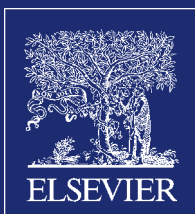


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Abstract Book

26 September 2021

ORAL PRESENTATIONS / FREE COMMUNICATIONS 01-32

Oral presentations / Free Communications (FC) are ordered by topic and sub-topic. They will be broadcasted here: https://2021.world-dental-congress.org/talks?talk_type=68 – Channel 8, on 26 September at a planned time (indicated below above each abstract in Australian Eastern Standard Time - AEST) and on-demand for 60 days after the ADA FDI 2021 World Dental Congress - Special Edition.

Topic 1. General Dentistry

Sub-topic 1.1: Oral Health and Systemic Health

26.09.2021, 08:30 - 08:45 AEST

FC01

Oral Health Education Combined with Routine Dental Treatment Reduces hsCRP

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Aim or Purpose: A multitude of studies investigated the beneficial effects of periodontitis therapy on general health. In contrast, the present trial aimed to investigate the effect of an oral health education program combined with routine dental treatment on serum biomarkers of systemic health in a community of low-socioeconomic background with general dental treatment needs.

Materials and Methods: Eligible participants (plaque index >50%, bleeding on probing >30%, active carious lesion) were randomised to a group that received dental treatment combined with an oral health education program (OHE+GDT) or a group that received general dental treatment only (GDT). Participants in both groups received routine dental treatment. In addition, participants in the OHE+GDT group received 180 min of health education and a full-mouth debridement. Serum levels of high-sensitivity C-reactive protein (hsCRP), lipid profiles, and HbA1c were measured at baseline and after 12 months.

Results: 295 participants (mean age, 45.4 ± 11 years) were analysed. Periodontal health significantly improved in both groups. However, no intergroup differences were detected (P=0.92 Generalised Estimating Equation (GEE)). A significant reduction of hsCRP levels at the follow-up assessment was observed in the OHE+GDT group, which was significantly different from the GDT group (P =0.01). Multivariate modelling

indicated that baseline hsCRP levels, baseline body mass index, and higher consumption of vegetables (P =0.021) predicted a reduction in hsCRP levels.

Conclusions: This study demonstrated that oral health education combined with routine dental treatment was associated with a significant reduction in hsCRP levels and hence suggests a beneficial effect on general health.

<https://doi.org/10.1016/j.identj.2021.08.002>

26.09.2021, 08:45 - 09:00 AEST

FC02

Prevalence of dental anomalies in cleft lip and palate patients

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Aim or Purpose: The study was performed to investigate the prevalence of dental anomalies in Moroccan patients with cleft lip and palate.

Materials and Methods: Ninety-six cleft patients referring to the dental care center of Casablanca (CCTD) and the Operation Smile Morocco center were included in this cross-sectional study. Ethical clearance for the study was obtained from Institutional Review Committee. Demographic data were collected and radiographs were evaluated for possible dental anomalies. We managed to compare dental anomaly traits based on gender. Data were analyzed using SPSS version 16.0. The differences in dental anomalies were compared using the Chi-square test.

Results: The most frequent cleft type was left unilateral cleft lip and palate (42,7%) and male predominance (55,2%) was observed. The most common anomaly was dental agenesis especially of the maxillary lateral incisor (24.7%). Regarding other types of dental anomalies, the microdontia and the amelogenesis imperfecta were the most frequent anomalies with significant differences between the two sexes (P <0.05).

Conclusions: Hypodontia, microdontia and amelogenesis imperfecta were the most prevalent dental anomalies among Moroccan patients with cleft lip and palate. However, the frequency of dental anomalies in cleft patients suggests that careful planning and implementation of specialist services should be performed to provide early and adequate detection and treatment.

<https://doi.org/10.1016/j.identj.2021.08.003>

26.09.2021, 09:00 - 09:15 AEST

FC03**Hyposalivation and oral health status among the Georgian population**

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Zurab Artmeladze³, Alexandre Pateishvili³,
Maria Nikuradze³, Manana Kalandadze³

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²Georgian National Museum, Georgia; ³Tbilisi State University, Georgia

Introduction: The normal stimulated salivary flow rate averages 1.5–2.0 mL/min while the unstimulated – is approximately 0.3–0.4 mL/min. Below this average, it is considered hyposalivation. Hyposalivation may be an accompanying symptom of multiple chronic illnesses.

Aim or Purpose: Salivary flow rate within the Georgian population is unknown. This study investigates hyposalivation in the Georgian population and examines if and how social conditions, liquid intake, and diseases influence hyposalivation.

Materials and Methods: We examined 135 individuals (61 men and 74 women) of different age groups. Questionnaires were created to assess the general oral health condition, accompanying chronic diseases, and the daily amount of liquids intake.

Participants were seated bent forward; the mouth was open while letting the saliva drip into a pre-weighed disposable cup for 10 min. The measurements were taken twice: to control unstimulated and stimulated salivary flow.

Results: Hyposalivation was found in 19 healthy individuals, 27 patients with accompanying diseases, and 3 post-COVID-19 individuals – a total of 36.3 % of the examined individuals. Thus, 70% of the chronically ill and 33% of healthy individuals suffered from hyposalivation. Patients with hyposalivation revealed to bear a higher prevalence of dental caries (p-value 0.0009), increased dental wear (p-value < 0.0001), pathological changes of the oral mucosa (p-value 0.0012), and increased accumulation of dental plaque (p-value 0.0001).

Conclusion: The study showed that although hyposalivation might be an accompanying symptom of several chronic illnesses and correlated to oral diseases, it can be compensated by the increase of the daily water intake.

<https://doi.org/10.1016/j.identj.2021.08.004>

26.09.2021, 09:15 - 09:30 AEST

FC04**Strategies to improve oral healthcare presentations in rural antenatal women**

Anjali Ragade*, Cynthia Opie
Echuca Regional Health, VIC, Australia

Aim or Purpose: What is the effectiveness of targeted stakeholder engagement on oral healthcare presentations in rural socially disadvantaged antenatal women?

Materials and Methods: Participants were antenatal women, 18 years of age and over who were concession or pension card holders. Key stakeholders (midwives and obstetric trained General Practitioners [GPs]) were educated on the importance of oral healthcare in antenatal women and provided with a referral form. A 10-month pre and post intervention period was compared and contrasted using descriptive statistics. Specifically, the number and type of oral health assessments and treatments undertaken, including the completed courses of treatment on eligible participants were analysed by using Microsoft Excel softwares (Microsoft Excel 2017; North Ryde NSW Australia). The study was assessed and received ethics approval before starting the project

Results: 62 referrals were received during the intervention period, leading to 44 (70.97%) antenatal assessments and treatments hence 40.36% (N=190, n=44) accessed oral healthcare during this period, compared with 17 antenatal assessments and treatments during the baseline period which means only 15.04% (N=113, n=17) accessed healthcare during the baseline period. The intervention increased access to oral healthcare by 168.32%.

Conclusion: Targeted stakeholder engagement strategies in a rural community have been found to be an effective method of increasing antenatal referrals of socially disadvantaged women to a rural Public Dental Clinic. Increased antenatal oral healthcare enhances an opportunity to provide more preventative care and results in fewer emergencies and is an example of VBHC.

<https://doi.org/10.1016/j.identj.2021.08.005>

26.09.2021, 09:30 - 09:45 AEST

FC05**Salivary total protein and electrolyte profile comparison in HIV patients**

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Aim or Purpose: Present study aims to assess potential difference in salivary total protein and electrolyte levels in HIV patients with and without ART.

Materials and Methods: Patients were divided into 3 groups Group A (HIV-1 positive patient under ART for at least 6 months) 66, Group B (HIV-1 positive patient not on ART) 66, Group C (HIV negative patients)66. Resting whole saliva of patients was collected by passive drooling into sterile glass tube by Colin Dawe's method. 2 ml of collected saliva sample was then analysed for total protein evaluation by Biuret method. Electrolytes in the samples were analysed by an ion-selective electrode technique. After evaluation, data were entered in Excel, analysed by SPSS version 20. Quantitative data were summarised using mean and standard deviation (SD). Statistical tests used to analyze the data included one-way ANOVA with post hoc Tukey test.

Results: There was statistically significant difference in salivary protein (p=0.000) and electrolyte (Sodium, p=0.000;

Potassium, $p=0.039$; chlorine, $p=0.027$; ionized calcium, $p=0.002$) levels among three groups.

Conclusions: HIV positive individuals with and without ART have alteration in salivary composition. Some of these alterations (total protein and iCa levels) are due to HIV infection, while others (Na, K, Cl) could be due to ART or a combined effect of both. Salivary changes in HIV positive individuals could predispose them to oral diseases. Thus, regular oral examination and prophylactic regimen must be formulated to maintain their oral hygiene and quality of life.

<https://doi.org/10.1016/j.identj.2021.08.006>

Sub-topic 1.2: Digital Dentistry

26.09.2021, 09:45 - 10:00 AEST

FC06

Artificial intelligence implementation in tooth identification from X-ray images

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Aim or Purpose: Development of a convolutional neural network that can precisely and quickly identify teeth from x-ray images, without using neighbouring structures as a frame of reference.

Materials and Methods: Using a database of 11403 x-ray images that were precisely annotated by dental professionals we have trained, validated and tested a convolutional neural network (CNN) that can identify teeth according to their position in the oral cavity. Four “levels” were tested, the first one being classification according to the type of the tooth morphologically. This consisted of 4 categories: incisor, canine, premolar and molar. The second “level” added the differentiation between types of incisors, premolars and molars. This “level” had 8 categories, imitating a dental quadrant. The third “level” added maxillary or mandibular origin and a total of 16 categories. Finally, the fourth “level” had 32 categories, meaning every tooth had its own.

Results: The first level offered an 97.83% accuracy on unseen data. The second level offered 92.13%. “Level” three offered 91.14%. The fourth level, while being the most demanding, offered a 91.13%.

Conclusions: The results were the best in the 4 category “level” and the least successful in the 32 category “level”. Interestingly, the difference between the 32 and 16 category level was not significant at all. The developed CNN can identify the morphological type of the tooth with a very high accuracy rate. This opens a door into implementation of artificial intelligence in rapid analysis and cross referencing in (forensic) dental medicine.

This study has been supported as a part of the Croatian Science Foundation under the project IP-2020-02-9423.

<https://doi.org/10.1016/j.identj.2021.08.007>

26.09.2021, 10:00 - 10:15 AEST

FC07

The 4D Concept_ Adding the missing link to the digital workflow

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Introduction: Recent digital technological advances have allowed for the mandibular movements to be tracked and the dynamic occlusion to be recorded in real time. The digital files created can be used towards assembling a complete virtual patient and for future restorations to be best designed using appropriate dental CAD software.

Case Description: A case report of a female patient that attended our private practice seeking a full mouth rehabilitation procedure is described. The clinical steps taken to transform the real patient as a complete virtual patient are outlined. Special emphasis is given to the way that the patients’ own mandibular movements were recorded clinically and incorporated in a dental CAD software.

Discussion: A virtual articulator using mean values is most often implemented in dental CAD software to design any proposed restorations. As errors could be introduced at this design stage, intraoral adjustments and corrections are often needed during the provisional stage.

Assembling a virtual patient and designing the restorations bringing the patients’ own mandibular movement to the scene could:

- Help design the most appropriate tooth shapes and occlusal morphology
- Lead to increased predictability from virtual design to actual outcomes
- Save chair time as less adjustments are generally needed
- Add the missing link to the digital workflow

Conclusion/clinical significance: The use of a virtual patient model incorporating the patients’ own jaw motion during dental CAD procedures will contribute towards the optimal design and manufacturing of restorations leading to successful long term clinical outcomes.

<https://doi.org/10.1016/j.identj.2021.08.008>

26.09.2021, 10:15 - 10:30 AEST

FC08

Artificial Intelligence DENTOMO: Opportunities and Prospects for analysis of CBCT in Dentistry

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Aim or Purpose: Analysis of artificial intelligence DENTOMO application efficiency, its opportunities and prospects for Interpretation of Cone Beam CT in Dentistry and developing model for automatic analysis cone beam computed tomography in Dentistry.

Materials and Methods: The presented model is based on two convolutional neural networks, includes a database and knowledge base, harmonized with SNOMED Clinical Terms is a systematically organized computer processable collection of medical terms providing codes, terms, synonyms and definitions used in clinical documentation and reporting. The accuracy of AI model was assessed by calculating the ratio of false identifications to the true ones in each case.

Results: The model of artificial intelligence DENTOMO, which allows automated deciphering the CT in maxillofacial area, was developed and implemented in practical dentistry. The developed model automatically decodes cone beam CT images, identifies, and classifies the anatomical structures of the human dental system, and reveals the pathological processes and their dynamics in dentistry system. The developed model rather accurately identified the natural teeth in the frontal group as well in the group of premolars and molars. The recognition accuracy surpassed 90%. It should be noted that the developed model includes the possibility of “training”, which can improve the quality of evaluation of diagnostic features and related parameters. Moreover, it can add the current diagnostic potencies with novel features.

Conclusions: Testing of DENTOMO model demonstrated a reasonable effectiveness in deciphering the CT of dental system. The developed technology allows computerizing and objectifying interpretation of CT of the dental system.

<https://doi.org/10.1016/j.identj.2021.08.009>

26.09.2021, 10:30-10:45 AEST

FC10

Diode laser-assisted frenectomy - A case report

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Introduction: Frenectomy, the removal of buccal frenum, is a common procedure in oral surgery as high attachment of frenum may cause prosthodontic issues, periodontal disorders and orthodontic disorders. The use of surgical diode lasers associated to laser biostimulation can increase patients' compliance to this procedure.

Case Description: A 48-years old male patient presented with a low attachment buccal frenum and prosthetic issues. A decision was made for laser-assisted surgery with diode laser 810nm (Elexxion Nano, Elexxion). The excision procedure used continuous mode, power 2.5W, optic fibre with diameter 400µm. The surgical procedure was ended with low-level laser procedure using biostimulation module of the diode laser. VAS indices decreased from 3,8 immediate post-operatively to 2,6

(1 day post-operatively), and 0,4 (3 days post-treatment). The wound healing was completed at 12 days post-treatment.

Discussion: Diode laser-assisted frenectomy had many post-operative advantages as follows: absence of bleeding and oedema, low pain intensity at 1 day and 3 days, the absence of postoperative pain at 7 days, reduced wound healing time.

Conclusion/Clinical Significance: The clinical application of the diode laser in frenectomy was easy-to-use, efficient, safe, and can be considered a valid alternative surgical procedure in relation to the classic surgical procedure.

<https://doi.org/10.1016/j.identj.2021.08.011>

Sub-topic 1.4: Special Care Dentistry

26.09.2021, 10:45 - 11:00 AEST

FC11

Conscious sedation, general anaesthesia for patients with special needs

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Aim: This study aimed to identify indications for dental treatment under general anaesthetic (GA) and conscious sedation for adult patients with special needs in public dental clinics and recommend pathways to provide safe and effective care.

Materials and Methods: Following ethics approval from relevant institutions (Approval No: EC00172; Reference No: 49013), de-identified data was collected and analysed from relevant hospital record software, dental record software and patient paper charts. A total of 444 patients (> 18 years old) who underwent 607 conscious sedation or GA treatment sessions (1st January 2015 -31st December 2018) were included. Treatment was provided by specialists in Special Needs Dentistry (SND) or postgraduate students in SND or general dentists.

Results: Overall, 395 of the 444 patients (89.0%) had conditions that affected their dental management, with the most common being medical conditions (87.4%), followed by intellectual disability (74.7%), physical disability (33.6%) and psychiatric conditions (16.8%). Statistically significant differences were seen between patient cohorts treated using relative analgesia (RA), intravenous (IV) sedation and GA for multiple parameters including elements of medical complexity. Using public dental cost parameters, RA was the most cost-effective and clinically efficacious.

Conclusions: The study showed under-utilisation of RA and IV sedation compared to GA for patients with special needs, although RA was superior for clinical productivity.

Referrals for patients with special needs should be triaged by SND team members (specialists or postgraduate students), to determine the appropriate modality for care (behaviour management/conscious sedation/GA) by clinicians within their scope of practice.

<https://doi.org/10.1016/j.identj.2021.08.012>

26.09.2021, 11:00-11:15 AEST

FC12

Oral health implications in patients with head and neck cancer

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Aim or purpose: This research aims to examine the supportive dental needs of patients with head and neck cancer by focusing on access to dental care, oral health impact and subsequent quality of life implications.

Methods: This acute cross-sectional study was conducted over a period of 4 months at the Andrew Love Cancer Centre and Peter MacCallum Cancer Centre in Victoria, Australia. The study included a questionnaire with demographic questions as well the Oral Health Impact Profile (OHIP-14) and the option to take part in an interview. A semi-structured interview further explored the QoL of consenting participants. Ethics approval was obtained from the Peter MacCallum Cancer Centre's Human Research Ethics Committee.

Results: 60% of patients had seen a dentist before cancer treatment with 32% of them receiving specific advice of how to manage their mouth during their cancer journey. A significant number of participants (36%) did not see a dentist after treatment. Qualitative data from the interviews were transcribed, coded and analysed using thematic analysis.

Conclusion: The research was able to highlight that not all patients have the same level of access to dental care following cancer treatment. The findings are likely to provide a platform on which current protocols can be improved for the management of HNC patients.

<https://doi.org/10.1016/j.identj.2021.08.013>

Topic 2. Preventive Dentistry

Sub-topic 2.2: Prevention and Periodontal diseases

26.09.2021, 11:15-11:30 AEST

FC13

Innovative rehabilitation for orofacial praxis

Patrick Fellus
FroggyMouth, France

Aim: Evaluation of the effectiveness of an anoetic network protocol for rehabilitation of swallowing and nasal breathing

Material and Methods: The swallowing re-education protocol lasted 10 weeks and involved a passive neuromuscular rehabilitation device: FroggyMouth, 15 minutes per day in front of a TV. It modifies the patient's proprioceptive stimuli and involves the biochemical link between neurons. The glial cells are involved in the interconnections of the different oro-facial neuronal networks. 48 patients between 5- and

16-year-old were selected, all of them diagnosed with atypical swallowing.

Study by Dr Cornut. The statistical analyses were conducted by the biostatistics department of the Lille University Hospital under the responsibility of Julien Labreuche (senior statistician of the department of Prof. A. Duhamel).

Results: After 10 weeks of treatment, secondary deglutition was obtained for 80% of the patients including 60% automatization and "a significant decrease in the percentage value of the oral ventilation flow".

Conclusion: Anoetic rehabilitation with FroggyMouth is a non-restrictive approach that has shown significant results improving nasal breathing and swallowing rehabilitation in 10 weeks.

<https://doi.org/10.1016/j.identj.2021.08.014>

Sub-topic 2.5: Public Health

26.09.2021, 11:30-11:45 AEST

FC14

Oral health therapeutic itineraries adopted by Baka Pygmies in Cameroon

Aurore Nadie Mankongo^{1*}, David Gonzalez Alarcón², Michael Ashu Agbor¹, Charles Pilipili¹

¹ Faculty of Dentistry Université des Montagnes, Cameroon; ² Zerca y Lejos NGO. Mindja Paul Health and Emancipation Research Center, Spain

Aim or Purpose: From the perspective of indigenous peoples, the systematic adoption of the Western concept of health is often related to inequalities and limited access to health services. This research aims to explore the traditional oral health therapeutic itineraries of Baka Pygmy in Cameroon.

Materials and Methods: This is a cross sectional descriptive study carried out between March-April 2021 in Baka communities. Data was collected via individual semi-structured questionnaires developed by the Health Department of Zerca y Lejos NGO.

Results: A total of 51 traditional doctors and 118 adults in 14 communities in south-eastern region, recruited in our study. Access to traditional doctors was the first option for 98.36% of the respondents. The Cameroonian government, however, only acknowledges 19.6% of all traditional healers. Oral pathologies are among the eight most frequent pathologies treated. Dental caries (66.6%), periodontal disease (23.52%), trauma to the jaw and Noma (5.8%) were the common diseases treated by traditional healers. 70.6% of traditional doctors deem as positive to comprehend conventional medical techniques.

Conclusion: The promotion and access to oral health, for indigenous peoples requires the adoption of a broader and more culturally oriented approach, that emanates from the concept of indigenous traditional health. Exploring therapeutic itineraries is a key tool pursuing the implementation of an emancipating community-based oral health plan.

It is therefore highly recommended to design and implement a mixed health programme that into account traditional

health itineraries and also empowers community health leaders on conventional health care while providing a basic oral health package.

<https://doi.org/10.1016/j.identj.2021.08.015>

26.09.2021, 11:45-12:00 AEST

FC15

Knowledge and Awareness of Specialists, General Dentists and Assistants Regarding SARS-CoV-2

Hafsa Qabool*, Rashna Sukhia
Aga Khan University Hospital, Pakistan

Aim or Purpose: This study aims to assess the knowledge and awareness among dental specialists, general dentists and dental assistants regarding guidelines on minimizing the spread of infection.

Materials and Methods: A survey based cross-sectional study was conducted on a sample size of 84 patients. A modified version of validated questionnaire was used to evaluate knowledge and awareness regarding SARS-CoV-2 as per the Center of Disease Control guidelines. The data were analyzed using one-way ANOVA to assess the difference in scores of knowledge among three groups. Pair-wise comparisons were performed using post-hoc Tukey test. Simple linear regression was used to examine factors influencing knowledge scores.

Among all the dental specialists, 13 were orthodontists, 9 were operative dentists, 8 were maxillofacial surgeons, 4 were prosthodontists, and one periodontist, who responded to the survey.

Results: Among the three groups, we found a significant difference ($p = 0.02$) of knowledge scores between dental specialists, general dentists and dental assistants. Additionally, the mean knowledge scores of dental specialists, general dentists and dental assistants were 10.05 ± 2.10 , 9.95 ± 2.60 and 8.53 ± 2.10 respectively. On pairwise comparison, we found that there was a significant difference ($p = 0.02$) of knowledge scores among dental specialists as compared to dental assistants.

Conclusion: Based on the findings, the study suggests that hospitals should conduct mandatory workshops, training sessions and seminars for awareness of novel coronavirus (nCoV) pandemic and disinfection protocols, not only for specialists but also for all the staff members.

<https://doi.org/10.1016/j.identj.2021.08.016>

26.09.2021, 12:00-12:15

FC32

Dental drive through model of care to reduce caries incidence

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Monash Health, Australia

Aim or purpose: An increase in number of people seeking emergency care due to inability to access dental services

for general care was seen during COVID-19. This drive through model was developed to screen, educate and prioritise, based on individual risks, patients who were otherwise unable to get dental care due to COVID-19 restrictions.

Methods: On World Oral Health Day, 2021 dental examinations were conducted for patients while they drove through an existing COVID-19 screening clinic. The ICDAS-II index (International Caries Detection and Assessment System), score two to six, was used for caries assessment and management. Patients were categorised into three groups based on number of decayed teeth (less than three, three to six or more than six). The management criteria was based on the ICDAS score of teeth under each of the three categories.

Results: A total of 247 patients were screened and educated on the day. 102 patients with ICDAS score two to four were given education and preventative treatment appointment. While 118 patients with ICDAS score five or six were identified to be at risk of dental emergency in the near future and were booked in for emergency or general treatment. Another 27 patient were given clinical priority based on their periodontal or denture related needs. Patient survey revealed a high satisfaction rate of 92%.

Conclusions: This public health initiative was a great success in providing dental care to the patients during these unprecedented times who would not have had any care otherwise due to COVID-19 restrictions.

<https://doi.org/10.1016/j.identj.2021.08.056>

Sub-topic 2.6: Dental erosion and non-cariou lesions

26.09.2021, 12:15 - 12:30 AEST

FC16

Erosion-inhibiting potential of a novel remineralising paste

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³ Future Industries Institute/University of South Australia, SA, Australia; ⁴ Adelaide Health Technology Assessment/University of Adelaide, SA, Australia

Aim or Purpose: The increasing prevalence of erosive tooth wear among children and young adults is an issue of growing concern, emphasising the need for improvement in the currently used preventive strategies. Our aim was to evaluate individual and synergistic effects of SnF2 and CPP-ACP pastes in inhibiting erosion at a nano-scale.

Materials and Methods: Forty flat, polished enamel specimens were subjected to 10 erosion cycles, with each cycle comprising one-min erosion in citric acid (pH 3.0) and one-min exposure to human saliva. In each of the 3 experimental groups (n = 10 per group), a remineralising paste (10% CPP-ACP or 0.45% SnF2 (1,100 ppm F) or SnF2/CPP-ACP (combined

10% CPP-ACP and 0.45% SnF2)) was applied as a slurry in saliva between erosion cycles. No remineralising agent was used in control specimens (n = 10). Erosion was assessed by calculating erosion depth using a novel photolithographic technique combined with high-resolution 3D laser scanning microscopy from baseline to 1 min, 5 min and 10 min.

Results: A significant increase in erosion depth was detected in the control group as early as 1 min (69.4 nm) ($P < 0.001$), with the erosion depths being smaller for all three remineralising agents after 1 min ($P \leq 0.004$). The overall trend of erosion depth reduction was SnF2/CPP-ACP > SnF2 > CPP-ACP > control.

Conclusions: Application of SnF2-enriched CPP-ACP agent reduces dental erosion more than either SnF2 or CPP-ACP alone, offering a potentially more-effective preventive strategy to manage this condition.

<https://doi.org/10.1016/j.identj.2021.08.017>

Topic 3. Dental Treatment & Restorative Dentistry

Sub-topic 3.2: Periodontics

26.09.2021, 12:30 - 12:45 AEST

FC17

Thickness of keratinized tissue as an indicator of success in connective tissue operations

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Istanbul University Department of Periodontology, Turkey

Aim or Purpose: To investigate how keratinized tissue thickness have an impact on clinical outcome of the subepithelial connective tissue graft with coronally advanced flap procedure in Miller Class I defects which previously grouped as having either “thick” or “thin” phenotypes.

Materials and Methods: Recession defects were treated with the same surgical approach in both “thick” (n=18), “thin” (n=19) groups. Plaque index (PI), gingival index (GI), recession depth (RD), recession width (RW) and width of keratinized tissue (WKT) were recorded on baseline, 6. week, 3., 6., 9., and 12. months respectively. Probing depth (PD), clinical attachment level (CAL), thickness of keratinized tissue (TKT) of defects were recorded on baseline, 3., 6., 9. and 12. months. The percentage of root coverage was measured on 3., 6. and 12. months. Palatal mucosa thickness measurements were repeated on 6. and 12. months.

Results: Compared to baseline, there was statistically significant decrease in CAL, RD and RW; and a significant increase in PD, WKT and TKT in both groups ($p < 0.05$). TKT was the highest on 3. month, decreased till 9. month and became stable then. According to phenotypes, only defects of thin group’s baseline TKT was positively correlated with the amount of thin group’s root coverage.

Conclusions: Within the results of this study success of root coverage in connective tissue operations is influenced by a threshold thickness of flap in the operation area only in thin phenotype group.

<https://doi.org/10.1016/j.identj.2021.08.018>

26.09.2021, 12:45 - 13:00 AEST

FC18

Clinical study of a bioactive barrier membrane for dental implants

Minghao Zheng, Brent Allan*

The University of Western Australia, Australia

Aim or Purpose: To evaluate the clinical performance of a new Australian bioactive collagen membrane (BCM) in guided bone regeneration (GBR) for bone defects surrounding dental implants.

Materials and Methods: We used this BCM in patients who required dental implant treatment with GBR. Patients who fulfilled the eligibility criteria (N=20) received dental implants (N=27) with GBR using the BCM and void filling material (natural bone mineral). Implant sites were allowed to heal for approximately 6 months before re-entry surgery (two-stage; N=10) or restoration (single-stage; N=10). Mucosal tissue conditions and evidence of wound dehiscence or membrane exposure were recorded during the healing period. The quality of newly formed bone was assessed using the QT Scale at the time of re-entry surgery. Vertical (defect height) and horizontal (facial bone wall thickness) dimensions were measured immediately after implant placement (baseline) and prior to re-entry surgery/restoration by CT scan.

Results: The BCM demonstrated excellent handling properties during surgery and retained its barrier structure over 4 months with no adverse tissue reactions, adverse events or membrane exposures. CT scans showed evidence of accelerated mature bone formation necessary for implant stability.

Conclusions: The results of this study indicate that this new bioactive collagen membrane is able to preserve and restore bone volume required for successful functional and aesthetic outcomes in dental implant treatment.

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26.09.2021, 13:00 - 13:15 AEST

FC19

Early mature bone formation using a bioactive membrane in dogs

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The University of Western Australia, Australia

Aim or Purpose: The purpose of study was to compare the amounts of mature bone formation between a new bioactive collagen membrane (BCM) and a conventional collagen membrane (CCM) when used in a canine model of dental guided bone and tissue regeneration (GBR).

Materials and Methods: GBR surgery was performed in 36 skeletally mature (9-14kg / 20-30lb) Beagle dogs using a split mouth design. The implant site was prepared with a titanium implant in the tooth socket and remaining void filled with a granulated bone substitute. The collagen membranes were trimmed and placed over the implant, and the gingiva closed around the treatment site. Animals were sacrificed (n=6 each

group) at 4, 8, and 12 weeks after implant placement. Bone formation and tissue reactions were measured by micro-CT and histomorphometry. The study was approved by the institutional Animal Ethics committee.

Results: Bone volume in sites treated with both collagen membranes was significantly greater than controls at 12 weeks. However, the BCM displayed comparatively more bone formation at the early time point of 4 weeks than the CCM. Further, histological assessment of sites treated with the bioactive membrane revealed that mature cortical bone formation occurred as early as 8 weeks, which was likely due to the minimal inflammatory reaction observed and retention of the bioactive barrier structure.

Conclusions: The new bioactive collagen membrane induces early mature bone formation in a canine model of dental GBR.

<https://doi.org/10.1016/j.identj.2021.08.020>

26.09.2021, 14:15 - 14:30 AEST

FC20

The Role of Electronic Periodontal Probing in Preventing the COVID-19 Transmission in Dentistry

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Aim or Purpose: The current pandemic context requires a series of preventive measures to reduce the risk of contamination during dental care procedures.

One of the most effective is to reduce the clinical working time (CWT) but without influencing the quality of the treatments.

Materials and Methods: The present study was performed on a group of 27 students from the Faculty of Dental Medicine-Grigore T. Popa University of Medicine and Pharmacy Iasi-Romania, during the 1st of February and the 31st of March 2021. All patients underwent both conventional probing (CP) and electronic probing (EP).

We evaluated the CWT required to perform the periodontal probing procedure and the related periochart. The accuracy of the measurements and the tolerance of the subjects were also evaluated.

Results: The mean values for clinical working time in order to perform periodontometry maneuvers were significantly different. (34.20 ± 6.8 min for CP and 11.30 ± 3.3 min for EP).

The results of the present study highlighted the fact that the mean CWT was reduced by approximately 300% in the case of the EP compared to the CP without affecting the quality and accuracy of the dental procedure. Our results point that the CWT for EP is minimal related to the exposure time necessary for viral contamination through aerosols.

Conclusions: In a pandemic context, EP may represent not only a viable diagnostic tool but also can be successfully associated with the prevention of aerogenic viral transmission through reducing exposure and maintaining a high-quality standard.

<https://doi.org/10.1016/j.identj.2021.08.021>

Sub-topic 3.5: Materials

26.09.2021, 14:30 - 14:45 AEST

FC21

Effect of Curing Modes on Depth-of-Cure in Bulk-Fill Composite

Zainab Haji*, Robia Ghafoor

Aga Khan University Hospital, Sindh, Pakistan

Aim or Purpose: LED unit has different curing modes with variable intensities that influence polymerization of composite restorative material. Bulk-Fill composites claim more depth of cure compared to conventional composites. However, they have conflicting reports on their success. Hence, the purpose of this study is to explore the curing mode that could result in maximum depth cure in Bulk Fill restorative material.

Materials and Methods: Thirty-three cylindrical composite specimens with dimension of 8mm length and 4mm diameter were made in preformed Teflon mold/frame by polymerization with LED using one of the three modes: Group1 constant mode; Group 2 pulse and Group 3 ramped mode. Once polymerized, each specimen was extruded from the mould and using the ISO 4049 scrapping method, uncured resin was removed. Specimen lengths were measured with a Vernier calliper. Each specimen was measured thrice and the mean was taken for the depth-of-cure. The data was subjected to ANOVA and Tukey's post hoc analysis.

Results: The pulse, constant and ramped modes resulted in depth of cure of SDR BulkFill composite of 2.88 ± 0.27 mm, 2.92 ± 0.29 mm and 3.18 ± 0.26 mm, respectively. The difference in depth of cure between pulse and ramped curing mode was statistically significant on post-hoc analysis (p -value=0.04).

Conclusion: Maximum depth of cure of SDR BulkFill composite was achieved by ramped cure mode of LED unit followed by Constant and Pulse modes.

<https://doi.org/10.1016/j.identj.2021.08.022>

26.09.2021, 14:45 - 15:00 AEST

FC22

Microleakage comparison in temporary restorative materials in complex endodontic cavity

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The Aga Khan University Hospital, Karachi, Pakistan

Aim or Purpose: To compare the mean microleakage (in millimeters) around two temporary restorative materials (zinc-oxide based versus light-cure resin based) at tooth-temporary restoration and temporary-permanent restoration interfaces, within the complex endodontic access cavities in the extracted human teeth.

Materials and Methods: Thirty teeth randomly allocated into 2 experimental groups in this in-vitro experimental study. Teeth in each group had conventional class II cavities prepared and restored with the composite filling. After 14 days of aging in saline, complex endodontic access

cavities were prepared in these teeth. This was followed by placement of either of the temporary restorative materials to seal the access cavities. After immersion in 1% methylene blue dye, teeth were sectioned and observed under stereomicroscope (magnification X25.6) Measurement was made at two interfaces 'a' and 'b' (temporary restoration-tooth and temporary restoration-pre-existing restoration), respectively. Depth of dye penetration in millimeters was recorded as the microleakage. Independent sample t-test was applied to compare the mean difference in dye penetration measurements in the two study groups at interfaces 'a' and 'b's. A p-value of < 0.05 was taken as statistically significant.

Results: Light-cure resin-based material showed microleakage of 0.14 ± 0.26 mm at interface 'a' and 0.07 ± 0.17 mm at 'b', respectively. Whereas zinc-oxide based temporary restorative material showed microleakage of 0.54 ± 0.42 mm at 'a' and 0.88 ± 0.51 mm at 'b' interface.

Conclusions: In complex endodontic access cavity, compared to zinc-oxide based material, light-cure resin-based material showed significantly less microleakage at the tooth-temporary restoration and pre-existing permanent filling-temporary restoration interfaces.

<https://doi.org/10.1016/j.identj.2021.08.023>

Sub-topic 3.7: Prosthodontics

26.09.2021, 15:00 - 15:15 AEST

FC23

Adhesive Rehabilitation of a Severely Worn Dentition: A Case Report

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Introduction: Tooth wear is a multifactorial progressive condition, leading to the loss of dental hard tissues. It is the result of a combination of mechanical (attrition and abrasion) and chemical (erosion) processes. As a consequence of worn dentition, patients claimed functional and esthetic problems.

Case description: This case report presents a 43 years-old senior female patient with a severe dental wear. Clinical examination revealed a worn dentition, a conserved vertical dimension and functional and esthetic problems, with a healthy periodontium. An adequate increase of the vertical dimension of occlusion was necessary to harmonize dentofacial esthetics and to provide an adequate space for the restorative material. A full-mouth conservative prosthetic rehabilitation was then conducted. Tabletops were bonded in the posterior region to restore the VDO, ceramic veneers and

palatal indirect resin to reestablish the maxillary anterior contact and guidance.

Discussion: Rehabilitation of worn dentition still remains a challenging situation for practitioners. In fact, because of its multifactorial etiology, tooth wear can manifest in many ways, and therefore, it can be difficult to diagnose and to manage. Traditionally, a full-mouth rehabilitation based on full-crown coverage has been the recommended treatment for patients with tooth wear. Nowadays, the improvement of adhesive techniques leads to a more conservative approach for such situation.

Conclusion: The innovative approach to restore worn dentition using an adhesive technique should be preferred to achieve maximum preservation of the tooth structure and the most predictable esthetic and functional outcome.

<https://doi.org/10.1016/j.identj.2021.08.024>

Sub-topic 3.8: Orthodontics

26.09.2021, 15:15 - 15:30 AEST

FC24

Predictors of soft tissue profile outcomes after Twin-Block appliance

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Aim or Purpose: Clark's Twin-Block (CTB) functional appliance is commonly used to treat mandibular deficiency in skeletal class II growing patients. This study was conducted to identify cephalometric predictors for favorable soft tissue profile outcomes with CTB appliance.

Materials and Methods: Using pre- and post-functional lateral cephalograms of 50 subjects treated with CTB, profile silhouettes were evaluated by a panel of orthodontists to assess improvement using the Visual Analogue Scale (VAS). Subjects were divided into favorable and unfavorable groups on the basis of VAS scores. Independent sample t-test was used to compare cephalometric skeletal and soft tissue measurements between the groups. Predictors of favorable and unfavorable outcomes were identified using the logistic regression analysis.

Results: Statistically significant differences in multiple pre-treatment values between favorable and unfavorable groups were observed. Multivariable logistic regression analysis found the decreased value of lower lip to E line (95% CI: 0.142, 0.800) and decreased pogonion to nasion perpendicular distance (95% CI: 1.05, 1.85) to be significantly associated with favorable soft tissue profile outcomes.

Conclusions: Pre-treatment hypodivergent skeletal pattern, reduced ANB, reduced lower incisor to pogonion distance and soft tissue recumbency were identified as predictors of favorable soft tissue outcomes for CTB treatment in growing patients with mandibular retrognathism.

<https://doi.org/10.1016/j.identj.2021.08.025>

26.09.2021, 15:30 - 15:45 AEST

FC25

Obstructive sleep apnea syndrome in obese, non-obese and control children

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Aim or Purpose: Obstructive sleep apnea syndrome (OSAS) in children is a highly prevalent disorder. Adenotonsillectomy is considered the first line of treatment. The aim of this study is to assess the effect of adenotonsillectomy on the apnea-hypopnea index (AHI), on the cephalometric values and on arch width measurements in obese and non-obese children with OSAS, and to compare the arch width measurements with a control group.

Materials and Methods: A quasi-experimental prospective study was performed. Children aged between 2 and 12 years were recruited. The sample was divided into three groups: 1. Obese children with OSAS (n=15), 2. Non-obese children with OSAS (n=117), 3. Matched control group (n=106). A child was considered obese when the body mass index was higher than 95th percentile. All subjects underwent anthropometric measurements and alginate impressions. A polysomnography and telerradiography were taken only in both experimental groups. These records were also taken after one year. Kruskal-Wallis and Wilcoxon test were used to compare the quantitative variables.

Results: Regarding the arch width variables, there were statistically significant differences (p-value <0.05) between both OSAS group and control group. However, there were no statistically significant differences between the cephalometric and arch width variables between obesity and non-obesity group. After adenotonsillectomy AHI improved in non-obese OSAS group (p-value <0.001), but no statistical differences in AHI were found in the obese OSAS group.

Conclusions: The dentofacial characteristics were similar in both obese and non-obese OSAS children. However, adenotonsillectomy improved the AHI in non-obese children more than in obese children.

<https://doi.org/10.1016/j.identj.2021.08.026>

Topic 4. Oral Surgery, Medicine and Cancer

Sub-topic 4.2: Oral Surgery

26.09.2021, 15:45 - 16:00 AEST

FC26

Is the role of Coronectomy procedures expanding?

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Aim or purpose: Extractions of lower third molars carry risk to the inferior alveolar nerve (IAN), varying from 0.42% to 7.8%. Risk varies between the operating skills of individuals.

The cost of medicolegal litigation settlement in these cases have been sky rocketing.

Coronectomy is an alternative procedure increasingly accepted world-wide to reduce the risk of nerve injuries. Increasing use of cone beam computed tomography (CBCT) aids assessment of the relationship of the IAN and roots in providing treatment planning to reduce the risk of nerve trauma.

Materials and methods: This retrospective study presents, patients who underwent coronectomy from 2012-2020 and analyses the post-coronectomy pain, migration of roots and follow-up of patients with comorbidities and/or decayed teeth.

Results: A total of 5,497 lower third molars were removed. In the cohort of 1,543 (28.06%) teeth removed in outpatient under local anaesthesia, 109 (1.98%) were coronectomies and of 3,954 (71.93%) removed under general anaesthesia, 305 (5.54%) were coronectomies.

Conclusion: The outcome of this study demonstrates:

- coronectomy is a safe and viable technique for the surgical management of wisdom teeth at high risk of neurosensory loss.
- Intra pulpal deposition of local anaesthetic intraoperatively reduced the post coronectomy pain significantly.
- The modification in surgical technique does reduce the post-surgical complications such as wound dehiscence.
- Migration of roots does occur but to quantify the amount is challenging.
- Follow-up results with patients with comorbidities and decayed teeth are encouraging and wider acceptance need to be seen in future.

<https://doi.org/10.1016/j.identj.2021.08.027>

26.09.2021, 16:00 - 16:15 AEST

FC27

Effect of Nasoalveolar Molding in Infants with Cleft Lip & Palate

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Background & Aim: In the 19th century McNeil (prosthodontist) used an oral prosthesis to approximate the cleft alveolar segments and thus initiating the concept of modern presurgical infant orthopedics. More recently (1994) Barry Grayson developed a new technique that not only it approximates the alveolar segments, but it also reshapes the nose in order to perform primary nose surgery, this technique is called Nasoalveolar molding (NAM).

Materials & Methods: Patients with nonsyndromic complete unilateral cleft lip and palate. Nasoalveolar molding was performed for each patient and treatment time took 8-12 weeks. A serial of standard basilar view 1:1 photographs were taken for each patient. Each patient was photographed at the initial visit and after the nasoalveolar molding.

Digital caliper was used to measure the cleft size on the study model at the initial visit and after nasoalveolar molding.

Results: Patients expressed good improvement. The cleft size was reduced significantly. Improved both the columella deviation and length as well as the nostril width and height in the cleft side.

Conclusion: NAM is an effective procedure in reducing the alveolar cleft size and it also improves the nasal architecture. This will facilitate the work of the plastic surgeon during the lip adhesion and primary nose surgery and consequently with better aesthetic outcome.

<https://doi.org/10.1016/j.identj.2021.08.028>

26.09.2021, 16:15 - 16:30 AEST

FC28

One stage surgery and full-mouth reconstruction- A case report

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Introduction: Nowadays patients demand implant-prosthetic therapy with optimal function and esthetics. Definition of success also implies dental implants osseointegration as well as optimal recovery of facial aspect. To reach these objectives an effective collaboration must take place between implantology specialist, oral surgery specialist, laboratory technician, and patient.

Case Description: A 52-year-old male patient presented with a full arch maxillary restoration with periodontal mobility and prosthetic issues. A decision was made for maxillary full arch implant-supported fixed bridge with one stage surgery and immediate implantation. The treatment plan sequence used for this patient was as follows: (1) manufacturing of interim removable prosthesis and discussion with patient of future esthetic requirements; (2) digital evaluation and planning of implant system selection, pro-implant surgical procedures and implant surgical stage; (3) digital planning of implant placement guide and its fabrication; (4) sinus lifting and alveolar augmentation; (5) immediate implantation; (6) provisional restoration; (7) early loading with definitive implant-supported fixed bridge at 4 weeks.

Discussion: Immediate implantation and interim provisional restoration ensure recovery of aesthetics, phonetics and function and confidence of patient as fast as possible. This stage also helped to check up the osseointegration of the implants and oral hygiene maintenance as well as to help patient to adjust from the provisional restoration to the definitive full-arch implant-supported bridge.

Conclusion/Clinical Significance: One stage surgery, immediate implantation and early loading are valid therapeutic solutions for the patients' acceptance of implant-prosthetic therapy.

<https://doi.org/10.1016/j.identj.2021.08.029>

Sub-topic 4.3: Oral Medicine

26.09.2021, 16:30 - 16:45 AEST

FC29

Long-Term Efficacy of Pulsed Radiofrequency Therapy in Temporomandibular Disorders

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Aim or Purpose: This prospective randomized controlled trial aimed to evaluate long-term treatment efficacy and patient satisfaction of pulsed radiofrequency (PRF) therapy in temporomandibular disorders (TMD).

Materials and Methods: Eighty-six female TMD patients diagnosed based on the Diagnostic Criteria for TMD (DC/TMD) were randomly assigned to either PRF or placebo therapy in combination with other conventional treatments. Therapy was delivered and symptoms were evaluated once a week for 12 weeks. Additional final analysis was done 12 weeks after treatment completion. Clinical outcomes including pain intensity, comfortable mouth opening range, maximum unassisted mouth opening range, response to palpation of the temporomandibular joint and masticatory muscle areas, and presence of joint noises and patient satisfaction were analyzed at baseline, 4, 8, and 12 weeks of intervention and at 24 weeks from baseline.

Results: Pain intensity, comfortable and maximum mouth opening range, and pain on capsule and masticatory muscle palpation were significantly improved after treatment in both groups. Notably, the PRF group showed a significantly lower pain intensity at the final evaluation done 3 months after completion of treatment. Significantly more patients in the PRF group reported subjective pain improvement and satisfaction with treatment following intervention at baseline.

Conclusions: Long-term regular PRF therapy was effective in significantly reducing TMD pain and the effect was long-lasting following treatment completion. PRF therapy should be considered as a supportive physical therapy modality in TMD.

<https://doi.org/10.1016/j.identj.2021.08.030>

Sub-topic 4.4: Oral Pathology

26.09.2021, 16:45 - 17:00 AEST

FC30

Anticancer Effect of Cardamom Extract on Hep-2 Cell Line

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Aim or Purpose: To investigate the anticancer effect of Cardamom extract on Hep-2 cell line which may aid in development of a novel treatment modality to Head and Neck Squamous Cell Carcinoma.

Materials and Methods: Hep-2 cell line was divided into five groups: one control group, two groups treated with Cardamom extract, and another two treated with Doxorubicin, each of the two treatments was applied for 24 and 48 hours, respectively. Then, cellular viability was measured using microculture tetrazolium assay, cell cycle analysis was done using Flow Cytometry and eventually, apoptotic activity was evaluated using enzyme-linked immunosorbent assay to measure the concentration of BAX protein and real time polymerase chain reaction to measure the fold change for caspase-3 enzyme.

Results: Cardamom extract succeeded to decrease the percentage of viable and proliferating cells with increasing dose. On the other hand, it increased the percentage of apoptotic cells and levels of caspase-3 and BAX protein.

Conclusions: Cardamom extract has a potential cytotoxic effect on Head and Neck Squamous Cell Carcinoma cell line in a dose and time dependent manner, and exerts this action through induction of apoptosis, and its action is comparable to Doxorubicin action.

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26.09.2021, 17:00 - 17:15 AEST

FC31

Success Rate of Treatment by Reviewing 4D Printers in Maxillofacial Surgeries

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Aim or Purpose: Tissue engineering is a process of renewal the damaged bone due to the repairing and healing process. The aim and objective of this study is to rule out which modern techniques will lead us towards precise bone regeneration.

Materials and Methods: Four database, including PubMed, Embase, Web of Science and Scopus were searched until April 2021, with the terms of ((((((3D printing) AND (4d printing)) OR (5d printing))) AND (materials)) AND (techniques)) AND (surgery). A total of 20 papers were included in the following study.

Results: Tissue grafted implants, allow surgeons to precisely form the defected, traumatized or cancerous sites owing to the treatment of patients in reconstructive surgeries. The precision of bone implants due to recovery of deformity, modified this method, from the range of diagnostics towards ultimate treatment plans, for the affected patients. Moreover, patients reveal less post-operative discomfort and expedited human tissue healing at the orthopaedic and oro-maxillofacial regions.

Conclusion: The latest techniques of 3D, 4D and recent 5D applications have shown favorable outcomes in tissue rehabilitation. Based on the current study, these methods can significantly demonstrate higher success rate of bone and tissue implants.

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Topic 1. General Dentistry

Sub-topic 1.1 Oral Health and Systemic Health

P01

Does Multiparity Affect Periodontitis Associated Adverse Pregnancy Outcomes' Awareness?

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Aim or Purpose: Periodontal disease (PD) is a complex dysbiotic biofilm-associated inflammatory disease of the periodontium. PD has a sizeable global burden and maybe a risk factor for pre-term birth and low birthweight.

Prior learning experiences establish cognitions that may continue to be influential throughout life, multigravidity may lead to learning by experience.

This study aimed to identify and measure the awareness of women in the city of Jeddah, about adverse pregnancy outcomes associated with PD.

Materials and Methods: A cross-sectional study was performed, based on a validated questionnaire developed by the authors (IBR approval: UB-RES-2020-0067). A convenience sample size of 966 women, aged 20-50 years, with a confidence level of 95%, and a 5% margin of error was selected. The questionnaire was divided into three main sections: demographics, knowledge and attitude.

Results: The study showed a mean score of awareness of 3.80 ± 1.26 ($54.35 \pm 17.98\%$) while the mean score of attitudes was 1.60 ± 0.98 ($39.91 \pm 24.42\%$). There was no statistically significant relationship to age group, nationality, or parity, however, scores were significant to university education level.

Only 8% ($n=77$, $p=0.007$) of participants knew that gingivitis during pregnancy might cause pregnancy complications, contrarily, multiparity added no significant extra learning experience to the knowledge of adverse pregnancy outcomes associated with PD, 71.6% ($n=692$, $p=0.007$).

Conclusions: Learning from previous multigravidas did not influence knowledge and awareness towards adverse pregnancy outcomes associated with PD.

Individual and community based oral health educational programs, specifically during maternity are regularly needed to reduce the global burden of PD and its systemic complications.

<https://doi.org/10.1016/j.identj.2021.08.034>

P02

The Oral Cavity Connective Tissue Dysplasia in Different Ages Children

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Aim or Purpose: To study the role of connective tissue dysplasia syndrome in children in the occurrence of oral diseases.

Materials and methods: 104 children with oral cavity pathology were on treatment during 2019-2020 in hospital. Aged from 5 to 17 years. All children had diseases of the digestive tract, were on dynamic observation at primary health care level. The control group consisted of 36 almost healthy children. comparable in age and sex.

The criteria for the inclusion of children in the study were: verified diagnosis, patient consent, absence of concomitant decompensated and sub compensated states.

Results: Connective tissue dysplasia of the oral cavity was more often in the control group (54.8%) comparing with the comparison group (19.4%, $p<0.05$), and more often among boys (32.6%) compared with girls (22.1%). The most common stigmas: gothic palate (26.2%), flat palate (21.5%), impaired growth and development of the jaws (24.5%), abnormalities in the permanent teeth eruption (11.3%), short frenum of the tongue (10.4%), folded tongue (6.1%). The level of stigma in 45.6% of children - 3 stigmas, 31.6% - 3-4 stigmas, and 22.8% - more than 5 oral stigmas. Among the children of the comparison group, the most common was the gothic palate (11.1%, $p<0.05$), short frenum (5.5%, $p<0.05$), flat palate (2.8%, $p<0.05$).

Conclusions: Probably, a significant prevalence of connective tissue dysplasia of the oral cavity organs, formed prenatally, can be markers of chronic somatic diseases.

<https://doi.org/10.1016/j.identj.2021.08.035>

P03

Prevalence of Dental Diseases in Children with Digestive Tract Diseases

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Aim or Purpose: To study the prevalence of stomatitis among children with the background of chronic gastroduodenitis (CG).

Materials and methods: 74 children aged from 3 to 17 years old, who were in inpatient treatment during the 1st half of 2020. The patients' aged 5 to 16 years. Boys - 41.8%, girls - 58.2%. The duration of the disease in 45% from 1 to 5 years, in 55% it was 5 or more years.

Results: Symptoms of CG were characterized by pain (82.6%), dyspeptic (76%) and asthenovegetative (in 2/3) syndromes. In 65.6%, signs of poly hypovitaminosis and micronutrient deficiencies were found. According to the endoscopic examination, superficial (42.2%), erosive (31.8%), atrophic forms of gastritis (18.8%) were more common, other forms of CG were less common. Among the oral cavity pathologies, caries (20.2%), aphthous stomatitis and angular cheilitis (39.1%) were common. Chronic stomatitis prevailed (62.1%) compared with acute (37.9%). Mild was 14.8%, medium - 51.7%, severe - 10.3%. In the structure of stomatitis, the fibrous form was often (62%), less often necrotic (17.2%) and granulation and lichenoid form 10.3%. The etiological factor: herpes virus (24.1%), Candida (17.2%), bacterial (27.5%, often staphylococci, streptococci, Klebsiella, etc.), combined flora was in angular cheilitis (31,2%)

Conclusions: Stomatitis in children with gastrointestinal tract pathology has more severe course. Success in the treatment and maintenance of health in different ages children. The work of a multidisciplinary team is required.

<https://doi.org/10.1016/j.identj.2021.08.036>

P04

Duration and dose of chemotherapy and dental development

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Aim or Purpose: The study aimed to establish an anticancer drug- and its dose-dependency of long-term adverse dental effects occurrence in cancer survivors.

Material and Methods: The objective of the research was a dental examination with a thorough analysis of panoramic radiographs in 37 cancer survivors treated with antineoplastic therapy before 10 year of age and at least 2 years after therapy completion. A total of 236 teeth with 243 different developmental abnormalities were revealed. Twenty-eight survivors presented with 236 teeth with 243 developmental abnormalities, such as agenesis, tooth size reduction, taurodontia and enamel and root abnormalities. All the survivors

received multiagent chemotherapy with the most frequent use of VCR, DXR, CP, IF, VP-16, CBDCA, CDDP, ACTD. A detailed analysis of medical records in order to assess a relationship between treatment duration and cumulative drug doses administered and occurrence of particular disturbances was also performed.

Results: There were no statistically significant differences between survivors with different disturbances within almost all particular drug groups when analyzing treatment duration and drug doses in the affected and non-affected participants. In some groups the mean cumulative treatment dose was statistically significantly higher in the non-affected patients. According to Spearman's rho, no reasonable relationship can be confirmed.

Conclusions: With respect to different treatment protocols used an analysis of a more homogenous group of survivors seems necessary. The developmental stage of tooth formation during chemotherapy is likely to be the most important decisive factor for dental changes.

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Sub-topic 1.5 Others (General Dentistry)

P05

A virtual learning environment to improve antibiotic stewardship in Dentistry

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Aim or Purpose: Optimizing usage of antibiotics is one of the most effective measures that minimize the emergence of antibiotic resistance. This study aimed to develop, implement, and measure the impact of a Virtual Learning Environment (VLE) on Awareness, Attitudes and Intentions to practice (AAIs) regarding antibiotic prescription in Colombian dentists.

Materials and Methods: A VLE on antibiotic prescription in dentistry using multimedia resources and an animated character which challenged the participant through different learning moments, was designed. Then, a quasi-experimental multicenter study approved by the ethics subcommittee from the leader University (015-2018), with the participation of 206 dentists from 7 Colombian cities, was performed. To measure the VLE impact, AAIs were compared before and

immediately after intervention through a validated questionnaire. Knowledge retention 6 months post-intervention was also assessed.

Results: A significantly positive impact on the median of correct answers on AAIs and the level of knowledge ($p < 0.01$, $p < 0.05$) was found. At 6 months, the impact on the median of correct answers on awareness and intentions to practice remained high ($p < 0.01$, $p < 0.05$), however this was not the case for attitudes.

Conclusions: The VLE improved awareness and intentions to practice regarding antibiotic stewardship in dentistry; however, more strategies that positively impact attitudes and consciousness on prophylactic use of antibiotics are urgently needed.

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P06

The commitment of dentists to prescribe antibiotics in modern conditions

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Aim or Purpose: The aim of this research was to study different patterns of antibacterial drugs prescribing in dentistry practice in Central Asian region.

Materials and Methods: The online survey of 108 dentists was conducted. The online questionnaire included 18 questions.

Results: Almost half of respondents (42,1%) frequently prescribed antibiotics. The most preferred antibiotics were from the group of penicillin (46.6% of cases). The following groups of antibiotics also were prescribed by dentists: fluoroquinolones (42.6%), nitroimidazoles (30.7%), cephalosporins 3 generations (18.8%) and lincosamides (16.8%). The duration of therapy in was 5-7 days in 62.3%, the rest of patients took antibiotics 3-5 days. The 67.7% of respondents prescribed monotherapy. The most common combination of antibiotic drugs were ciprofloxacin and metronidazole (26%). The indications for ambulatory antibiotic prescription were tooth extraction (48.1%) and apical periodontitis (38.7%). Most of the respondents (61.3%) answered that they are familiar with the principles of rational antibiotic therapy. The 84% of respondents prescribe an antibiotic with an average therapeutic dose. The replacement of antibiotic because of inefficiency was provided in 84.5%. In the absence of an allergic history 48.1% of dentists prescribe ciprofloxacin.

Conclusions: Thus, in the course of the study, it was found that the majority (64%) of antibiotic appointment were irrational in outpatient dental practice. The most common observation was prescribing antibiotics and their combinations without direct indications. This trend is a cause for concern and requires additional measures aimed at increasing

awareness of dentists about antibiotic treatment as well as standardization of prescription.

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P07

Influence of lip posture and malocclusion type on incisor trauma

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Aim or Purpose: The aim of our study was to establish the relationship between the severity of the maxillary incisors' trauma, the type of malocclusion and the lip posture.

Materials and Methods: This retrospective descriptive survey was conducted over a period of 3 months on 54 complete orthodontic files, at the dento-facial orthopedic department of the Dental Care Center of Casablanca (CCTD). The aesthetic analysis of RICKETTS was performed on pre-treatment lateral cephalograms. The data were collected through a questionnaire containing socio-demographic variables, clinical variables related to the trauma, type of dental malocclusion and lip posture. The Chi2 test was used to evaluate the different variables, the difference was found to be significant when $p \leq 0.05$.

Results: According to our study, patients between 13 and 18 years of age appear to have an increased risk of trauma. Class II division 1 was the most frequent in the traumatized population (56%) and overjet greater than 3 mm was the most common (48%) with a highly significant difference. Lip incompetence was most frequent in the traumatized population (68%) and the reduced length of the upper lips was frequent (50%) with a significant difference.

Conclusions: Dental trauma, especially in the anterior sector, is frequent in adolescent patients. Increased overjet and inadequate lip posture are two major risk factors for incisor trauma. Early orthodontic treatment might prevent dental trauma in these patients.

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P08

Shock absorption of 3D-printed ABS and fabric for sports faceguard

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Aim or Purpose: Sports faceguards (FG) to protect the maxillo-facial area get sweaty due to bad air permeability. To solve this problem, a combination of 3D-printed perforated acrylonitrile butadiene styrene (ABS) and knitted fabric with honeycomb structure (AKE) is considered as one option but it was unclear whether the combination have enough shock

absorption ability or not. The aim of this study was to test the shock absorption ability of the various combination of 3D-printed materials compared with conventional FG.

Materials and Methods: 3D-printed ABS sheets (100 mm square, 3 mm thick) were prepared with 5 different perforated patterns; ABS0 without hole, ABS10S with 2.52 mm round holes/10 % open area, ABS10 with 3.60 mm RHs/10 % OA, ABS20S with 2.56 mm RHs/20 % OA and ABS20 with 3.57 mm RHs/20 % OA. The hole arrangement was unified in the 45-degree staggered formation. The impact test was performed on each specimen with AKE (n=5 for each). The combination of polycaprolactone sheet without hole and polychloroprene rubber cushioning material was used as a control. The maximum loads, maximum stress and stress impressed area were analyzed using 2-way ANOVA with Dunnett's Test or Tukey HSD test ($p < 0.05$).

Results: On the maximum loads, maximum stress and stress impressed area, there was statistical interaction between ABS and AKE. The combination of ABS10S and AKE showed good enough shock absorption properties compatible to control.

Conclusion: The FG made with 10% perforated ABS and honeycomb knitted fabric may establish good air permeability and enough shock-absorbing properties.

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Topic 2. Preventive Dentistry

Sub-topic 2.1 Caries prevention

P09

Fractional urinary fluoride excretion in 1.5-3-year-old children

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Aim or Purpose: Currently, due to the lack of data a unified fractional urinary F excretion (FUFE) of 45% is used for all children under 7 yo to assess F intake based on urinary fluoride excretion; the study aimed to investigate FUFE in young children under conditions of varying total daily F intake (TDFI).

Materials and Methods: The study recruited 15 children residing in an institution aged 1.5-3.0 years. The material was collected during six two-week periods with different TDFIs: regular and supplemented with table salt with [F] = 150, 200, 250, 300 or 350 mg/kg (in compliance with local regulations). TDFI was assessed through the calculation method of ingested water, food, F-salt and F-toothpaste; the data was obtained through observation. Daily urinary F excretion (DUFE) was assessed through F analysis of 24-hour urine samples using a F-ion-selective electrode. The data were classified into three groups according to children's TDFI level: 1) 0.050-0.149 mgF/kg; 2) 0.150-0.223 mgF/kg; 3) 0.224-0.300 mgF/kg. FUFE was calculated as the ratio between DUFE and TDFI. For statistical analysis, Wilcoxon's t-test was used.

Results: In group 1, children had $DUFE \pm SD = 312 \pm 187 \mu gF$, in group 2 – $512 \pm 162 \mu gF$, in group 3 – $501 \pm 185 \mu gF$. FUFE was 0.23 ± 0.03 ; 0.21 ± 0.07 and 0.16 ± 0.06 , respectively ($p_{12} < 0.01$; $p_{13} < 0.01$; $p_{23} > 0.05$).

Conclusions: In 1.5-3-year-old children FUFE approaches 23% with a TDFI close to optimal and decreases with a higher TDFI. This is important to consider when calculating TDFI based on FUFE to avoid underestimating the risk of iatrogenic fluorosis.

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Sub-topic 2.4 Interceptive Orthodontics

P10

Interception of Class III malocclusion with facemask: cases' report

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Introduction: A skeletal Class III malocclusion is one of the most difficult anomalies to treat. Class III malocclusion with retruded maxilla can be orthopedically corrected with facemask in deciduous or mixed dentition in mild to moderate cases. The treatment should be carried out as early as possible before the malocclusion becomes severe.

Cases' report: These are two case reports of successful treatment of developing skeletal class III malocclusion, on a 7-year-old female patient in early mixed dentition and on a 9-year-old female patient in mixed dentition. Both present a skeletal Class III due to a deficient maxilla. The treatment plan included protraction of the maxilla by a reverse pull Delaire type facemask. The post treatment results showed significant improvement in Class III skeletal relationship and the facial profile, with the correction of the overjet.

Discussion: The purpose of early orthodontic treatment of Class III is to intercept the developing malocclusion and redirect it to physiological development. Cases that show skeletal maxillary retrognathism are cases opt for treatment with facemask. The latter acts by promoting maxillary growth while restricting mandibular growth. Thus, it improves the skeletal relationships, minimizes excessive dental compensation and improves occlusal function. It also provides more pleasing facial aesthetics and may eliminate the necessity for orthognathic surgery treatment in some cases.

Conclusion: Early Class III treatment can be done successfully when proper diagnosis and proper treatment plan are carried out carefully.

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Topic 3. Dental Treatment & Restorative Dentistry

Sub-topic 3.3 Endodontics

P11

A clinical predicament- Extraoral cutaneous sinus tract of dental origin

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Introduction: Extra oral cutaneous sinus tracts are generally misdiagnosed because of absence of dental

symptoms. In this case report we have treated a 12-year-old patient, initially misdiagnosed and treated as a skin lesion by the physician. Once the accurate diagnosis of dental origin was made, definitive treatment through conventional root canal therapy reduced the incidence of complications.

Case Description: He had a painless erythematous nodule present for the past 3 months extra orally. It was soft on palpation and elicited a purulent discharge. Intra oral examination revealed carious lesion in mesio-occlusal aspect of left mandibular first molar. Radiographic examination revealed pulp involvement and periapical radiolucency. He was diagnosed with a non-vital mandibular molar with chronic apical periodontitis and a draining extra oral sinus. Endodontic intervention was performed with intracanal medicament placed for two weeks. During final visit, root canals were obturated. There was resolution of sinus tract with minimal scar after 7 months. 15 months follow up showed scar completely resolved extra orally.

Discussion: Several case reports reveal that if appropriate diagnosis could not be made, incorrect treatment causes cutaneous sinus tract to reoccur. This scientific paper aims to present a dental literature review of cutaneous sinus tracts having dental origin and to report a case treated successfully by non-surgical conservative endodontic therapy.

Conclusion/Clinical Significance: Extra oral cutaneous sinus tracts are rare entity, hard to diagnose unless the treating clinician considers the possibility of its dental origin. Proper management curbs the disease progression and protects patient from emotional upheaval.

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P12

Double visualization of root canal treatment with CBCT and microscope

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Introduction: In root canal retreatment, the outcome may not be always favorable in the standard procedure. Identification of the cause and direct approach to it may be a key point to success.

Case Description: A 58-year-old male patient visited Okaguchi dental clinic in Tokyo, Japan. His chief complaint was discomfort on the mandibular right second premolar. He had a slight percussion pain and sinus tract in this tooth. The dental X-ray showed a periapical lesion around the root canal-treated tooth. From CBCT images a radiopaque material was observed in periapical lesion. Gutta-percha was removed with ultrasonic files (Mani, Japan) and micro excavator (Seto, Japan) using microscope (Karl Zeiss, Germany). The radiopaque material in periapical lesion was also removed with

micro excavator and it was gutta-percha. Root canal was filled with MTA (ProRoot MTA, USA). After treatment, all of his symptoms disappeared. At the 3-year follow-up, periapical lesion was completely healed.

Discussion: Clinicians usually treat blindly with hand or rotary files and 2-Dimensional X-ray. However, CBCT reveals more detailed information on the morphology and problems of the root canals.

In this case, it was presumed that gutta percha outside the apical foramen also became an infection source. To perform all procedures visually, microscope, ultrasonic files and micro excavator were used. For the success of retreatment, it is important to identify the problem in each case and direct approach to it.

Conclusion/Clinical Significance: Double visualization of endodontic treatment using CBCT and microscope is an ideal technique for root canal retreatment.

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P13

Regulation of metallothionein gene expression in dental pulp cells

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Aim or Purpose: Metallothionein (MT) is a cysteine-rich metal-binding protein. Zinc (Zn) is one of the inducers for expression of MT in many organs. It is widely believed that MT functions in the detoxification of heavy metals such as cadmium (Cd). In addition, it has been suggested MT plays an antioxidative role in the inflammation since MT has many sulfhydryl groups. In this study, we investigated the pharmacological significance of MT induced by Interleukin-6 (IL-6), one of the inflammatory cytokines in dental pulp cells.

Materials and Methods: IL-6 was added to dental pulp cells, which were cultured by the usual method, and the changes in gene expression of MT were analyzed 1, 6, 24 hours after IL-6 or Zn treatment by using real-time RT-PCR. In addition, Cd was added to the culture medium after Zn treatment, and cytotoxicity was observed using LDH assay, and cell viability assay. The means of each treatment were compared using Student's t-test.

Results: Cd toxicity has been reduced by MT induction by Zn pretreatment. The gene expression of MT increased within 6 hours after Zn treatment. The IL-6 treatment increased MT gene expression after 6 hours. It showed that there is a difference in the reactivity of MT gene expression by the type of stimulation to pulp cells.

Conclusions: Since IL-6 is known to be involved in the onset and progress of pulpitis, the MT of dental pulp could work as a multifunctional protein induced during inflammation as well as a biological defense reaction to heavy metals.

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Sub-topic 3.5 Materials

P14

Biocompatibility of copper-based shape memory alloy

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Aim or Purpose: To represent biocompatibility of CuAlNi shape memory alloy manufactured by continuous casting.

Materials and Methods: Test samples were cut by electro erosion into discs shape. After polishing and cleaning, samples were UV sterilized for 1h. For the indirect test, discs were incubated in DMEM for 24h at 37°C in humidified 5% CO₂ atmosphere (0.2 g/ml), and supernatant was collected the next day. Human gingival cells (HGCs) were isolated by out-growth method from gingival tissues of healthy donors. HGCs were seeded in 96 well plates, and the next day undiluted material extract was added in corresponding wells. For the assessment of mitochondrial activity of HGCs after 24 and 168h from exposure to material supernatant, medium was discarded, and medium containing 3-(4,5-dimethylthiazol-2-yl)-2,5 diphenyltetrazolium bromide was added to each well and incubated. After 4h supernatant was discarded, and dimethyl sulfoxide was added to each well and optical density was measured. Cells cultured in growth medium alone were used as control.

Results: After 24h mitochondrial activity was increased in test group (HGCs exposed to material supernatant) in comparison to control group (untreated HGCs). After 168h of exposure to extracts mitochondrial activity was still higher in test group in comparison to control. T-test of paired samples showed that there was not statistically significant decrease in mitochondrial activity during time (p=0.642).

Conclusions: Although Cu-based alloys are controversial in terms of their biocompatibility, our study justified that biocompatibility depends on the manufacturing process and surface modification but not directly from the content of Cu.

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Sub-topic 3.7 Prosthodontics

P15

Deep margin elevation for indirect bonded restorations: A case report

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Introduction: Large posterior defects located beneath the gingival tissues and probably invading the biological width, complicate the use of indirect bonded restorations during rubber dam isolation, impression taking and adhesive procedures.

A minimally invasive technique allows to relocate subgingival margin to supragingival level using a resin composite material. This procedure is known as deep margin elevation.

Case Description: A 30-year-old female patient, consulted with a restoration loss on molar. The patient was in a good general health. Clinical examination revealed a large sized cavity, associated with cuspal involvement and recurrent carious lesion, extending below the cemento-enamel junction. The treatment plan included a deep margin elevation, followed by an indirect CAD/CAM Lithium disilicate restoration.

Discussion: The deep margin elevation procedure decision was based on the presence of deep class II cavity with proximal cervical margin extending below the cemento-enamel junction, the non-invasion of the connective compartment of the biologic width (caries with a margin in the junctional epithelium) and the ability to get a proper isolation using rubber dam and curved matrix. In this case, a two-step etch-and-rinse adhesive system and a combination of restorative and flowable composites were used. The subgingival composite obturation was well tolerated by surrounding tissues.

Conclusion/Clinical Significance: Deep margin elevation is a relatively recent technique which benefits seem recognized. The durability of indirect restorations depends on the respect of a correct protocol and the use of appropriate materials.

In this case, a two-step etch-and-rinse adhesive system and a combination of a filled hybrid and flowable composites were used.

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Topic 4. Oral Surgery, Medicine and Cancer

Sub-topic 4.1 Implantology

P16

Soft tissue expander for severely vertical atrophied alveolar ridges

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Introduction: Voluminous horizontal or vertical bone grafting can make primary tension-free wound closure difficult. To achieve tension-free wound closure at the grafted site and thus avoid dehiscence and exposure or total loss of the bone graft, extensive soft tissue mobilization is required. The objective of this study was to evaluate clinical significance and efficacy of bone augmentation and soft tissue enlargement after application of novel tissue expander and bone grafting in patients with severe vertical alveolar bone atrophy, requiring implant placement.

Case Description: We review three cases of soft tissue augmentation using a self-inflating tissue expander for bone graft and dental implantation. In all cases, self-inflating expander was inserted beneath the flap as a first-stage procedure and fixated into bone in both sides of the silicone using micro screws. Two to 4 weeks later, in second-stage procedures, the tissue expander was removed and guided bone regeneration

technique (GBR) was carried out with titanium mesh and collagen membrane. They showed good healing without specific complications such as wound dehiscence. After periodic follow-up at 6 months, all patients showed favorable outcomes with sufficient gain of vertical height, hence, an increase in total volume, as seen in the imaging diagnostics.

Conclusions: Within the limits of this observational clinical study, self-inflating tissue expander may help to generate additional soft tissue, and they might contribute to the overall improvement of the bone augmentation process by reducing the risk of complications related to the lack of soft tissue.

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