6th International Congress of the Department of Endodontics and Restorative Dentistry, School of Dental Medicine, University of Zagreb in co- organization with the Croatian Society for Minimum Intervention Dentistry CMA:

„Science and Clinical Work Sinergy“

October 21-22, 2022, Zagreb, Croatia

VI. kongres s međunarodnim sudjelovanjm Zavoda za endodonciju i restaurativnu stomatologiju Stomatološkog fakulteta Sveučilišta u Zagrebu u suorganizaciji Hrvatskog društva za minimalno intervencijsku dentalnu medicine HLZ-a:

„Sinergija znanosti i kliničkog rada“

21. i 22. listopada 2022., Zagreb, Hrvatska

Lecture abstracts

ARTIFICIAL INTELLIGENCE, MINIMAL-INVASIVE DENTISTRY AND CARIES INFILTRATION

Prof.dr.sc. Falk Schwendicke

At the dawn of the data era, artificial intelligence (AI) is entering dentistry: The presentation will discuss what AI is, how it works and why it may revolutionize dental diagnostics and facilitate minimal-invasive care. We will highlight how AI fits into clinical practice and fosters minimal-invasive dentistry, particularly caries infiltration, but also demonstrate the limitations in current AI applications in dentistry.

BIOACTIVE DENTAL CONCEPT: TIME TO CHANGE THE RESTORATIVE PARADIGMS IN DENTISTRY

Prof.dr.sc. Hervé Tassery

Minimal intervention dentistry is now accepted for caries management. How and when to intervene using non-invasive, micro-invasive and invasive techniques according to the patient's individual caries risk and the caries activity are the main factor. First, at each treatment steps: Non-Invasive, Micro-Invasive, or Invasive, it raised questions about how to clean without damaging, how to disinfect the deep dentine layers, when to promote the use of ions released biomaterials. Second, the new diagnostic technologies combining images, magnification, and photonic signals like fluorescence, infrared and photothermal radiometry completely modified the paradigms of the Minimally invasive dentistry and caries diagnosis. The presence of surface cavitation is the starting point for micro-invasive restoration, caries activity is a warning sign to reverse or to moderate the caries process thanks to ions released biomaterials and cleanability is a moderating factor. The objective learning of this lecture will discuss the commercially available technologies for carious lesion detection, with an unconventional angle, to determine how these devices can help us to interpret the clinical situation: lesion cavitation, activity and cleanability and shift the line of the academic cariological engrams with the promotion of ions released biomaterials use and the help of specific clinical flow charts.

AN OVERVIEW OF CONTEMPORARY FLOURIDE-RELEASING DENTAL MATERIALS

Prof.dr.sc. Sevil Gurgan

Resin composites and glass ionomers (GIs) are the most commonly used dental materials to perform direct restorations. Both have specific characteristics that explain their popularity and their limits. More than 20 years ago, the first attempt (followed by others) to combine the advantages of these two families was performed and recently, new formulations with claimed ion release properties have been proposed under different family names. These materials were introduced to overcome the problems associated with conventional GIs and resin composites and maintain their clinical advantages. They have different setting mechanisms between acid-base reaction and free radical polymerization. Beside the ability to release fluoride and inhibit recurrent caries, fluoride releasing materials have the advantage of natural shade and they are less expensive compared with other restorative materials. However, there have been few studies on them and explanations of their chemistries. This presentation aims to gather the compositions; the setting reactions; the mechanical, self-adhesive, and potential bulk-fill properties; and the ion release abilities of the large existing families of fluoride releasing restorative materials to precisely describe their characteristics, their eventual bioactivities.

ULOGA OPTIČKIH POMAGALA U RESTAURATIVNOJ DENTALNOJ MEDICINE I ENDODONCIJI

Prof.dr.sc. Ivana Miletić, prof.dr.sc. Vlatko Pandurić

The introduction of optical aids (dental magnifiers, operating microscopes) enabled greater precision in the daily work of diagnostics, sparing of healthy dental tissue during the cavity preparation, better control of all phases of work in restorative dental medicine and endodontics. Dental magnifiers are the most common form of magnification used due to their affordable price and ease of use. The biggest disadvantage of using a magnifying glass is the inability to maintain a fixed position during operation and the inability to change the magnification. The operating microscope enables different magnifications during work, ergonomics for the therapist and high precision and is becoming a new standard in the therapy of hard dental tissues.

VLAKNIMA OJAČANI MOSTOVI - ZNANSTVENI I KLINIČKI ASPEKT

Izv.prof.dr.sc. Anja Baraba

Tooth loss in the anterior and posterior regions requires rehabilitation of aesthetics and function. Replacing a missing tooth is always a challenge, especially when the adjacent teeth are intact. Although various options are available in these cases, such as partial dentures, fixed bridges or dental implants, there are also alternatives to these traditional treatments. Fiber-reinforced composite (FRC) bridges can be used as temporary or long-term tooth replacement solutions in the anterior and posterior regions. The advantage of using fibers based on interpenetrating polymer network (IPN) technology is in achieving strong chemical adhesion to hard dental tissues and in the possibility of replacing a missing tooth without preparation of adjacent teeth or with minimally invasive preparations. The lecture will discuss the indications for placing FRC bridges, from a scientific and clinical point of view, with a presentation of clinical cases.

Poster presentations

CROSSLINKING DENSITY OF EXPERIMENTAL DENTAL COMPOSITES WITH COPPER-DOPED MESOPOROUS BIOACTIVE NANOSPHERES

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Aim: Copper-doped mesoporous bioactive nanospheres (Cu-MBGN) were developed to prevent secondary caries by imparting antimicrobial and ion-releasing/remineralizing properties to experimental composites. The crosslinking density of the polymer network determines the material's mechanical properties, residual monomer release and durability. In this study, we aimed to investigate whether Cu-MBGN affects the crosslink density of the polymer network using the ethanol softening test.

Materials and Methods: Seven experimental composites were prepared containing 1, 5, or 10 wt% Cu-MBGN and the corresponding inert controls (silica) and bioactive controls (bioactive glass 45S5). The resin matrix consisted of 35 wt% BisGMA/TEGDMA and 51-55 wt% barium glass microfillers. Cylindrical samples (n=5; h=2 mm, d=6 mm) were photopolymerized at 700 mW/cm^2 for 2x20 s and dark stored at 37°C. After polishing, Vickers microhardness (HV; 100 g load, 15 s dwell time) was measured at 5 positions/sample and before and after storage in absolute ethanol for 7 days in the dark at 37°C. One-way analysis ANOVA and Tukey's post hoc test ($p<0.05$) were used for statistical analysis.

Results: Composites containing Cu-MBGN had the highest HV both before and after ethanol storage (61.2-50.6 VHN), while bioactive controls containing 10 or 15 wt% 45S5 had the lowest HV (40.6-35.2 VHN). Ethanol storage decreased HV the most for the inert control materials (12.5% and 10.4% decrease), followed by the material containing 10% Cu-MBGN, which had 8% lower HV values. However, there was no statistically significant difference between the materials in the before/after ratio. Materials with 1 and 5 wt% Cu-MBGN had the lowest HV decrease (6.2 and 5.5%, respectively) and the highest absolute HV values before and after ethanol softening.

Conclusion: Composite with 5 wt% Cu-MBGN in combination with nanosilica fillers exhibited the lowest ethanol softening, indicating the polymer's highest durability and crosslinking density.

Keywords: composites, copper-doped mesoporous bioactive nanospheres

This study was supported by the Croatian Science Foundation (IP-2019-04-6183).

RELIABILITY ANALYSIS OF EXPERIMENTAL COMPOSITE MATERIALS WITH BIOACTIVE GLASS

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Aim: To examine the reliability of experimental composite materials with bioactive glass using Weibull analysis.

Materials and methods: Eight experimental composite materials with bioactive glass were prepared. An experimental composite material without bioactive glass and one commercial composite material (Charisma Classic, Kulzer, Hanau, Germany), were used as reference materials. Eight experimental composite materials were functionalized with 5-40 wt% of two types of bioactive glass, the conventional bioactive glass 45S5 (C-series) and a customized low-Na F-containing bioactive glass. Specimens with dimensions of 2 x 2 x 16 mm were prepared. Flexural strength was measured after three different simulated aging protocols (1 day, 30 days, 30 days, and thermocycling of 10000 cycles between 5 and 55° C). Data were analyzed by Weibull reliability analysis.

Results: The C-series of experimental composites showed a statistically significant decrease in flexural strength (17.1-121.5 MPa) with the increasing amount of bioactive glass and after simulated aging, in contrast to the F-series (83.8-130.2 MPa). Also, the C-series showed a statistically significant decrease in Weibull modulus after simulated aging (3.87-13.69), in contrast to the reference composite materials (Charisma and Control) (5.36-8.60) and most of the materials in the F-series which showed similar values (6.93-10.54) and an increase in values (F-40 material), except for F-10 material which showed a decrease in values after simulated aging.

Conclusion: The experimental composites of the F-series, functionalized with the customized low-Na F-containing bioactive glass, showed better and more stable material reliability after simulated aging and thus a narrower range of values at which specimen fracture occurs, in contrast to the experimental C-series.

Keywords: bioactive glass, experimental composite materials, Weibull reliability analysis

ADJUSTMENT OF THE METHOD FOR MEASURING CALCIUM CONCENTRATIONS USING A UV-VIS SPECTROPHOTOMETER

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Aim: Due to the complexity and high costs of atomic absorption spectrometry, this study examined a technically simpler alternative for measuring Ca^{2+} concentrations using a UV-Vis spectrophotometer.

Materials and methods: Standard solutions with Ca^{2+} concentrations of 1–5 mg/L with the Arsenazo III reagent were used for calibrating a double-beam UV-Vis spectrophotometer (Genesys 180, Thermo Fisher Scientific, Waltham, MA, USA). Two series of experimental composites were prepared with 5–40 wt% of either bioactive glass 45S5 (C-series) or a customized experimental bioactive glass (E-series). Commercial materials Cention (Ivoclar, Schaan, Liechtenstein) and Beautifil II (Shofu, Tokyo, Japan) were used as references. Following the immersion of cured composite specimens in 5 mL of distilled water for 1 year, their eluates were evaluated spectrophotometrically.

Results: In the C-series, the material containing the lowest amount of bioactive glass (5%) showed the highest Ca^{2+} concentrations (4.15 mg/L). The composites of the C-series containing 10–40 wt% of bioactive glass showed Ca^{2+} concentrations statistically similar to those of Cention and Beautifil II (1.34–2.21 mg/L). The reduction of Ca^{2+} concentration in eluates with increasing amounts of bioactive glass was attributed to the precipitation of calcium in the form of hydroxyapatite. In the E-series, a slight increase in Ca^{2+} concentration was seen as the bioactive glass amount was increased from 5 wt% to 10 wt%, while the composites with 10–40 wt% of bioactive glass showed statistically similar values (2.10–2.60 mg/L).

Conclusion: UV-Vis spectrophotometry can be used for simplified and cost-effective measurements of Ca^{2+} concentrations released from experimental composites.

Keywords: UV-vis spectrophotometer, calcium ions, bioactive materials, bioactive glass

PATHOLOGICAL CHANGES OF THE ORAL MUCOSA CAUSED BY THE USE OF SMOKELESS TOBACCO PRODUCT: A CASE REPORT

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Introduction: "Velo" is a product that belongs to a new type of tobacco originating from Scandinavian countries. According to the law of the Republic of Croatia, it is a smokeless tobacco product. Usage of this product has been increasing in recent years. The product is intended to be used orally in the form of a pad placed in the upper maxillary vestibule area.

Case report: A twenty-two-year-old male, self-initiated, arrives at the Department of oral medicine at the University Hospital of Split due to a change in the area of the maxillary vestibule. Anamnestically, the patient denies the existence of any other systemic disease,

drug allergy, or allergies to xylitol, cellulose and sodium alginate. He states that he is a former tobacco smoker who only uses oral smokeless tobacco products ("Velo"). The patient noticed changes in the form of a textural shift in oral mucosa after using several packages of oral smokeless tobacco product. He also emphasizes that mentioned changes gradually started to cover more significant areas of his oral mucosa as well as his personal feeling of pain while brushing his teeth. Executed clinical examination of the patient's maxillary vestibule region has shown non-symmetric hyperkeratotic plaques with an erythematous surface. The patient confirms that the area where changes in his oral mucosa are located matches the most frequent part of his "Velo" patches application. The toluidine test was negative, and the patient was advised to stop using the product immediately. At the control examination in 14 days, in which he didn't use an oral smokeless tobacco product, the patient's oral mucosa changes regressed spontaneously.

Conclusion: In this case, it can be concluded that the usage of an oral smokeless tobacco product ("Velo"), which is packaged in the form of oral pads, caused hyperkeratotic and erythematous lesions of the oral mucosa. By ending consumption of this product for two weeks, spontaneous lesion regression has occurred. By reviewing several published scientific papers regarding the same issue, we conclude that the long period of usage of smokeless tobacco products could potentially be associated with the appearance of potentially malignant lesions on the oral mucosa. Therefore, we consider that every healthcare worker must point out the harmful health effects of smokeless tobacco products on patients' oral mucosa, as they are not printed on the product packaging.

Keywords: Velo, smokeless tobacco products

ENDODONTIC TREATMENT OF A MAXILLARY LATERAL INCISOR WITH THREE CANALS: A CASE REPORT

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Aim: Endodontic treatment of teeth with morphological anomalies is complicated and often requires individual approach to each case. The upper lateral incisor is the tooth that appears with the most anomalies, followed by the wisdom teeth, and the type of anomaly is often difficult to determine with precision.

Case report: A 23-year-old female patient comes to the Department of Endodontics as a referral of an oral surgeon for the treatment of tooth 22. The medical history states that the access cavity was made four years ago and since then it has been open. Clinical examination reveals an open cavity with carious masses around it. CBCT analysis indicates that it is a tooth with three canals and an existing periapical lesion. Despite the successful initial analgesia after the application of anesthesia, the patient was still feeling pain during the rotary instrumentation of two of the three canals. This suggested that there was a third canal outside of the access cavity and it was vital. It was decided to fill the treated canals without including the third, distal canal to the endodontic treatment. At the follow-up after four months, the patient was symptom-free, vitality test was positive, and the x-ray showed healing of the periapical lesion.

Conclusion: Based on this case, it can be concluded that every endodontic treatment is specific and allows variations depending on the tissue condition within the endodontic system. However, the importance of preserving the vitality of teeth when possible can be recognized from this case. The fact that the tooth is relatively slightly destroyed by caries despite having been open for four years can be associated with the defensive role of the vital pulp in the part of the tooth that was not affected by the lesion.

Keywords: upper lateral incisor, endodontic treatment, morphological anomalies

INFLUENCE OF DIFFERENT CORONAL RESTORATION TECHNIQUES ON FRACTURE RESISTANCE OF ENDODONTICALLY TREATED TOOTH

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Aim: This research evaluates the fracture resistance of endodontically treated teeth with extensive MOD cavities based on different types of restorative material. The purpose of this study is to determine whether short fiber reinforced composite resign (SFRC) can compensate the loss of dental tissue in extensive MOD cavities or if crown placement is fully necessary.

Materials and methods: In the study, 40 extracted molars were divided into four groups (n = 10). One group (CG) was left intact to serve as a control. Teeth inside the three experimental groups received extensive MOD cavity preparation and root canal treatment. The approximal tooth surfaces were restored with hybrid composite by using the incremental technique. The specimens were prepared and restored with their respective core materials as follows: (i) EX - EverX Posterior (GC Japan) + high-level microhybrid composite; (ii) BF - Filtek One Bulk Fill (3M, USA) + high-rise microhybrid composite; (iii) GIC - Fuji II LC (GC Japan) + high-level microhybrid composite. Restored teeth were embedded into resin molds and subjected to thermocycling. The specimens were scanned with an extraoral scanner to evaluate the tooth surface for the stress calculation. Fracture resistance was tested using the universal testing machine. The results were statistically analysed using ANOVA and Tukey's HDS post hoc tests.

Results: The control group (CG) showed a significant difference from experimental groups within maximum and break force ($p < 0.01$). The only difference between the experimental groups was made between the EX group and the GIC group where the maximum force values were statistically significantly lower in the SIC group compared to the EX ($p < 0.05$).

Conclusion: The greatest fracture resistance was demonstrated by the control group (CG), while the SFRC restoration did not show a significant difference in resistance compared to other groups. The most probable cause may be MOD preparation with an isthmus greater than 2/3 of the vestibulooral width.

Keywords: short fiber-reinforced composite, fracture resistance, maximum force, breaking force, pressure strength, breaking strength, post endodontic restoration

ENDODONTIC SURGERY FOLLOWING ENDODONTIC TREATMENT: A CASE REPORT

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Aim: The goal of endodontic treatment is to remove microorganisms from the root canal and ensure good sealing in order to establish favorable conditions for healing of the periapical lesion. A modern therapeutic approach is to use biomaterials for root canal filling, which, in most cases and regardless of the size of the periapical lesion, promote healing. However, the root canal exudate affects the treatment plan.

Case report: A 29-year-old female patient comes to the Department of Dental Diseases, KBC Zagreb, referred by her doctor of dental medicine for the treatment of tooth 23. In her medical history, she states that the endodontic treatment was initiated six months ago and when the tooth is temporarily closed, the patient feels severe pain. A clinical examination revealed an open cavity. Radiologic examination indicated a relatively large radiolucent lesion with not-well-defined margins. Endodontic treatment was started and a cystic exudate was observed in the root canal during instrumentation. In consultation with the oral surgeon, the canal was instrumented, disinfected and obturated. Oral surgery was performed immediately after the endodontic procedure. During the surgical procedure an unusual round cyst-like formation was noticed around the apex of the tooth, which was removed and sent to PHD, that confirmed the formation was a radicular cyst.

Conclusion: Every endodontic treatment is specific. Radiographically, the periapical leasion in this case is not presented as a well-defined radiopaque lesion, which is normally expected in cystic formations, but the root canal exudate was decisive for the therapy approach.

Keywords: Radicular cyst, endodontic surgery, root canal exudate
The study was supported by the Croatian Science Foundation (IP-2018-01-1719).

ASSESSEMENT OF CYTOTOXIC AND GENOTOXIC EFFECT OF WHITENING TOOTHPASTES IN BUCCAL MUCOSAL CELLS

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Aim: To assess the cytotoxic and genotoxic effects of commercially available whitening toothpastes with different ingredients using a buccal micronucleus cytome assay.
Materials and methods: This prospective, parallel randomized controlled clinical trial was conducted using a buccal micronucleus cytome assay (BMCyt assay). 198 participants were randomly divided into ten groups based on used toothpaste (9 whitening toothpastes and 1 conventional toothpaste). Buccal mucosal cell samples were taken at baseline (T0), 30 and 60 days from the beginning of treatment (T1, T2) and 30 days after using the tested toothpaste (T3).
Results: Genotoxic parameters didn't show biologically significant changes within testing whitening toothpastes. Cytotoxic parameters (number of cells with karyorrhexis and condensed chromatin) showed statistically significant increase ($p<0.05$) at T1 and T2 compared to baseline for three peroxide containing toothpastes.
Conclusion: It can be concluded that the usage of toothpastes with whitening ingredients doesn't lead to cytogenetic damage of buccal mucosa cells. In clinical conditions, the obtained changes can't be considered as significant.
Keywords: cytotoxicity, genotoxicity, buccal mucosal cells, micronucleus assay, whitening toothpastes

KNOWLEDGE AND PREVALENCE OF DENTAL TRAUMA ON A POPULATION OF SOCCER PLAYERS

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Aim: The study aimed to assess the incidence of dental and orofacial injuries and knowledge about emergency therapeutic procedures for dental injuries in football players.
Materials and Methods: This cross-sectional study was conducted on a sample of active football players of all football leagues in Croatia by an online questionnaire. The questionnaire consisted of four parts (demographic data, knowledge regarding urgent therapeutic procedures in case of dental injury, self-reported experience of orofacial and dental injuries and preventive measures, including the use of mouthguards).
Results: 393 subjects with an average age of 23.93±5.03 participated in the study. The respondents with a master's degree education show a statistically significantly higher level of knowledge than those with a bachelor's degree (4.0±3.5 versus 2.5±2.6, P=0.002). In addition, those respondents who experienced dental injuries (18.6%) demonstrated a statistically significantly (P=0.022) higher level of knowledge (3.6±2.9) compared to those who had not (2.7±2.9). Only 16.0% of the respondents use mouthguards, most often individual ones.
Conclusion: The football players included in this study showed inadequate knowledge regarding urgent therapeutic procedures in case of dental injury and did not take the necessary preventive measures. Therefore, from the obtained results, it is evident that additional education for football players is needed to prevent dental injuries and take proper procedures when urgently taking care of them.
Keywords: football players, dental injuries, urgent care of the traumatic tooth, knowledge

ASSESSMENT OF KNOWLEDGE, ATTITUDES AND BEHAVIOR ABOUT SMOKING AND ITS HARMFUL EFFECTS IN THE STUDENT POPULATION

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Aim: The aim of this study was to assess the prevalence of the use of tobacco products among students at the University of Split, as well as their knowledge, attitudes, and perceptions regarding the harmful effects of tobacco products.
Materials and methods: Cross-sectional research was conducted using an online questionnaire. A total of 1184 students aged ≥ 18 years who were full-time students in the winter semester of 2022 at the University of Split participated.
Results: Among the surveyed students, 30.2% were smokers, 74.5% of which smoked classic cigarettes, and 17.6% smoked tobacco products. The average knowledge of all respondents was 16.2±7.1 (range from 0 to 27 correct answers). Better results in knowledge were shown by older students, higher years of study, students studying biomedicine and healthcare, and those who notice health warnings on cigarette packages and believe that smoking should be prohibited in public indoor spaces (P≤0.001).
Conclusion: The results of the research confirmed the gaps in knowledge and misconceptions regarding the harms related to the use of tobacco products. The findings highlight the need for clearer promotion of prevention and raising awareness of the harmful effects of smoking on human health.
Keywords: health risks, knowledge, smoking, tobacco products, electric cigarettes, heated tobacco products

VARIATIONS OF ENDODONTIC SPACE OF SECOND LOWER MOLAR IN ZAGREB POPULATION - CBCT ANALYSIS

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Aim: Knowledge of usual internal anatomy of tooth and its variations, is a key point for successful endodontic treatment. The aim of this study is to analyze anatomical shapes of mandibular second molars and the occurrence of „C" shape in root canals using three-dimensional computed tomography with conical rays, CBCT. This research is based on the Zagreb population.
Materials and methods: Out of a total 3211 CBCT images from archives of two private radiological centers (based in Zagreb), the analyze was based on those who had both lower molars. Considering age and sex of patients, the following was recorded: number of roots and root canals, the occurrence of C-shaped canals, radix entomolaris and paramolaris. In the „C" shape, the canal is divided into three thirds. Each third was evaluated and assigned with category according to Melton's classification. Data were analyzed using descriptive statistics and Fisher's exact test ($p<0.05$).
Results: 219 patients were found with both second lower molars, of which 29 of them (6.6%) had lower second "C" canal shaped molars. The "C" shape of the canal appeared bilaterally in 13 cases and unilaterally in 3. Two canals were found in the mesial root on 353 molars, while one canal was found in 56 molars. In the distal root, one canal was found in 394 molars, and two canals were found in 15 of them. Radix entomolaris and paramolaris were found in 9 (0.02%) second lower molars.
Conclusion: Second lower molars in the Zagreb population show significant diversity in internal anatomy, and most often have 2 roots and 3 canals, with two canals in the mesial root and one canal in the distal root. The "C" form occurs in 6.6% of cases, while radix entomolaris or paramolaris are found in 0.02% of cases. In order for the outcome to be predictable, prior to endodontic treatment, thorough analysis of their anatomy needs to be done.
Key words: endodontics, anatomy, second lower molar, C-shape, CBCT

FREQUENCY OF PATIENTS WITH ODONTOGENIC INFECTION AT THE DEPARTMENT FOR MAXILLOFACIAL SURGERY OF UNIVERSITY HOSPITAL OF SPLIT IN THE PERIOD FROM 2015. TO 2021.

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Aim: The aim of this study was to assess the frequency of odontogenic infections treated at KBC Split from 2015 to 2021.
Materials and Methods: Medical documentation from the archives of the Department of Maxillofacial Surgery at KBC Split from January 2015 to March 2021 was retrospectively evaluated. General data of each patient with odontogenic infection were collected from the protocol and medical history.
Results: The results were tabulated and graphed using descriptive statistical methods. The study included 151 patients aged 3 to 92 years, of whom 90 were men (59.6%) and 61 were women (40.4%). The highest frequency of odontogenic infection (35.8%) was recorded in the age group 20-39 years. One third of the procedures (33.3%) under general anaesthesia were performed in the under 20 age group. Perimandibular abscess was the most common odontogenic abscess (33.1%), and the lower left molars, second molars and third molars were the most common causative teeth. No statistically significant difference was found in the frequency of odontogenic infections between the sexes.
Conclusion: This study presented the distribution of the frequency of odontogenic infections based on gender, age, type of abscess and the causative tooth. Data are compared with other studies. In particular stands out the number of people younger than 20 who were operated under general anesthesia. Greater effort should be made to raise patients' awareness of the importance of oral health as a significant factor in general health.
Keywords: general anesthesia, odontogenic infection

ATTITUDES AND PRACTICES OF NURSING STAFF ABOUT ORAL HYGIENE IN HOSPITALIZED PATIENTS, QUALITATIVE STUDY

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Aim: The aim of this stud is to explore in-depth opinions and experiences of nurses about oral hygiene in critically ill hospitalized patients. Also, the aim is to identify possible barriers and facilitators for optimal implementation of oral care.
Materials and methods: We conducted semi-structured interviews of 25 to 40 minutes' duration with nurses using the Zoom platform. Nurses were recruited through personal contacts. Interviews started in February 2022. We sought nurses' opinions about the importance of oral hygiene and asked about the practice, education, and potential needs in their everyday work. Number of interviews is guided by saturation. Thematic analysis is used.
Results: So far nine nurses from Split and Zagreb from departments of neurology, cardiology, infectious and lung diseases, and intensive care units took part in the study with work experience ranging from two to 27 years. The preliminary analysis of the interviews resulted in several themes and corresponding sub-themes. There is awareness of the importance of oral hygiene. Current practice includes agents based on paraffin or hexetidine applied using pean and soaked gauze. The frequency of oral care is not uniform, and is most often carried out in intensive care units. There is a lack of written protocols for procedure, while lack of time is reported as one of the main challenges in the implementation of oral hygiene. Need for additional education is emphasized, in the form of practical bed-side demonstration on a patient, but also the need for additional equipment.
Conclusions: Oral hygiene in hospitalized patients is recognized as an important factor contributing to overall health. Nurses need more time, clear guidance on methods and frequency of oral care, and equipment in line with available recommendations. Oral hygiene education including practical demonstration on patient would enable better implementation of oral care
Keywords: Oral hygiene, hospitalised patients, nurses, practice, interview

THE ASSOCIATION BETWEEN SELF-ESTEEM AND SELF-PERCEIVED AESTHETIC COMPONENT OF SMILE AMONG TEENAGERS

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Aim: The aim of this study was to determine the relationship between the self-esteem of teenagers and the evaluation of the aesthetic component of their smiles. Materials and methods: The research was conducted through physical questionnaires in the schools of Split-Dalmatia County on 413 students aged 13 to 18. The first part contained general and demographic questions, as well as a question about the use and desire to use orthodontic therapy. In the second part, according to the photo of the aesthetic component of the IOTN index, the respondents assessed the aesthetics of their smiles, placing themselves in one of the ten degrees of the aesthetic element of the IOTN index. The third part consisted of Coopersmith's self-esteem questionnaire. After completing the questionnaire, the doctor of dental medicine determined the aesthetics of each child's smile.
Results: The connection between the self-esteem of teenagers and the assessment of the aesthetic component of their own smile has been proven. Those who rated their aesthetics as better have higher self-esteem. The correlation coefficient between the assessment of smile aesthetics by the child and the doctor of dental medicine is R = 0.556 (P ≤ 0.001). In addition, a significant difference was observed between the self-esteem of those subjects who assessed their aesthetics equally to the doctor of dental medicine and those who considered their smile aesthetics as lower than whether the doctor of dental medicine estimated it (P = 0.032).
Conclusion: There is an association between the self-concept of smile aesthetics and the individual's self-esteem.
Keywords: aesthetics, self-esteem

THE ASSOCIATION OF EMPATHY AND THE OCCURRENCE OF WORK- AND FAMILY-BASED CONFLICT IN THE DOCTOR OF DENTAL MEDICINE

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Aim: The aim of this study was to determine the degree of emotional empathy and to explore the connection between emotional empathy and the occurrence of conflicts between work and family roles in dental medicine doctors.
Materials and methods: The research involved 589 doctors of dental medicine from the Republic of Croatia, the Republic of Serbia and Bosnia and Herzegovina. The questionnaire consisted of three segments. The first segment of the questionnaire contained questions about the general and demographic data of the respondents, the second segment of the questionnaire included the Scale of Emotional Empathy, and the third segment of the questionnaire contained a Scale for Assessing Work and Family Roles.
Results: 49 % of dental medicine doctors surveyed show high levels of emotional empathy. A positive correlation was observed between empathy and the female sex (R = 0.282; $P \leq 0.001$). No difference in the emotional empathy of the doctor was observed ($P = 0.318$) and the conflict between the working and family roles ($P = 0.291$) depending on the country they come from. Research has found no association between emotional empathy and work and family role conflicts ($P = 0.435$).
Conclusion: The research found no connection between the degree of emotional empathy and the occurrence of work- and family-based conflict in examined doctors of dental medicine. Women show a higher degree of emotional empathy compared to men. Also, subjects employed at the clinical hospital center show a higher emotional empathy than those employed in the private sector. Oral surgery specialists show a lower degree of emotional empathy.
Keywords: emotional empathy, work- and family-based conflict

EFFICACY ASSESSMENT OF USING RECIPROCATING INSTRUMENTS AND A SOLVENT IN ROOT CANAL RETREATMENT

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Aim: The aim of this study was to compare the retreatment duration and efficiency of reciprocating instruments and Endosolv solvent in the root canal retreatment.
Materials and methods: The study was carried out on 30 human teeth, randomly divided in three groups (n=10) according to the sealer used. Each canal was prepared using a Reciproc engine-driven system and was filled with a gutta-percha point and a sealer (group 1 – AH Plus, group 2 – MTA Fillapex, group 3 – BioRoot RCS), using a single cone technique. After the incubation of seven days, retreatment was done with reciprocating instruments (Reciproc M-Wire and Reciproc blue) and Endosolv solvent. Specimens were split longitudinally. The amount of residual material was recorded using stereomicroscope (15x magnification) in coronal, middle and apical third. Analysis was done with an Image J computer software. Data were analyzed by Student t-test.
Results: A significantly less remnant of MTAF/GP compared to AHP/GP was in entire root canal for both reciprocating files (p=0,008 Reciproc blue; p=0,01 Reciproc M-Wire). In apical third was significantly less remnant of BR (p=0,001) and MTAF (p<0,001), compared to AHP/GP when Reciproc blue was used. AHP/GP group showed the fastest retreatment, regardless of the type of instruments used (164 sec Reciproc M-Wire and 182 sec Reciproc blue).
Conclusion: None of the sealers were completely removed from root canal. The type of sealant and the use of Endosolv changed the amount of sealant remaining in the root canal system, although the use of solvent had no significant influence on retreatment duration among groups.
Keywords: retreatment, sealer, Endosolv

INFLUENCE OF DIFFERENT PREPARATION TECHNIQUES AND AGING ON THE SEALING OF BIOCERAMIC RETROFILLINGS

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Aim: determine the influence of different preparation techniques and artificial aging on the sealing of bioceramic retrograde fillings.
Materials and methods: 72 single-root human teeth extracted for periodontal reasons were used in the study. The root canals were instrumented using Reciproc Blue #25 and

obturated using single cone technique. Apicectomies were performed using a Piezomed device. Retrograde cavities were prepared with: PiezoMed device, Er:YAG laser in SP mode or Er:YAG laser in QSP mode and filled with Biodentin or TotalFill RRM. According to the preparation technique and the material there were 6 groups (n=12): 1. Piezo BD; 2. Piezo TF; 3. QSP BD; 4. QSP TF; 5. SP BD and 6. SP TF. From each group, 6 samples were chosen at random and thermocycled for 2000 cycles. Leakage test was performed with 2% Rhodamine B-color. The samples were cut longitudinally, the retrofillings were removed by ultrasound and examined with a stereomicroscope at a magnification of 5.2 X. Digital recordings were analyzed in ImageJ software. The deepest penetration of color in mm was recorded. The data were statistically analyzed using t-test for independent and dependent samples at the significance level $p<0.05$.

Results: The lowest leakage was recorded in the QSP TF group and was significantly lower than in SP BD, Piezo BD, SP TF and QSP BD ($p<0.05$). Thermocycling significantly increased leakage in the Piezo TF and QSP TF groups ($p<0.05$)

Conclusion: Different cavity preparation techniques and artificial aging affect the sealing of Biodentin and TotalFill RRM. The lowest leakage was recorded in the group where cavities were prepared with Er:YAG laser in QSP mode and filled with TotalFill RRM.

Keywords: Biodentin, bioceramics, sealing, retrograde filling, TotalFill RRM