleacija tvorbe nalik na cistu učinjene su 4 tjedna ranije, kako bi rana zacijelila i kako graft ne bi ostao eksponiran. Na dan operacije ekstrahiran je zub 16, učinjena incizija na bezubom grebenu regije 45 i 46, te je odignut poštedni mukoperiostalni režanj i uklonjene granulacije iz alveole, gdje je uočena perforacija lingvalnog kortikalisa. U međuvremenu, ekstrahirani zub je bio očišćen od mekog tkiva i karijesnih lezija te je zdrobljen u mlincu. Dobiveni graft je pripremljen po specificiranom protokolu za upotrebu te pomiješan s autolognim faktorima rasta dobivenim tehnikom PRF-a. Mukoperiostalni režanj je produljen presijecanjem periosta i zašiven koncem 5-0 madrac i pojedinačnim šavovima. Učinjen je kontrolni CBCT 4 mjeseca nakon zahvata radi evaluacije koštanog cijeljenja.
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S20 MEDICATION RELATED OSTEONECROSIS OF THE JAWS (MRONJ)

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Antiresorptive (bisphosphonates and denosumab) and angiogenic drugs are drugs used widely to manage bone disorders resulting from diseases such as multiple myeloma, other cancer related osteolysis and from some metabolic bone diseases such as osteoporosis and Paget disease. In recent years the use of these drugs has increased as have their complications. Medication-related osteonecrosis of the jaw (BRONJ) is severe complication that occurs in patients on antiresorptive and antiangiogenic therapy, especially after dento-alveolar surgery procedures, such as tooth extraction. In this report we present three cases of MRONJ. First is 69 years old male patient with diagnosed multiple myeloma 9 years ago, treated with intravenous pamidronate for 2.5 years and intravenous zoledronic acid for 6 years. When examined he had a complaint of bony exposure on the right posterior mandible which is persistent 2 months after extraction of tooth 47. Radiographic examination showed the decrease in bone density on the right mandibular alveolar process and resorptive area with irregular shape. Second case is a 66-year-old woman diagnosed with plasmacytoma, treated with intravenous pamidronate for the last 3 years. When presented in clinic her major complaint was fistula in the area of tooth 15 and exposed bone in the area of tooth 24, persistent for 3 months after extraction of teeth 15 and 24. Radiographic examination showed osteolysis in the said area. The patient was removed from pamidronate according to the oncologist's instructions and treated conservatively. The third case is a woman 73 years old, diagnosed with osteoporosis, on oral ibandronate acid therapy for the past 9 years. The patient was referred to our clinic because of exposed bone and purulent suppuration in the right and purulent fistula in the frontal area of the mandible. This situation has been going on for the last 6 months. The lower jaw is toothless; the patient wears a lower total denture. Significant osteolysis in the right mandible area, with pronounced sequesters, is radiologically evident. Antibiotic therapy was performed on the patient and a sequestrectomy was performed. Therapy of MRONJ often requires cessation of antiresorptive and antiangiogenic drugs, and usually takes combined conservative and surgical therapy. These case reports demonstrate the importance of awareness of physicians who prescribe those drugs about possible complications of their use. Prevention of MRONJ can be easily achieved with better communication between physicians who prescribe antiresorptive and antiangiogenic drugs and dentists.
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S20 MEDIKAMENTNA NEKROZA ČELJUSTI

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Antiresorptivni (bifosfonati i denosumab) i antiangiogeni lijekovi su lijekovi koji se široko koriste u upravljanju koštanim poremećajima koji su posljedica bolesti poput multiplog mijeloma, drugih osteoliza povezanih s rakom i nekih metaboličkih koštanih bolesti poput osteoporoze i Pagetove bolesti. Posljednjih godina povećava se uporaba ovih lijekova kao i njihove komplikacije. Osteonekroza čeljusti uzrokovana lijekovima (MRONJ) teška je komplikacija koja se javlja kod pacijenata na terapiji antiresorptivnim i antiangiogenim liekovima, osobito nakon dentoalveolarnih operativnih zahvata, poput vađenja zuba. U ovom prikazu slučajeva predstavljamo tri slučaja MRONJ-a s tri različita pristupa u terapiji. Prvi je pacijent star 69 godina s dijagnosticiranim multiplim mijelomom prije 9 godina, liječen intravenskim pamidronatom 2,5 godine i intravenskom zoledronskom kiselinom 6 godina. U ambulantu se javlja zbog eksponirane kosti u mandibuli desno koja perzistira dva mjeseca nakon vađenja zuba 47. Radiografskim pregledom utvrđeno je smanjenje gustoće kostiju desnog mandibularnog alveolarnog procesa i resorpcijskog područja nepravilnog oblika. Drugi slučaj je 66 godina stara žena s dijagnosticiranim plazmocitomom, liječena intravenskim pamidronatom posljednje 3 godine. Javlja se u ambulantu zbog fistule u području zuba 15 i eksponirane kosti u području zuba 24, koje perzistiraju 3 mjeseca nakon ekstrakcije zuba 14 i 25. Radiološki je uočljiva osteoliza u navedenom području. Pacijentica je, prema naputku onkologa, skinuta s pamidronata te je liječena konzervativno. Treći slučaj je žena stara 73 godine, s dijagnosticiranom osteoporozom, na peroralnoj terapiji ibandronatnom kiselinom zadnjih 9 godina. Javlja se zbog eksponirane kosti i gnojne supuracije u mandibuli desno i gnojne fistule u frontalnom području mandibule. Navedeno stanje traje posljednjih 6 mjeseci. Donja je čeljust bezuba, pacijentica nosi donju totalnu protezu. Radiološki je uočljiva značajna osteoliza u području mandibule desno, s izraženim sekvestrima. Kod pacijentice je provedena antibiotska terapija te je napravljena sekvestrektomija. Terapija MRONJ-a često zahtijeva prestanak uzimanja antiresorptivnih lijekova i zahtjeva kombiniranu konzervativnu i kiruršku terapiju. Ovi prikazi slučajeva pokazuju važnost svjesnosti liječnika koji propisuju antiresorptivne i antiangiogene lijekove o mogućim komplikacijama upotrebe tih lijekova. Prevencija MRONJ-a lako se može postići boljom komunikacijom između liječnika koji propisuju takve lijekove i stomatologa.
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S21 ANATOMIC VARIATIONS OF THE MANDIBULAR CANAL AS POTENTIAL SURGICAL COMPLICATIONS

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Bifid mandibular canal is an anatomical variation of the mandible. The first case report of bifid mandibular canal was published in 1973. This anatomical variant can be revealed by a detailed analysis of the orthopantomogram or CBCT. The most famous classification of this anatomical variation is according to Langleis. After surgical treatment of the lower wisdom teeth, implantation of dental implants, removal of bone grafts from the angle of the mandible, and orthognathic surgery, the incidence of complications in patients with bifid mandibular canal increases. We analyzed orthopantomograms and the incidence of bifid mandibular canal was 4.93%. According to literature data, the incidence is 3-8% based on orthopantomogram analysis, and according to CBCT analysis it is 7-13%. Since the incidence is not low, it is necessary to analyze the x-ray images thoroughly and adjust the surgical procedure to prevent complications. We outline potential complications and how to treat them.
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S21 ANATOMSKE VARIJACIJE MANDIBULARNOGA KANALA KAO POTENCIJALNE KIRURŠKE KOMPLIKACIJE

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Dvostruki mandibularni kanal je anatomska varijacija donje čeljusti. Prvi prikaz slučaja dvostrukoga mandibularnoga kanala objavljen je 1973.godine. Ova anatomska varijacija može se otkriti detaljnom analizom ortopantomograma ili CBCT-a. Najpoznatija podjela ove anatomske varijacije je prema Langleisu. Tijekom kirurških zahvata poput alveotomije donjih umnjaka, ugradnje dentalnih implantata, uzimanja koštanih presadaka iz područja kuta mandibule te ortognatskih kirurških zahvata raste učestalost komplikacija u pacijenata s dvostrukim mandibularnim kanalom. U Klinici za kirurgiju lica, čeljusti i usta analizirali smo ortopantomograme te je učestalost dvostrukoga mandibularnoga kanala iznosila 4,93%. Prema podacima u literaturi učestalost dvostrukoga mandibularnoga kanala temeljem analiza ortopantomograma iznosi 3-8 %, a prema analizi CBCT-a 7-13%. Obzirom na učestalost koja nije mala, potrebno je detaljno analizirati radiološke snimke te prilagoditi kirurški postupak kako bi se prevenirale komplikacije. Prikazujemo potencijalne komplikacije i kako ih liječiti.
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S22 BULLOUS ERUPTION ON ORAL MUCOSA AFTER MULTIPLE TOOTH EXTRACTION

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We present a case of a sixty-six-year-old patient with a finding of bullous lesions that appeared in the mouth after multiple tooth extraction in the upper and lower jaw. The patient reported a thyroidectomy, diabetes, hypertension and chronic gastritis and the appearance of blisters on the skin. The medications she used regularly were Euthyrox, Repaglinit, Beloformin, Pyramil, Concor, Sortis, Ranital, Diuver, Jardiance. After extraction of the teeth in the upper and lower jaw, due to periodontitis, at the site of the extraction wounds and other regions of oral mucosa she noticed the appearance of bullae and peeling of the oral mucosa. According to the medical history, the healing of post-extraction wounds was slowly and followed by ulcers and white deposits on the oral mucosa, which were peeling off with a wooden spatula. In differential diagnosis, granuloma, herpetic gingivostomatitis and candidiasis were being considered. Despite antimicrobial therapy, the patient's condition began to improve only after administration of topical corticosteroid. After accidentally finding of bulla just outside the postextraction wound during a check-up three weeks after extraction, the patient subsequently states that there are lesions on her skin and genitals and that her chosen physician attributed it to a massage oil allergy for months. Additional anamnestic data raised suspicion of autoimmune bullous disease. The patient was referred to a dermatologist who confirmed suspected bullous disease and is further referred a patient to the University Clinic for skin and genital diseases, Clinical Hospital Centre Zagreb for immunofluorescence (DIF and IIF). At present the patient is undergoing a diagnostic workup. This case presentation will provide a diagnostic algorithm that includes a history, clinical findings, polytherapy, and the necessary diagnostics that would allow establishment of an early and exact diagnosis and the possibility to treat a patient. This case report highlights the need for a multidisciplinary approach to the patient as well as the importance of dentists in the early diagnosis of systemic disorders.
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S22 BULOZNA ERUPCIJA NA SLUZNICI NAKON SERIJSKE EKSTRAKCIJE ZUBI

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Prikazujemo slučaj 66-godišnje pacijentice s nalazom buloznih lezija koje su se pojavile u ustima nakon serijske ekstrakcije zuba u gornjoj i donjoj čeljusti. U anamnezi pacijentica je navela tireoidektomiju, šećernu bolest, hipertenziju, kronični gastritis i pojavu mjehurića po koži. Od lijekova uzimala je Euthyrox, Repaglinit, Beloformin, Piramil, Concor, Sortis, Ranital, Diuver i Jardiance. Nakon ekstrakcije zuba u gornjoj i donjoj čeljusti zbog parodontitisa, na mjestu ekstrakcijskih rana i drugim regijama primijetila je pojavu mjehura i ljuštenja sluznice. S obzirom na anamnezu, zarastanje postekstrakcijskih rana išlo je sporo, praćeno ulkusima i bijelim naslagama po oralnoj sluznici koje su se ljuštile drvenom špatulom. Diferencijalno dijagnostički uzet je u obzir piogeni granulom, herpetični gingivostomatitis i kandidijaza. Stanje pacijentice se usprkos antimikrobnoj terapiji počelo poboljšavati tek nakon početka lokalne aplikacije kortikosteroida. Uz bule neposredno u blizini postekstrakcijske rane tijekom kontrolnoga pregleda tri tjedna nakon ekstrakcije, pacijentica naknadno anamnestički navodi da i po tijelu i genitalijama ima lezije koje izabrani liječnik mjesecima pripisuje alergiji na ulje za masažu. Dodatni anamnestički podatak izaziva sumnju na autoimunu buloznu bolest. Pacijenticu smo uputili dermatovenerologu koji je također posumnjao na buloznu bolest te pacijenticu upućuje na pregled u Kliniku za kožne bolesti na Šalati radi imunofluorescencije (DIF i IIF). Pacijentica je i dalje u tijeku dijagnostičkog postupka. U ovoj će se prezentaciji dati dijagnostički algoritam koji uključuje anamnezu, kliničku sliku, politerapiju i potrebnu dijagnostiku koja omogućuje postavljanje rane egzaktne dijagnoze i mogućnost liječenja pacijentice. Ovaj prikaz slučaja ukazuje na potrebu multidisciplinarnoga pristupa bolesniku kao i važnost stomatologa u ranoj dijagnostici sustavnih poremećaja.
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S23 LOCALISED AMYLOIDOSIS OF MAXILLARY ALVEOLAR RIDGE MUCOSA

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Localized head and neck amyloidosis is a rare and usually benign condition. In the oral cavity most commonly affected areas are the tongue and buccal mucosa. We will present an extremely rare case of localized amyloidosis of mucosa of maxillary alveolar ridge, discovered as an accidental finding due to the inability to wear the upper total denture. A patient, aged 71, was referred to the Department of Oral Surgery, School of Dental Medicine, University of Zagreb, for persistent nodular formation in the region of the edentulous ridge of the region 13-23. Nodular formation of a reddish colour, with a solid consistency of approximately 40x15mm moving from the substrate. Orthopantomographic imaging was performed and bone resorption and defects were excluded. Biopsy material was taken, by histopathological analysis, the stroma was occupied by a multiplied, partial-

S23 LOKALIZIRANA AMILOIDOZA SLUZNICE GORNJEGA ALVEOLARNOGA GREBENA

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Uvod: Lokalnizirana amiloidoza glave i vrata je rijetko i obično benigno stanje. Unutar usne šupljine najčešće zahvaća jezik i obraznu sluznicu. Prikazati ćemo rijedak slučaj lokalizirane amiloidoze grebena gornje čeljusti, slučajno otkriven zbog nemogućnosti nošenja gornje potpune proteze. *Prikaz slučaja:* Pacijent u dobi od 71 godine upućen je na Zavod za oralnu kirurgiju Stomatološkog fakulteta zbog perzistentne nodularne tvorbe u području bezubog grebena regije 13-23. Tvorba je crveno ružičaste boje, čvrste konzistencije veličine cca 40x15 mm, pomična od podloge. Učini se ortopantomogram te se isključe koštane resorpcije i defekti. Uzeta je biopsija i patohistološkom analizom uočena stroma zauzeta umnoženim, dijelom hijaliniziranim, vezivom. Uzorci su naknadno bojeni Kongo crvenilom pri čemu nakupine kolagena pod polariziranim svijetlom prikazuju dvolom karakterističan za amiloid. Pacijent je zbog dobi odbio sistematske pretrage kao bi se is-

ly hyalinised, connective tissue. The samples were subsequently stained with Congo red, with collagen accumulations under polarized light showing a double characteristic of amyloid. Blood and urine examination showed no potential systemic involvement. ECG analysis shoved normal readings. Due to age and health condition, the patient refused other invasive systematic examinations to rule out systemic disease. In the second procedure the formation is completely excised and the total upper denture is made. Localized amyloidosis of the alveolar ridge mucosa is an extremely rare condition, to the best of our knowledge this is the third case reported in the literature. Pathohistological analysis is the first step in diagnosis, and systemic tests, blood counts, urinalysis, bone marrow biopsy, ECG and digestive endoscopy are recommended to rule out possible systemic disease.
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uključila sistemna bolest. U drugom zahvatu tvorba je ekscidirana u cijelosti te je izrađena gornja potpuna proteza.
Zaključak: Lokalizirana amiloidoza sluznice alveolarnog grebena je ekstremno rijetko stanje, ovo je treći u literaturi opisan slučaj. Patohistološka analiza prvi je korak pri postavljanju dijagnoze, te se nakon toga preporučaju sistemni testovi, krvna slika, analiza urina, biopsija koštane srži, EKG i digestivna endoskopija kao bi se isključila moguća sistemska bolest.
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S24 IMPLEMENTATION OF NEW TECHNOLOGIES IN A MORE PRECISE POSITIONING OF DENTAL IMPLANTS

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Today dental implant placement has become a common practice in most dental clinics. Implantology is a separate branch of dental medicine in which oral surgery, periodontology and prosthodontics intertwine and complement each other in order to enhance the protocol of implantation, osseointegration and optimal prosthodontic implant placement. Poor tissue healing can compromise the best placed implant, and also the best tissue management cannot correct the mistakes in positioning of dental implants. Implants placed in a prosthodontically unacceptable location also compromise the final quality of the prosthesis temporally, functionally and aesthetically. The trend in modern implantology is to develop a clinical procedure that allows the shortening of the overall surgical and rehabilitation protocol, while using the least invasive surgical technique, overcoming mistakes and increasing precision in implant placement. The success of implantation is directly linked to precise planning, which is enabled by new technologies. The first and probably most important influence on the development of new surgical protocols is 3D imaging and computer programs that enable the production of precision surgical guides that are printed in Computer Aided Design / Computer Aided Manufacture (CAD / CAM) technology. All of this has spurred the development of a computer-made surgical guide that provides the clinician with a predictable protocol - from implant placement planning to the final prosthodontic solution. Choosing the right implant site guarantees success in the prosthodontic rehabilitation. The case study illustrates the implementation of new technologies in implant placement in the most demanding area for both, the clinician and the patient, and this is the lack of an upper incisive as a result of a vertical fracture. Guided tissue healing protocol, temporary prosthodontic solution, implant planning and placement are presented.
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S24 IMPLEMENTACIJA NOVIH TEHNOLOGIJA U PRECIZNIJOJ POSTAVI DENTALNIH IMPLANTATA

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Danas je ugradnja zubnih implantata postala uobičajena praksa u većini ordinacija dentalne medicine. Implantologija je područje dentalne medicine u kojoj se oralna kirurgija, parodontologija i protetika uzajamno isprepleću i nadopunjuju. Zajedno unaprjeđuju protokol implantacije i oseointegracije te optimalno protetski postavljanje implantata. Loše tkivno cijeljenje može ugroziti i najbolje postavljen implantat, ali i najbolji tkivni menagement ne može ispraviti pogrešku u slučaju protetski loše postavljenog implantata. Implantati postavljeni na protetski neprihvatljivom mjestu također ugrožavaju konačnu kvalitetu rada vremenski, funkcionalno i estetski. Trend u suvremenoj implantologiji jest razviti kliničku postupak koji omogućuje skraćenje ukupnoga kirurškog i rehabilitacijskog protokola, a pritom upotrebljavati što manje invazivnu kirurško tehniku, prevladati pogreške i povećati preciznost u postavljanju implantata. Uspješnost implantacije izravno je povezana s preciznim planiranjem, a to omogućuju nove tehnologije. Prvi i vjerojatno najvažniji utjecaj na razvoj novih kirurških protokola ima 3D snimanje i kompjutorski programi koji omogućuju izradu preciznih kirurških vodilica koje se printaju u Computer Aided Design/ ComputerAided Manufacture tehnologiji (CAD/CAM). Sve to potaknulo je razvoj kompjutorski izrađene kirurške vodilice koja osigurava praktičaru predvidljiv protokol od planiranja postavljanja implantata do konačnog protetskog rješenja. Odabir pravog mjesta za implantaciju jamči kasniji uspjeh u protetskoj rehabilitaciji. Prikazom ovog slučaja prikazujemo protokol implementacije novih tehnologija u najzahtjevnijem području kako za ordinarijusa tako i za pacijenta, a to je nedostatak gornjeg sjekutića nastao kao posljedica vertikalne frakture zuba. Prikazuje se protokol vođenog tkivnog cijeljenja, privremenog protetskog rješenja, planiranja i postave implantata.
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S25 MINIMALY INVASIVE CORRECTION OF LOWER VESTIBULE WITH DIODE LASER AFTER POLYTRAUMA AND MANDIBLE INJURY IN TRAFFIC ACCIDENT - CASE REPORT

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Introduction: The aim of the procedure was to correct soft tissue blisters and newly formed mucous folds as a consequence of a large number of surgical procedures. *Case report:* In 46 years old patient, a car accident 4 years ago caused polytraumatic injuries and multiple mandibular body fractures. A large lacerated and contused wound and an open multiple fractures of the mandibular corpus with bone defects and fracture dislocations were obtained. The patient was primarily taken care of by the nearest surgeon and later by a specialist in maxillofacial surgery, and corrective procedures were performed to restore the proper occlusal relationship of the maxilla and mandible. Rehabilitation by physical medicine has restored partially lost functions. The patient referred to the Department of Periodontology, School of Dental Medicine in Zagreb, with a problem of asymmetry of the lips. Multiple mucous folds, as a result of a large number of surgeries, caused a tightening and aggravation of facial mimicry, lower right part of the lip as well as difficulty in phonation. The therapy of choice was soft tissue correction with a diode laser *(Ultradent Gemini ™ 810 + 980)*. Three corrective procedures were made under local anesthesia with minimal bleeding and at intervals of 3 months. The appearance of the patient's lips after the first procedure showed their correct symmetry. There was no relapse, but keratinized gingiva appeared, which maintained the achieved lower mucogingival border and deepened vestibule. C*onclusion:* The soft tissue diode laser has proven to be an excellent therapy choice with minimal postoperative recovery. Minimally invasive surgery improved facial mimic, a deeper vestibule of the lower jaw, and better function and phonation, thus achieving the primary goal of improving the patient's quality of life.
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S25 MINIMALNO INVAZIVNA KOREKCIJA DONJEGA VESTIBULUMA DIODNIM LASEROM NAKON POLITRAUME S OZLJEDOM MANDIBULE U PROMETNOJ NESREĆI – PRIKAZ SLUČAJA

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Uvod: Cilj zahvata bio je korekcija mekotkivnih plika i novonastalih sluzničnih nabora kao posljedice velikog broja operativnih zahvata. *Prikaz slučaja:* U pacijentice stare 46 godina, prometna nesreća prije 4 godine prouzročila je politraumatske ozljede i prijelome više kostiju tijela. Zadobila je veću lacero kontuznu ranu i otvoreni multifargmentarni prijelom korpusa mandibule s defektima kosti i dislokacijama ulomaka. Pacijenticu je primarno zbrinuo najbliži kirurg te kasnije i maksilofacijalni kirurg koji je izvršio korektivne zahvate radi usklađivanja pravilnog okluzijskog odnosa maksile i mandibule. Fizikalnom rehabilitacijom vratile su se djelomično izgubljene funkcije. Pacijentica se javila na Zavod za parodontologiju Stomatološkog fakulteta u Zagrebu zbog asimetrije usana. Višestruki sluznični nabori, kao posljedica velikog broja operacija, zatezali su i otežavali mimiku lica i desne strane donje usne s posljedičnim fonacijskim poteškoćama. Izbor terapije bila je korekcija mekih tkiva diodnim laserom *(Ultradent Gemini™ 810 + 980)*. Napravili smo tri korektivna zahvata u razmacima od 3 mjeseca u lokalnoj anesteziji s minimalnim krvarenjem. Vanjski izgled usana pacijentice već nakon prvog zahvata pokazao je njihovu pravilniju simetriju. Nije bilo recidiva asimetrije, nego se pojavila keratinizirana gingiva koja je zadržala postignutu nižu mukogingivalnu granicu i produbljeni vestibulum. *Zaključak:* Diodni laser za meka tkiva pokazao se kao odličan izbor terapije uz minimalni postoperativni oporavak. Minimalno invazivnim zahvatom dobila se pravilnija mimika lica, dublji donji vestibulum te bolja funkcija i fonacija, čime je postignut primarni cilj poboljšanja kvalitete života pacijentice.
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Invited Lectures

I1 FACIAL BALANCE CORRECTION OPTIONS

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Sometimes clients come into our offices without clear idea what to change or rejuvenate because they are bombed with techniques and options. To understand what to propose between surgical options and less invasive options we have to have knowledge of both. We have to understand ageing process of the face, loss of volume and skin changes. Very important are infrastructural elements: facial bones and muscles. Knowledge of ageing process of the facial structures including bones and their deformities, how to correct it and give a harmony which Leonardo da Vinci implemented long time ago is essential. Absolutely have facial beauty trends changed from V shape to quadrangular, but that is not the rule. Those are trend changes but not acceptable for all clients. Also noninvasive techniques push to change some standards in beauty, but not always in proper way. The basic surgical rule is to correct the key points of deformities to achieve harmony in the face and its profile- to have a nice jaw line etc. We can divide facial deformities in two groups: 1. Facial deformity of bones and soft tissue as real congenital or exquisite deformity; 2. Facial deformities as consequences of ageing process. We can divide techniques of facial deformities: 1.surgical and radical options - as definitive result; 2. camouflage techniques - noninvasive procedure; 3. combination of surgical and non-surgical technique.

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I2 CYSTIC LESIONS OF THE JAWS

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Cystic lesions of the jaws are relatively common. Histogenically, they may be of odontogenic or non-odontogenic origin. Pathogenically, they can be developmental, inflammatory or neoplastic. Radiologically, they are most often presented as lytic lesions, so for accurate diagnosis and thus optimal therapy, a clinical-radiological-pathological correlations are important. Odontogenic cysts are formed from the remnants of the odontogenic epithelium remaining during embryonic tooth development. Most odontogenic cysts arise by the proliferation of epithelial residues triggered by inflammatory cytokines. The most common is a radicular cyst, always associated with a non-vital tooth. It is clinically manifested only when secondary inflammation develops, and is treated with tooth extraction or apicoectomy with cyst enucleation, or non-surgical treatment of the root canal. The most common developmental odontogenic cysts are the follicular cyst, which surrounds the crown of the uneruptted tooth, and the odontogenic keratocyst. The pathogenic mechanism of epithelial proliferation in developmental cysts has not been elucidated. A keratocyst can develop in Gorlin's syndrome, in which a mutation of the PTCH1 gene has been demonstrated. In these cases, multiple cysts are found in younger patients. Odontogenic tumors are much less common than odontogenic cysts, and very often present radiologically as cystic lesions. They arise from epithelial, mesenchymal, or a combination of both elements of the tooth germs. Odontomas, which are considered to be hamartomas composed of epithelial and mesenchymal structures, are the most common. They are mostly accidental findings and are treated with surgical excision. Ameloblastoma is a benign epithelial odontogenic tumor. It is locally aggressive and often recurs. It can be composed as a solid, variably cystic or unicystic formation, which is clinically and radiologically similar to a keratocyst. Pathohistological diagnosis is crucial because surgical treatment requires widespread excision and patient follow-up must be long-lasting. Differential diagnosis of radiologically lytic lesions of the jaw also includes other, very rare odontogenic tumors such as squamous odontogenic tumor, adenomatoid odontogenic tumor, ameloblastic fibroma, odontogenic fibroma and some others that occur extremely rarely. Cystic lesions of non-odontogenic histogenesis that must be considered in the differential diagnosis are simple bone cyst, aneurysmal (traumatic) bone cyst, some benign and malignant bone tumors, plasmacytoma, and metastatic tumors in the jaws.

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I3 INDUCED ORAL MUCOSAL REACTIONS CAUSED BY ORAL SURGERY

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The incidence and severity of postoperative complications are an important element in determining the risk of any oral surgery procedure. Expected concomitant complications

Pozvana predavanja

I1 IZBOR KOREKCIJE PROPORCIJA LICA

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Ponekad pacijenti dođu u ordinaciju bez jasne ideje što promijeniti ili pomladiti jer su bombardirani tehnikama i mogućnostima. Da bismo razumjeli što treba predložiti između kirurških i manje invazivnih opcija, moramo znati obje. Moramo razumjeti proces starenja lica, gubitak volumena i promjene kože. Vrlo su važni infrastrukturni elementi: kosti lica i mišići. Poznavanje procesa starenja struktura lica, uključujući kosti i njihove deformacije, kako to ispraviti i dati sklad koji je Leonardo da Vinci odavno implementirao, od ključne je važnosti. Apsolutno su trendovi ljepote lica promijenjeni iz V oblika u četverokutni oblik, ali to nije pravilo. To su promjene trenda, ali nisu prihvatljive za sve pacijente. Također i neinvazivne tehnike potiču promjenu nekih standarda ljepote, ali ne uvijek na pravi način. Osnovno kirurško pravilo je ispraviti ključne točke deformiteta za postizanje sklada na licu i njegovom profilu - imati lijepu čeljusnu liniju itd. Možemo podijeliti deformitete lica u dvije skupine: 1. Deformitet kostiju i mekog tkiva kao stvarni kongenitalni ili stečeni deformitet; 2. Deformiteti lica kao posljedica procesa starenja. Možemo podijeliti tehnike deformiteta lica: 1.kirurške i radikalne mogućnosti - kao konačni rezultat; 2. tehnike kamufliranja - neinvazivni postupak; 3. kombinacija kirurške i nekirurške tehnike.

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I2 CISTIČNE LEZIJE ČELJUSTI

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Cistične lezije čeljusti su relativno česte. Histogenetski, one mogu biti odontogenog ili neodontogenog podrijetla. Patogenetski mogu biti razvojne, upalne ili neoplastične. Radiološki se najčešće prezentiraju kao litičke promjene, pa je za točnu dijagnozu, a time i optimalnu terapiju, važna kliničko-radiološko-patološka korelacija. Odontogene ciste nastaju od ostataka odontogenog epitela zaostalog tijekom embrionalnog razvoja zuba. Najveći broj odontogenih cista nastaje proliferacijom epitelnih ostataka potaknutom upalnim citokinima. Najčešća je radikularna cista, uvijek povezana s nevitalnim zubom. Klinički se manifestira tek kad se razvije sekundarna upala, a liječi se ekstrakcijom zuba ili apikotomijom uz enukleaciju ciste, ili nekirurškom obradom zubnog kanala. Najčešće razvojne odontogene ciste su folikularna cista, koja okružuje krunu neizniknutoga zuba i odontogena keratocista. Patogenetski mehanizam proliferacije epitela u razvojnim cistama nije razjašnjen. Keratocista se može razviti u sklopu Gorlinova sindroma, kod kojega je dokazana mutacija PTCH1 gena. U tim se slučajevima nalaze multiple ciste u mlađih pacijenata. Odontogeni su tumori mnogo rjeđi nego odontogene ciste, a vrlo se često radiološki prikazuju kao cistične promjene. Oni nastaju od epitelnih, mezenhimalnih ili kombinacije obaju elemenata zubnoga zametka. Najčešći su odontomi, koji se smatraju hamartomima građenim od epitelnih i mezenhimalnih struktura. Uglavnom su slučajan nalaz, a liječe se kirurškom ekscizijom. Ameloblastom je benigni epitelni odontogeni tumor. Lokalno je agresivan te često recidivira. Može biti građen kao solidna, varijabilno cistična ili unicistična tvorba, koja je klinički i radiološki slična keratocisti. Patohistološka dijagnoza je ključna jer kirurško liječenje zahtijeva široku ekscziju, a praćenje bolesnika mora biti dugotrajno. Diferencijalna dijagnoza radiološki litičkih lezija čeljusti uključuje i ostale, vrlo rijetke odontogene tumore kao što su skvamozni odontogeni tumor, adenomatoidni odontogeni tumor, ameloblastični fibrom, odontogeni fibrom i neke druge koji se pojavljuju iznimno rijetko. Cistične lezije neodontogene histogeneze koje se moraju razmatrati u diferencijalnoj dijagnozi su jednostavna cista kosti, aneurizmatska (traumatska) cista kosti, neki benigni i maligni tumori kosti, plazmacitom te metastatski tumori u čeljusnim kostima.

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I3 INDUCIRANE REAKCIJE NA ORALNOJ SLUZNICI IZAZVANE ORALNOKIRURŠKIM ZAHVATIMA

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Incidencija i težina postoperativnih komplikacija važan su element u određivanju rizika bilo kojeg oralno kirurškog zahvata. Očekivane popratne komplikacije uključuju bol

include pain and swelling that result from inflammatory processes accompanying surgical wound healing. Postoperative discomfort, swelling or bleeding may also be related to a number of other factors such as the duration, extent and nature of the oral surgery, the use of periodontal bandage and suturing, the patient's age, his or her bad habits (smoking tobacco), systemic underlying disease, the level of surgery stress as well as other psychosocial factors. The use of antibiotics can reduce the patient's discomfort, prevent postoperative infections and accelerate healing. However, postoperative course and healing can also complicate the occurrence of possible unexpected reactions and new lesions on the mucosa triggered by oral surgery. These lesions may be restricted to the site of surgery or may extend to other areas. The type and extent of new lesions are unpredictable and can be caused by trauma, virus activation and kebnerization. The Koebner phenomenon, also known as an isomorphic response, represents the development of disease after surgical trauma to previously uninfected mucosa or / and skin. In addition to classic oral surgery procedures, laser ablation may also cause koebnerization. Therefore, the postoperative Koebner phenomenon or related responses should be included in the differential diagnosis of poorly healing surgical wounds in addition to the diagnostic histopathologic and immunological tests required for definitive diagnosis and optimal treatment. In this lecture we will present some cases of oral diseases caused by oral surgery and kebnerization.

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I4 PROSTHODONTICALY DRIVEN IMPLANT THERAPY

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Implant therapy is more and more becoming the therapy of choice for treating tooth loss. Classical implant therapy protocols begin with a basic X-ray analysis followed by a surgical procedure. Complications which can occur as a result of such planning and implant placement can lead to inadequate superstructure design and long-term functional and esthetical instability or failure. Prosthodonticaly driven implant therapy begins with planning and designing of the future suprastructure which has to ideally integrate into the esthetical and functional whole of the patient's mouth. Only after the complete design of the prosthetic plan, according to the position of the restoration can the position of the implant into the bone bed be planned. Esthetical and functional integration of the implant and suprastructure depends on the stability of both hard and soft tissue, and the appropriate selection of restorative materials. Digital technologies enable the rapid development of protocols for prosthodonticaly driven implant therapy. The use of intra- and extra-oral scanners, software for virtual designing of prosthetic restorations, planning and implementation of the guided implant placement technique, and finally computer aided manufacturing of the provisional and final restorations increases the predictability and precision to a new, higher level. Within the scope of this lecture modern protocols for planning, surgical placement and superstructure design and manufacturing will be discussed for treating partial edentulism in esthetically and functionally demanding cases.

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I4 PROTETSKI VOĐENA IMPLANTOPROTETSKA TERAPIJA

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Gubitak prirodnoga zuba sve više se zbrinjava implantoprotetskim nadomjescima. Klasični protokoli nadoknade izgubljenih zuba započinju s osnovnom RTG analizom i kirurškim zahvatom ugradnje. Komplikacije koje nastaju kao posljedica takve izvedbe planiranja i ugradnje implantata mogu dovesti do nemogućnosti adekvatne protetske opskrbe te dugoročne funkcijske i estetske nestabilnosti, gubitka suprastrukture i/ili intraosealnog dijela implantata. Protetski vođena implantoprotetska terapija započinje s planiranjem i oblikovanjem budućega protetskoga rada koji se treba idealno integrirati u estetsku i funkcijsku cjelinu stomatognatog sustava pacijenta. Tek nakon izrade protetskoga plana prema položaju nadomjeska planira se i određuje intraosealni položaj implantata. Estetska i funkcijska integracija implantoprotetskoga nadomjestka ovisi o stabilnosti mekih i tvrdih tkiva, te pravilnom odabiru materijala s kojim izrađujemo suprastrukturu. Digitalne tehnologije uvelike omogućavaju brzi razvoj protokola za protetski vođenu implantoprotetsku terapiju. Korištenje intraoralnih i ekstraoralnih skenera, softvera za virtualno oblikovanje protetskih nadomjestaka, planiranja i provođenja koncepta računalno vođene kirurške ugradnje implanatata, te finalno strojne izrade privremenoga i trajnoga protetskoga nadomjeska podižu predvidljivost i preciznost terapije na višu razinu. U sklopu ovoga predavanja biti će predstavljeni moderni protokoli planiranja, kirurške ugradnje i protetske opskrbe djelomične bezubosti u estetski i funkcijski zahtjevnim slučajevima.

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I5 REGENERATIVE MEDICINE – THE PRESENT AND FUTURE OF PLASTIC, RECONSTRUCTIVE AND ESTHETIC SURGERY

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Until recently, tissue deficiency reconstruction due to congenital defects, trauma, tumor resection or infection has been replaced by the use of local or distant tissue from patients or the use of alloplastic materials. Each of these techniques has its deficiency as well. The number of donor regions is limited and tissue uptake leaves a more or less pronounced functional and aesthetic deficit. Aloplastic materials have their own problems and are usually not durable, so they need to be altered and can cause adverse reactions. A second option is tissue transplantation, but due to the immune response and the need for permanent immune suppression, with the risk of disease transmission and the need for a donor, it is limited to only a small number of indications. Most injuries in the body heal with a fibrous scar are only bone if it has adequate conditions heal with the creation of new bone. Therefore, the thought of a generation of plastic, reconstructive and aesthetic surgeons is to encourage tissue to regenerate and achieve healing *in vivo* with the same tissue, which is lost. The regeneration of limbs in some animals gave us hope that in the future we will be able to replace complex tissues. For the regeneration of tissue, three basic conditions must be met. We need to have a 3D matrix that is the carrier and landmark of the cells for growth, the surrounding matrix, the basal membrane that connects the cells to the carrier and contains growth factors as well as blood and lymphatic vessels that feed and drain waste matter along with the neural mesh, which also plays an important role in regeneration tissue. The third factor is cells. These may be adult cells that have a further multiplication potential or stem cells that can develop into any tissue with adequate stimuli. Ar-

I5 REGENERATIVNA MEDICINA - SADAŠNJOST I BUDUĆNOST PLASTIČNE, REKONSTRUKCIJSKE I ESTETSKE KIRURGIJE

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Do nedavno rekonstrukciju nedostatka tkiva zbog kongenitalnih defekata, traume, resekcije tumora ili infekcije nadomještali smo uporabom lokalnih ili udaljenih tkiva s bolesnika ili uporabom aloplastičnih materijala. Svaka od tih tehnika ima i svoje nedostatke. Broj davajućih regija je ograničen, a uzimanje tkiva ostavlja manje ili više izraženi funkcionalni i estetski deficit. Aloplastični materijali imaju svoje probleme i obično nisu trajni te se moraju mijenjati, a mogu izazvati i neželjene reakcije organizma. Druga mogućnost je transplantacija tkiva no zbog imunološke reakcije i potrebe za trajnom imuno supresijom, uz rizik od prijenosa bolesti i potrebe za donorom, ograničena je samo na mali broj indikacija. Većina ozljeda u tijelu cijeli s fibroznim ožiljkom, jedino kost ako ima adekvatne uvjete cijeli stvaranjem nove kosti. Stoga je misao vodilja generacija plastičnih, rekonstrukcijskih i estetskih kirurga kako potaknuti tkivo na regeneraciju i postići cijeljenje *in vivo* s istim tkivom koje je i izgubljeno. Regeneracija udova u pojedinih životinja dala nam je nadu kako ćemo u budućnosti moći nadomještati kompleksna tkiva. Za regeneraciju tkiva potrebno je zadovoljiti tri osnovna uvjeta. Moramo imati 3D kalup koji je nosač i orijentir stanicama za rast, okolni matriks, bazalnu membranu koja povezuje stanice s nosačem i sadrži čimbenike rasta kao i krvne i limfne žile koje dovode hranu i odvode otpadne tvari, uz neuralnu mrežu koja ima također važnu ulogu u regeneraciji tkiva. Treći čimbenik su stanice. To mogu biti odrasle stanice koje imaju daljnju mogućnost podjele ili matične stanice koje se mogu adekvatnim podražajima razviti u bilo koje tkivo. Područja kojima se bavi regenerativna medicina možemo podijeliti na transplantaciju tkiva bez imuno

eas of regenerative medicine can be divided into tissue transplantation without immune suppression, stem cell development, tissue engineering, genetic engineering, cloning, development of personalized biomaterials, development of personalized fillers and development of technology that will enable us all. While some methods such as lipofiling, the use of fat or bone marrow stem cells and the cultivation of keratinocytes, chondrocytes and fibroblasts have become common practice, the regeneration of complex tissues, organs and organ systems still requires a great deal of research before entering everyday practice. Significant steps in this direction have already been made, the challenges ahead are exciting, and hints of treatment options were unthinkable until recently.
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supresije, razvoj matičnih stanica, tkivni inženjering, genetički inženjering, kloniranje, razvoj personaliziranih biomaterijala, razvoj personaliziranih filera i razvoj tehnologije koja će nam to sve i omogućiti. Dok su pojedini postupci kao lipofiling, uporaba matičnih stanica dobivenih iz masti ili koštane srži kao i uzgoj keratinocita, hondrocita i fibroblasta postali uobičajna praksa, regeneracija složenih tkiva, organa i organskih sustava još zahtjeva puno istraživanja prije nego bude ušla u svakodnevnu praksu. Značajni koraci u tom smjeru su već napravljeni, izazovi koji su pred nama su uzbudljivi, a nagovještaji mogućnosti liječenja do nedavno nezamislivi.
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IN MEMORIAM PROF. DR. SC. MIŠO VIRAG

Plenary Lectures

P1 NECK DISSECTION - INDICATIONS AND THE EXTENT OF THE PROCEDURE

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Twenty – four years ago, a study on this topic was conducted at the Department of Maxillofacial and Oral Surgery, University Hospital Dubrava, Zagreb, which included 374 patients. From the 1st January 1986 till the 31st December 1990, 460 neck dissections were performed. All patients had been followed for a minimum of 5 years, and the results had been presented in detail in my thesis. In this study, we will analyse the contemporary changes in neck dissections indications and in the procedure extent with regards to head and neck tumour type. In the same period, 17784 articles, or 900 publications per year (2.5 / day), were published in the PubMed database under the term 'neck dissection'. There are still disagreements in the indications and the extent of the procedure for many head and neck tumours. Indications for an elective neck dissection in oral cancer patients, as well as for most other malignant tumours of the head and neck, depend on: histologic type and tumour grade, T-stage, and primary tumour localization. In primary skin melanomas localized in the upper half of the face, occult metastases often first occur in the parotid gland. In these cases, along with elective neck dissection, an elective parotidectomy is indicated. Rarely is an elective neck dissection indicated in skin, lip and maxillary sinus squamous cell carcinoma cases. Furthermore, an elective neck dissection is generally reserved for large salivary glands high grade / high stage malignant tumour cases. Better knowledge of the natural course of the disease, availability of more reliable diagnostic methods, as well as modern multimodal treatment algorithms (chemotherapy + radiotherapy / immunotherapy, biological therapy, etc.) based on numerous and extensive meta-analyses have contributed in the reduction of indications and the extent of elective neck dissections.
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P2 COMPUTERIZED TOMOGRAPHY AND MAGNETIC RESONANCE IN ANALYSIS OF HEAD AND NECK TUMORS

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Radiological imaging techniques, such as computerized tomography (CT) and magnetic resonance (MR), allow a detailed analysis of the pathoanatomical changes of the head and neck. Contemporary multi-dimensional array of detector elements and multi-slice (MSCT or MDCT) CT machines provide extremely fast scanning and excellent anatomical detail in various projections, vascular imaging (CTA), various 3D reconstructions (3D), and virtual endoscopy. Routine MDCT examination should have axial, coronar and sagittal reconstructions with a maximum thickness of 3 mm with two different windows (for soft tissues 150 to 400 centered at 40 to 60 HU, and for bone structures and mucosal surface 2000 to 4000 centered at - 100 to 300 HU). 3D projections and endoscopic finding of changes in the nose, sinuses, larynx and pharynx are useful, but not mandatory. In order to distinguish soft tissue changes and spread to surrounding structures such as the base of the skull, orbit, and other regions, a contrast application is necessary. Specific protocols are applied to each anatomical region and clinical problem regarding the imaging method, thickness of scans, amount and contrast flow rate, reconstruction projections in post-processing of the recorded part, etc. Changes in soft tissues, especially in the contact areas of the anterior and middle cranial fossa, orbits, sinuses, and structures below the middle cranial fossa, are best demonstrated by MR imaging. In MR examination of the head and neck, the scan protocol depends on the type and localization of the pathological process and clinical inquiry. Based on clinical inquiry and data, in both methods the radiologist determines and modifies the protocol of examination and post-processing of the recorded portion. The standard MR proto-

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Plenarna predavanja

P1 DISEKCIJA VRATA - INDIKACIJA I OPSEG ZAHVATA

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Unazad 24 godine provedeno je istraživanje u Klinici za kirurgiju lica, čeljusti i usta Kliničke bolnice Dubrava u Zagrebu na istu temu, a obuhvatilo je 374 bolesnika kod kojih je učinjeno 460 diskecija u razdoblju od 1.1.1986. do 31.12.1990. Svi bolesnici praćeni su minimalno 5 godina, a rezultati toga istraživanja detaljno su izneseni u mom diplomskom radu. U ovom istaživanju analizirat ćemo što se promijenilo u indikacijama i opsegu disekcija vrata za pojedine tumore glave i vrata tijekom proteklog razdoblja i što je utjecalo na eventualne promjene. U istom razdoblju, u bazi PubMed-a pod pojmom "disekcija vrata" objavljeno je 17784 članaka, odnosno 900 publikacija godišnje (2,5/dan), a indikacije i opseg zahvata za mnoge tumore glave i vrata još su uvijek predmet rasprave. Danas, indikacije za elektivnu disekciju vrata kod karcinoma usne šupljine, ali i kod većine drugih malignih tumora glave i vrta, ovise o: histološkom tipu i gradusu tumora, T-stadiju i lokalizaciji primarnog tumora. Kod primarnih melanoma kože lokaliziranih u gornjoj polovici lica i mekom oglavku, okultne metastaze često se pojavljuju prvo u parotidnoj žlijezdi pa je uz elektivnu disekciju vrata indicirano učiniti i elektivnu parotidektomiju. Indikacije za elektivnu disekciju vrata kod planocelularnog karcinoma kože, usne i maksilarnog sinusa su rijetkost, dok su indikacije za elektivnu disekciju malignih tumora velikih žlijezda slinovnica uglavnom rezervirane za *high grade/high stage* tumore. Bolje poznavanje prirodnog tijeka bolesti, dostupnost pouzdanijih dijagnostičkih metoda, ali i suvremeni algoritmi multimodalnog liječenja (KRT/ imunoterapija, biološka terapija i dr.) temeljeni na mnogobrojnim i opsežnim meta analizama, doprinjeli su redukciji indikacija i opsega elektivnih disekcija vrata.
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P2 KOMPJUTORIZIRANA TOMOGRAFIJA I MAGNETSKA REZONANCIJA U ANALIZI TUMORA GLAVE I VRATA

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Radiološke tehnike slikovnoga prikaza kao što su kompjutorizirana tomografija (CT) i magnetska rezonancija (MR), omogućuju detaljnu analizu patoanatomskih promjena glave i vrata. Suvremeni CT uređaji s više redova detektorskih nizova i spiralnim načinom snimanja (multi slice – MSCT ili MDCT) pružaju mogućnost izuzetno brzoga skeniranja i izvrstan prikaz anatomskih detalja u raznim projekcijama, izvođenje snimanja krvnih žila (CTA), različite trodimenzionalne rekonstrukcije (3D) te virtualnu endoskopija. Rutinski MDCT pregled treba imati aksijalne, koronarne i sagitalne rekonstrukcije maksimalne debljine 3 mm uz prikaz u dva različita prozora (za meka tkiva 150 do 400 s centrom od 40 do 60 HU, a za koštane strukture i površinu sluznice 2000 do 4000 s centrom od -100 do 300 HU). Korisne su, ali ne i obvezatne, 3D projekcije te endoskopski prikaz promjena u nosu, sinusima, larinksu i farinksu. Za razlikovanje mekotkivnih promjena i širenja u okolne strukture kao što je baza lubanje, orbita te ostale regije, neophodan je pregled uz aplikaciju kontrastnog sredstva. Za svaku anatomsku regiju i klinički problem primjenjuju se posebni protokoli, a što se odnosi na način snimanja, debljinu slojeva, količinu i brzinu protoka kontrasta, projekcije rekonstruiranja u naknadnoj obradi snimljenoga dijela itd. Promjene na mekim tkivima, osobito u dodirnim zonama prednje i srednje lubanjske jame, orbite, sinusa i struktura ispod srednje lubanjske jame najbolje se prikazuju MR pregledom. Kod MR pregleda glave i vrata je protokol skeniranja ovisan o vrsti i lokalizaciji patološkoga procesa te kliničkoga upita. Na temelju kliničkoga upita i podataka, kod obje metode radiolog određuje i modificira protokol pregleda i naknadne obrade snimljeno-

col involves axial projections in T1 and T2 weighted image, sagittal in T1 weighted image, coronar in T1 and T2 weighted image, axial or coronar projections in STIR technique, and post-contrast axial, coronar and sagittal sections in T1 weighted image. Additionally, cross sections with fat saturation are used. The advantage of the MR technique is to better distinguish the soft tissue changes where very small anatomical details can be presented and that there is no ionizing radiation of the patient. The advantage of the MDCT technique is the very short scaning time, excellent presentation of bone anatomical details and various 3D and virtual endoscopic techniques. The choice of imaging method, MR or CT, depends primarily on the clinical problem and the type and localization of the expected changes. We will present a radiological diagnostic procedure with details of the pathoanatomical analysis in both methods, possible errors and the most common artifacts that make it difficult or impossible to view individual anatomical structures. In patients with malignant tumors in the head and neck region, the role of recent technological advances such as PET CT as a synthesis of nuclear medical imaging and classical morphological CT analysis is significant. The monitoring (follow-up) of patients with diseases in the head and neck after the treatment, because of the changed regional anatomy from a radiological point of view, is particularly significant. In such patients, the radiologist must be familiar with the details of the surgical procedure and other methods of treatments, because only then can the radiological analysis and interpretation be reliable. It is also important to do a baseline postoperative CT or MR examination that serves as a starting point for later controls.

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ga dijela. Standardni MR protokol podrazumijeva aksijalne projekcije u T1 i T2 mjerenoj slici, sagitalne u T1 mjerenoj slici, koronarne u T1 i T2 mjerenoj slici, aksijalne ili koronarne projekcije u STIR tehnici te postkontrastne aksijalne, koronarne i sagitalne presjeke u T1 mjerenoj slici. Dodatno se još koriste presjeci sa saturacijom masti. Prednost MR tehnike je u boljem razlikovanju mekotkivnih promjena gdje se mogu prikazati vrlo sitni anatomski detalji te što nema ionizirajućeg zračenja bolesnika. Prednost MDCT tehnike je vrlo kratko vrijeme snimanja, izvrstan prikaz koštanih anatomskih detalja te različite 3D i virtualne endoskopske tehnike. Izbor metode snimanja, MR ili CT, ovisan je prvenstveno o kliničkom problemu te tipu i lokalizaciji očekivanih promjena. Prikazat ćemo radiološki dijagnostički postupak s detaljima patoanatomske analize u obje metode, moguće pogreške i najčešće artefakte koji otežavaju ili onemogućuju prikaz pojedinih anatomskih struktura. U bolesnika s malignim tumorima u regiji glave i vrata značajna je uloga novijih tehnoloških dostignuća kao što je PET CT kao sinteza nuklearno medicinskoga prikaza i klasične morfološke CT analize. Praćenje bolesnika s bolestima u području glave i vrata nakon postupka liječenja, zbog promijenjene regionalne anatomije s radiološkoga aspekta je posebno značajno. U takvih bolesnika, radiolog mora biti upoznat s detaljima kirurškoga postupka te drugih načina liječenja jer tek tada radiološka analiza i interpretacija mogu biti pouzdane. Isto je tako važno učiniti bazični poslijeoperacijski CT ili MR pregled koji služi kao polazište za kasnije kontrole.

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IN MEMORIAM PROF. DR. SC. MIŠO VIRAG

Oral Presentations

O1 SURGICAL TREATMENT OF PARAPHARYNGEAL AND INFRATEMPORAL SPACE TUMORS – OUR EXPERIENCE

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Tumors of the parapharyngeal and infratemporal spaces present a surgical resection challenge as it is a borderline and difficult to reach area with vital anatomical structures that are connected to the middle skull base and neurocranium. They account for less than 1% of all tumors of the head and neck, and 80% of them are benign and their origin may be from all types of tissue that can be found in the area. Surgical treatment remains the basic and often the only modality of therapy. In this review, we present our experiences in the treatment of such tumors, problems in the surgical approach, and complications.

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O2 TREATMENT STRATEGY FOR MALIGNANT ANTERIOR CRANIAL BASE TUMORS

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Surgery for malignant anterior cranial base tumors represents a challenge in the light of the fact that this space represents anatomically very demanding region. Since tumors' spreading early involves vital structures of the orbit, cavernous sinus and central cranial base its resection represents a real challenge. Resection usually results in communication between the sterile area of the anterior cranial fossa and contaminated sinonasal space. The aim of reconstruction is to restitute the airtight and watertight barrier between the brain and the sinonasal cavity providing reliable mechanical support to intracranial structures. Those are essential prerequisites needed in prevention of serious and possibly lethal postoperative complications. Open surgical approach, using transfacial, transvestibular or transcranial route, has been for years considered as golden standard technique in surgical treatment of malignant anterior cranial base tumors. In the last fifteen years, endonasal endoscopic surgical technique has considerably evolved in its indications. It has been for a long time considered legitimate surgical technique for treatment of only inflammatory diseases and for the reconstruction of limited cranial base defects resulting from spontaneous, iatrogenic or post traumatic CSF leaks. With the awareness that peace meal malignant cranial base tumor resection is oncologically equally effective in comparison to en-bloc resection, and with the advent of new surgical tools (navigation, powered instrumentation) and reconstructive techniques (axial vascularised flaps), endonasal endoscopic approach is now considered as being equally effective and absolutely legitimate surgical technique in the treatment of malignant anterior cranial base tumors. The role of surgery as the first treatment option in a treatment strategy for the most of malignant sinonasal tumors has been recently questioned. Growing number of reports suggests that neoadju-

IN MEMORIAM PROF. DR. SC. MIŠO VIRAG

Usmena priopćenja

O1 LIJEČENJE TUMORA PARAFARINGEALNOGA I INFRATEMPORALNOGA PROSTORA - NAŠA ISKUSTVA

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Tumori parafaringealnoga i infratemporalnoga prostora predstavljaju resekcijski izazov budući da se radi o graničnome i teško dostupnome području s vitalnim anatomskim strukturama koje su povezane sa srednjom lubanjskom bazom i neurokranijem. Na njih otpada manje od 1% svih tumora glave i vrata, a 80% njih je benigno te njihovo podrijetlo može biti od svih vrsta tkiva koje se u tom prostoru mogu naći. Kirurško liječenje i dalje je osnovni i često jedini modalitet terapije. U ovome prikazu osvrnuti ćemo se na naša iskustva u liječenju takvih tumora, probleme u kirurškom pristupu i komplikacije kod liječenja.

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O2 STRATEGIJA LIJEČENJA ZLOĆUDNIH TUMORA KOJI ZAHVAĆAJU PREDNJU LUBANJSKU OSNOVICU

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Kirurgija zloćudnih tumora prednje lubanjske osnovice predstavlja u svakom smislu veliki izazov, s obzirom na iznimno kompliciranu anatomiju prostora u kojem se nalaze. Kako su njihovim širenjem vrlo brzo zahvaćene vitalne strukture poput orbite, kavernoznoga sinusa i strukture centrale lubanjske osnovice, njihovo kirurško liječenje je vrlo rizično i tehnički kompliciranо. Njihova resekcija rezultira stvaranjem komunikacije između sterilnoga prostora prednje lubanjske jame i bakterijama kontaminiranoga prostora nosa i paranazalnih sinusa. Cilj rekonstrukcije je uspostavljanje vodo- i zrakonepropusne granice između struktura središnjega živčanoga sustava i sinonazalnoga prostora uz istovremeno pružanje mehaničke potpore tim strukturama. Postizanje ovih ciljeva je osnova prevencije ozbiljnih i potencijalno smrtonosnih postoperativnih komplikacija. Otvorena kirurška tehnika s korištenjem transfacijalnih, transvestibularnih i transkranijskih pristupa je desetljećima bila smatrana zlatnim standardom za kirurško liječenje ove patologije. U zadnjih 15 godina došlo je do značajnoga razvoja endoskopske kirurgije nosa i paranazalnih sinusa što je rezultiralo posljedičnim proširenjem indikacija za korištenje ove kirurške tehnike. Endoskopska kirurgija nosa i paranazalnih sinusa se dugo vremena nazivala funkcijskom, odakle i potiče akronim FESS (Functional Endoscopic Sinus Surgery). Godinama je smatrana zlatnim standardom za liječenje upalnih bolesti nosa i paranazalnih sinusa te za rekonstrukciju limitiranih defekata lubanjske osnovice, najčešće spontanih i jatrogenih nenamjernih lezija tijekom kirurgije sinusa. Sa spoznajom da tzv. "piece meal" resekcija zloćudnih tumora ima u onkološkom smislu jednaku vrijednost kao i "en bloc" resekcija i s uvođenjem novih sustava (navigacija, motorizirani instrumenti) u armamentarij endoskopske kirurgije nosa i paranazalnih sinusa kao i uvođenjem novih metoda rekonstrukcije

vant therapy should be considered as the treatment protocol of first choice in these cases. This treatment strategy offers significantly better regional and distant control of the disease, providing for these patients a better chance for survival, improving in the same time the quality of their life. In this presentation we will expose the essentials and rationale of the treatment strategy for malignant anterior cranial base tumors, as well as the role of surgery in it.

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(aksijalni nazoseptalni režanj), postala je ravnopravna kirurška tehnika otvorenim tehnikama u liječenju zloćudnih tumora koji zahvaćaju prednju lubanjsku osnovicu. Uloga kirurgije kao prve i najvažnije opcije u liječenju zloćudnih tumora, a poglavito onih najvišega stupnja malignosti, u zadnje vrijeme sve više dolazi u pitanje. Sve više kliničkih studija potencira važnost neoadjuvantne kemoterapije kao važnoga terapijskoga oruđa prvoga izbora u liječenju ovih tumora. Neoadjuvantna kemoterapija nam u liječenju najzloćudnijih tumora nosa i paranazalnih sinusa nudi bolju regionalnu i udaljenu kontrolu bolesti te mnogo veći postotak čuvanja struktura orbite, kako u fizičkom, tako i u funkcionalnom smislu. U isto vrijeme omogućava nam veće šanse za kontrolu bolesti i preživljenje bolesnika uz istovremeno poboljšanje kvalitete njihovoga života. U ovoj prezentaciji će biti prikazane osnove strategije liječenja zloćudnih tumora koji zahvaćaju prednju lubanjsku osnovicu i ulogu kirurgije u toj strategiji, s posebnim naglaskom na mjesto koje ona u toj strategiji zauzima i načine kirurškoga liječenja koji nam stoje na raspolaganju za ovaj tip patologije.

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O3 EXPERIENCES OF KBC OSIJEK AFTER CRANIOFACIAL AND CRANIAL VAULT RESECTIONS

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The aim of this presentation is to present a variety of defects after craniofacial resections and cranial vault resections, be it tumor diseases, inflammation or the consequence of trauma. We present options for reconstruction of calvaria with alloplastic materials and the use of different types of microvascular flaps, local flaps and grafts depending on the type and size of cranial vault defects and brain sheaths, treatment complications, and overall treatment success. Reconstruction of cranial vault defects presents a demanding challenge because of the specificity of the central nervous system region. Microvascular tissue transfer is unfortunately in most cases the only possible choice since the use of local flaps very often results in liquorrhea, meningoencephalitis, osteomyelitis, and osteoradionecrosis after radiation therapy.

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O3 ISKUSTVA KBC-A OSIJEK NAKON KRANIOFACIJALNIH RESEKCIJA I RESEKCIJA KRANIJSKOGA SVODA

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Cilj ovoga prikaza je iznijeti raznolikost defekata nakon kraniofacijalnih resekcija i resekcija kranijskoga svoda bilo da se radi o tumorskim bolestima, upalama ili posljedicama traume. Prikazujemo opcije rekonstrukcije kalvarije aloplastičnim materijalima te upotrebu različitih vrsta mikrovaskularnih režnjeva, lokalnih režnjeva i presadaka ovisno o tipu i veličini defekata kranijskoga svoda i moždanih ovojnica, komplikacije liječenja i cjelokupnu uspješnost liječenja. Rekonstrukcija defekata kranijalnoga svoda predstavlja zahtjevan izazov zbog specifičnosti regije središnjeg živčanog sustava. Mikrovaskularni prijenos tkiva je nažalost u većini slučajeva i jedini mogući izbor budući da upotreba lokalnih režnjeva vrlo često rezultira s likvorejom, meningoencefalitisom, osteomijelitisom te osteoradionekrozom nakon provedene iradijacijske terapije.

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O4 EXTRANODAL EXTENSION FROM CLINICALLY NODE-NEGATIVE ORAL CANCER: PROGNOSTICATOR OF RECURRENCE AND SURVIVAL

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Extranodal extension (ENE) in patients with oral cancer indicates a poor prognosis and is associated with a significant risk of recurrence and metastastic spread. The aim of this study was to analyse this important feature of cervical lymph nodes in the clinically node-negative setting. The study included 61 patients with cT1–T3N0 oral cancer who underwent primary surgical treatment which included intraoral excision and elective neck dissection. There were 52 men and 9 women. Median age was 57 years and fourteen (22.9%) had ENE. Four (28.6%) of all pN+/ENE patients experienced ENE in lymph nodes <1 cm. The five-year disease-free survival, disease-specific survival, and overall survival rates were 30.6%, 28.3%, and 14.3%, respectively, in the ENE subgroup compared to 61.9%, 61.9%, and 48.2%, respectively, in the pN+/ENE-negative subjects and 76.7%, 81.9%, and 47%, respectively, in the pN0 group. The differences between the survival were significant (p = 0.023, p = 0.003, and p = 0.029, respectively). The incidence of local (50% *vs.* 14.9%, p = 0.011) and regional (28.6% *vs.* 2.1%, p = 0.008) relapse was significantly higher in the ENE subjects compared to the other subgroups of patients. Additionally, the time to recurrence was significantly shorter in the subjects experiencing ENE. In conclusion, ENE in patients with oral cancer indicates a poor prognosis and is associated with significant risk of all-type recurrences. It's a frequent feature in clinically node-negative settings and may be more common in smaller lymph nodes than is generally appreciated.

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O4 EKSTRANODALNA EKSTENZIJA U BOLESNIKA S KARCINOMOM USNE ŠUPLJINE I KLINIČKI NEGATIVNIM VRATOM: ČIMBENIK POVRATA BOLESTI I DOŽIVLJENJA

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Ekstraodalna ekstenzija (ENE) u bolesnika s intraoralnim karcinomom ukazuje na lošu prognozu i povezana je sa značajnim rizikom povrata bolesti i metastaziranja. Cilj ove studije bio je analizirati ovo važno svojstvo u klinički negativnom vratu. Studija je obuhvatila 61 bolesnika s intraoralnim karcinomom stadija cT1 – T3N0 koji su podvrgnuti primarnom kirurškom liječenju, a koje je uključivalo intraoralnu eksciziju i elektivnu disekciju vrata. Bilo je 52 muškarca i 9 žena. Srednja dob bila je 57 godina, a četrnaest (22,9%) bolesnika je imalo ENE. Četiri (28,6%) bolesnika od ukupnog broja bolesnika s pN + / ENE imalo je ENE u limfnim čvorovima <1 cm. Petogodišnje doživljenje bez bolesti, bolest-specifično doživljenje i ukupne stope doživljenja iznosile su 30,6%, 28,3% i 14,3%, u podskupini ENE u odnosu na 61,9%, 61,9% i 48,2%, u podskupini pN + / ENE - te 76,7%, 81,9% i 47%, u skupini pN0. Razlike doživljenja bile su statistički značajne (p = 0,023, p = 0,003, i p = 0,029, kako slijedi). Učestalost lokalnog (50% naspram 14,9%, p = 0,011) i regionalnog (28,6% u odnosu na 2,1%, p = 0,008) relapsa bila je značajno veća kod ENE ispitanika u usporedbi s ostalim podskupinama bolesnika. Uz to, vrijeme do pojave recidiva bilo je znatno kraće kod ispitanika s ENE. Zaključno, ENE u bolesnika s intraoralnim karcinomom pokazuje lošu prognozu i povezana je sa značajnim rizikom svih vrsta recidiva. Česta je pojava u klinički negativnom vratu te češća u manjim limfnim čvorovima nego što se obično smatra.

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O5 PROGRESS IN THE 80 YEARS OF TREATMENT OF HEAD AND NECK TUMORS

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80 years is a long time period in the treatment of head and neck tumors. With the introduction of new therapies, the development of medical technology and a team approach

O5 NAPREDAK U 80 GODINA LIJEČENJA TUMORA GLAVE I VRATA

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80 godina je dugo vremensko razdoblje u liječenju tumora glave i vrata. Uvođenjem novih terapijskih postupaka, razvoj medicinske tehnologije i timski pristup u liječenju ovih bolesnika doprinijeli su boljoj kontroli bolesti, dužem preživljenju uz istodobno očuvanje

in the treatment of these patients have contributed to better disease control, longer survival rate while maintaining quality of life. The timeline shows surgical, radiotherapeutical, chemotherapeutical and immunotherapeutical options and protocols in the treatment of head and neck tumors during the specified period. Introducing quality of life monitoring for treated patients with head and neck tumors has also led to an evolution in the way they are treated. A sparing approach to patients at lower risk for disease recurrence is preferable. In the last 10 years, the introduction of immunotherapy has led to better control and longer survival of patients with local recurrence and metastatic disease. The results of new studies determine new therapeutic paradigms. This presentation focuses on the historical course, current opportunities and future directions for treatment. The future of treatment for patients with head and neck tumors goes in the direction of an individualized approach in the therapeutic procedure.
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kvalitete života. Vremenskom crtom prikazane su kirurške, radioterapijske, kemoterapijske i imunoterapijske mogućnosti i protokoli u liječenju tumora glave i vrata u navedenome razdoblju. Uvođenjem praćenja kvalitete života liječenih bolesnika s tumorima glave i vrata dolazi i do evolucije u načinu njihovoga liječenja. Preferira se primjena poštednijega pristupa prema bolesnicima koji imaju manji rizik za povrat bolesti, U zadnjih 10 godina uvođenje imunoterapije dovelo je do bolje kontrole i dužeg preživljenja u bolesnika s lokalnim recidivima i metastatskom bolesti. Rezultati novih studija određuju nove terapijske paradigme. Ovaj prikaz fokusira se na povijesni tijek, sadašnje mogućnosti i buduće pravce liječenja. Budućnost liječenja bolesnika s tumorima glave i vrata ide u smjeru individualiziranog pristupa u terapijskom postupku.
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O6 MANAGEMENT OF HEAD AND NECK PATHOLOGY

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Introduction: Magnetic resonance imaging (MRI) provides excellent anatomic depiction and superior soft tissue contrast in workup of patients affected by various congenital, inflammatory, degenerative and neoplastic diseases and conditions arising in the head and neck region. The continuous advancements in MRI technology present an opportunity and a challenge for radiologists and clinicians alike to utilize this non-invasive modality for optimal patient benefit. *Materials and methods:* The diagnostic value of MRI was analyzed according to findings in patients who had been referred for imaging at our Department. MR images were acquired at 1.5 T using different protocols depending on the clinical indication. Newer techniques, such as T2 CISS, DWI and DSC-PWI sequences were utilized in addition to the conventional T1-weighted and T2-weighted scans. *Results:* The diagnostic evaluation of the obtained MR scans played a significant role in different clinical settings, including the workup of various soft tissue lesions, staging and follow-up of malignancies, and neuroradiological assessment in trigeminal neuralgia. In all of these cases, the usefulness of MRI was enhanced by the unique morphologic and physiologic information provided by the newer imaging sequences. *Conclusions:* With recent technical advancements, MRI can provide a more accurate and more comprehensive window into different pathologies of the head and neck region.
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O6 MANAGEMENT OF HEAD AND NECK PATHOLOGY

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Uvod: Magnetska rezonanca (MRI) daje izvrstan anatomski prikaz i vrhunski kontrast mekoga tkiva u obradi pacijenata zahvaćenih različitim kongenitalnim, upalnim, degenerativnim i neoplastičnim bolestima i stanjima u predjelu glave i vrata. Neprekidno napredovanje MRI tehnologije predstavlja priliku i izazov za radiologe i kliničare da koriste ovu neinvazivnu metodu na optimalnu korist za pacijente. *Materijali i metode:* Dijagnostička vrijednost MRI analizirana je prema nalazima u pacijenata koji su upućeni na radiološku obradu na naš zavod. MR prikaz dobiven je na 1,5 T koristeći različite protokole, ovisno o kliničkoj indikaciji. Uz konvencionalne T1 i T2 skenove korištene su i novije tehnike, poput T2 CISS, DWI i DSC-PWI skenove. *Rezultati:* Dijagnostička procjena dobivenih MR prikaza igrala je značajnu ulogu u različitim kliničkim situacijama, uključujući obradu različitih lezija mekoga tkiva, određivanju stadija i praćenju malignih oboljenja i neuroradiološku procjenu trigeminalne neuralgije. U svim ovim slučajevima, korisnost MRI povećana je jedinstvenim morfološkim i fiziološkim informacijama dobivenima novijim slikovnim tehnikama. *Zaključci:* S nedavnim tehničkim napretkom, MRI može pružiti precizniji i sveobuhvatniji pregled različitih patologija regije glave i vrata.
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O7 PROPOSAL OF GUIDELINES ON REFER TO RADIOLOGICAL DIAGNOSTICS OF MAXILLOFACIAL INJURIES

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The key to choosing a radiological method in the process of diagnosing maxillofacial injury is an emergency physician (general surgeon, otorhinolaryngologist), except in institutions that have organized emergency maxillofacial surgery. The correct choice of the radiological method generally indicates injury, and inadequate choice results in delayed diagnosis and treatment. Although it is much simpler today, since all hospitals in Croatia have emergency admissions and they have CT devices and most of the politraumatized patients are referred to CT of the head for exclusion of craniocerebral injury, omissions are still recorded. Many years of experience in maxillofacial traumatology, many years of cooperation through Croatian telemedicine, and monitoring the consequences of a missed diagnosis are the main reasons for proposing guidelines on radiological assessment of maxillofacial injuries. The suggestions are based on the methods used at our hospital versus the methods used in patients referred from other institutions. The aim of the guidelines is to connect clinical signs and the imaging method that would be indicated. The basic guidelines would cover the following: - polytrauma (multiple system injury including head injury): full body CT, - evident open or complex mid-face injury without associated injuries: CT of the head, - suspected mid-face fracture with no evident orbital disorders: craniogram AP and Waters view depending on clinical signs, in findings of hematosinus CT, - signs of bulbomotor muscles and eye position disorders: orbital CT is an initial examination, - suspected mandible fracture: orthopanthomogram (or CT of the mandible in institutions that do not have an orthopanthomograph), - in clinically evident TM joint fractures and in multiple and/or comminutive fractures: CT.
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O7 PRIJEDLOG SMJERNICA ZA UPUĆIVANJE NA RADIOLOŠKU DIJAGNOSTIKU MAKSILOFACIJALNIH OZLJEDA

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Ključ izbora radiološke metode u procesu dijagnostike maksilofacijalne ozljede je liječnik na hitnom prijemu (opći kirurg, otorinolaringolog) osim u ustanovama koje imaju organizirano dežurstvo maksilofacijalne kirurgije. Ispravan izbor radiološke metode u pravilu ukazuje na ozljedu, a neadekvatan izbor rezultira propustom pravovremene dijagnoze i liječenja. Iako je danas znatno jednostavnije budući da sve bolnice u Hrvatskoj s hitnim prijemom raspolažu CT uređajima i većina politraumatiziranih zbog isključivanja kraniocerebralne ozljede bivaju upućeni na CT glave, propuste još uvijek bilježimo. Dugogodišnje iskustvo u maksilofacijalnoj traumatologiji, višegodišnja suradnja putem Hrvatske telemedicine i praćenje posljedica propuštene dijagnoze glavni su razlozi za prijedlog smjernica u upućivanju na radiološku dijagnostiku maksilofacijalnih ozljeda. Prijedlozi su popraćeni pregledom metoda koje se u koriste u KB Dubrava u odnosu na metode korištene u pacijenata upućivanih iz drugih ustanova. Cilj smjernica je povezati kliničke znakove i slikovnu metodu koja bi bila indicirana. Osnovne smjernice bi obuhvaćale sljedeće: – politrauma (ozljeda više sustava koja uključuje i ozljedu glave): CT cijeloga tijela, – evidentna otvorena ili kompleksna ozljeda srednjega lica bez udruženih ozljeda: CT glave, – sumnja na prijelom u području srednjega lica bez sigurnih znakova orbitalnih poremećaja: ekscentrični kraniogram i aksijalni kraniogram ovisno o kliničkim znacima, u nalazu koji uključuje sumnju na hematosinus CT u drugom koraku, – u prisutnih znakova poremećaja bulbomotorike i pozicije oka: CT orbite je inicijalna pretraga, – sumnja na prijelom u području mandibule: ortopantomogram (odnosno CT mandibule u ustanovama koje nemaju ortopantomograf), – u klinički evidentnoga prijeloma zglobnoga nastavka i u višestrukih i /ili kominutivnih prijeloma: CT.
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FREE TOPICS

Oral presentations

F1 QUANTITATIVE SUCCESS ASSESSMENT OF DECOMPRESSION AS A TREATMENT METHOD FOR LARGE JAW CYSTS

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Introduction: Decompression as a method of treating jaw cysts is nowadays a generally accepted procedure. It belongs to the group of conservative surgical techniques together with marsupialization. Unlike enucleation, i.e. cystectomy, it is a less invasive procedure. Decompression is based on the theory that jaw cyst growth is dependent on intra-cystic pressure and terminated with permanent drainage. The goal of decompression is to allow new centripetal bone growth from the bone edge of the cyst. Like marsupialization, it is indicated in cases where, due to size and localization, enucleation would result in damage of the related anatomical structures such as vital teeth, nerves, blood vessels, maxillary sinus and nose, and in cases where it is not possible to completely enucleate the cyst. *Materials and methods:* All patients with large jaw cysts from the Department of Maxillofacial and Oral surgery, University hospital Dubrava, with satisfactory inclusion criteria were included in the study. Treatment success was quantitatively analysed with respect to clinical and radiological findings and based on panoramic x-rays, CBCT and MSCT. The results were compared according to cyst type, size, localization, patients' age and gender. *Results:* Complete protocol, from planning, decompression and consequent cyst reduction will be presented. Furthermore, the incidence and types of complications will be discussed. *Conclusions:* Decompression, as a method for treating jaw cysts, has proven to be successful for treating large jaw cysts in children. Low incidence of complications furthermore makes it comparable with other surgical techniques.
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F2 OPPORTUNITIES OF ORTHODONTIC-SURGICAL THERAPY OF IMPACTED TEETH

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Introduction: Impacted teeth are a common finding in everyday clinical practice. Resolving issues of impacted teeth in the jaw are primarily the domain of the orthodontist, oral surgeon and pediatric dentist and their coordinated collaboration. A prerequisite for a successful final result is knowledge of surgical and orthodontic techniques for individual teeth and types of impaction, as well as experience of all specialties involved in treatment. *Materials and Methods:* We present a systematic review of the type of tooth impaction and frequency of occurrence. Depending on the patient's age, localization, amount of bone and soft tissue volume, different surgical and orthodontic methods are used. The patient's motivation, adjacent anatomical structures and teeth must be taken into account, as well as a satisfactory final aesthetic result. *Results:* The most commonly impacted are lower wisdom teeth, then canines, premolars, and central incisors. Surgical therapy is the most common option of removal of wisdom teeth. Similar is with the lower canines, with the upper canines we mostly use one of several types of orthodontic-surgical methods. Of the surgical techniques, the closed flap method seems generally to be the most acceptable. *Conclusion:* The approach to the treatment of impacted teeth must be multidisciplinary and individually focused. Choosing the right surgical technique and timely orthodontic therapy is the key to a satisfactory final functional and aesthetic result.
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F3 CLEFT LIP AND PALATE - TREATMENT PROTOCOL

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Introduction: Cleft lip and palate are the most common malformation of the head and neck. The prevalence of clefts in Europe ranges from 1 to 2.2 per 1000 births. According to data for the Croatia, the prevalence is 1.7 per 1000. The clinical appearance can be varied. The etiology of cleft lip and palate has not been fully clear. *Materials and methods:* There is no single protocol for treating clefts. The Centers for the clefts differ in the surgical techniques but also in the time period of treating. Various protocols include pre-surgical orthodontic treatment, geometric line incision or modification of rotation advancement flaps. The lips are surgically treated from the infant period to the six months of age. The protocols most differ in the approach to the palate treatment. *Results:* Department of maxillofa-

SLOBODNE TEME

Usmena priopćenja

F1 KVANTITATIVNA PROCJENA USPJEŠNOSTI DEKOMPRESIJE KAO METODE LIJEČENJA VELIKIH CISTA ČELJUSTI

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Uvod: Dekompresija kao metoda liječenja cista čeljusti danas je opće prihvaćen kirurški zahvat. Spada u skupinu konzervatinih zahvata zajedno s marsupijalizacijom. Za razliku od enukleacije tj. cistektomije manje je invazivan zahvat. Dekompresija se temelji na teoriji rasta cista čeljusti u cilju smanjenja unutarcističnoga tlaka trajnom drenažom. Cilj dekompresije je omogućiti novi centripetalni rast kosti s koštanoga ruba ciste. Kao i marsupijalizacija, indicirana je u slučajevima kada bi se zbog veličine i lokalizacije ciste enukleacijom moglo prouzročiti oštećenja bliskih vitalnih struktura poput vitalnih zubi, živaca, krvnih žila, maksilarnoga sinusa i nosa, te kada se cistična ovojnica ne bi mogla izljuštiti u cijelosti. *Materijali i metode:* U ispitivanje su uključeni pacijenti s velikim cistama čeljusti liječeni u našoj ustanovi metodom dekompresije. Kvantitativno će se analizirati uspješnost liječenja s obzirom na klinički i radiološki nalaz temeljem ortopantomograma, CBCT-a i MSCT-a. Također, rezultati će se usporediti u odnosu na vrstu ciste, veličinu, lokalizaciju, dob i spol. *Rezultati:* Prikazati će se vremenski tijek liječenja cista od uvođenja sredstva dekompresije do posljedične redukcije cista. Također, prikazati će se pojavnost i vrste komplikacija. *Zaključci:* Dekompresija kao metoda liječenja cista čeljusti pokazala se kao uspješna metoda liječenja posebice velikih cista čeljusti u dječjoj dobi. Mala incidencija komplikacija ide u prilog njezinoj ravnopravnosti s ostalim tehnikama.
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F2 MOGUĆNOSTI U ORTODONTSKO-KIRURŠKOJ TERAPIJI IMPAKTIRANIH ZUBI

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Uvod: Impaktirani zubi su česti nalaz u svakodnevnoj kliničkoj praksi. Rješavanje pitanja impaktiranih zubi u čeljusti ponajprije pripada domeni ortodonta, oralnog kirurga i dječjeg stomatologa i njihove koordinirane suradnje. Preduvjet za uspješan konačni rezultat je poznavanje kirurških i ortodontskih tehnika za pojedine zube i tipove impakcija, ali i iskustva svih specijalnosti uključenih u liječenje. *Materijali i metode:* Prikazujemo sistematski pregled vrsti impakcija prema zubu i učestalosti javljanja. Ovisno o dobi pacijenta, lokalizaciji, količini koštanoga i mekotkivnoga volumena primjenjuju se različite kirurške i ortodontske metode izvlačenja. Pri tome se mora voditi računa i o motivaciji pacijenta, susjednim anatomskim strukturama i zubima, ali i zadovoljavajućem konačnom estetskom rezultatu. *Rezultati:* Najčešće se susrećemo s impaktiranim donjim umnjacima, potom očnjacima, pretkutnjacima i središnjim sjekutićima. Kod umnjaka je kirurško uklanjanje najčešća opcija. Slično je i s donjim očnjacima dok se kod gornjih očnjaka u velikoj mjeri odlučujemo za jednu od nekoliko vrsti ortodontsko-kirurškoga izvlačenja. Od kirurških tehnika se metoda zatvorenoga režnja čini općenito najprihvatljivijom. *Zaključak:* Pristup liječenju impaktiranih zubi mora biti multidiscplinaran i individualno usmjeren. Izbor odgovarajuće kirurške tehnike i pravodobne ortodontske terapije ključ je zadovoljavajućega konačnog funkcijskoga i estetskoga rezultata.
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F3 RASCJEPI USNE I NEPCA – PROTOKOL LIJEČENJA

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Uvod: Rascjepi usne i/ili nepca najčešća su malformacija glave i vrata. Učestalost rascjepa u Europi kreće se od 1 do 2,2 na 1000 novorođene djece. Prema podacima za RH učestalost iznosi 1,7 na 1000. Pojavnost rascjepa može biti raznolika. Etiologija nastanka nije u potpunosti razjašnjena. *Materijali i metode:* Nema jedinstvenog protokola za liječenje racjepa usne i/ili nepca. Pojedini centri razlikuju se u kirurškim tehnikama oblikovanja usne i nepca, ali i u vremenskom periodu kada se rascjepi liječe. Razni protokoli uključuju pretkirurško ortodontsko liječenje, koriste se geometrijske linije incizije i modifikacije rotacijsko kliznog režnja, usne se operiraju od novorođenačke dobi do šest mjeseci starosti. Protokoli se najviše razlikuju u pristupu oblikovanja sekundarnog nepca. *Rezultati:* Klinika za

cial surgery, University Hospital "Dubrava" is the regional Center for the treatment of facial malformations. About 100 primary surgeries are performed annually. In the surgical approach to the cleft lip, we use our own modification of the rotation-advancement flap. In the treating of cleft palate we use the modification of the Langebeck technique. Nose shaping is the most challenging part of cleft surgery and today is an integral part of primary cleft surgery. *Conclusion:* Cleft lip and palate surgery is a specific surgical discipline because the surgery is performed at the age of several days and the final results of treatment are visible at the end of the child's growth. The surgical treatment is in the Centers for the clefts. The approach to each child is individual, not only in the choice of surgical technique but also in the period of the lip and palate treating. The standardization of the various protocols can only result after years of multicenter studies. Continuous follow up of children and the involvement of a multidisciplinary team in their treatment is important.
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kirurgiju lica čeljusti i usta regionalni je Centar za liječenje malformacija lica. Godišnje se učini oko 100 primarnih operacija. U kirurškom pristupu oblikovanja usne koristimo vlastitu modifikaciju rotacijsko-kliznog režnja. Za oblikovanje nepca koristimo modifikaciju Langebeckove metode. Oblikovanje nosa najizazovniji je dio kirurgije rascjepa i danas je sastavni dio primarne operacije rascjepa usne. *Zaključci:* Kirurgija rascjepa je specifična kirurška disciplina jer se kirurški zahvati rade u najmlađoj dobi od nekoliko dana starosti, a konačni rezultati liječenja vidljivi su na kraju završetka rasta djeteta. Liječenje se provodi u Centrima, a pristup svakom djetetu je individualan, kako u izboru kirurške tehnike, tako i u vremenskom periodu oblikovanja usne i nepca. Ujednačavanje raznih protokola može rezultirati samo nakon dugogodišnjih multicentričnih studija i zato je važno kontinuirano praćenje djece te suradnja multidisciplinarnog tima u njihovom liječenju
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F4 STRUCTURE RHINOPLASTY

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Rhinoplasty is one of the top five cosmetic surgical procedures performed annually in the United States. Rhinoplasty is precise surgery and therefore excellent results can be obtained with thorough knowledge of nasal anatomy and surgical relevance of altering these structures. Clear understanding must be reached between surgeon and patient regarding the perceived nasal deformities, surgical plan, and expected outcomes. Therefore preoperative imaging is important part of consultation process in preparing for surgery (Vectra XT 3D imaging sistem). Photographic documentation and analysis is essential before and after surgery. Authors analyse most common deformities of nose. Preferred approach is external. This approach allows maximal exposure of the cartilaginous nasal structures, bony vault and septum. Authors will show that with structural grafting obtained from septal cartilage we can create stable nasal structure and correct significant nasal deformities such as significant tip deformity, crooked nose, secondary rhinoplasty and cleft lip rhinoplasty.
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F4 STRUKTURALNA RINOPLASTIKA

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Korekcija nosa je jedan od pet najčešćih zahvata koji se izvode u Sjedinjenim Američkim Državama na godišnjoj bazi. Korekcija nosa je precizna kirurgija u kojoj se odlični rezultati osiguravaju detaljnim poznavanjem anatomije kao i poznavanjem kirurških tehnika kojima se mijenjaju određene strukture na nosu. Tijekom procesa konzultacija mora biti jasno objašnjeno pacijentu koja je prisutna problematika na nosu, koji je naš kirurški plan i koji se rezultat očekuje nakon operacije nosa. Koristimo analizu pacijenta na njegovoj animaciji na aparatu Vectra 3D kao pripremu za operativni zahvat i jasnije objašnjavanje očekivanoga rezultata kod svakog pacijenta. Fotografiranje pacijenata i medicinska dokumentacije prije i nakon operativnog zahvata je najvažnija u pripremi i praćenju pacijenata i rezultata operativnih zahvata. Za koreciju nosa koristimo otvoreni pristup na nos koji nam osigurava najbolju vidljivost struktura nosa i na taj način osigurava mogućnost preciznijega kirurškoga mijenjanja i rekonstrukcije nosa sa strukturalnim graftovima. Strukturalni graftovi se osiguravaju najčešće hrskavicom iz nosne pregrade ili ako ona nije dostupna hrskavicom uške čime se osigurava stabilna struktura nosa.
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F5 MULTIDISCIPLINARY APPROACH TO TEMPOROMANDIBULAR DYSFUNCTION

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Introduction: Temporomandibular disorders are very common in the population. But nevertheless, our perception of these patients as "non-surgical" significantly diminishes the interest of maxillofacial and oral surgeons in this group of patients. In practice, a large number of different specialties are involved in the diagnosis and treatment of these patients - maxillofacial surgeons, oral surgeons, dental prosthodontists, orthodontists, radiologists and physiatrists. The key problem is the lack of communication between these experts, which results in a non-standardized approach to the diagnosis and treatment of these patients. *Materials and methods:* The role of specialties in the diagnosis and treatment of patients with temporomandibular disorders will be analyzed. Emphasis will be placed on the algorithm for selecting diagnostic methods, with an emphasis on NMR and ultrasound, and an algorithm for the conservative and surgical treatment of these disorders. *Results:* In the Republic of Croatia there is a great disparity in the approach to the diagnosis and treatment of patients with temporomandibular disorders. *Conclusions:* A team approach along with more clearly defined roles for individual team members and finding treatment algorithms are necessary to raise the standard of care for patients with temporomandibular disorders.
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F5 MULTIDISCIPLINARNI PRISTUP TEMPOROMANDIBULARNOJ DISFUNKCIJI

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Uvod: Temporomandibularni poremećaji su vrlo česti u populaciji. No unatoč tome, naša percepcija ovih pacijenata kao „nekirurških", bitno umanjuje interes maksilofacijalnih i oralnih kirurga za ovu skupinu pacijenata. U praksi, u dijagnostici i liječenju ovih pacijenata sudjeluje velik broj različitih specijalnosti- maksilofacijalni kirurzi, oralni kirurzi, stomatološki protetičari, ortodonti, radiolozi i fizijatri. Ključni problem je nedostatak komunikacije između navedenih stručnjaka što za posljedicu ima nestandardizirani pristup dijagnostici i liječenju ovih pacijenata. *Materijali i metode:* Analizirati će se uloga pojedinih specijalnosti u dijagnostici i liječenju pacijenata s temporomandibularnim poremećajima. Naglasak će biti stavljen na algoritam odabira pojedinih dijagnostičkih metoda s naglaskom na NMR i ultrazvuk te algoritam konzervativnoga i kirurškoga liječenja ovih poremećaja. *Rezultati:* U Republici Hrvatskoj postoji velika neujednačenost u pristupu dijagnostici i liječenju pacijenata s temporomandibularnim poremećajima. *Zaključci:* Timski pristup uz jasnije definirane uloge pojedinih članova tima te iznalaženje algoritama postupanja su neophodni za podizanje standarda skrbi pacijenata s temporomandibularnim poremećajima.
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F6 SCHMID FOREHEAD FLAP - A VALUABLE TOOL IN RECONSTRUCTION OF LATERAL NOSE DEFECTS

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Introduction: Reconstructions of postablative and posttraumatic nose defects are a major problem and challenge for head and neck surgeons. The reconstruction challenge is particularly emphasized if there is a full thickness defect of the nose. One of the many reconstructive techniques for nasal reconstruction is the use of a Schmid forehead flap. If there is only a skin defect, this flap can be applied on its own. If full thickness reconstruction of the nasal wing is required, it is most commonly used in combination with nasolabial flaps. The combination of the Schmid forehead flap with the island in-turned nasolabial flap, with or without the island triangular sliding flap, is particularly effective. *Materials and Methods:* The use of Schmid forehead flap in the reconstruction of lateral nose defects, in combina-

F6 SCHMIDOV ČEONI REŽANJ – VRIJEDAN ALAT U REKONSTRUKCIJI LATERALNIH DEFEKATA NOSA

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Uvod: Rekonstrukcije postablativnih i posttraumatskih defekata nosa veliki su problem i izazov za kirurga glave i vrata. Rekonstrukcijski izazov je osobito naglašen ukoliko postoji defekt pune debljine nosa. Jedna od brojnih rekonstrukcijskih tehnika rekonstrukcije nosa je korištenje Schmidovoga čeonoga režnja. Ukoliko postoji samo defekt kože, ovaj režanj može se primijeniti samostalno. Ukoliko je potrebna rekonstrukcija pune debljine nosnoga krila, najčešće ga se koristi u kombinaciji s nazolabijalnim režnjevima. Posebno je učinkovita kombinacija Schmidovoga čeonoga režnja s otočnim in-turned nazolabijalnim režnjem, sa ili bez otočnoga triangularnoga klizajućega režnja. *Materijali i metode:* Kroz nekoliko primjera prikazana je uporaba Schmidovoga čeonoga režnja u rekonstruk-

tion with several types of nasolabial flaps, has been demonstrated through several examples. The nasolabial island flap is raised on the subcutaneous pedicle, turns toward the nasal cavity (in-turned flap), and sutures for the edges of the mucosal defect. The nasolabial donor site is closed on the principle of V-Y reconstruction by a sliding triangular island flap, and the resulting defect in the donor site after raising the triangular sliding flap is directly closed. *Results:* Using the Schmid forehead flap, we achieved a very acceptable reconstruction and aesthetic effect, regardless if applied independently for reconstruction of skin defects or in combination with other flaps for reconstruction of full thickness nasal wall defects. *Conclusions:* Schmid forehead flap is a very useful replacement for the classic seagull flap, because the transposed flap is more natural looking than the seagull flap, leaving a negligible scar on the forehead, and when properly raised it is adorned by the absence of complications.
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ciji defekata lateralnoga dijela nosa, u kombinaciji s nekoliko tipova nazolabijalnih režnjeva. Nazolabijalni otočni režanj odiže se na potkožnoj peteljci, obrće se prema šupljini nosa (in-turned flap) i šiva za rubove sluzničnoga defekta. Nazolabijalno donorno mjesto zatvara se po principu V-Y rekonstrukcije klizajućim triangularnim otočnim režnjem, a nastali defekt donornoga mjesta nakon odizanja triangularnoga klizajućega režnja zatvara se izravno. *Rezultati:* Uporabom Schmidovoga čeonoga režnja postigli smo vrlo prihvatljiv rekonstrukcijski i estetski učinak, neovisno bio primjenjivan samostalno za rekonstrukciju kožnih defekata ili u kombinaciji s drugim režnjevima za rekonstrukciju defekata pune debljine stjenke nosa. *Zaključci:* Schmidov čeoni režanj vrlo je korisna zamjena za klasični seagull flap, jer je transferirani režanj prirodnijega izgleda nego seagull flap, ostavlja zanemariv ožiljak na čelu, a pri pravilnom odizanju krasi ga odsustvo komplikacija.
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F7 PARTIAL RECONSTRUCTION OF THE EAR AFTER ABLATIVE SURGERY

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The ears are easily recognizable by their position, relief and size, and therefore the partial reconstruction of the ears requires a lot of knowledge and skills in order to make the reconstruction after ablative procedures less noticeable. It is mostly made up of cartilage wrapped in skin of varying thickness. The specific relief of the ear, conditioned by the material, makes it difficult to "camouflage" when reconstructing it. The most frequent partial reconstructions are the result of resection of the tumor formation on the ear. Given that the basic postulate of oncologic surgery must be satisfied, surgery to the rescue, the width of the resection should not be conditioned by the possibility of reconstruction. Consequently, the possibility of reconstruction causes the lowest percentage of disease recurrence. Partial reconstruction of the ear depends on the localization of the resected tumor. Edge is usually wedge excision (plain, modified) with primary reconstruction. Larger ear defects are reconstructed by local skin flaps from the anterior or posterior (preauricular, postauricular flap), depending on the localization of the defect. Concha is reconstructed with an island postauricular lobe ("revolving door") and may also have a free skin graft from the postauricular region. The results for the aesthetic component are about the same. Otherwise, a minor skin defect can be used with a free skin graft or even wound healing "per secundam". Thus, the possibilities of partial reconstruction of the ear are wide from the oncological point of view, considering the most common cause, but also the cosmetic aspect.
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F7 PARCIJALNE REKONSTRUKCIJE UŠKE NAKON ABLATIVNIH KIRURŠKIH ZAHVATA

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Uške su lako uočljive svojim položajem, reljefom i veličinom te stoga parcijalna rekonstrukcija uške zahtijeva dosta znanja i umješnosti, kako bi rekonstrukcija nakon ablativnih zahvata bila što manje uočljiva. Građena je većim dijelom od hrskavice obavijene kožom različite debljine. Specifični reljef uške uvjetovan građom, otežava „kamuflažu" prilikom rekonstrukcije iste. Najčešće parcijalne rekonstrukcije posljedica su resekcije tumorskih tvorbi na uški. Obzirom na to da mora biti zadovoljen osnovni postulat onkološke kirurgije, operacija „do u zdravo", širina resekcije ne smije biti uvjetovana mogućnošću rekonstrukcije. Posljedično, mogućnost rekonstrukcije uvjetuje što manji postotak recidiva bolesti. Parcijalna rekonstrukcija uške ovisi o lokalizaciji reseciranoga tumora. Rubno je obično klinasta ekscizija (obična, modificirana) s primarnom rekonstrukcijom. Veći defekti uške rekonstruiraju se lokalnim kožnim režnjevima s prednje ili stražnje strane (preauricular, postauricular flap), ovisno o lokalizaciji defekta. Konha se rekonstruira otočnim postaurikularnim režnjem („revolving door"), a može i slobodnim kožnim transplantatom iz postaurikularne regije. Rezultati glede estetske komponente približno su isti. Inače, za manje defekte na uški može se koristiti slobodni kožni transplantat ili čak cijeljenje rane „per secundam". Dakle, mogućnosti parcijalne rekonstrukcije uške su široke s onkološkog gledišta, s obzirom na najčešći povod, ali i s kozmetskoga aspekta.
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F8 3D PRINTING - THE CHALLENGE TO CROATIAN MEDICINE

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The occurrence of 3D printing at the end of the last century triggered a revolution in the production of prototype, single and small-scale products. Biomedicine is also an ideal field that justifies the use of additive manufacturing, because of its need for individual and single products formed to the needs and requirements of each patient for the purpose of successful treatment. Each person is unique in both character and physiological and anatomical features. The use of individual medical devices formed for the individual patient, whether it is a model for surgery planning, medical guides for the preparation and installation of implants or individual implants, medical procedures for doctors to be able to plan surgery in advance, use of our products reduces the time of surgery, stress, while increasing efficacy and helping patients recover faster due to the custom implant made for each patient. The main characteristic of these processes is the addition of materials, usually layer by layer, to the production of the entire product. Such a principle of production makes it possible to create a very complicated product geometry that would be very difficult or impossible to make with other, classical manufacturing processes. One of the main advantages of developing and applying 3D printing procedures is the collaboration of experts from different fields on joint projects, which allows for further progress in this field. Such projects allow the involvement of new experts who find their interest in a new field of research and have different views on solving the problems posed, which opens up completely new perspectives. In addition to interdisciplinarity, which requires maximum utilization of the potential of additive manufacturing processes, the appropriate education of future professionals should not be forgotten, which will push the frontiers of development and production of new products with innovative and creative ideas. Such shifts for the better can only be enabled by additive manufacturing processes. The lecture will present an overview of the current state and future applications of 3D printing in the technical and biomedical fields in the world and in the Republic of Croatia. The use of 3D printing is a classic example of Industry 4.0 where most of the information is digitally circulated and produced at the nearest end-user center. Where is Croatian medicine in the world of development and application, are we too late or keeping up with developed environments?
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F8 3D PRINTANJE – IZAZOV HRVATSKOJ MEDICINI

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Pojava postupaka 3D printanja krajem prošloga stoljeća izazvala je revoluciju u proizvodnji prototipnih, pojedinačnih i maloserijskih proizvoda. Biomedicina je također idealno područje koje opravdava primjenu aditivne proizvodnje, zbog svoje potrebe za individualnim i pojedinačnim proizvodima oblikovanima po mjeri i zahtjevima svakoga pacijenta u svrhu što uspješnijega liječenja. Svaka je osoba jedinstvena kako po svom karakteru tako i po fiziološkim i anatomskim značajkama. Upotreba individualnih medicinskih proizvoda načinjenih po mjeri pojedinoga pacijenta bilo da se radi o modelu za planiranje operacije, medicinskim vodilicama za pripremu i ugradnju implantata ili o individualnim implantatima, medicinskim procedurama za liječnike kako bi mogli unaprijed planirati operaciju, uporabom naših proizvoda skraćuje se potrebno vrijeme trajanja operacije, stres, uz istovremeno povišenje efikasnosti i pomaže pacijentima pri bržem oporavku zbog primjene implantata načinjenoga za svakoga pacijenta po mjeri. Glavna je karakteristika tih postupaka dodavanje materijala, najčešće sloj po sloj, do izrade cijeloga proizvoda. Takvo načelo proizvodnje omogućuje pravljenje vrlo kompliciranе geometrije proizvoda koju bi drugim, klasičnim postupcima proizvodnje bilo vrlo teško ili nemoguće načiniti. Jedna od glavnih prednosti razvoja i primjene postupaka 3D printanja, suradnja je stručnjaka iz različitih područja na zajedničkim projektima, što omogućuje dodatan napredak na tom polju. Takvi projekti omogućuju uključivanje novih stručnjaka koji nalaze svoj interes u novom području istraživanja i imaju drugačije poglede na rješavanje postavljenih problema, što otvara potpuno nove vidike. Uz interdisciplinarnost, koja zahtijeva maksimalno iskorištavanje potencijala postupaka aditivne proizvodnje, ne smije se smetnuti s uma ni odgovarajuće obrazovanje budućih stručnjaka, koji će inovativnim i kreativnim idejama pomicati granice mogućnosti razvoja i proizvodnje novih proizvoda. Takve pomake mogu im omogućiti jedino postupci aditivne proizvodnje. U predavanju biti će predstavljen pregled današnjega stanja te buduće primjene 3D printanja u tehničkom i biomedicinskom području u svijetu i RH. Upotreba 3D printanja klasični je primjer Industrije 4.0 gdje većina informacija kruži digitalnim putem, a proizvodi se u najbližem centru krajnjega korisnika. Gdje je hrvatska medicina u svijetu razvoja i primjene, jesmo li zakasnili ili držimo korak s razvijenim sredinama?
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