An important role of relationship between empathy and stress in students – dentists.

**Aim or purpose:** To establish the level of empathy and stress and check for significant correlations between this process.

**Materials and methods:** In the course of the study, the following methods were used: “The questionnaire of emotional intelligence” D.V. Lyusin, the psychological stress scale PSM-25 (adaptation of N.E. Vodopyanova). Mathematical and statistical data processing (correlation analysis of C. Spearman) based on the SPSS program was carried out. The study involved 83 students - a 2-year medical student.

**Results:** At the level of reliability, a direct significant correlation was found: “Stress” and the scale “management of other people’s emotions” (r = 0.291 p = 0.01). Communication shows that students’ desire to control other people’s emotions is interconnected with the stress indicator. This indicates that students still lack experience and competence in the eyes of others, and attempts to guide the emotions of others lead to uncertainty and anxiety, the consequence of this is stress.

**Conclusions:** These studies show that it is important for students-dentists to manage the emotions of another person. But at the beginning of the training, students cannot read the patient’s emotions because professional skills are acquired through the use of simulators. To some extent, inaccessibility of interaction with a living person similarly contributes to the occurrence of stress and high emotional stress when imitating a medical situation.

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**FC289**

**The Features of Attention Concentration in Dental-Students in Stressful Situations**

Natalia Karabushchenko, Svetlana Razumova, Anastasia Vetrova, Aleksandr Ivashchenko
Peoples Friendship University of Russia (RUDN University), Moscow, Russia

An important role of the process of attention and stress for students – dentists.

**Aim or purpose:** To set the level of attention and stress and check for significant correlations between this process.

**Materials and methods:** In the course of the study, the following methods were used: G. Munsterberg's test, PSM-25 psychological stress scale (in the adaptation of N.E. Vodopyanova). For determining the correlation between attention and stress was taken rank method of Ch. Spearman in the SPSS. The study involved 83 students - a 2-year medical student.

**Results:** Applying rank correlations, an inverse significant correlation was established at the level of statistical significance: between “attention level” and “stress” (r = -0.016 p = 0.05). This means that as the level of stress increases, the concentration of attention decreases and, conversely, if the concentration of attention increases - the indicator of the level of stress goes to a decline.

**Conclusions:** These studies show that the development of attention and stress resistance for dental students is of great importance, since Students do not yet have the resources to maintain attention and skills of stress resistance.

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**FC290**

**Features of the Manifestation of Empathy in Dental Students in Situations of Increased Effort Stress and Stress**

Natalia Karabushchenko, Svetlana Razumova, Anastasia Vetrova, Nina Sungurova
Peoples Friendship University of Russia (RUDN University), Moscow, Russia

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**FC291**

**A Stress Inducing Factors among Undergraduate Dental Students in Saudi Arabia**

Faisal Alhedyan1, Ibrahim Alqarni1, Faisal Hayyn2, Hussam Alqhtani1, Ahmed Alkhali2, Shahid Mahmood1
1Prince Sattam Bin AbdulAziz University, Alkhari, Saudi Arabia, 2Dar Al Uloom University, Riyadh, Saudi Arabia

**Aim or purpose:** The Aim of this study was to assess the perceived stress and its severity, sources and determinants among a group of the dental students belonging to different universities in Saudi Arabia.

**Materials and methods:** In this cross-sectional study, the perceived stress and its severity, sources and demographic variables were investigated in 677 dental students (464 males, 213 females) of 16 Saudi Universities, who agreed to participate. The students (1st year to 5th year) were contacted to fill the forms online from
January to February 2016. A self-administered valid and reliable questionnaire including demographic details and 27 questions based on Dental Environment Stress proforma were placed online. The questions were organized into four categories: personal and administrative, theoretical, preclinical and clinical. The level of stress was calibrated against range from 1–4.

**Results**: Saudi dental students gave high levels of perceived stress. The clinical practice issues inflicted the maximum level of stress on the students. Some significant relationships between the investigated variables and the level of the perceived stress were found.

**Conclusions**: Specific results of this research show that most of the dental students had perceived stress. Second-year students showed lower perceived problems compared to other students.

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**FC292**

**Dentine Hypersensitivity Treatment Priorly Professional Oral Hygiene**

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RUDN - Peoples’ Friendship University of Russia, Moscow, Russia

**Aim or purpose**: To evaluate efficacy of dentine hypersensitivity professional treatment and minimize pain during professional oral hygiene.

**Materials and methods**: 376 subjects entered the study. 124 patients presenting moderate and high hypersensitivity level (determined by questionnaires and after clinical examination) were randomly allocated into 5 groups, all of them suit the inclusion criteria, underwent single in-office application of the professional treating agent. Group A - 8.0% arginine and 1450 ppm fluoride as MFP in a calcium carbonate base, group B - prophylaxis non-fluoride polishing toothpaste, C - casein phosphopeptide-amorphous calcium phosphate, D - resin containing medicine, E - Fluoride varnish 22,600 ppm. Reaction to airblast (Schiff Cold Air Sensitivity Scale) and tactile stimuli (Wong Backer Faces Pain Rating scale) were registered priorly to application, immediately after, after professional hygiene and 4 weeks later. “Anova” analysis of variance was used for statistics.

**Results**: Baseline sensitivity in groups was equal (p > 0.05). Tactile hypersensitivity changes comparing initial situation and results immediately after application were significant (p < 0.001) for groups A (5.92 ± 1.58 and 2.56 ± 1.39), D (5.96 ± 1.31 and 2.76 ± 1.56), E (5.76 ± 1.09 and 2.48 ± 1.76); Schiff’s test results as well: A (2.36 ± 0.49 and 1.2 ± 0.82), D (2.48 ± 0.51 and 1.2 ± 0.82), E (2.4 ± 0.5 and 1.44 ± 0.77). Sensitivity after professional hygiene was left reduced (p < 0.001): group A (3.28 ± 1.02 and 1.4 ± 0.76), D (3.84 ± 1.03 and 1.68 ± 0.69), E (3.8 ± 1.22 and 1.76 ± 0.72) for tactile and air hypersensitivity.

**Conclusions**: Hypersensitivity treatment before professional hygiene can relieve pain successfully.

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**Free Communication Session 74 | 01.09.2017, 09:00 - 10:00 | Room A9.10**

**Theme: Dental erosion and non-carious lesions**

**FC293**

**Prevalence of Tooth Wear and Associated Factors in Arab Populations**

Manal A Awad1, Dina Elkassas2, Latifya Alharthi3, Khalifa S Al-Khalifa5, Rola Alhabashneh5, Sheela B Abraham1, David Bartlett6

1University of Sharjah, Sharjah, United Arab Emirates, 2Mistr International University, Cairo, Egypt, 3Military Dental Center, Muscat, Oman, 4University of Dammam, Dammam, Saudi Arabia, 5Jordan University of Science and Technology, Irbid, Jordan, 6King’s College, London, United Kingdom

**Aim or purpose**: This study was conducted to assess the prevalence of erosive tooth wear on buccal/facial, lingual/palatal and occlusal surfaces and identify associated risk factors in a sample of 18–35-year-old adults in five Arab countries.

**Materials and methods**: In this cross-sectional study, calibrated examiners measured tooth wear using the Basic Wear Examination (BEWE) to score all teeth in 1586 patients who attended private and public dental clinics. A previously validated 14-item questionnaire was used to assess the impact of several risk factors on tooth wear. Each individual was characterized by the highest BEWE score recorded on any assessed surface.

**Results**: BEWE score of 2 or 3 was present in 47.8% of the study participants. Significant differences were observed between countries. Overall, a significantly higher percentage of males (57.3%) had BEWE score 2/3 compared to females (42.7%) (Chi-square test; p < 0.05). Heartburn/acid reflux; drinking energy drinks/iso-tonic drinks and regular intake of fresh fruits were associated with increased risk of erosive tooth wear (p < 0.001). Frequency of eating per day and snoring were not associated with tooth erosion in this study.

**Conclusions**: This study indicates that erosive tooth wear is a prevalent oral disease in 18–35 years old Arab populations. The results of this study also underscore the importance of information regarding risk factors and the implementation of preventive strategies.

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**FC294**

**Diagnosis and Management of NCCLs in Primary Dental Care**

Bilal El-Dhuwaib

University of Leeds, Leeds, United Kingdom

**Aim or purpose**: This is a quantitative and qualitative survey-based study, to investigate the diagnosis and the management of non-caries cervical lesions within primary dental care. To establish the contributing factors associated with NCCLs, to identify the most common approach used by dentists on how to manage NCCLs and to identify what restorative materials dentists used and why.

**Materials and methods**: A randomised sample size of 300 dentists based within South Yorkshire and Bassetlaw NHS, UK were contacted post. The response rate was (53.3%). A questionnaire
was sent to participants. Five-level Likert scale, free-text boxes and closed-ended and multiple-choice questions were used to collect data from respondents.

Results: (87%) believed that abrasion is the main cause of NCCLs while (31%) believed that occlusal factors (abfraction) is related to NCCLs. (44%) of dentists will monitor NCCLs rather than restoring them and composite is the material of choice to restore (57%), followed by (30%) for GI-based restorations.

Conclusions: There is a strong agreement between dentists that toothbrushing abrasion is the main causes of NCCLs. While the majority of NCCLs are managed conservatively, composite is the most frequent restorative material used by dentists to restore NCCLs followed by GIC. Dentists are more likely to restore NCCLs to improve sensitivity or to preserve remaining tooth structure, than to improve patients’ aesthetics. The size of the cavity, the anatomical position of the tooth, the nature of the cause, the aesthetic consideration and the materials’ technicality, have an effect on deciding the choice of restorative material.

FC295
Sugar-Free Chewing Gums Enriched with Minerals and Enamel Erosion
Wafa Gargouri1, Rym Kammoun2, Nabil Kechaou1, Sonia Ghoulemazgar2
1Groupe de Recherche en Génie des Procédés Agroalimentaires, Laboratoire de Recherche en Mécanique des Fluides Appliquée Génie des Procédés-Environnement, Ecole Nationale d’Ingénieurs de Sfax, Université de Sfax, Sfax, Tunisia, 2Laboratory of Dental-Facial, Clinical and Biological Approach (ABCDF), Faculty of Dental Medicine, University of Monastir, Monastir, Tunisia

Aim or purpose: The aim of this in vitro study was to investigate the effect of sugar-free chewing gums enriched with hydroxyapatites, CPP-ACP and xylitol against carbonated beverage erosion.

Materials and methods: Four types of sugar-free chewing gums were prepared: P1: CPP-ACP (3%) + isomalt; P2: Hydroxyapatite (2.5 %) + isomalt; P3: CPP-ACP (3%) + xylitol; P4: Hydroxyapatite (2.5%) + xylitol. Forty-two human permanent, non-fluoride teeth, free of caries and hypocalcification, were collected. Roots were cut and the half of the enamel surfaces were covered with a protective varnish. The specimens were immersed in Coca Cola solution during 4 h, five times a day. They underwent thirty six thermocycles as follow: 20 min with artificial saliva and chewing gums at 37°C followed by 40 min with artificial saliva at 37°C. Assessment of the effects of gums was evaluated using scanning electron microscopy (SEM) and microscopic measurements on polarized light microscopy.

Results: The mean of the enamel thickness difference between varnished and unvarnished surfaces was significantly higher for the specimens treated with P2 compared to all the other groups and significantly lower for the groups treated with CPP-ACP compared to the groups treated with hydroxyapatite. SEM showed a non-homogeneous deposits structure recovering the enamel surfaces treated with xylitol enriched chewing gums.

Conclusions: The sugar-free chewing gums enriched with xylitol and CPP-ACP showed the best remineralizing effect on the eroded enamel. However, adding hydroxyapatite to isomalt chewing-gums didn’t promote tooth remineralization.

Free Communication Session 75 | 01.09.2017, 09:00 - 10:00 | Room A9.11
Theme: Endodontics
FC297
Evaluation of Periapical Healing in Response to Two Root Canal Sealers
Mohamed Zaazou, Dalia Zaki, Maram Khallaf, Tamer Hamdy
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Aim or purpose: To evaluate the healing of periapical infected lesions in dogs’ teeth when using calcium hydroxide or ceramic based sealers for obturation.

Materials and methods: All animal procedures were performed according to the protocols reviewed and approved by the Ethical Committee. Sixty roots in 6 animals were divided into 3 groups (n=20) according to post evaluation period (1 month, 2 months and 3 months). Each group was further subdivided into 2 experimental groups (n=8) according to sealer used for obturation; Group 1: Calcium Hydroxide based sealer and Group 2: Bioceramic based sealer, a positive control group where no treatment was applied (n=2) and a negative control group with no periapical lesion (n=2). Apical periodontitis was induced in the 2 experimental and the positive control groups. The animals were sacrificed at the end of each evaluation period and the maxillae were subjected to histological processing. The sections were stained with hematoxylin and eosin and examined under light microscopy. A description of the apical and periapical features was done and scores were attributed to the following histopathological parameters: newly formed mineralized apical tissue, periapical inflammatory infiltrate. Kruskal-Wallis and Mann–Whitney U tests were used for statistical analysis (p = 0.05).

Results: No statistically significant difference was found between the 2 experimental groups at the 3 evaluation periods, but Group 2 showed more mineralized tissue formation at the 3 months evaluation period.

Conclusions: Bioceramic based sealers have more favorable though insignificant effect on periapical healing than calcium hydroxide based sealers.

FC298
Effectiveness of Hydrodynamic Disinfection in Cleaning the Lateral Canals
Daniela Sultova
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Introduction: The long-term success of endodontic treatment is closely linked to adequate cleansing of the endodontic space after root canal shaping. This goal is pursued by chemo-mechanical debridement, where the mechanical systems are associated with the irrigating solutions. Direct correlation between persistent
apical periodontitis and a biofilm remaining in a lateral canal or other ramifications was suggested. **Case Description:** A 31-year-old man with swelling, tooth mobility, normal bone level around the adjacent tooth, came in the office. Endodontic treatment (files-hand and rotary system Revo-S; Ca (OH)2) was placed for 7 days; Permanent filling-hydraulic condensation with bioceramic sealer; Irrigation in both appointments-heated 2.5% NaClO, citric acid, activation with Endoactivator and VibeRinge) was performed and the patient was referred back to her dentist.

At 6 years follow up the case showed periradicular health. **Discussion:** Sonic activation has shown to be an effective method to disinfect the root canals. Most actual systems have smooth plastic tips of different sizes activated at sonic frequency by a hand piece. This system seems to be able to effectively clean the main canal, to remove the smear layer and to promote the filling of a greater number of lateral canals.

**Conclusions/Clinical signiﬁcance:** The primary goal of all treatment efforts must be to rid the canals from the infection. Irrigant activation/agitation techniques that create a flow in the lateral direction could improve the flow into lateral canals and tubules. Correct diagnosis and adequate treatment resulting in greater chances of obtaining the success in endodontic treatment.

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**FC299**

**Influence of XP-endo Following Retreatment of MTA- and Bioceramic-based Obturated Root Canals**

Eleftherios Terry Farmakis, Taxiarchis Kontogiannis, Nikolaos Kerezoudis

*National and Kapodistrian University of Athens, School of Dentistry, Athens, Greece*

**Aim or purpose:** To assess in vitro the retreatability of root canals obturated with a single cone technique and either an MTA-based or a bioceramic-based sealer and the influence of XP-endo on the cleanness of the retreated canals.

**Materials and methods:** A total of 123 (mean age 47.7 ± 12.3) patients were included in the study. 123 teeth (53 molars, 48 bicuspids, 22 anterior teeth) were prepared with Reciproc® single-files and rinsed with sodium hypochloride (3%). All canals were filled vertically with Reciproc gutta-percha cones (VDW GmbH) and AH Plus sealer (Dentsply Maillefer). 3, 6, 12, 18 and 36 months postoperatively, teeth were examined clinically and radiographically by an independent examiner. Healing rate (healing was considered as no clinical symptom or signs and periapical index < 3) was evaluated by obtaining Kaplan-Meier curves. In order to assess the joint influence of status at root canal treatment, we fitted a proportional hazard model (Cox regression model).

**Results:** 37.39% of treated teeth showed a radiographic lucency prior to endodontic treatment and 22.7% had positive vitality. Postoperative evaluation after 36 months showed a 99.18% success and apical lucency was reduced to 6.5% (p = 0.01). No complications during preparation such as instrument fracture were reported.

**Conclusions:** Only 1 tooth was extracted after 25 months due to a vertical fracture. The results of this study indicate that single-file preparation of root canals in a single visit treatment is a successful and secure endodontic treatment protocol.
This paper reports a severe case of Xeroderma Pigmentosum in a two-and-a-half-year-old patient presenting with dermatological, orofacial and ophthalmic manifestation.

**Case description:** A four-and-a-half-year-old child presented with severe scaling of the face and limbs, loss of hair, reduced vision on the right eye and severe oral pain. She had difficulty in speaking and feeding. Small papules had begun developing on the scalp four months earlier. Once infected, they developed into larger papules with purulent discharge. An intraoral examination revealed two nodular swellings on the dorsum of the tongue. Oral hygiene was poor. Her twin sister had succumbed to the condition at the age of two. There was no report of the condition in the extended family.

**Discussion:** The cure for Xeroderma Pigmentosum is unknown. Morbidity and mortality rates are markedly high. The use of UV visor, sunscreen and protective clothing, minimal exposure to sunlight and tumour excision in the case of oral manifestation is key in improvement of the quality of life of patients. Genetic counselling is also important in the management of the patient especially in a family that has an affected child.

**Conclusion:** Despite early diagnosis and management of Xeroderma pigmentosum, increased morbidity and mortality rates remains a major challenge in our low resource setup.

**FC302**

**Nosocomial Oral Myiasis in a Heart Failure Unit Patient: A Case Report**

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**Introduction:** Myiasis is a disease caused by infestation of living mammal’s tissue by larvae of flies. It is an uncommon disease in humans and occurs more frequently in rural than urban areas. The incidence of oral myiasis is less than the one of other anatomical sites as the oral tissues are not permanently exposed to the environment. Introduction will include a reference to the definition, etiopathogenesis and classification of the disease.

**Case description:** A case of Nosocomial Oral Myiasis in an 80-year-old female is reported. The patient was hospitalized in the Heart Failure Unit of a General Hospital in Athens. She had a tracheal and nasogastric intubation, and had poor oral hygiene. Myiasis was caused by larvae of blowfly group (family Calliphoridae).

**Discussion:** The case is discussed in relation to its clinical presentation, management, and prognosis. Myiasis-related predisposing factors with respect to the patients and their hospitals are discussed.

**Conclusions/Clinical significance:** Prevention of myiasis is important. Necessary protocols that must be followed especially in managing high risk patients are discussed. Education of medical and paramedical teams about preventive myiasis measures should be performed.

**FC303**

**Therapeutic Use of Melatonin and 5-Methoxytryptophol Induced TMJ Rheumatoid Arthritis**

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**Aim or purpose:** This study was evaluated the effects of Melatonin (MEL) and 5-Methoxytryptophol (5-MTX) on Cyclooxygenase-1 (COX-1), Cyclooxygenase-2 (COX-2), Rapid Accelerated Fibrosarcoma-1 (Raf-1) and Signal Transducer and Activator of Transcription 3 (STAT3) which are involved in the pathogenesis of Temporomandibular Joint Rheumatoid Arthritis (TMJ RA).

**Materials and methods:** 200–250 g Wistar albino rats of both sexes were used. Arthritis model was created by intraarticularly (i.a.) injecting 2 mg Zymosan dissolved in 40 μl saline solution into the left TMJ of the rats while the sham group was created by only injecting 40 μl saline (i.a.). Intraperitoneal (i.p.) applications of MEL (15 min before zymosan) and 5-MTX (30 min before zymosan) were carried out for therapeutic. The animals were decapitated 6 h after the administrations. COX-1, COX-2, Raf-1 and STAT3 levels were examined with Real-Time-Polymerase Chain Reaction technique. The parameters were determined by one way analysis of variance (ANOVA) and the Tukey test was used for binary comparisons (p < 0.05). Articular structural damage was assessed histologically.

**Results:** Zymosan administration, increased the activity of COX-2, Raf-1 and STAT3 in TMJ tissues, administration of MEL and 5-MTX brought these values closer to the sham group. However, no significant difference observed in COX-1. In the histological evaluation, obvious articular degeneration and disc congestion in the arthritis group regressed with therapy.

**Conclusions:** In this study, COX-2, Raf-1 and STAT3, which play a role in the pathogenesis of TMJ RA, have been suppressed by the therapeutic effect of the dark hormone MEL and the day light hormone 5-MTX.

**FC304**

**The Efficacy of Turmeric in Inhibiting Oral Cancer Growth**

Indra Hadikrishna¹, Harmas Yazid Yusuf², Alwin Kasimi³, Bambang Pontjo Priosoeryanto¹, Mantra Nandini¹, Andri Hardianto¹, Endang Syamsudin¹, Tantry Maulina¹, Aulia Iaskanadaryah³, Nurul Ramadhan²

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**Aim or purpose:** Oral squamous cell carcinoma (OSCC), one of the most common types of oral cancer, has an initial phase that is called epithelial dysplasia. Whilst turmeric is known for its anti cancer potential simply by inhibiting the transcription of several proteins that are expressed during epithelial dysplasia stage, the aim of the current study was to determine the efficacy of turmeric
Materials and methods: The current study was an experimental study that was performed on forty Sprague Dawley rats that were divided into treatment group and control group. Dysplasia stage of OSCC was induced by using 7,2-dimethylbenz (a) anthracene for 4 weeks. After the diagnosis of dysplasia was confirmed from hematoxylin and eosin (HE) staining, the rats in the treatment group were given a dose of curcumin of 80 mg/kg/bw/day for 4 consecutive weeks, orally. The evaluation of NFκB and Cyclin D1 IHC staining was assessed by histoscore. All data were tested by using Wilcoxon-Mann Whitney test, and Kendall correlation coefficient of concordance.

Results: There were significant decreases in immunoexpression rate of NFκB ($p < 0.01$) and Cyclin D1 ($p < 0.01$) between the treatment group compared to the control group. A positive significant ($p < 0.05$) correlation between immunexpression rate of NFκB and Cyclin D1 with epithelial dysplasia rate of the oral cavity was also revealed.

Conclusions: It is concluded that an oral consumption of turmeric is effective in inhibiting oral cancer growth at epithelial dysplasia stage.

Free Communication Session 77 | 01.09.2017, 10:15 - 11:15 | Room A9.9

Theme: General Dentistry

FC305

Apoptotic Process in Experimental Tooth Movement with Light and Heavy Forces in Rats
Suheyla Kaya1, Muhsin Gifter2, Ali Cekici2, Vakur Olgaç2, A. Gulden İşık2
1Okan University, Istanbul, Turkey, 2Istanbul University, Istanbul, Turkey

Aim or purpose: Our aim is to investigate the time course of apoptotic process in rat model of orthodontic tooth movement (OTM) with light and heavy forces.

Materials and methods: Two groups of 56 male Wistar rats were used as experimental animals. Each group (10 cN light, 60 cN heavy force) had 4-time related sub groups (1, 7, 21, 42 days) to investigate all the phases of OTM. Appliances were placed on maxillary molars at randomly chosen side and activated to mesially. OTM measurements were calculated for experimental and control sides. Immunohistochemical (IHC) examinations were performed on the maxillary 2. molar’s mesiobuccal root and positive staining cells were counted both for resorption and apposition sides. Caspase 9 as initiator, caspase 3 as executioner caspases, Bax and Bcl-2L1 as regulation for apoptotic process were chosen as IHC examinations.

Results: No statistical significant difference was found at any period of time for OTM measurements. While apoptotic activity evaluated via Bax IHC technique for 60 cN group was more severe than 10 cN group, Bcl-2L1 was found more active for 10 cN groups than 60 cN in the initial phase.

Conclusions: Although there was no difference for rate of tooth movement with light and heavy forces, apoptotic process was more active at heavy forces especially in the initial phase. As a result of this, 10 cN force magnitude that could cause experimental tooth movement showed minimal adverse effects for supporting tissue.

FC306

Dental Age Estimation in Southern Turkish Children: Comparison of Demirjian and Willems’ Methods
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Aim or purpose: Age-related legal problems are especially common in underdeveloped parts of Turkey. Age determination is important in terms of both penalties and laws in the legal process. The aim of this study is to compare the validity of the Demirjian and Willems’ methods in southern Turkish children.

Materials and methods: In this retrospective study, digital panoramic radiographs of 745 healthy southern Turkish children (363 girls and 382 boys) aged between 4 and 15.99 years were examined by one investigator. According to Demirjian and Willems’ method, the mean difference between dental and chronological age was calculated for each age and sex group. The Wilcoxon test was used to compare all data. Statistical analysis was performed to test the validity of investigated methods by comparing the mean chronological and mean estimated age.

Results: The Demirjian’s method overestimated age with a mean accuracy of 0.832 in females and by 0.923 in males, while Willems’ method overestimated of 0.202 in females and by 0.434 in males.

Conclusions: In summary, the dental age estimation by Willems’ method is found to be more accurate than Demirjian’ method in contemporary Turkish children population.

FC307

Conscious Sedation in the Dental Office: What, Why and How
Jean-Frederic Andre
Andre & Milhe Dental Sedation Clinic, Geneva, Switzerland

Aim: Standards for conscious sedation techniques for the dental office have been developed for decades, and numerous publications have proven their need, efficacy and safety. Yet, patient management techniques still have trouble making their way inside the ambulatory office setting. Conscious sedation offers a wide spectre of possibilities from behavioral techniques, hypnosis to drug induced moderate sedation techniques provided by adequately trained professionals. This presentation describes two safe, accessible and efficient techniques: nitrous oxide inhalatory sedation, and single drug intravenous sedation.
**Materials and methods**: Conscious sedation has been defined as: A technique in which the use of a drug or drugs produces a state of depression of the central nervous system enabling treatment to be carried out, but during which verbal contact with the patient is maintained throughout the period of sedation. Consciousness is preserved, as well as protective reflexes. Nitrous oxide must be administered using a titrating machine in order to achieve optimal patient sedation. Benzodiazepines are also titrated intravenously, throughout the procedure. All patients are monitored, every procedure is documented.

**Results**: Titration is the key to safety and efficiency. Success is achieved when treatment has been completed according to plan, and patient satisfaction is confirmed.

**Conclusion**: Dental authorities must gradually acknowledge the necessity and justification of such techniques, and set the standards (training, equipment, experience) in under and post graduate dental education. Some countries are still reluctant in granting dentists this practice, always for wrong reasons.

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**FC308**

**Perception of Dentists about the Dental Market in Catalonia (Spain)**

Elias Casals Peiró, Primitivo Roig Jornet

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**Aim**: Evaluating the perception of dentists in Catalonia about the dental sector situation as well as performance and evolution of dental practices.

**Materials and methods**: A 29 multiple-choice closed-ended online questionnaire was emailed to registered addresses from the professional association database (n = 4610). Email invitations were sent twice (November and December 2016). Only owners of dental practices were entitled to answer. A descriptive plus an inferential analysis were performed.

**Results**: 158 males (45.3%) and 191 female dentists (54.7%) answered, with a mean age of 43.9 ± 11.5 years. Most were odontologists (83.1%). The average practice age was 17.2 ± 13.8 years. 19.5% of patients had a dental insurance. Average number of patients visited each day was 21.4 ± 31.9. There are 3.4 ± 3.2 dental chairs on average even though 50% of the practices have <3. Mean number of full-time dentists is 1.1 ± 1.0 and average number of part-time dentists is 3.2 ± 2.8. Average number of auxiliary staff is 3.2 ± 3.3. Average annual turnover did not exceed half a million euros.

**Conclusions**: Even though cancellation of appointments and team stress have increased for more than a third of practices the evolution of billing in the last two years point to a certain stabilization or at least a balance between the number of clinics that improve/worsen. Orthodontics and implantology services exhibit a greater impulse, against esthetics in a certain regression. The sharp increase in the number of dentists and unfair competition are the causes of greater impact on the sector.

**Free Communication Session 78 | 01.09.2017, 10:15 - 11:15 | Room A9.10**

**Theme: Caries**

**FC309**

**The Effect of Fluoride Application on Micro Hardness of Enamel Demineralization**

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**Aim or purpose**: Caries and erosion are examples of demineralized enamel. In order to reduce the demineralization effect, fluoride is often used. The aim of this study was to evaluate the effect of fluoride application on the micro hardness of enamel demineralization.

**Materials and methods**: This in vitro study used specimens of canine and premolar with no history of caries and fractures. The teeth were cut approximately at the Cemento-Enamel Junction (CEJ) and then planted on resin. Twenty-four samples were generated from the above procedures and were divided into two groups: the control group, and the experimental group. Teeth samples were then immersed in acidic solution with 5.0 pH for 6 h to induce demineralization followed by an immersion in artificial saliva with a 7.0 pH for 17 h to induce remineralization. The teeth in the experimental group were then received fluoride application for 4 min, before another immersion in artificial saliva for another 30 min. The remineralization and fluoride applications were then repeated for seven consecutive days for both groups. Remineralization and demineralization were assessed by evaluating enamel micro hardness tested by Vickers hardness test.

**Results**: The results of the current study showed that enamel micro hardness of the teeth in the experimental group was improved up to 80% whilst those in the control group showed an improvement of 48.7%.

**Conclusions**: From the current study, it was concluded that fluoride application improved enamel micro hardness of a demineralized tooth. Nevertheless, further study in this area is needed.

**FC310**

**The Efficacy of Curcuminoid in Treating Odontogenic Origin Orofacial Pain**

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**Aim or purpose**: Orofacial pain from odontogenic origin, including pain due to acute irreversible pulpitis, remains one of the most
complained dental problems. The aim of the current study was to compare the efficacy of Curcuminoid to Ibuprofen, as analgesic agent in treating acute irreversible pulpitis.

**Materials and methods:** Sixty-four patients (35 males; 29 females) who visited dental triage installation at Unpad Dental Hospital, Bandung, Indonesia, due to excruciating pain caused by acute irreversible pulpitis were recruited. Patients were randomly divided into two groups, the treatment group that received curcuminoid to treat the pain, and the control group, that received ibuprofen for pain control. At the time of visitation, all patients took either ibuprofen or curcuminoid right after tooth irrigation. All patients were then sent home with an instruction to take the curcuminoid or ibuprofen capsule every 8 h to treat the pain. Pain level evaluation was performed by using Numeric Rating Scale (NRS) and was performed exactly 2 h after the first medication, second medication, and third medication. All data were analyzed by using the Mann-Whitney test.

**Results:** The current study showed that the treatment groups showed a more significant (p < 0.01) pain level decrease compared to the control group. It was also revealed that female patients showed greater pain level decrease (p < 0.01) compared to male patients within both groups.

**Conclusions:** Despite of the promising preliminary result of the efficacy of curcuminoid as an analgesic agent for treating orofacial pain, further study that evaluates this particular matter is of important.

**Aim or purpose:** To found the possibility of caries arrest using ClinPro XT Varnish.

**Materials and methods:** The research was conducted on the extracted (due to physiological replacement) deciduous teeth having cavitory carious lesions at the level of mantle dentin. The teeth were brushed with paste without fluorine, washed and dried. Then there was done an application of ClinPro XT Varnish (“3M ESPE”) according to manufacturer’s instructions. Then the teeth were sawed in sagittal direction and analyzed on the X-ray energy dispersive spectrometer “INCA 350” (“Oxford Instruments”, Great Britain). The results were statistically processed.

**Results:** In all the samples material showed homogeneous structure and good adaptation to bottom and walls of cavities due to its low viscosity. The content of fluorine in ClinPro XT Varnish has been varying from 2.8 up to 22.7%; the median value has been equal to 12.3% (9.7; 16.7). The release of fluorine well-known agent for caries arrest inside the dentin has been detected in all the samples up to the 100 microns depth. We have also detected the highest concentration of fluorine in dentin contacting the fillings (2.0% (1.1–4.9)) and gradual decrease of fluorine content in pulp direction.

**Conclusions:** The obtained results found the opportunity of clinical usage of ClinPro XT Varnish for arrest of teeth caries.

**Aim or purpose:** To evaluate the antibacterial efficacy of two doses of vetiver and chamomile essential oils with chlorhexidine and calcium hydroxide against Enterococcus faecalis.

**Materials and methods:** 126 recently extracted single rooted human teeth were contaminated with *E. faecalis*. The teeth were randomly divided into 5 experimental (n = 21) and 1 control group (n = 21). Each subgroup was then exposed to different antimicrobials namely Calcium hydroxide (group 1), 2% Chlorhexidine (CHX) (group 2), Silver nanoparticles (SNP) (group 3), SNP with Ca(OH)2 (group 4), SNP with 2% CHX (group 5) and saline as control group (group 6). Cultures were made from each group after 24 h, 7 days and 14 days and colony forming units were counted. The Kruskal-Wallis test was used to compare the study parameters among the groups at 24 h, 7 days and 14 days.

**Results:** Significant difference was found in the antimicrobial efficacy of different intracanal medicaments against *E. faecalis* after 24 h, 7 days and 14 days. 2% CHX was found to be most effective medicament at 24 h, 7 days and 14 days against *E. faecalis*. Combination of SNP with 2% CHX and Ca(OH)2 and SNP alone ranked second in their antimicrobial efficacy against *E. faecalis* at 24 h, 7 days and 14 days respectively.

**Conclusions:** 2% CHX was more effective as intracanal medicament against *E. faecalis* biofilm in both short and long-term duration i.e. at 24 h, 7 days and 14 days.
Different Antimicrobial Agents Against Vivo Study

**Results:** There was a significant reduction of CFU (log 10) in vetiver oil high dose (3.33 ± 0.036) and chlorhexidine (3.34 ± 0.030), followed by calcium hydroxide (3.46 ± 0.015) and chamomile oil high dose (3.48 ± 0.20) on day one. On 7th day, significant reduction was seen in chlorhexidine (2.74 ± 0.212), chamomile oil (2.81 ± 0.035, low dose) and (2.97 ± 0.119, high dose) followed by calcium hydroxide (3.25 ± 0.028). However, on 14th day it was 2.32 ± 0.088 for chlorhexidine, 2.91 ± 0.029 for chamomile oil high dose, 3.10 ± 0.010 for vetiver oil high dose and 3.10 ± 0.069 for calcium hydroxide.

**Conclusions:** Study showed a good effectiveness of chamomile oils in root canal infection of *E. faecalis* at different time intervals compared to chlorhexidine and calcium hydroxide, vetiver oil did not sustain their activity for long time.

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**FC315**
Antimicrobial Efficacy of Silver Nanoparticles With and Without Different Antimicrobial Agents Against *Enterococcus faecalis*: Ex Vivo Study

Anil Chandra, Rakesh Yadav, Vijay Shakya, Simith Yadav
K.G’s Medical University, Chowk, Lucknow India, India

**Aim or purpose:** The aim of the present Ex-Vivo study was to check the antimicrobial efficacy of silver nanoparticles with and without different antimicrobials against *E. faecalis*.

**Materials and methods:** 126 recently extracted single rooted human teeth were contaminated with *E. faecalis*. The teeth were randomly divided into 5 experimental (*n*= 21) and 1 control group (*n*= 21). Each subgroup was then exposed to different antimicrobials namely Calcium hydroxide (group 1), 2% Chlorhexidine (CHX) (group 2), Silver nanoparticles (SNP) (group 3), SNP with Ca(OH)2 (group 4), SNP with 2% CHX (group 5) and saline as control group (group 6). Cultures were made from each group after 24 h, 7 days and 14 days and colony forming units were counted. The Kruskal-Wallis test was used to compare the study parameters among the groups at 24 h, 7 days and 14 days.

**Results:** Significant difference was found in the antimicrobial efficacy of different intracanal medicaments against *E. faecalis* after 24 h, 7 days and 14 days. 2% CHX was found to be most effective medicament at 24 h, 7 days and 14 days against *E. faecalis*. Combination of SNP with 2% CHX and Ca(OH)2 and SNP alone ranked second in their antimicrobial efficacy against *E. faecalis* at 24 h, 7 days and 14 days respectively.

**Conclusions:** 2% CHX was more effective as intracanal medicament against *E. faecalis* biofilm in both short and long-term duration i.e. at 24 h, 7 days and 14 days.

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**FC316**
Dentinal Defects- Cracks on the Road to Success

Smita Sahni
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**Aim or purpose:** This study was carried out to compare the dentinal defects induced by three different rotary file system 2 shape (Micro-Mega, Besancon, Cedex, France), Hyflex EDM (Coltene/Whaledent AG, Altstatten, Switzerland) and ProTaper universal (Dentsply Maillefer, Ballaigues, Switzerland).

**Materials and methods:** Eighty single-rooted mandibular premolars were selected based on predetermined criteria. Twenty teeth were left unprepared and served as a negative control. The remaining sixty teeth were divided into three groups: Group I (2 shape files), group II (Hyflex EDM) and group III (ProTaper Universal). Biomechanical preparation was carried out as per the manufacturer’s instructions. After root canal preparation, all of the roots were sectioned perpendicular to the long axis at 3, 6, and 9 mm from the apex. These sections were visualized under stereomicroscope to evaluate the dentinal defects using predetermined criteria. The absence/presence of cracks was recorded, and the data were analyzed with a chi-square test. The significance level was set at *p* = 0.05.

**Results:** Roots prepared with ProTaper Universal showed more number of defects, whereas no significant difference was found in dentinal defects in roots prepared with Hyflex EDM and 2 shape files. There was statistically significant difference between the ProTaper group and other two groups (*p* < 0.05).

**Conclusions:** All of the NiTi files tested in the present study were found to cause dentinal defect on root canal dentine. Statistical analysis showed no significant difference in root dentinal crack formation between 2 shapes and Hyflex EDM rotary systems.

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**FC317**
Solitary Plasmacytoma of the Mandible: a Rare Case Report

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**Introduction:** Solitary plasmacytoma of bone (SPB) is a separate entity of plasma cell. The localization of SPB in maxillofacial region is very rare. We present an unusual case of a SPB with a radiological mixed lesion.

**Case description:** A 31-year-old man referred to us with a complaint of pain and swelling in the mandibular right region over the past 2 months. Medical history was not relevant. Radiological investigations revealed a well-defined mixed lesion involving the root of 46 and extending breadthwise 45 and 47. Histopathological analysis revealed an SPB and no distant lesion or serum M protein was noted on hematological examinations. The patient was under follow-up care with no recurrence at 1 year of follow-up.
Discussion: Diagnosis of an SPB is based on radiological and neurological symptoms and similar systemic manifestations of multiple myeloma that are also distinctive for SPB. Skeletal radiological analysis, bone marrow biopsy, and serum protein electrophoresis are essential for confirmation of the diagnosis.

Conclusions/Clinical significance: SPB of the mandible is a rare tumor, confirmation of diagnosis is histological, but a complete assessment is necessary to eliminate multiple myeloma. Surgery following by radiotherapy is the treatment of reference.

FC318
Non-Invasive Techniques for Detection of Oral Premalignant and Malignant Lesions
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Introduction: The early detection and diagnosis of the oral potentially malignant lesions (OPMLs) are important for oral cancer prevention and management. Recently, there has been a growing and persistent demand for new non-invasive, practical diagnostic techniques that might facilitate the early detection of OPMLs.

Aim/purpose: This study compares the effectiveness of the optical adjunct technique versus vital tissue staining in detecting oral lesions in adults.

Materials and methods: 90 patients with suspicious oral premalignant lesions were examined with two non-invasive techniques, randomly divided into two groups. Group 1 was examined conventionally (COE) with white-light and vital tissue staining with a solution that can be used as a mouth rinse. Group 2 was examined additionally to the white-light-examination with an autofluorescence visualization device. Biopsies were obtained from all suspicious areas identified in both examination groups (n = 42). The diagnostic strategies were compared regarding sensitivity and specificity as well as their advantages, clinical applications, and indications.

Statistical analysis: Differences and associations between groups were examined using either Fisher’s exact test for categorical variables or t-test for continuous variables. p < 0.05 was considered to be statistically significant.

Conclusions: These non-invasive techniques showed great potential for screening and monitoring OPMLs. But there is insufficient evidence to recommend for or against the standalone use of any method for identifying OPMLs. Considering sensitivity, specificity, expenses and feasibility of the techniques mentioned above, we propose a protocol for the detection and diagnosis of OPMLs at local community hospitals/dental offices.

Keywords: Early diagnosis, non-invasive techniques, oral premalignant lesions, sensitivity, specificity.

FC319
Lipoma of the Buccal Fat Pad: Rare Case Report with Surgical Technique of Transoral Approach
Mouna Bouhoute, Soukayna Bahbah, Wafaa El Wady
Faculty of Dentistry, Rabat, Morocco

Introduction: The buccal fat pad (BFP) has been the subject of numerous publications regarding its anatomy and clinical implications; however, lipoma of the BFP is an exceedingly rare case and just a few cases were previously reported in the English literature.

Case description: A 50-year-old man with 2 years history of painless swelling in the left cheek. The patient did not undergo any treatment. Clinical examination revealed a clearly visible, painless, tender, and mobile swelling with a diameter of approximately 6 cm. The lesion was palpated in the left cheek around the anterio ramus of the mandible and situated anterior to the masseter muscle. These findings, especially the location of the lesion, led to the suspicion of BFP lipoma. Surgical excision was performed through transoral approach, the lipoma was over 5 cm in diameter and was completely removed. The histological examination confirmed the diagnosis. The facial symmetry was restored after removal of the lipoma. Accordingly, the overall result of the surgery was satisfactory.

Discussion: The aims of this work was to introduce our clinical report of this rare pathologic entity, describe the surgical technique of the transoral approach, and discuss the potential pitfalls regarding the preoperative diagnosis and the close interrelation among the lipoma of the BFP and the surrounding anatomical structures.

Conclusions/Clinical significance: Lipoma of the BFP is very rare and little is known about its biological behavior. This work would be helpful in reaching a conclusion about the correct diagnosis and adequate treatment for the BFP lipoma.

Free Communication Session 81 | 01.09.2017, 11:30 - 12:30 | Room A9.9

Theme: General Dentistry

FC321
Detailed Investigation of the Mesio-Distal Crown Size
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Aim or purpose: To determine the mesio-distal (M-D) size and rate of Bolton, symmetrical teeth and determine whether there is any difference between men and women in the permanent teeth of individuals living in Central Black Sea Region.

Materials and methods: Data were obtained from measurements on plaster models of a total of 264 patients (166 women, 98 men) because of crowding in their teeth. The average for each tooth size, minimum and maximum values with standard deviations were calculated. In addition, anterior and overall ratios calculated
Evaluation of Different Treatment Modalities in Patients with Myofascial Pain
Aysegul Kurt¹, Sirin Guner², Caglar Bilmeloglu¹, Altur Cilingir¹
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Aim or purpose: The low-level laser therapy (LLLT) and occlusal splint therapy (OST) are therapeutic options for Myofascial pain dysfunction syndrome (MPDS). This study aims to evaluate the effect of LLLT and OST on pain relief and mandibular movement improvement in patients with myofascial pain.

Materials and methods: A total of 30 patients (13–50 years) were selected after the diagnosis of MPDS according to the Research Diagnostic Criteria for Temporomandibular Disorder (RDC/TMD). The patients were randomly divided into three groups; OST group (n = 10), LLLT group (n = 10), and placebo group (n = 10). LLLT (940 nm, 6 J/cm², 30 mW) was applied two times per week, for a total of eight sessions. For the placebo group, treatment was similar, but patients were not irradiated. Patients in the OST group were instructed to wear occlusal splints 12 h/day for 3 months. Mandibular movements evaluation was based on RDC/TMD, and pain values were obtained with the Visual Analog Scale. The measurements were performed at baseline; 1, 2 and 3 months after the baseline. Wilcoxon, Mann–Whitney U, and Kruskal–Wallis tests were used to analyze the data.

Results: A reduction in pain values (p < 0.05) and an increase in mandibular movements’ ranges (p < 0.05) were seen in both LLLT and OST group when comparing the placebo group. There was no significant difference between LLLT and OST groups after treatment (p > 0.05).

Conclusions: This particular type of LLLT is as effective as OST for pain relief and mandibular movement improvement in MPDS.

Investigation of Reparative Dentinogenesis as Histologic in Dental Organ Culture
Dide Odabaş, Sibel Yıldırım
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Aim or purpose: The ethical problems of histological studies on humans about reparative dentin and animal studies which require technical precision and do not reflect human teeth, are limiting the histological studies. By the use of the tooth organ culture model modified within the scope of this thesis, it is aimed to histologically examine the reparative dentin.

Materials and methods: After the extraction of the premolars and third molar teeth, transferred to the laboratory conditions on ice. Following the preparation of the occlusal cavity, a 1 mm³ perforation area was created on the tooth. Perforated pulp was washed with sterile saline. As a pulp coating agent, mineral trioxide aggregate or calcium hydroxide was used. Pulp coating with a Teflon strip was performed in the negative control group. Then the teeth
were restored with glass ionomer cement. Teeth were followed for 1, 2, 3 and 4 weeks in the prepared medium and the CO2 etuve. The teeth those follow up is completed were passed through the routine histological follow-up stages and then blocked with paraffin. Then sections were taken and stained with hematoxylin eosin and Masson’s trichrome. The stained tissue was assessed by light microscopy in terms of pulp tissue status and reparative dentin.

**Conclusions:** Reparative dentin was observed in different thicknesses and structures in all three groups including mineral trioxide aggregate, calcium hydroxide and Teflon strip. It is considered that the modified tooth organ culture system may be useful in the future as a model for studying the mechanisms underlying reparative dentin formation.

**Free Communication Session 82 | 01.09.2017, 11:30 - 12:30 | Room A9.10**

**Theme: Caries**

**FC325**

**Early Childhood Caries status and Associated socio-behavioural variables among preschoolers**

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Dr Ishrat Ul Ebad Khan Institute of Oral Health Sciences, Dow University of Health Sciences, Karachi, Pakistan

**Aim or purpose:** Dental caries is highly prevalent and a significant public health problem around the world. Epidemiological information about dental caries amongst Pakistani pre-school children is very limited. Therefore, the aim of this study was to assess the frequency of early childhood caries (ECC) in preschool children and its relationship with socio-demographics, oral hygiene and dietary practices.

**Materials and methods:** A cross-sectional study of 277 preschool children was conducted in central and east districts, Karachi. Sample was selected through simple random sampling. Structured questionnaire was used to collect socio demographic variables. Clinical dental information obtained by experienced dentist using dental caries criteria set by World Health Organization. Binary and multiple logistic regression analysis (p-value < 0.1) were computed using dmft cut off i.e., < 1 = no caries to investigate factors associated with dental caries.

**Results:** Caries prevalence was 54.8% with a mean dmft score 1.99 (±2.79). A significant association (p-value <0.1) was found between dental caries and following variables in univariate analysis: children with middle and upper middle class (COR = 1.41), habit of tooth brushing once daily (COR = 1.6), clean their teeth with index finger (COR = 2.5), having snacks once a day (COR = 1.9). In multivariate logistic regression, only habit snacking from canteen showed significance association with the presence of dental caries (p-value = 0.03, AOR = 1.8, 95% CI = 1.03–3.13).

**Conclusions:** More than half of the study sample had dental caries coupled with a high prevalence of unmet dental treatment needs. Association between caries experience and age of child, consumption of non-sweetened milk, dental plaque and poor oral hygiene was seen.
Materials and methods: Thirty-five premolars were randomly assigned into 7 groups of 5 each. Group 1: bleaching treatment and no antioxidants application. Group 2: composite was built-up immediately after bleaching. Group 3: bleached specimens received composite build-up delayed by 2 weeks. Group 4, 5, 6 and 7: bleached specimens received an application of 10% sodium ascorbate, 10% alpha-tocopherol, 10% green tea, and 10% aloe vera before composite build-up. Specimens were immersed in artificial saliva, stored in an incubator 37°C (24 h), thermocycling, and tested using a universal testing machine. Data were analyzed by one-way ANOVA and Tukey’s test.

Results: Bleaching caused significantly reduced shear bond strength (p < 0.05), and application of 10% sodium ascorbate, 10% alpha-tocopherol, 10% green tea and 10% aloe vera produced significantly greater shear bond strength compared to bleached group (p < 0.05). However, no significant differences occurred between antioxidant groups (p > 0.05).

Conclusions: Application of antioxidants influenced the shear bond strength of composite resin to enamel following extra-coronal bleaching using 40% hydrogen peroxide. 10% sodium ascorbate, 10% alpha-tocopherol, 10% green tea and 10% aloe vera extracts produced the same effect on the shear bond strength of composite resin to enamel following extra-coronal bleaching using 40% hydrogen peroxide.

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FC330

Level of Knowledge on Rotary Endodontics of Southern Dental Surgeons

Chantal Avoaka Boni, Stephanie Xavier Djole, Yolande Koffi Gnagne, Nasi Gnaba, Edmee Mansilla

Abidjan Dental School, Abidjan University of Felix Houphouet Boigny, Ivory Coast

Aim or purpose: This study is to assess the level of knowledge of the dental surgeons in a city regarding mechanical techniques of endodontics with a developing country environment.

Materials and methods: A survey was carried out among 145 practitioners in modern city during three months in a random selection from the list of private practitioners maintained by the national dental board of the country. The data obtained referred to professional seniority, kind of practice, frequency of weekly endodontic treatments and the systems used.

Results: More than half of the practitioners perform an average of five root canal treatments per a week. Even though 73% know about mechanical root canal treatment, only 22% use it. The basic concepts on mechanical root canal shaping with rotatory files were acquired for most of them through undergraduate teaching and also during scientific meetings. Among the various mechanical systems, the HERO is the most used (40%). This study reveals that mechanical root canal shaping with rotatory files is mostly known to recent practitioners educated over the past decade.

Conclusions: It highlights that the basic theoretical concepts are known by practitioners yet very few use them on a frequent basis.

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FC331

Magnetic Resonance Imaging effectiveness to differentiate Periapical Cysts from Granulomas

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University of Bologna, Bologna, Italy

Aim or purpose: To investigate the reliability and accuracy of Magnetic Resonance Imaging (MRI) as a pre-treatment diagnostic tool to differentiate peri-apical endodontic lesions in comparison with histopathological data.

Materials and methods: 34 radiolucent peri-apical lesions of the jaw that required surgical enucleation in 34 subjects were prospectively enrolled. Two radiologists, using the same six objective criteria, independently interpreted the MRI images and categorized the lesions as granulomas, radicular cysts, or other conditions. After apicoectomies, two oral pathologists, blinded to the radiologists’ diagnoses, analyzed all specimens by reference to seven specific parameters, and also diagnosed granulomas, radicular cysts, or other conditions. The inter-rater agreements between radiologists and pathologists were calculated in terms of MRI and histological diagnoses, respectively, along with the accuracies of MRI assessments in comparison with histopathological ones.

Results: The inter-rater reliabilities between both radiologists (k = 0.86, p = 0.0001) and both pathologists (k = 0.88, p = 0.0001) were strong. The accuracies (true-positives plus true-negatives) of the two radiologists compared to pathologists as measured by ROC analysis were high (AUC = 0.87 and 0.91). In spite of the objective criteria adopted to differentiate cysts from granulomas, a poor discriminant power of these resulted (Cronbach’s α coefficient < 0.5).

Conclusions: A pre-operative diagnosis of a cyst from a granuloma can clarify the real capability of a non-surgical endodontic approach in treating these lesions. Even if the selection of discriminant criteria should be improved, MRI, a completely harmless exam, demonstrated a high reliability and accuracy to differentiate the two lesions comparable to histopathological assessments.
Aim: To investigate whether Neutrophil Elastase (NE) induces IL-8 via trans-activation of EGFR in human oral epithelial cells by demonstrating that in vitro and in vivo samples containing high levels of NE can induce IL-8 via EGFR. EGFR binds to TGF-α and sustains neutrophil infiltration hence, effects of NE on epithelial damage were observed.

Materials and methods: Normal human oral keratinocytes (NHOK/OKF6) obtained and were cultured at 37°C, in the serum free medium Keratinocyte SFM. Cells were passaged at 70–80% confluency while the doubling time of 72.6 h. Cells cytotoxicity was assessed using MTT assay following treatment with NE and LPS. Cells were treated with NE, LPS, AGF14789 and EGFR to detect cytokine levels (IL-8 and TGF-α) by using ELISA kits in culture supernatants.

Results: Statistical analysis was done using student t-test to compare the difference between treatments. Viability data showed at higher concentrations of NE viability was significantly decreased (p < 0.05). IL-8 release was increased at lower NE concentration and on treatment with EGFR inhibitors and results were statistically insignificant. LPS also upregulated levels of IL-8. TGF-α levels were low at all treatments with NE and EGFR inhibitors and results proved to be statistically significant (p < 0.05).

Conclusions: This is the first study to report NE induced IL-8 production in OKF6. EGFR transactivation in response to NE over expressed these receptors which increases cytokine production and inflammation. Since high levels of NE lead to mucosal instability, IL-8 production and further neutrophil recruitment thereby contributes to pathology as observed in oral ulceration.

Metabolite Profiling of Preneoplastic and Neoplastic Lesions of Oral Cavity Tissue Samples Revealed a Biomarker Pattern

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Aim or purpose: The current study is focused on the identification of distinguished biomarker metabolites of oral cancer tissue samples in comparison with precancerous and control tissue samples using gas chromatography coupled with triple quadrupole tandem mass spectrometry and chemometric analyses.

Materials and methods: Samples were collected from Oral and Maxillofacial department of Dow University of Health Sciences, Karachi, consist of 4–6 mm punch biopsies of total 51 tissue samples: 15 samples of potentially malignant disorder of oral cavity.
that is of oral sub-mucous fibrosis (OSF), 21 of diagnosed OSCC patients and 15 from the healthy individuals. GC-MS-based metabolite profiling and chemometric analysis of tissue samples has been performed at H.E.J. International Center for Chemical and Biological Sciences, University of Karachi. Metabolites obtained were identified through National Institute of Standards and Technology (NIST) mass spectral (Wiley registry) library. Mass Profiler Professional (MPP) software was used for the alignment and for all the statistical analysis.

Results: 31 compounds out of 735 found distinguishing among oral cancer, precancerous and control group samples using p-value ≤ 0.05. Partial Least Square Discriminant Analysis (PLSDA) model was generated using statistically significant metabolites gave an overall accuracy of 90.2%. Down-regulated amino acid levels appear to be the result of enhanced energy metabolism or up-regulation of the appropriate biosynthetic pathways, and required cell proliferation in cancer tissues.

Conclusions: Our study has shown that a GC-MS-based metabolite profiling and extensive chemometric analysis of tissue is able to identify biomarker metabolites which can significantly differentiate oral cancer from the control groups.

FC336
An Unusual Iatrogenic Mucocele of the Mouth Floor: Marsupialisation as Treatment
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Introduction: A mucocle is a benign, mucus-containing cystic lesion of the minor salivary gland. Mucocles occur either due to rupture of salivary gland duct or by blockade of salivary gland duct. The floor of the mouth is a less common site of occurrence.

Case description: A 24-year-old patient complained of swelling in the floor of the mouth evolving for the past 15 days. History revealed that she had a laceration during her last dental care in that site which healed on its own. Then she developed a small swelling which gradually increased in size. She also gave a history of traumatizing the swelling, followed by its recurrent development; and no associated pain. Intraoral examination showed a mild swelling in the left side close to the floor mouth with bluish purple changes. The treatment consisted of a marsupialisation of the mucocle to prevent any iatrogenic lesion of the adjacent structures. The healing was without recurrence.

Discussion: The aims of this work was to introduce our clinical report of this common pathology, describe the surgical technique of marsupialisation and it’s interest especially in this location, and discuss the potential role of the uncontrolled dental care in the occurrence of this pathology.

Conclusions/Clinical significance: Marsupialisation proved to be a simple, low cost, relatively non-invasive, painless, and low recurrence technique to treat mucus extravasations or retention phenomena. Marsupialisation can be recommended primarily to treat oral mucocles. A correct maneuver during dental care is a key word in preventing traumatic iatrogenic mucocle lesions.

FC337
Biological Based Treatment Modalities in Contemporary Endodontics
Zahid Iqbal
Isra Dental College/Isra University, Hyderabad/Sindh, Pakistan

Aim: Compare the success rate of PRF Pulpotomy with mineral trioxide aggregate in pulpotomy procedures for pulp exposures with pulpitis in vital mature permanent teeth.

Methods: Total 100 patients aged 10–40 years attending OPD, presented with vital carious expose permanent mature molars with pulpitis were selected for the study. Patients with presence of apical radiolucency and periodontal disease were excluded. Patients were randomly divided into 2 groups of 50 each using sealed envelope technique. Group A pulpotomy using PRF, Group B pulpotomy using MTA, the assessment was carried out at 3, 6 and 12 months appointments. The outcome of clinical success or failure was determined by subjective symptoms including pain and objective signs including abscess, swelling, sinus tract, and tenderness. The outcomes of radiographic success were determined by normal contour and width of periodontal ligament (PDL) of teeth in radiograph. Teeth with presence of radiographic signs of internal root resorption and apical periodontitis was recorded as “failure”. The recorded data were analyzed by using the statistical software.

Results: The results of the study showed clinical success in all both groups and radiographic success was found to be 68%, 60 % and 55% in MTA pulpotomy group and 92%, 84% and 78 % in PRF pulpotomy group at 3, 6 and 12 months intervals with p value 0.05 and 95% confidence interval.

Conclusion: There was significant difference found in the clinical and radiographic outcome between PRF pulpotomy and MTA pulpotomy for pulpotomy procedures of carious expose vital permanent 1st molars with pulpitis.

FC339
Management of Endodontic Emergencies and Use of Antibiotics in Teaching Hospitals of Karachi
Sara Ikram Khan, Syed Muhammad Faizan, Shama Asghar
Bahria University Medical and Dental College, Karachi, Pakistan

Aim or purpose: To gather information about endodontic emergency treatment approaches in different cases and antibiotic prescribing habits of dentists in teaching dental hospitals.

Materials and methods: A cross sectional study was done in 4 different teaching based dental hospitals of Karachi. 175 dentists consented to participate which included BDS (Bachelors of Dental Surgery) graduates, Post Graduate Residents and Post graduates. Questionnaires were distributed which included questions regarding emergency treatment approaches and antibiotic prescribing habits. Data analysis was done on IBM Statistics SPSS version 20.
Results: For irreversible pulpitis cases in vital teeth, most of the dental practitioners (50.3%) preferred two-visit root canal treatments. For teeth presenting in an emergency case of pulpitis, the preferred treatment approach was pulpectomy in combination with analgesics (49.7%) whereas (44%) preferred pulpectomy in combination with analgesics as well as antibiotics. 80% of the dentists prescribed medications if RCT required multiple visits. The rate of prescription of analgesics and antibiotics was 25.1% in untreated acute apical periodontitis cases. 66.3% preferred drainage by opening pulp chamber with systemic antibiotics in acute apical abscess cases. Frequently prescribed antibiotics were amoxicillin–clavulanate (83.4%), amoxicillin (46.9%) and Metronidazole (44.6%). Most common analgesic prescribed was Naproxen Sodium (53.1%) and Ibuprofen (34.9%).

Conclusions: There is a difference in methods taught and practiced by the practitioners. Over prescription of antibiotics was seen in cases where local treatment would have been sufficient. Seminars and educational programs should be conducted more frequently to keep dentists up to date with proper treatment methods.

Free Communication Session 86 | 01.09.2017, 12:45 - 13:45 | Room A9.13

Theme: Oral Pathology

FC341

TMJ Degenerative Changes as an Occult Finding in Cone-beam CT Scans for Routine Dental Assessment
Christos Angelopoulou1, Ghabi Kaspo1, Stavros Kiliaridis2
1Columbia University, NYC, New York, NY, USA, 2University of Geneva, Geneva, Swaziland

Aim or purpose: The goal of this study is to assess the incidence of TMJ degenerative changes in CBCT scans made for routine dental assessment in a period of 4 years. The radiologic reports of 9,374 CBCT scans included and reviewed retrospectively (over a period of 4 yrs).

Materials and methods: CBCT scans were extended FOV (the vast majority of the scans included both articulations) and were acquired by a variety of CBCT scanners. All scans were prescribed for routine dental assessment (impacted teeth, implants, jaw pathology etc). Scans which were prescribed for TMJ assessment were excluded.

Results: The incidence rate of TMJ degenerative changes is high TMJ should be included in the standardized review of a CBCT scan despite the prescription of the exam.

Conclusions: The radiologist should be alert for the appropriate recommendations if the observed findings are out of the ordinary.

FC342

Interim Analysis of an Oral Rinse Point-Of-Care Assay to Predict Head and Neck Squamous Cell Carcinoma (HNSCC) in a High-Risk Danish Ear-Nose Throat (ENT) Clinic
David Hebbelstrup1, Michael Donovan2, Elizabeth Franzmann3, Mads Klokker4
1University of Copenhagen, Copenhagen, Denmark, 2Icahn School of Medicine at Mt. Sinai, New York City, NY, USA, 3University of Miami, Miami, USA, 4University of Copenhagen, Copenhagen, Denmark

Aim or purpose: Head and neck squamous cell carcinoma (HNSCC) is the 6th most common cause of cancer mortality throughout the world affecting some 50,000 people in the US and 600,000 worldwide each year. Previous studies have demonstrated that a point-of-care (POC) assay measuring CD44 and total protein (TP) was able to aid in the diagnosis of HNSCC. We sought to better understand performance of this assay in a hospital-based high-risk oral clinic in Denmark.

Materials and methods: Oral rinse was obtained from 130 consecutive patients presenting for physical exam and biopsy in a high-risk ENT clinic (Rigshospitlet, Copenhagen, Denmark). Operators were provided visual tools to record assay results. A positive test is a visible CD44 band or level of TP (>0.5 scale, recommended cut-off >2 or adjusted ≥3), with Sensitivity (Se), Specificity (Sp), NPV and PPV to evaluate correlation with biopsy outcome.

Results: 86 of 130 (66%) patients had HNSCC by biopsy. Average age 56 years, 40% male, 100% white and 65% smokers. Using levels of CD44 or a TP cut-off of 3, the assay achieved a Se of 71%, and Sp 55%. Applying a TP level of 2 for non-smokers and 4 for smokers further improved assay performance: Se 81% and Sp 49%. With 15% prevalence, the NPV was >90%, and PPV 22%.

Conclusions: Preliminary results from an easy to administer POC assay measuring salivary levels of either CD44 or TP performed well for discriminating HNSCC. Additional studies are underway to confirm and validate these results.

FC343

Miescher’s Cheilitis Granulomatosa: Diagnostic Approaches and Therapeutic Management
Fatma Hedhli, Raouaa Belkacem Chebil, Dorsaf Touil, Lamiya Oualha, Nabila Douki
Dentistry School of Monastir, Monastir (Dentistry School/University Hospital of Sabliou), Tunisia

Introduction: Miescher’s cheilitis granulomatosa is known as a rare inflammatory disorder of unknown aetiology that consists of the persistent swelling of one or both lips. It has been considered as a monosymptomatic manifestation of the Melkersson-Rosenthal syndrome. This work aims to present the diagnostic approaches and therapeutic dilemma of a case observed in the department of medicine and oral surgery.

Case description: Authors report the case of a 53-year-old woman, complaining of a chronic asymptomatic swelling of the right lower hemi-lip. Neither fissuring tongue nor facial paralysis was noticed. Multiple epithelioid granulomatous and giant cells without caseous

International Dental Journal 2017; 67 (Suppl. 1): 199–247 © 2017 The Authors. International Dental Journal © 2017 FDI World Dental Federation
necrosis were revealed by a labial mucosa biopsy. An evaluation of the gastrointestinal system, a chest radiograph, serum levels of angiotensin-converting enzyme, C1 esterase inhibitor, a complete hemogram, sedimentation rate, serum folate, iron and vitamin B12 levels were done, they all report a normal range. Thus, the diagnostic of a Miescher’s cheilitis granulomatosa was retained. The treatment consists on intralesional betamethasone injections in the lower lip associated to doxycycline (200 mg). A six months follow-up shows a good response to treatment with a visible symptom regression.

Discussion: The diagnosis of a Miescher’s cheilitis granulomatosa is a diagnosis of exclusion. All the investigations have to be done in order to eliminate other differential diagnoses including Melkersson-Rosenthal syndrome, Crohn’s disease, sarcoidosis, tuberculosis, soft-tissue tumours, and angioneurotic edema. The treatment of Miescher’s cheilitis granulomatosa is only symptomatic and recurrences are frequent.

Conclusions/Clinical significance: Diagnostic approach and treatment of Miescher’s cheilitis granulomatosa is a real therapeutic challenge.

Free Communication Session 87 | 01.09.2017, 14:00 - 15:00 | Room A9.11

Theme: Endodontics

FC345
Investigation of the Depth of Diffusion of a Nanosilver Solution Poviargol into a Dentin Under the Influence of Ultrasound
Alexander Mitronin¹, Dmitriy Volkov¹, Vladislav Mitronin¹, Yury Okladnikov²
¹Moscow State University of Medicine and Dentistry named after A.I. Evdokimov, Moscow, Russia, ²The Chuvash State University named after I.N. Ulyanov, Cheboksary, Russia

Aim or purpose: Compare the depth of penetration of the nanosilver solution of poviargol into the dentinal tubules under the influence of ultrasound and free penetration. With the purpose of increasing the effectiveness of treatment of apical periodontitis, an antisepsic treatment of the root canals of the teeth uses an aqueous solution of nanowireber poviargol with particle sizes 4–20 nm, which have high antibacterial activity.

Materials and methods: 50 extracted human teeth were divided equally into the main and control groups. A mechanical cleaning of the root canals was carried out, which was filled with a 2.5% Poviargol nanosilver colored with a tint. In the main group, the canal was made and the staining zone around the channel opening was measured under a microscope.

Results: The depth of penetration of the nanosilver solution into the dentin in the main group was on the average 780 µm, and in the control group about 20 µm.

Conclusions: The results of the study show that under the influence of ultrasound, a deeper penetration of the nanosilver solution into the dentin occurs than with free penetration. Obviously, when the nanosilver solution is activated by acoustic ultrasonic waves, its heating occurs, and, consequently, the diffusion of the solution into the dentinal tubules increases.

FC346
Effectiveness of Ozone Gas on E. faecalis biofilms
Viviana Clelia Lüdi Etchevarren, Rafael Seoane Prado, Antonio Pérez Estévez, Yanina Ledesma Lüdi
Universidad Santiago de Compostela, Santiago de Compostela, Spain

Aim or purpose: To test the bactericidal ability of ozone gas onto mature E. faecalis biofilms generated in polypropylene microtubes. This new experimental model eliminates the possible significant differences found in extracted teeth experiments.

Materials and methods: Biofilms formation. Aliquots (50 µl) of Enterococcus faecalis (ATCC29212) cultures were incubated into polypropylene microtubes for 5 days at 37°C without shaking. Then, the supernatant was carefully removed and the microtubes were washed four times. Control group: After washing, 50 µl of medium were added to the microtube, vigorously vortexed for 60 s and CFU counted. Ozonated group: After the last wash, 20 ml of ozone (20 µg/ml; recommended therapeutic dose) were directly applied onto biofilms for 60 s. Samples were processed as described in control group.

Results: Biofilms generated on the microtube tubular surface are similar to found in the root canals in infected teeth. The amount of CFUs recovered from control group was very similar in all samples (p > 0.05). Direct ozonation of biofilms showed a reduction of 99.9% in the recovered CFUs when compared with control group (p < 0.01).

Conclusions: The model presented here showed high reproducibility and eliminates variability due to anatomical variations present in extracted teeth. Ozone gas has proved a high bactericidal effect on mature E. faecalis biofilms generated in our standardized model. Ozone gas therapy is a very promising therapy in endodontics due to its effectiveness, anti-inflammatory and angiogenic properties and could be used in antibiotic allergic patients.

FC347
Tooth Discoloration Potential and Chemical Characterization of Calcium Silicate-based Cements
Cangül Keskin, Ebru Özeser Demiriyürek
Faculty of Dentistry, Department of Endodontics, Ondokuz Mayıs University, Samsun, Turkey

Aim or purpose: The present study aimed to compare the tooth discoloration induced by MTA Plus, ProRoot wMTA, MTA Angelus and Biodentine over the 1-year course and to present chemical characterization of materials using X-ray diffraction analysis (XRD), scanning electron microscope and energy-dispersive X-ray analysis (SEM EDX).

Materials and methods: Eighty-five human maxillary incisor teeth were assigned to 1 control (n = 5) and 4 experimental (n = 20) groups as MTA Plus (Avalon Biomed Inc, Bradenton, FL, USA),
ProRoot wMTA (Dentsply, Tulsa, OK, USA), MTA Angelus (Angelus, Londrina, PR, Brazil) and Biodentine (Septodont, Saint Maur des Fossés, France). Materials were compacted via apical access preparation, which was then sealed with glass ionomer cement. Color measurements were performed after the placement (t1), the first month (t2), the third month (t3), the sixth month (t4) and the twelfth month (t5). Cylindrical discs of each specimen were also prepared and subjected to SEM EDX analysis. The powder and hydrated specimens were also analyzed using XRD. Data were analyzed using one-way ANOVA and Tukey tests (p = 0.05).

**Results:** The bond strength and microleakage results were significantly influenced by the application of the protocols compared with the control whereas there was no significant difference between the experimental groups (p = 0.533). Conclusions: Within the limitations of the present study, it was concluded that removal of unsupported collagen fiber with deproteinizing agents results in improved bond strength and decreased microleakage.

**Conclusions:** Within the limitations of the present study, it was concluded that removal of unsupported collagen fiber with deproteinizing agents results in improved bond strength and decreased microleakage.

**FC349**

**Clinical Evaluation of Composite Onlays/Overlays**

Aylin Cilingir

Trakya University, Faculty of Dentistry, Department of Restorative Dentistry, Edirne, Turkey

**Aim or purpose:** The aim of our study was to evaluate the clinical performance of indirect composite onlay and overlay restorations.

**Materials and methods:** In total 29 patients (15 males, 14 females, mean age; 38.17 ± 12.37 years) 38 indirect composite onlays/overlays (Gradia, GC) were luted using a dual-cured cement (Panavia F2.0). The restorations were evaluated using the modified USPHS criteria. The observation periods involved 2 recalls during 12 months. After baseline recordings, patients were followed at 6 months and 1 year. The data were collected and analyzed at a level of significance (p < 0.05) using Friedman, Bonferroni-adjusted Wilcoxon, Cochran Q, Bonferroni-adjusted McNemar tests to examine the restorations.

**Results:** All restorations assessed were rated clinically acceptable in USPHS criteria. Regarding the clinical performance of the tested materials there were no statistical significant difference among the fracture of restoration, postoperative sensitivity between baseline and the 1 year recall. Adaptation, color match, marginal discoloration, surface roughness, fracture of tooth, wear of restoration showed a significant difference between baseline and the 1 year recall.

**Conclusions:** Within the limitations of this study, composite onlays/overlays demonstrated adequate clinical performance after 1 year of function. Monitoring this study further will give more descriptive data.

**FC350**

**Shear Bond Strengths Between Resin Cement and All-Ceramics Fabricated by Using Different Techniques**

Fehmi Gonuldas, Pelin Atalay, Dogan Derya Oztas

Faculty of Dentistry, Department of Prosthodontics, Ankara University, Ankara, Turkey

**Aim or purpose:** There are many ways to produce all-ceramic restorations which include powder/liquid building, slip casting, hot-ceramic pressing and computer-aided design/computer-aided manufacturing (CAD/CAM). CAD/CAM procedures compete against conventional fabricated restorations. As different methods of production may produce variable results, this study aims to compare CAD/CAM systems to hot-pressed ceramics regarding their shear bond strength using resin cement.

**Materials and methods:** Twenty specimens were prepared from leucite-reinforced glass-ceramic blocks (IPS Empress CAD) sectioned in dimensions of 2-mm thickness, 12-mm length, 10-mm...
wide with a diamond slicer. Twenty leucite-reinforced pressable ceramic specimens (IPS Empress Esthetic) were constructed by the hot-pressing technique in the same dimensions. The obtained fragments were then embedded in autopolymerizing acrylic resin. Subsequently, self-adhesive resin cement was applied to the surface of the specimens using a Teflon mold and photopolymerization was carried out. All specimens were stored in distilled water for 24 h. The shear bond strength measurements were accomplished with a universal testing machine and the failure modes (adhesive, cohesive or mixed) were determined. The data were statistically analyzed using by SPSS software. Prior to the Anova test, the Shapiro-Wilk test for normality and Levene’s Test for Equality of variances was performed.

**Results:** Regarding to the results, IPS Empress Esthetic group showed higher bond strength values than IPS Empress CAD, that was not statistically significant. Additionally, cohesive type fractures occurred entirely within the porcelain were seen.

**Conclusions:** Material selection must be considered cautiously by clinicians, because bond strength between all-ceramic restoration and resin cement may be affected by fabrication techniques of restorations.

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**FC351**

**Evaluation of Repair Bond Strength of Bulkfill Resin Composite**

Burcu Oglakci1, Neslihan Arhun2

1Baskent University, School of Dentistry, Ankara, Turkey, 2Baskent University, Faculty of Dentistry, Ankara, Turkey

**Aim or purpose:** The aim of in vitro research was to compare the effect of different adhesive systems and resin composite on the repair bond strength of bulkfill resin composite.

**Materials and methods:** 135 bulkfill resin composite discs (BF) were fabricated, finished/polished and thermocycled for 5000 rounds (5–55°C). All specimens were surface roughened by diamond bur (except cohesive group) and divided into 8 groups with respect to repair procedures (n = 15): Group A: Universal adhesive system in self-etch mode (TSE)+BF; Group B: Universal adhesive in etch&rinse mode (TER)+BF; Group C: TSE+Nanohybrid resin composite (NH); Group D: TER+NH; Group E: Self-etch adhesive system (CSE)+BF; Group F: CSE+NH; Group G: Etch&Rinse adhesive system (SB)+BF; Group H: SB+NH; Group I: BF (cohesive-control). After repair procedure, all specimens were thermocycled 5000 times. Shear bond strength (SBS) test was accomplished with a universal test machine at a cross head speed of 1 mm/min. Fractured surfaces were observed with a stereomicroscope under 10x magnification to determine mode of failure of samples. SBS data of all groups was statistically analyzed by two-way ANOVA and post hoc test.

**Results:** Although being not statistically significant Group E showed the highest SBS values (MPa) (27.04 ± 4.93) while Group H (18.74 ± 6.40), showed the lowest ones. There were statistically significant differences between Group H (18.74 ± 6.4) and Group B (25.86 ± 5.73) (p = 0.04) and Group E (27.04 ± 4.93) and Group H (p = 0.007). The predominant mode of failure was mixed type of failure except for Group H.

**Conclusions:** Repair bond strength of bulkfill resin composites reached the cohesive strength of the material itself irrespective of the adhesive system and repair resin composite used.

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**FC352**

**Coefficient of Mandibular Bone Attenuation in Different Examinations of Computerized Tomography**

Rebeca Brasil Costa, Viviane Almeida Sarmento, Bruno Botto De Barros Da Silveira, Weber Ceo Cavalcante, Larissa Lima Costa, Gabriel De Toledo Telles Araujo, Emilly Leticia Gusmão Borges, Graziella Ribeiro De Mendonça

Univ. Federal de Bahia, Salvador, Brazil

**Aim or purpose:** The aim of the present study was to evaluate the bone quality in conical beam computed tomography (CBCT), by means of the attenuation coefficient measurements, and the values of the helical computed tomography (TCH) as gold standard.

**Materials and methods:** After approval by the Research Ethics Committee, ten human dry jaws were scanned standardized by TCFc (with three different sizes of voxel) and single TCH and four-channel multislice equipment. The images were exported in DICOM format and evaluated in a software in which panoramic reconstructions of the jaws were performed. In each reconstruction, the attenuation coefficient of the bone tissue was measured at four predetermined points in the various CT scans. A single expert investigator performed all the analyses twice, with an interval of one week between assessments. The intraobserver agreement was determined by the Student t test. The difference between the groups was tested by ANOVA, followed by the Tukey test for Multiple Comparisons. The level of significance was 5%.

**Results:** There was a statistical difference in the bone attenuation coefficient between TCFc and TCFl. There was no difference of this coefficient between the CBCTs with different voxel sizes, as there was no significant difference between the measurements of the single and multislice TCF.

**Conclusions:** The differences found can determine potential failures in planning in Implantology and, therefore, information to be used with caution when obtaining CBCT.

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**FC353**

**Atypical Odontalgia Due to Birth Control Pill (Oral Contraceptives) Consumption**

Tantry Maulina1, Ika Destina Ulfa2, Shellya Edu September Anita3

1Oral Surgery Department, Faculty of Dentistry, Universitas Padjadjaran, Bandung, Indonesia, 2Tooth Conservation Department, Faculty of Dentistry, Universitas Padjadjaran, Bandung, Indonesia, 3Cibeunying Community Health Centre, Bandung, Indonesia

**Aim or purpose:** Atypical odontalgia is one of dental disorders with unknown mechanism. To date, atypical odontalgia is one the most
complex yet difficult dental disorders to diagnose. This particular dental disorder is usually preceded by dental measurement, with dental extraction and root canal treatment being the most common dental treatment that might initiate atypical odontalgia.

**Case description:** A 24-year-old woman came to the dental triage installation due to excruciating pain (VAS=8) on the molar region of the upper and lower jaw. About eight months prior to the visit, the 36 tooth was filled due to superficial caries. The patient experienced sharp intermittent pain due to the caries, but the pain immediately disappeared once the tooth was filled. About one week prior to the visit, the patient experienced sharp-throbbing pain in all molar region, especially during eating. Clinical as well as panoramic examination exhibited no abnormalities. From the anamnesis, it was revealed that the patients started to feel the tooth pain one week after birth pills consumption. Ibuprofen was given as pain control therapy. VAS score reduced to 6, but remained at that level. Once the birth pills consumption stopped, the pain disappeared completely.

**Discussion:** As birth control pills works by changing hormonal balance, the effect of these hormonal changes might somehow affect oral health condition. The possible involvement of hormonal factors in atypical odontalgia should be taken into account.

**Conclusions/Clinical significance:** The involvement of hormonal changes in atypical odontalgia is rare and might be a potential research topic in the future.

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**FC354**

**Oral Stem Cells Derived from Diabetic Patients Exhibit Impaired Proliferation**

Mostafa El Naggar¹, Samia Mostafa Kamal², Riham Aly¹

¹National Research Centre, Cairo, Egypt, ²Cairo University, Cairo, Egypt

**Aim or purpose:** The aim of this research was to assess the proliferative potential of periodontal ligament stem cells and gingival stem cells derived from controlled type II diabetic patients in comparison to those derived from normal patients.

**Materials and methods:** Impacted third molars indicated for extraction were collected as well as 1 mm³ of interdental papilla from human type II diabetics (n=50) and age-matched control subjects (n=50). Stem cells were isolated by enzymatic digestion of periodontal ligament (PDL) scraped from the middle third of the extracted molars and the gingival stem cells were similarly isolated from the interdental papilla. After propagation and maintenance for two weeks, proliferation of stem cells was assessed by MTT assay and RT-PCR for Survivin gene, an inhibitor of apoptosis.

**Results:** Proliferation of diabetic derived stem cells relative to control subjects was decreased by 81% (p < 0.001). Similarly, Survivin gene expression significantly decreased in the diabetic derived stem cells. Proliferation and Survivin expression were significantly correlated (p < 0.001).

**Conclusions:** We conclude that PDL and gingival derived stem cells proliferation are significantly affected by diabetic changes. Given the impairments to the stem cells due to diabetes, the impact of hyperglycemic reversal on cell functionality is crucially important for designing targeted therapeutics. Finally, this study demonstrated the impact of diabetes on stem cells for regenerative medicine.

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**FC355**

**Forensic Procedures for Age Assessment in the Living: The Dentist’s Role**

Gwénaëlle Drogou-Saout¹, Guy Collet²

¹AFIO French Forensic Odontology Association, Ploemeur, France, ²AFIO French Forensic Odontology Association, Orleans, France

**Introduction:** Europe is facing a huge influx of young migrants and asylum seekers. Age determination is key to establishing their status as a child or adult in penal and judicial matters. These medico-legal methods are only used in cases of questionable identity documents.

**Case description:** There is no existing method which allows to determine a person’s exact age and procedures vary from country to country and even within a single country. The most widely used methods in France and in Europe in general are multi-disciplinary. There are three key methods: puberty tests, bone tests, and dental tests involving three medical specializations:

- a physical examination to assess pubertal development and detect possible pathologies influences
- an x-ray examining the clavicle and/or the carpal bone
- panoramic x-ray analyzed by a dental surgeon (Demirjian method).

**Discussion:** These methods have brought up ethical questions and have led to many discussions. The reasons are manifold: the lack of reliability of the methods, the lack of data on the analyzed populations, and the fact that those who undergo testing must be able to give informed consent, be informed of the method, of the possible consequences of the test results, as well as the consequences of refusing a medical test. This information must be given free of charge and communicated in a language which is understood.

**Conclusions/Clinical significance:** This presentation will expose the Dentist’s role within forensic procedures for age assessment.

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**Free Communication Session 90 | 01.09.2017, 15:15 - 16:15 | Room A9.10**

**Theme: Pedodontics**

**FC356**

**Rehabilitation of Compromised Permanent Incisors with Anatomically Adjustable Fiber Post**

Talat Beltagy

Faculty of Dentistry, Kafar Elsheikh University, Kafar Elsheikh, Egypt

**Aim or purpose:** To evaluate clinically and radiographically the rehabilitated compromised upper permanent central incisors with the everStick post.
Materials and methods: Thirty-six children patients aged from 10–16 years were divided into three equal groups (12 patients each). Group I, flared root canals of the patients were rehabilitated with everStick post. Group II, flared root canals were rehabilitated with EasyPost/composite, and Group III (Control), unflared root canals were rehabilitated with EasyPost/core reinforcement. The clinical parameters included the reinforced tooth, mucosa, temporary crown, and reinforcing system. The radiographical parameters were the periapical status, periodontal ligament condition, root fracture and root resorption. All patients were recalled clinically and radiographically at 3, 6, 12 and 18 months.

Results: Both everSick and control group showed 100% clinical success, while EasyPost/composite group showed debonding of the reinforcing system in one patient with a clinical success rate 91.7%, and the difference was not statistically significant (p > 0.05). Radiographic assessment showed no evidence of root fracture or external root resorption and no periodontal or periapical pathology that require crown removal for clinical interference. The radiographic findings showed 100% success rate for all studied groups.

Conclusions: The use of direct anatomical everStick posts in the rehabilitation of flared canals functioned well for 18 months with favorable clinical, radiographical, and aesthetic results.

Conclusions: Ferric sulphate, mineral trioxide aggregate (MTA) and Calcium hydroxide and iodoform paste (Metapex) provide clinically acceptable alternatives to formocresol in vital pulp therapy in primary teeth.

Free Communication Session 91 | 01.09.2017, 15:15 - 16:15 | Room A9.11
Theme: Esthetics

FC360
The Mine Field one has to surpass—to finish an EASY case
Yossi Fish, Gal Fish
Private clinic, Tel-Aviv, Israel

Introduction: Decision if a case is easy or not is done for every new patient to determine the complicity and duration.
Case description: A 35 years old female came after an accident. Swollen and lacerations of the lips Lateral 12 avulsed in the and the two Centrals were broken at the third upper part of the roots, to be extracted. Treatment diverted from partial thru fixed bridge or implants. Implants were chosen – as an EASY case, and there started a cascade of misfortunes that were corrected as we advanced in the treatment.
Discussion: This lecture is all about failures that happened in the course of treatment. The main problem of was the swelling of the lips that camouflaged the patient’s Gummy Smile! The X rays drove to the conclusion that extraction, immediate implantation combined with immediate loading will solve the problem as an Easy one. After the swelling has moved, the lip discovered the gummy smile and there started really the rehabilitation.

Conclusions/Clinical significance: One shouldn’t rush into conclusions before having evaluated thoroughly all the data of the case. The rehabilitation should be postponed until the soft tissue, including lips, are at their final position.

FC361
The Distribution of the Shades in Upper Frontal Teeth Depending on Gender and Age
Teuta Pustina-Krasniqi1, Kujtim Shala2, Teuta Bicaj2, Nexhmije Ajeti2, Enis Ahmedi2, Linda Dula2, Zana Lila2, Arlinda Dragusha2
1University of Prishtina “Hasan Prishtina”, Prishtina, Rectorate of University of Prishtina, Prishtina, Kosovo, 2Medical Faculty, University of Prishtina, Prishtina, Kosovo

Aim or purpose: The objective of this study was the determination and comparison of colorimetric characteristics of the upper frontal teeth in subjects of the different gender and age.

Materials and methods: The measurements were made in 255 patients in the intercanine sector of maxilla. There were analyzed left teeth of the intercanine sector of maxilla. Patients’ tooth color measurements were performed using an intraoral spectrophotometer Vita Easyshade® (Vita Zahnfabrik, H Rauter GmbH & Co. KG, Bad Sackingen, Germany). From the spectrophotometer were collected the data of 3D Master shades.
Results: In the central incisors, the most frequent shade was registered 2M1 in 62 subjects (8.10%), in lateral incisors 1.5M1.5 in 65 (8.50%) and in canines 2M3 in 142 subjects (18.56%). The Pearson Chi-square test results, showed that there was a significant statistical difference in relation gender and age, as concern the colorimetric characteristics. In central incisors, the results were as follow: $\chi^2 = 73.12$ and $p < 0.001$/gender and $\chi^2 = 287.02$ and $p < 0.001$/age. In lateral incisors for $99.01$. df = 41. p = 0.001/ gender and $\chi^2 = 231.76$ and $p < 0.001$ (p = 0.001)/age. In canines $\chi^2 = 89.44$ p < 0.001 (p = 0.001)/gender and 221.14. df = 90. p = 0.001/age.

Conclusions: The colorimetric characteristics in the upper frontal teeth showed that there is a significant statistical difference between gender and age.

FC362
Aesthetic Improvement of Facials Cutaneous Sinus Tract
Akram Belmehdi, Karima El Harti, Wafaa El Wady
Faculty of Dentistry, Rabat, Morocco

Introduction: A cutaneous sinus tract of dental origin is relatively uncommon and may easily be misdiagnosed, owing to its uncommon occurrence and absence of dental symptoms. Such a lesion continues to be a diagnostic dilemma. The cases described here presented with a persistent cutaneous sinus tract of dental origin that was misdiagnosed by a general physician but which showed complete resolution following dental treatment.

Case description: We will present five cases of facial lesions that were initially misdiagnosed as lesions of non odontogenic origin. The correct diagnosis in each case was cutaneous sinus tract secondary to pulpal necrosis and suppurative apical periodontitis. All facial sinus tracts resolved after the patients received both surgical and nonsurgical root canal therapy.

Discussion: Extraoral manifestations of pulpoperiradicular pathology, cutaneous sinus tract and fistulization of the facial skin have a wide range of etiologies. Because patients with cutaneous facial sinus tracts of dental origin often do not have obvious dental symptoms, a possible dental etiology may be overlooked. If dental origin is suspected, the diagnosis is easily confirmed by dental examination and dental roentgenograms of the involved area. Early correct diagnosis, based on radiologic evidence of a periapical root infection and treatment of these lesions can help prevent unnecessary and ineffective antibiotic therapy or surgical treatment, reducing the possibility of further complications such as sepsis and osteomyelitis.

Conclusions/Clinical significance: Knowing this condition proves to be of paramount importance for dentists and physicians to correctly conduct the diagnosis and treatment of the disease.

FC363
Assessment of General Characteristics of Smile and Analysis of Sexual Dimorphism in Smile Parameters and Smile Patterns of Undergraduate Students
Zubair Ahmed Abbasi, Affal Fatima, Sehrish Ahmed, Tabbasum Ahsan
Bahria University Medical and Dental College, Karachi, Pakistan

Aim or purpose: The aim of this research was to analyze the general smile characteristics and to identify if there exists statistically significant sexual dimorphism in smile patterns and smile parameters of undergraduate students.

Materials and methods: A cross sectional study conducted in Bahria University Medical and Dental College. Study population comprised of 100 undergraduate dental students of 18-24 years. The photographs were shot from DSLR. A proforma was filled by the investigators for assessing the smile pattern and other features in the smile such as; smile arc, buccal corridors, incisal display and gingival show. Data was analyzed on SPSS version 15. p-value of less than 0.05 was considered significant. Ethical approval was taken.

Results: 77 individuals participated in the study. In majority of the subjects, the smile pattern was cuspid (59.7%) while 40.3% showed commissure pattern of smile. The smile arc was found to be consonant in 53.2% subjects. Mean buccal corridor was ascertained to be 18.78% with a Standard Deviation of ±5.82. Sexual Dimorphism in smile patterns was found to be statistically insignificant (p value = 0.221). Gender difference in smile arc (p value = 0.030) and Buccal Corridor (p value = 0.009) was found to be statistically significant.

Conclusions: Our study concluded that the values of general smile characteristics of our population varied from the results of other studies and sexual dimorphism was found to be statistically significant. Although, the sexual dimorphism in smile patterns was found to be statistically insignificant.

Free Communication Session 92 | 01.09.2017, 15:15 - 16:15 | Room A9.13

Theme: Materials

FC365
Evaluation of Home Bleaching Agents Developed with Different Delivery Systems
Burcu Altindis1, Mustafa Duzyol1, Samet Tosun2, Derya Surmelioğlu1
1Faculty of Dentistry, Department of Restorative Dentistry, Gaziantep University, Gaziantep, Turkey, 2Gaziantep University, Gaziantep, Turkey

Aim or purpose: The aim of this in vitro study is using chitosan, a natural material, instead of carbopol carrier whitening gel for to achieve effective bleaching and to minimize enamel surface changing during whitening process at the same time.

Materials and methods: Forty-four extracted human maxillary central incisors were selected and divided into four groups. Their
enamels examination with SEM-EDX (Energy-dispersive x-ray spectroscopy) and teeth is going to record using a dental contact spectrophotometer. Two groups are going to bleach with used in routine gels %16 carbamide peroxide gel (Opalescence home bleaching kit, Ultradent Products) and %6 hydrogen peroxide (Opalescence Go home bleaching kit) gel (n = 11), third group is going to bleach with our preparations which contain %6 hydrogen peroxide and chitosan, fourth group is going to bleach with our preparations which contain %16 carbamide peroxide and chitosan. And same procedure is going to use same beginning which examination with SEM-EDX and is going to record using dental contact spectrophotometer. Values are going to calculate as ΔE, L*, a*, b* and the data is statistically analyzed (p < 0.05).

Results: There is no statistically difference among groups about colour change and demineralization values. On the other hand, carbamide peroxide + chitosan has the best results on colour change and has less demineralization values.

Conclusions: As a result of this study, chitosan delivery system included home-bleaching agents can be used due to acceptable whitening and minimal enamel surface changes.

**FC366**

**Effect of Bleaching Agent Incorporated Chitosan on Tooth Color Change**

Samet Tosun\(^1\), Esra Duzyol\(^2\)

\(^1\)Gaziantep University, Gaziantep, Turkey, \(^2\)Faculty of Dentistry, Department of Pediatric Dentistry, Gaziantep University, Gaziantep, Turkey

**Aim or purpose:** The aim of this in vitro study was to compare the bleaching efficacy of different concentrations of bleaching agents containing chitosan delivery system on human primary maxillary incisors.

**Materials and methods:** Thirty extracted maxillary incisors teeth which color with A3 or over, randomly divided into 3 test groups; Group 1 was carbopol with Whiteness Super Endo (37% carbamide peroxide) Group 2 was chitosan with 37% carbamide peroxide, Group 3 was chitosan with 16% carbamide peroxide. After finishing canal preparation and root canal filling, the root fillings were removed to a level 2 mm apical to the cementoenamel junction. Glass ionomer base was placed approximately 2-mm thick. Bleaching agents were placed into the rest of the cavity for 3–4 days at 3 times. Bleaching efficiency was measured a spectrophotometer. Values are going to calculate as ΔE, L*, a*, b* and the data is statistically analyzed (p < 0.05).

**Results:** There is no statistically difference among groups about colour change and demineralization values. On the other hand, carbamide peroxide + chitosan has the best results on colour change and has less demineralization values.

**Conclusions:** As a result of this study, chitosan delivery system included home-bleaching agents can be used due to acceptable whitening and minimal enamel surface changes.

**FC367**

**Effect of Resin-Cements on Color and Bond-Strength of CAD/CAM Ceramics**

Ozge Parlar Öz\(^1\), Funda Ozen\(^1\), Derya Sürmelioğlu\(^2\)

\(^1\)Department of Prosthodontics, Faculty of Dentistry, Gaziantep University, Gaziantep, Turkey, \(^2\)Department of Restorative Dentistry, Faculty of Dentistry, Gaziantep University, Gaziantep, Turkey

**Aim or purpose:** Evaluate the effect of different resin cement type and ceramic shades on final color and bond strength of CAD/CAM glass ceramics restorations.

**Materials and methods:** A total of 60 glass-ceramic discs in two different shades (VITA shades A2 and A4) were selected for this study. Ceramic slices of 1 mm in thickness were prepared from the CAD/CAM blocs. All specimens were distributed into 6 groups each and composed of 10 specimens. Total-etch, self-etch and self-adhesive resin cement systems from different manufacturers in A3 shades were chosen for cementation. Firstly, color values of all the ceramic groups specimens were measured according to the CIE L*a*b* system by a spectrophotometer before applying resin cement. After than color measurements of resin-cemented ceramic specimens were performed under the same conditions. ΔE values between the “ceramic” and “ceramic-resin” groups were calculated. All specimens were subjected to thermocycling (5,000 cycles) then shear bond strength test was performed. The fractured surface was assessed by examination of the debonded surfaces with a stereomicroscope.

**Results:** The highest ΔE values were observed for the total-etch resin cement with A2 shade ceramic group (p < 0.05), and the lowest ΔE values were obtained for self-etch resin cement with A4 shade ceramic group statistically (p < 0.05). The highest bond strengths were observed for the self-adhesive resin cement with A4 shade ceramic group (p < 0.05), and the lowest bond strength was obtained for the self-etch resin cement with A4 shade ceramic group statistically (p < 0.05).

**Conclusions:** Ceramic shade and resin cement type significantly effect to the final color and bond strength of CAD/CAM ceramics.

**FC368**

**In-Vivo Study of Different Bleaching Methods for Measuring Mineralization Level**

Derya Sürmelioğlu\(^1\), Özge Parlar Öz\(^2\)

\(^1\)Faculty of Dentistry, Department of Restorative Dentistry, Gaziantep University, Gaziantep, Turkey, \(^2\)Faculty of Dentistry, Department of Prosthodontics, Gaziantep University, Gaziantep, Turkey

**Aim or purpose:** The objective was to evaluate the alterations on surface and mineral loss of human enamel in organic and inorganic contents following bleaching treatment can be observed by means of laser fluorescence device.

**Materials and methods:** In this study, different bleaching methods were compared. 35% and 40% hydrogen peroxide was applied with diode laser; ozone was applied with a specialized device. 60 patients were included in this study; each group consisted of 20
patients. All mineralization measurements were performed before and just after the treatment, and also 14th, 30th days following the bleaching treatment with laser fluorescence device. Indication for use of the device is detecting carries by measuring the demineralised areas.

**Results:** Data were analyzed by Wilcoxon-T test and Kruskal Wallis-Mann Whitney U Test. The values of device showed a significant increase on 40% HP measurements just after the treatment which indicated demineralization ($p < 0.02$). By contrast, values were decreased following ozone bleaching treatment ($p < 0.0007$). The values were normalized after 14 and 30 days for both methods. The values were decreased for 35% HP method after two weeks ($p < 0.007$).

**Conclusions:** To our knowledge, this study is the first, using a laser fluorescence device to detect mineralization levels after bleaching treatment. It is known that bleaching procedures may alter mineralization levels of the enamel and our results showed different mineralization levels for each bleaching method.

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**Similarity of Lip Print Patterns in the Chinese Biological Families**

Sunardhi Widyaputra, Dani Rizali Firman, Su Yinn Chai

**Universitas Padjadjaran, Bandung, Indonesia**

**Aim or purpose:** The role of identification serves many important purposes in life from personal to forensic uses, and cheiloscopy is one of the ways used in forensic identification of a person that deals with lip prints. This study is done to find out if there is a similarity of lip print between the family members.

**Materials and methods:** A descriptive study was done involving 30 biologically related families in the Chinese subrace in Bandung and Kuala Lumpur consisting of the parents and 2 offsprings. A digital camera is used to photograph the lip prints of the samples whereby the photos are later transferred into the computer for observation and classification of the lip print types according to Tsuchihashi’s Classification.

**Results:** The study reveals that the similarity lip print pattern can be found in the children as compared with their parents with a percentage of 52.5%. Whereas between the siblings, a similarity of 46.67% of lip print pattern can be observed in the samples. Type III lip print appears to be the most prevalent among the samples with Type V being the least.

**Conclusions:** Lip print can serve as a secondary supplementary data in forensic odontology. This research suggests that cheiloscopy may be used in paternity and racial determination of an individual.

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**Range of Mandibular Motion Among the Functional Malocclusion Classification**

Rana Ansari¹, Asma Saher², Intiaz Ahmed²

¹Dow University of Health Sciences, Karachi, Pakistan, ²Dr Ishrat Ul Ebad Khan Institute of Oral Health Sciences, Dow University, Karachi, Pakistan

**Aim or purpose:** Temporomandibular joint range of motion assessment is a simple and objective method used to perform a functional evaluation of the masticatory system. The aim of this study was to measure the mandibular range of motion among children of different malocclusion classification.

**Materials and methods:** This comparative study was conducted in Orthodontic department of Dr Ishrat Ebad Khan institute of oral health science. The study population was comprised of randomly selected 250 voluntary individuals from both genders, with ages varying between 15 and 28 years. Billy’s gauge was used to get the record of maximum mouth opening, lateral and protrusive movements of mandible.

**Results:** A significant difference was found in the maximum clinical mouth opening capacity between the Class I and the Class II groups ($47.8 \pm 4.7$ mm vs. $45.4 \pm 5.0$ mm; $p \leq 0.05$) and significant differences in the protrusive mandibular movements were noted between the groups. The maximum clinical mouth opening capacity was significantly different between the boys and the girls in each group (Class I group: $50.4 \pm 1.8$ mm vs. $45.9 \pm 5.2$ mm, $p \leq 0.01$; Class II group: $47.5 \pm 4.5$ mm vs. $43.4 \pm 4.8$ mm, $p \leq 0.05$).

**Conclusions:** These findings suggest that there was considerable difference in the maximum mouth opening, lateral and protrusive movement among the function malocclusion classification.
Materials and methods: Balb/C mouse gingiva (male, 8 weeks) was collected and primary cultures of gingival fibroblast were established through the explant methodology. Briefly, tissue fragments were digested with trypsin and type I collagenase and plated. When an 80% of confluence was reached, 100,000 cells/ml were plated on 12 wells plates and left overnight. Experimental groups were: (1) negative control, untreated cells, (2) vehicle control, 5 μM DMSO; (3) 5 μM DA without medium change; (4) 5 μM DA applied daily without medium change and (5) 5 μM DA applied daily with medium renewal. After 96 h cells were analyzed regarding morphology (optical microscopy of live and crystal violet stained cells), cell number, clonogenic efficiency (clonogenic assay) and cell cycle analysis (flow cytometry with propidium iodide labeling).

Results: DA 5 μM application without (group 4) or with (group 5) medium renewal promoted an increase in cell size and morphological changes, namely spherical appearance and some characteristics of cell death. DA application promoted a dose-dependent decrease in cell proliferation and clonogenic efficiency. However, DA leads to a G2/M increase and the appearance of a population with double DNA amount, probably due to tetraploid formation.

Conclusions: These preliminary results point that DA succeeds in promoting gingival fibroblast dedifferentiation, with morphological and genetic changes compatible with stem-like phenotype. Soon, International Society for Cellular Therapy Criteria characterization will be completed and cells used for regenerative dentistry research.

Free Communication Session 94 | 01.09.2017, 16:30 - 17:30 | Room A9.10

Theme: Pedodontics

FC375
Nano-Hydroxyapatites as Pulpotomy Medicaments in Primary Molars
Monika Grewal, Rajeev Kumar Singh, Richa Khanna
King George's Medical University, Uttar Pradesh, Lucknow, India

Purpose: The purpose of this triple arm parallel group randomized clinical trial was to evaluate and compare clinical and radiographic success rates of Mineral Trioxide Aggregate (MTA), Nano-hydroxyapatite (NHA) and Nanohydroxyapatite-calcium hydroxide (NHA-CH) biphasic cements as pulpotomy medicaments in primary molars.

Materials and methods: 69 carious primary molars indicated for pulpotomy in children aged 4–8 years irrespective of gender were treated with the conventional pulpotomy technique. The teeth were randomly assigned to three groups with 23 teeth in each group based on pulpotomy medicament used: Group I (MTA) as control group, Group II (NHA) and Group III (NHA-CH biphasic cement) as two experimental groups. The treated teeth were clinically and radiographically evaluated every 3 months up to 9 months. The Institutional Ethics Committee approved the research protocol (76 ECM II-BP38).

Results: The clinical success rate in all the three groups at 3 and 6 months was 100%. However, at 9 months, it was 100%, 95.7% and 87% in group I, II and III respectively which was non-statistically significant (p = 0.26). In group I, II and III, radiographic success rate at 3 months was 100%, 95.7% and 87% (non-statistically significant); at 6 months 95.7%, 91.3% and 73.9% (non-statistically significant) and at 9 months 95.7%, 82.6%, and 65.2% respectively which was found to be statistically significant (p = 0.030).

Conclusions: NHA showed similar (non-statistically significant) clinical and radiographic success as MTA, and can be recommended as its replacement because NHA is cost effective than MTA. The NHA-CH biphasic cement performed significantly worse than MTA.
under general anaesthesia. The patients with an age range 4–6 years. After pulp therapy, molars were restored and divided into two equal groups, group (1) stainless steel crowns (control) and group 2 Zirconia crowns. Clinical and radiographic evaluation were conducted at baseline, 3, 6, 9 and 12 months intervals utilizing Scoring system. Data were collected and analysed statistically.

**Results:** No statistical significant difference between Gingival index (GI) and Oral Hygiene index (OHI) scores at base line, 3, 6 months. Stainless Steel crown showed statistically significant higher mean GI and OHI scores than Zirconia crown group at 9 and 12 months. At 12 months, 75.8% of the Stainless-Steel crowns showed accepted clinical and radiographic criteria compared to 80.8% of the Zirconia crowns. The drop out were 5 cases in Stainless Steel crown group comprising 20 molars and 4 cases in Zirconia group comprising 16 molars. However, there was no statistically significant difference between the two groups. At 12 months, 9.2% of the St. St. crowns showed inter-proximal bone resorption compared to 7.5% of the Zirconia crowns. However, there was no statistical significant difference between the two groups.

**Conclusions:** Regarding the results of the current study, Zirconia crowns proved accepted clinical and radiographic success compared to stainless steel crowns with an advantage of better esthetics.

**Free Communication Session 95 | 01.09.2017, 16:30 - 17:30 | Room A9.11**

**Theme: Esthetics**

FC364

**Correlation Between the Shape of Maxillary Central Incisor and Face Form in A Sample Taken from Pakistani Subjects**

Asma Saher Ansari1, Atif Siddique1, Intiaz Ahmed1, Zainab Ifikhar2, Zairah Ansari3

1Dr Israt Ul Ebad Khan Institute of Oral Health Sciences, Karachi, Pakistan, 2Dow University of Health Sciences, Karachi, Pakistan, 3Institute of Business Management, Karachi, Pakistan

**Aim or purpose:** The purpose of this study was to find correlation between the shape of maxillary central incisor and face form in a sample taken from Pakistani subjects.

**Materials and methods:** A total of 180 subjects ranging from 17–25 years of age were selected. Digital photographic records were made; a full-face photograph with the closed lips was obtained. An intraoral photograph of the maxillary central incisor was obtained using cheek retractor, with the lens parallel to the labial surface of the teeth. The outline tracings were printed in distinct transparencies, and 3 general dentists determined if there was correspondence between the tooth and the face forms by superimposition of the transparencies. The experts also classified the central incisor forms into square, ovoid and tapering. A non-parametric Chi-Square test was applied in the statistical analysis (p < 0.05).

**Results:** Results showed by visual method the correlation between maxillary central incisor tooth form and face form, a predominance of the Ovoid shape (100%) in relation to the squarish shape (98%), and the tapering (97.3%), p-value < 0.001, r = 0.99 (Highly correlated).

**Conclusions:** There was a defined correlation between maxillary central incisor tooth form and face form among the male and the female Pakistani subjects.

FC378

**Comparison of Different Techniques in Treatment of Excessive Gingival Display**

Hasan Guney Yilmaz

Near East University, Faculty of Dentistry, Department of Periodontology, Mersin, Turkey

**Aim or purpose:** The aim of this clinical study was to investigate the outcomes of a lip repositioning surgery (LPS) technique with diode laser for the treatment of excessive gingival display (GD).

**Materials and methods:** 36 patients were included. Patients were assigned to an experimental group (n = 18) and treated with LPS with diode laser. In the control group (n = 18) LPS was done with conventional method. The clinical dimensions of GD were measured at baseline, 6 and 12 months post-operatively. Patients completed surveys to evaluate their satisfaction.

**Results:** The baseline GD of 9.8 ± 1.6 mm and 9.2 ± 1.4 mm at laser and control group, respectively. GD significantly decreased to 1.6 ± 1.1 mm and 1.8 ± 1.3 mm at 6 months and was maintained until 12 months (1.8 ± 1.2 mm 1.9 ± 1.5 mm) at laser and control group respectively. There were no significance differences for GD between the groups at any time point. Patients were satisfied with their smile after surgery (96% and 94%). The disadvantage part of LPS was the inability to move the lip during the early healing (88% at laser group and 62% at control group p < 0.05).

**Conclusions:** Treatment of excessive GD by LPS with or without diode laser results in high level of patient satisfaction and predictable outcomes that are stable in the long term. Treatment of excessive GD by LPS with or without diode laser results in high level of patient satisfaction and predictable outcomes that are stable in long term.

FC379

**Sub-Ablative Er,Cr:YSGG Laser Irradiation Under All-Ceramic Restorations: Effects on Demineralization and Shear Bond Strength**

Serdar Baglar

Kirikkale University, Kirikkale, Turkey

**Aim or purpose:** This study evaluated the caries resistant effects of sub-ablative Er,Cr:YSGG laser irradiation alone and combined with fluoride in comparison with fluoride application alone on enamel prepared for veneer restorations. And also evaluated these treatments’ effects on the shear bond strength of all ceramic veneer restorations.

**Materials and methods:** One hundred and thirty-five human maxillary central teeth were assigned to groups of 1a-control, 1b-laser treated, 1c-fluoride treated, 1d-laser+fluoride treated for shear-bond testing and to groups of 2a-positive control (non demineralised), 2b-laser treated, 2c-fluoride treated, 2d-laser+fluoride treated, 2e-negative control (demineralised) for micro-hardness...
testing (n = 15, N = 135). Demineralization solutions of microhardness measurements were used for the ICP-OES elemental analysis. The parameters for laser irradiation were: power output: 0.25W, total energy density: 62.5 J/cm², energy density per pulse: 4.48 J/cm² with an irradiation time of 20 seconds and with no water cooling. 5 % NaF varnish was used as fluoride preparate. ANOVA and Tukey HSD tests were performed (α=5%).

Results: Surface treatments showed no significant effects on shear bond strength values (p = 0.579). However, significant differences were found in micro-hardness measurements and in elemental analysis of Ca and P amounts (p < 0.01). Surface treated groups showed significantly high VHN values and significantly low ICP-OES values when compared with non-treated (-control) group while there were no significance among surface treated groups regarding VHN and ICP-OES values.

Conclusions: Sub-ablative Er,Cr:YSGG treatment alone or combined with fluoride is as an effective method as at least fluoride alone for preventing the prepared enamel to demineralization with no negative effect on shear bond strength.

Free Communication Session 96 | 01.09.2017, 16:30 - 17:30 | Room A9.13

Theme: Materials

FC381
12-Month Clinical Evaluation of Different Adhesive Strategies of Universal Adhesive
Cansu Atalay, A. Ruya Yazici, Gul Ozgunaltay
Hacettepe University, School of Dentistry, Department of Restorative Dentistry, Ankara, Turkey

Aim or purpose: To evaluate the effect of different adhesive strategies of a universal adhesive on clinical performance of cervical restorations over the course of 12 months.

Materials and methods: Thirty-five patients of both sexes (13 female, 22 male) each with at least three non-caries cervical lesions under occlusion were enrolled in this study. Restorations were divided into three groups according to the adhesive strategies utilized (n = 55/group): A universal adhesive, Single Bond Universal used either in selective-etch mode; etch-and-rinse (ER); or self-etch (SE) mode. A total of 165 restorations were placed using a nanofilled resin composite, Filtek Ultimate by a single operator. The restorations were evaluated in accordance with the modified USPHS criteria. Clinical assessments were conducted at baseline and after 6 and 12 months by two calibrated examiners other than the operator. The Chi-square test was used for statistical analysis, at a level of significance of 5%.

Results: At 12 months (recall rate of 100%), all restorations showed only minor changes, and no statistically significant differences were detected among the adhesive strategies used (p > 0.05) except for marginal adaptation criteria (p = 0.010). Restorations placed with self-etch mode of universal adhesive showed worse results. Only one restoration from self-etch mode group failed because of loss of retention.

Conclusions: Regarding the overall performance, all adhesive strategies of the universal adhesive tested had similar and acceptable clinical efficacy after 12 months of service when placed in cervical restorations.

FC382
Color Change Evaluation of Stained and Brushed Different Aesthetic Materials
Derya Dinc, Mehmet Semih Velioğlu, Nevin Cobanoglu
Faculty of Dentistry, Department of Restorative Dentistry, Selcuk University, Konya, Turkey

Aim or purpose: The aim of this study was to investigate the staining susceptibility of various aesthetic restorative materials and the ability of different toothpastes in removing stains from these materials.

Materials and methods: Discs shaped specimens (2 x 8 mm) were prepared for Gradia Direct Anterior, Filtek Ultimate, Tetric N-Flow, Fuji IX GP (n = 90). The specimens were polished and randomly divided into 6 brushing groups (n = 15): 1: Distilled water; 2: Toothbrush; 3: Clinomyn; 4: Sensodyne; 5: Curasept ADS 712; and 6: Ipana Pro-Expert. Except for distilled water group, the specimens in other groups were immersed in tea for 14 days and then were subjected to a brushing test of 14 600 cycles with only toothbrush or one of four different toothpastes. Color changes (ΔE*) were measured using spectrophotometer according to CIE L*a*b* color system; at baseline, after tea immersion and after brushing. Results were statistically analyzed using one-way ANOVA and Tukey HSD test.

Results: After immersion in tea for 14 days, the color change of the other restorative materials are clinically unacceptable except for the Gradia Direct Anterior (ΔE*>3.3). After brushing, the color change of materials is clinically acceptable except for Fuji IX. There was no statistically significant difference in the ability to remove stains among the toothpastes (p > 0.05).

Conclusions: Tea causes different levels of staining in the restorative materials. Brushing with or without toothpaste is effective on stain removal in composite resins.

FC383
Double-Application Effect of Universal Adhesive on Tooth Substrates’ Bond Strength
Meltem Nermin Dursun1, Aybuke Uslu1, Cansu Atalay1, A. Ruya Yazici1, Atilla Ertan2, Gul Ozgunaltay1
1School of Dentistry, Department of Restorative Dentistry, Hacettepe University, Ankara, Turkey, 2School of Dentistry, Department of Prosthetics, Hacettepe University, Ankara, Turkey

Aim or purpose: The aim of this in vitro study was to evaluate the effect of double application on the bonding efficacy of a universal adhesive to different tooth substrates (enamel, coronal and radicular dentin).

Materials and methods: Extracted non-caries human teeth were mounted in self-curing acrylic resin and the surfaces were ground flat to obtain enamel, coronal and radicular dentin substrates. The prepared specimen were randomly assigned according to the tooth substrates and to the application number of a universal adhesive
system (6 groups; \( n = 12 \)). For each tooth substrate, the universal adhesive system, Adhese Universal was applied in self-etch mode either following the manufacturers’ recommendations or with double application. Following the application of the adhesive, resin composite, Tetric N-Ceram was bonded on enamel, coronal and radicular dentin. After storage of samples in distilled water at 37°C for 24 h, they were subjected to shear bond strength (SBS) test. SBS measurements were performed using a universal testing machine at a crosshead speed of 1 mm/min. Data were analyzed using two-way ANOVA (\( \alpha = 0.05 \)).

**Results:** There were no statistically significant differences in shear bond strengths between the single- and double-application of the universal adhesive for each tooth substrate (\( p > 0.05 \)). While no difference was observed between the tooth substrates in single application (\( p > 0.05 \)), double-application for coronal dentin showed significantly higher bond strength than enamel (\( p < 0.05 \)).

**Conclusions:** Application of the tested universal adhesive either single or double did not affect the bond strength of different tooth substrates.

**POSTER SESSIONS 68-81**

**Poster Session 68 | 01.09.2017, 09:30 - 10:30 | Poster Display 1**

**Theme: Oral Surgery**

**P341**

**Efficacy of Low-Level Laser Therapy on Postoperative Discomfort Following Third Molar Surgery**

Ayse Ozcan Kucuk\(^1\), Fatih Asutay\(^2\), Hilal Alan\(^3\), Mahmut Koparal\(^4\)

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**Aim or purpose:** To evaluate the effect of low-level laser therapy (LLLT) on the pain, trismus and swelling of patients whose impacted lower third molar tooth was extracted compared to placebo or “sham” treatment and measure volumetrically to the edema with 3dMD face system.

**Materials and methods:** Forty-five patients 18 years of age or older were included into the study. The study was approved by the Human Ethics Committee of Inonu University. Patients were randomized into three groups (\( n = 15 \)); Group 1, the control group, received only routine management (i.e. application); Group 2 received single-dose LLLT immediately after surgery; and Group 3, placebo group, received sham therapy immediately after surgery. In this study, a gallium-aluminum-arsenide diode laser device was used. The laser was applied extraorally (0.3 W, 40 s, 4 J/cm\(^2\)). The mouth opening, pain and facial swelling evaluated.

**Results:** There was no statistically significant difference in the edema and trismus between the groups. The pain level in Group 2 was significantly lower than in Group 3 at all-time points. Furthermore, the pain level in Group 2 was significantly lower than in Group 1 on day 7.

**Conclusions:** LLLT reduced the intensity of pain following third molar surgery by single dose compared to placebo group and control group. Furthermore, we used a different method (three-dimensional system) to evaluate objectively volume changes of the swelling.

**P343**

**Maxillary Sinus Floor and Maxillary Posterior Teeth: A biometric Assessment**

Mohamed Thili, Faten Khanfir, Mohamed Salah Khalfi, Faten Ben Amor

**Research Laboratory LR12ES11, Faculty of Dental Medicine, University of Monastir, Monastir, Tunisia**

**Aim or purpose:** This study aimed to assess the vertical relationship between the maxillary sinus floor (MSF) and maxillary posterior teeth (MPT) roots using cone beam computed tomography in a Tunisian population.

**Materials and methods:** In this cross-sectional study, 60 CBCT were selected including 33 males and 27 females. Totally 100 Maxillary sinuses were analyzed; enclosing 500 MPT i.e. 1256 root tips. The vertical relationship between each root of the MPT and the MSF was classified into three types: type 1; the roots were in contact with the MSF, type 2; the roots penetrated into the MSF and type 3; the roots were distant from the MSF.

**Results:** For the vertical relationships according to the maxillary teeth, type 3 occurred most frequently in the first premolar (94%). Type 2 was most frequently observed with the second molar (32%). For the vertical relationships according to each root of these teeth and the MSF, the results were as follow: Type 3 occurred most frequently in the first premolar buccal root (98%). For the type 2, the mesio-buccal root of the second molar had the closest proximity with the MSF with 48%. No statistically significant difference was found between the right and left side assessments (\( p = 0.19 \)) but several differences were found between males and females (\( p = 0.011 \)).

**Conclusions:** This relationship between MPT and MSF should be considered in order to prevent an iatrogenic procedure and minimize the risks from an infectious disease within the sinus.

**P344**

**A New Alternative Treatment Technique for Immediate Closure of Acute Oroantral Communications: Platelet Rich Fibrin**

Kani Bilginaylak\(^1\), Aysa Ayali\(^2\)

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**Aim or purpose:** Frequently, buccal advancement flap, palatal rotational flap or buccal fat pad techniques are used to close an oroantral communication (OAC). In this study, Platelet Rich
Fibrin (PRF) clots were used for immediate closure of acute oroantral communications after the extraction of posterior maxillary molars.

**Materials and methods:** Acute oroantral perforations of more than 3 mm in diameter in 21 patients were treated uneventfully by using of PRF clots. None had systemic diseases or sinus disease. After tooth extraction, the diagnosis of acute oroantral communication was examined by Valsalva's maneuver test (compression of nostrils with the fingers and 28 blowing out the air). After the detection of air leak, modification of a ball burnisher instrument which was 3 mm in diameter used to determine whether the size of perforation was greater than 3 mm diameter. The post-extraction socket of the tooth was cleaned with sterile physiologic saline solution and cavity was filled with PRF. PRF clots were sutured to the gingiva to prevent them from migrating to the sinus and for stabilization.

**Results:** At the 7th day follow-up, healthy granulation tissue and at the third week follow-up, epithelialized oral mucosa was observed at the extraction side of all cases.

**Conclusions:** This technique (PRF) enables the closure of OACs without a primary flap closure or any other surgical interventions. So, the use of PRF in immediate closure of acute OACs will make the treatment of OACs easier and also will eliminate the need for special surgical expertise.

**Introduction:** The failures of dental implants for many reasons, autotransplantation has recently a focus of interest in dentistry. The success of autotransplantation has become more consistent compared to that of earlier studies owing to a better knowledge of healing mechanisms of the alveolar bone and periodontal tissues. However, the procedure is technique sensitive and strict regard to certain factors is critical for its success. Meanwhile, Platelet Rich Fibrin (PRF) is popular as a biomaterial which helps in the regeneration of bone and periodontal tissues.

**Case description:** We are presenting a case where PRF and bone graft (Bios) are used in same surgical treatment duration, as well as improve the treatment outcome in a single procedure of transplanting an impacted tooth in the alveolar region previously occupied by an odontoma.

**Discussion:** The clinical and radiological findings at 1.5 year-follow-up showed good result and promise.

**Conclusions/Clinical significance:** Use of PRF with grafts in single-step autotransplantation warrants many trials and comparative studies to fully realise its potential. Also, it is important for patient and physician comfort that the healing process can not needed without two-stage surgery.

**Discussion:**
Immediate Autotransplantation of a Tooth Impacted by an Odontoma: A Case Report
Özner Tuncay, Göksel Şimşek Kaya
Akdeniz University, Antalya, Turkey

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**P346**
ATM Disorders and Prosthesis: Is There a Relationship
Boumedienne Soumia, Houari Takia, Benhenni Moufida, Makrelouf Leila Khadidja, Bouzianne Mohamed, Houari Hakima
Department of Dentistry, Oran, Algeria

**Aim or purpose:** Study the interrelationships between prosthetic factors and ATM disorders in a partially edentulous patient population within the CHUOran prosthesis department.

**Materials and methods:** Case study was carried out. An investigation form was completed with general information, clinical and prosthetic examination. We looked for a possible association between ATM disorders and prosthetic factors using the logistic regression model. The statistical test used is the chi-square test under SPSS.

**Results:** Our sample (106 patients) represents a female predominance of 77.64% and an average age of 39.19 years ± 1.18 years. The prosthesis involved 64 patients (60.4% of the population). We observed a rate of 49.1% without a prosthesis for the upper jaw, 34.9% for a removable prosthesis, 16% for a joint prosthesis and 72% without a prosthesis, 24% for the removable prosthesis and 4% for the lower jaw. In the univariate analysis, several factors had a significant relationship, however the final model obtained had only one explanatory variable adjusted for the other variables with a statically significant association to DAM (adjusted OR = 3.075 with 95% CI = [1.973–9.715], p = 0.04) The description of the clinical profile concluded that the most common sign in the “cases” was lateral pterygoid pain with a value of 81% (43 of 53), pain ‘ATM 69.8% (37 of 53), and joint noise for 35.8 (19 out of 53).

**Conclusions:** There is no association between ATM disorders and prosthetic factors in this population.

**P347**
Influence of Canine Inclination to Sagittal Plane on Smile Aesthetics
Janina Pavlova, Georgi Ilev
Faculty of Dental Medicine, Medical University-Sofia, Sofia, Bulgaria

**Aim:** Establishing the influence of upper canine inclination relative to sagittal plane on profile and full-face smile aesthetics.

**Materials and methods:** 114 surveyed persons, of them 63 dental students and 51 patients with partially or completely removable dentures. The CoreDRAW Graphics Suite X6 software performed the upper canine inclination relative to sagittal plane simulations. Five types of inclinations were reproduced, 7°, 9°, 11°, 13°, and 15°. The respondents assessed the aesthetics of two setups of different profile and full face canine angulation images using a six-point scale.

**Results:** Canine inclination introduces different levels of aesthetics evaluation. The patients showed a significantly higher tolerance to canine angulation changes than the dental students.
Conclusions: The inclination of the canine tooth to the sagittal plane has a greater impact on profile aesthetics than on the frontal view. Smiles with canine inclination of 9° were considered as the most aesthetic. They are preferred by 70% of respondents in the full-face images, while pictures in profile by 48.45%. Smiles with canine inclination of 15° were assessed as unesthetic. In full face images by 1/3 of respondents, while in profile by 2/3 of them. According to 1/2 of the dental students, the smiles with canines inclination of 7° are unesthetic, while the patients don’t share this. To achieve good aesthetics of prosthetics, the inclination of the canine tooth relative to the sagittal plane should vary between 9° and 13° to comply with patients’ preferences.

Introduction: Addiction to synthetic cannabinoids has many oral manifestations such as erosion of teeth. This case report described the multidisciplinary approach of a patient whose teeth and dental appearance were severely compromised as a result of synthetic cannabinoids addiction.

Case description: A 27-year-old male patient with a one-year history of synthetic cannabinoids addiction referred to our clinic for esthetic rehabilitation. He had 2 mm reduced vertical dimension of occlusion and deep acid erosion of enamel and dentin on maxillary and mandibular anterior teeth surfaces due to vomiting after synthetic cannabinoids usage. Following the clinically, radiographic and diagnostic casts examination; periodontal, endodontic and prosthetic treatments were planned. Crown lengthening was applied to the maxillary incisors and endodontic treatment was performed to the teeth that had exposed pulp chambers and extensively deep caries. After 6 weeks healing period, provisional restorations were fabricated using wax-up and mock-up models for adapting new vertical dimension. 2 months later, anterior mandibular teeth were restored with direct composite resin restorations and 15-unit metal-ceramic crowns were prepared for all the maxillary teeth and mandibular left second premolar. The crowns were cemented and followed-up a period of 1 year.

Discussion: This clinical report described a multidisciplinary approach using composite resin provisional for adaptation of new occlusal vertical dimension and rehabilitation of loss of tooth structure. Metal-ceramic restorations may be an economic treatment alternative in such cases.

Conclusions/Clinical significance: The restoration of esthetics and function in patients with synthetic cannabinoids addiction may be achieved with multidisciplinary approach.
analgesia of painful zones and muscular relaxation have positive effects on long, and short term. Also, in the treatment of muscular-joint disorders at the level of stomatognathic system we use the ultrasonotherapy (30.65%) procedures.

Conclusions: The establishment of stomatognathic system functions is based mainly on the neural muscular activity that ensures the mandible, relaxation, re-equilibration, and functional re-education being mandatory for complex rehabilitation of stomatognathic system.

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Theme: Public Health

P351
Practices Concerning Infection Control Measures Among Dental Students & Dentists of Fatima Jinnah Dental College
Kishwer Naz1, Saima Butt2, Zainab Haji1
1Fatima Jinnah Dental College, Karachi, Pakistan, 2Ziauddin University, Karachi, Pakistan

Aim or purpose: To assess the attitude, understanding and practice concerning infection control measures among dental students and dentists of Fatima Jinnah Dental College, Karachi, Pakistan.

Materials and methods: A cross-sectional study was carried out to collect data from 117 dental students and dentists using convenience sampling from Fatima Jinnah Dental College, Karachi, Pakistan. All the individuals were interviewed using a questionnaire based on different questions regarding knowledge, attitude & practice related to different aspects of infection control. Data was analyzed using SPSS version 16.0.

Results: Majority (77.8%) of the individuals were dental students mainly females (69.2%) of which 74.4% belonged to 3rd and 4th/final year. When asked about infection control almost all individuals have a thorough understanding of the different techniques that are important for infection control. 95.7% of the individuals washed their hands after examining/treating the patients with 85.5% using either a hand wash or antiseptic solution. 97.4% of the sample considered isolation using rubber dams a key factor in infection control while treating patients. 93.2% of the sample considers instrument sterilization using autoclaving as an important factor in infection control, majority having complete knowledge of the process involved. Regarding preventive measures, 66.7% of the sample was vaccinated against Hep, B, TB and Tetanus/BCG and 93.2% took protective measures required for disease transmission prevention.

Conclusions: The education & enlightenment of dental students and dentists in terms of preventive measures particularly vaccinations should be emphasized as an obligatory requirement for joining dental school.

P352
Workshop for Caregivers of Dependent Elderly in Rural Areas
Jose Manuel Gonzalez-Perez, Mª Esther Rodriguez-Priego, Rocio Mateos-Palacios
Andalusian Health Service, Córdoba, Spain

Aim or purpose: To improve the knowledge of caregivers at home for dependent elderly people on oral health and prevention of oral diseases.

Materials and methods: A dentist, a nursing assistant and a social worker conducted a workshop for a group of 12 caregivers from a rural area. Prior knowledge test was performed. Then, a session on preventive measures (hygiene, healthy eating, etc.) and oral symptoms or findings which require the dentist to carry out an assessment were given. After that, attendees passed a new test of knowledge. 6 months later, a remembrance session was held and doubts were resolved. Finally, the acquired knowledge was reassessed.

Results: An improvement in oral health and oral disease knowledge and preventive measures was found in the caregivers evaluated. The improvements were maintained over time.

Conclusions: The delivery of workshops on oral hygiene and health aimed at caregivers improves their knowledge. Further studies are needed to assess whether this acquisition of knowledge will, in turn, improve the oral health of these dependent elderly.

P353
Improving Oral Health of Indigenous Children Through Community Partnerships
Ramini Shanmugananthakumar, Parul Marwaha
Monash Health, Melbourne, Vic., Australia

Aim: Using outreach model to increase oral health knowledge and awareness of Indigenous children and parents and improve access to dental services, through community partnerships.

Materials/Methods: The dental team liaised with local community services and programs conducted for Indigenous children, to conduct oral health education and screening sessions within existing settings. These sessions included oral health education delivered in an age appropriate manner, dental story books and information about dental visit. Pictorial goal setting to encourage ongoing commitment to good oral health practices and a showbag for each child were also included. Dental screenings were offered to children and those at high risk of dental caries had a re-mineralising agent applied to their teeth.

Results: This project engaged 125 Indigenous children at Healthy Koori event, 70 children at Back to School Day event, 60 parents were educated at Kick the Butt event and 60 families during Aboriginal week. 300 children received showbags. Feedback forms received from parents and carers reported the session was useful, practical and filled with new and relevant information. Number of Indigenous children accessed dental services:

2014/2015 - 56
2015/2016 - 100
**Conclusions:** The outreach model was effective in engaging a hard
reach community and increasing oral health knowledge of
Indigenous children and parents. The project provided informa-
tion about dental services and the positive experience encouraged
further engagement with services leading to increased access. The
results of this initiative were used to secure Department of Health
funding of $100 000 to replicate this model across the region.

**P354**

Engage, Educate and Improve Oral Health for Patients and Staff
Ramini Shanmugananthakumar, Parul Marwaha
Monash Health, Melbourne, Vic., Australia

**Aim:** To conduct screening and education of patients, supporting
the maintenance and improvement of oral health while on the
waitlist, for the timely provision of services to high risk groups and
to improve oral health knowledge across the organisation.

**Materials and methods:** The organisation’s catchment area is char-
acterised by high oral disease burden, resulting in long waiting
lists. Waitlisted patients were invited to participate in the screen-
ing and education program as part of World Oral Health Day
2016. The oral health education session explained the effects of
poor oral health on overall health. This was followed by a dental
assessment, where patients with more than six decayed teeth or
comprised medical conditions were removed from waiting lists.
Staff booths were placed at organisational sites to provide infor-
mation about dental services and the positive experience encouraged
further engagement with services leading to increased access. The
results of this initiative were used to secure Department of Health
funding of $100 000 to replicate this model across the region.

**Results:** 468 patients participated in the program and were pro-
vided with oral health education and assessment. A quantitative
and qualitative assessment indicated that patients were immensely
satisfied with the program and found the education sessions useful.
A fluoride application was done for 24% of patients at high risk
and 19% of patients were prioritised and given an emergency
appointment.

**Conclusion:** The promotion of oral health knowledge and preven-
tative care provides the opportunity to up skill staff, reduce wait-
ing lists and reduce treatment complexity, improving oral health
outcomes of patients and working towards a ‘preventative model of
care’.

**P355**

The Oral Hygiene Status of Visually Impaired and Healthy
Individuals
Aditi Dhoble, Amey Patil
Terna Dental College, Mumbai, India

**Aim:** The objective of this study is to compare the oral health sta-
tus amongst blind subjects and healthy controls of same age and
sex adults by evaluating Simplified Oral Hygiene Index (OHI-S).

**Materials and methods:** A total of 80 adults (aged 18–60 years)
were included in this study into two groups. Complete Visual
Impairment Adults (CVIA) Group, n = 40 and Healthy Adults
(HA) Group, n = 40. In the first visit, OHI-S was obtained from
all participants. Oral hygiene instructions by audio recordings in
unambiguous language and instructions in Braille were given to the
CVIA Group and were instructed to practice the same. Audio-
visual oral hygiene instructions in unambiguous language were
given to HA Group. All participants were asked to practice oral
hygiene measures following the instructions provided for one
month. In the second visit, after one month, the OHI-S was
recorded and compared with the baseline. Statistical power of
90% and alpha at 0.05 was set for all analyses.

**Results:** OHI-S at baseline was statistically significant (p < 0.0001)
between CVIA Group and HA group. OHI-S after one month was
statistically not significant when compared between both groups.
OHI-S at baseline and OHI-S after one month was statistically sig-
nificant in CVIA Group (p < 0.0001) and HA Group (p 0.0454).

**Conclusion:** The present study shows improvement of oral hygiene
in both the study population by the decrease in the OHI-S. There-
fore, the combination of audio recordings and oral hygiene
instructions in Braille is one of the effective methods of oral
hygiene educational aid for visually impaired individuals.

**P356**

Survival of Primary Molars after Pulpotomy in 1–7-Year-Old
Children
Elena Maslak1, Anastasia Osokina1, Evgenia Arjenovskaya1,
Bakhtinur Khudanov2
1Volgograd State Medical University, Volgograd, Russia,
2Tashkent State Dental Institute, Tashkent, Uzbekistan

**Aim or purpose:** To study the survival rate of primary molars after
pulpotomy in 1–7-year-old children.

**Materials and methods:** The retrospective study was conducted in
2009–2014 years. The records of 34655 children aged 1–7 years
who visited municipal dental clinics were studied. The cases of
reversible pulpitis treatment by vital (N = 7858) and non-vital
pulpotomy (N = 7550) in primary molars were included into the
study. Pulpotomy was provided by 38 dentists in 2009–2011 and
after treatment all children visited their dentists annually for
3 years. The criterion of success was based on the survival of a
tooth after pulpitis treatment. The primary molars naturally exfoli-
ated on time were not taken into account. The proportions (%) of
surviving teeth and 95% confidence intervals (CI) were calculated
in 1, 2 and 3 years after pulpotomy. The differences in propor-
tions were assessed by Student’s t-test at p-value < 0.05.

**Results:** The proportions of primary molars surviving after vital
pulpotomy were 94.0% (CI 93.5%–94.5%) after 1 year, 87.6%
(CI 86.9%–88.3%) after 2 years, and 79.8% (CI 78.9%–80.7%)
after 3 years. The survival rates after non-vital pulpotomy were
89.2% (CI 88.5%–89.9%), 69.8% (CI 68.8%–70.8%) and 45.7%
(CI 44.6%–46.7%) after 1, 2 and 3 years respectively. The differ-
ces in proportions were statistically significant (p < 0.001).

**Conclusions:** In routine dental practice, the survival rates of pri-
mary molars decreased from 1 to 3 years after reversible pulpitis
Semi-Rigid Splint Method for Severe Dental Trauma
Hidenori Yoh, Haruka Yoshida, Yuki Matsuzaki, Toshiomi Shirase, Yoshimori Uchikawa, Hisashi Okamura, Hiroyuki Karibe

Introduction: The prognosis of dental trauma is affected by the initial management. We had been using a semi-rigid splint method for various dental traumas in clinical practice. The purpose of this presentation is to introduce this simple and effective splint method. We present the following cases.

Case description: Case 1: A 14-year-old girl visited our clinic two hours later after her #11 tooth was horizontally displaced to labial side. We repositioned and splinted the tooth by the semi-rigid splint method which uses flowable composite resin and elastomeric chain. One week later, pulpectomy was performed for this tooth. After one month follow up, we performed a root canal filling for this tooth and removed the splint. After one year follow up, the tooth was asymptomatic without inconvenient findings. Case 2: A 4-year-old boy visited our clinic two hours later after his #61 and #62 teeth were displaced to lingual side. We repositioned and splinted these teeth by the semi-rigid splint method. One month later, we performed root canal treatment for the teeth and removed the splint. Then, his injured teeth were keeping in a favorable outcome. Three years later, the successor permanent teeth erupted normally.

Discussion: By using the semi-rigid splint method, dentists can confirm the healed status of injured teeth without splint removal. We consider that this is one of the important advantages of this method.

Conclusions/Clinical significance: From the prognoses of the 2 cases in the present study, this method seems to be effective for severe dental traumas with alveolar bone fracture.

Oral Health State and Treatment Needs of Children with Down Syndrome
Hind Boufdil, Maria Mtalsi, Aya Amorri, Samira Elarabi

Faculty of Dentistry, Casablanca, Morocco

Aim or purpose: Down Syndrome is the most common congenital genetic disorder in the world affecting many organs including the orofacial region. The aim of this study is to evaluate the oral health status and treatment needs of children affected with Down syndrome.

Materials and methods: A transversal and descriptive study with a sample of 111 children was performed. The children were aged between 4 and 14 years. The oral status and treatment needs were recorded.

Results: The dental caries severity is evaluated as moderate. The DMFT index was 0.62 and dmft index was 3.38. The gingival inflammation was found in 46.84% and 62.2% of the children present a need for a prophylactic.

Conclusions: Based on our results, we can conclude that the Moroccan child with Down syndrome had a special oral health status requiring an adapted oral dental preventive program.
Pathogenesis is thought to involve an altered epithelium-mesenchymal interaction. ED patients have oligodontia (or sometimes anodontia) and malformed teeth in addition to other abnormalities involving the skin, sweat glands, or hair. The quality of life is greatly impaired very early, with major difficulty for feeding and the drawbacks of dental anomalies.

**Case description:** This case report outlines the oral rehabilitation treatment of a 9-year-old girl with ectodermal dysplasia. The patient exhibited only the permanent maxillary and mandibular first molars bilaterally and maxillary central incisors. The treatment to improve his appearance and oral function included a removable prosthesis. The extraction of the central teeth was performed, followed by acquisition of maxillary and mandibular impressions for fabrication of acrylic removable partial dentures with circumferential clasps on the first molars. The dentures allowed recovery of the vertical dimension and excellent esthetics.

**Discussion:** Early prosthetic rehabilitation is an alternative, which could become a first line treatment. It makes the subsequent treatment steps easier. In this case a prosthetic rehabilitation in the form of a removable acrylic prosthesis was made, achieving excellent esthetics, functionality and adaptation, thanks to which a considerable improvement in self-esteem has been obtained.

**Conclusions/Clinical significance:** The prosthetic rehabilitation is an appropriate technique for ED diseases, and it may further psychologically motivate child patients in the social environment during the growing period.

**Case description:** A 47-years-old female patient referred to our clinic with aesthetic complaints, and metal ceramic restoration on #11, 21 and congenital missing tooth #12 were observed. Following clinical and radiographic examinations, crown lengthening operation was performed to rearrange the smile line. For prosthetic treatment, crown restorations were decided for #13, 11, 21, 22, 23, 24, 31, 32, 41, 42 due to need for dentin level preparations, whereas laminate veneers were planned for #14, 15, 25, 33, 43 for minimally invasive approach. Diagnostic wax-up was conducted on model and mock-up was transferred to mouth. The preparations were performed on mock-up and impressions were obtained with polyether impression material (Impregum, 3M ESPE). The restorations were fabricated by using pressable lithium-disilicate glass-ceramic (IPS e-max Press, Ivoclar Vivadent). The adaptation and aesthetic of restorations were checked intraorally, and restorations were cemented with total-etch resin cement (Variolink II, Ivoclar Vivadent), following glaze procedure.

**Discussion:** In the case with congenital unilateral tooth deficiency, laminate veneers based on minimal invasive principle may be used successfully to replace the missing teeth by shaping teeth forms. 

**Conclusions/Clinical significance:** According to preliminary results, smile design and symmetric aesthetic is provided successfully with full ceramic crown and laminate veneers in cases with congenital unilateral tooth deficiency.

**Conclusions:** The psychological evaluation of the complete edentulous patient becomes essential for the optimum prosthetic treatment and also for the consolidation of the patient – doctor relationship. The psycho – social behavioral analysis will bring benefits in all directions.
Materials and methods: The geometric model has been achieved by 3D scanning of a mandibular overdenture on two implants that has been imported than into the ANSYS program for performing numerical study. In the study were analysed stress, displacement and deformation amplitudes of the model after applying forces. 16 clinical cases were simulated varying interimplant distance, the site of force application (frontal or lateral side), unilateral or bilateral, implants being positioned symmetrical or asymmetrical to the centre line, while keeping the force constant (100 N).

Results: The effects of the simulation were displacement of the overdenture with different amplitudes and torsion of the denture base relative to the site of the force and of the position of the implants. Stress distribution caused by masticatory forces become more even with increase of the interimplant distance. Thus, if the implants are positioned closer to the force application, the stress transmitted through the prosthesis to support tissue, both in the working as well as the non-working side, are lower, that being due to a less displacements of the denture as well.

Conclusions: The most favourable situation regarding an even force distribution correlated with a low displacement of the denture and less stress on implant-prosthetic connection was the position of the implants distal from canine area with a correct occlusion on lateral site.

Effect of The Coloring Zirconia Liner on Micro Shear Bond Strength to Veneering Porcelain
Aneta Mijoska, Biljana Kapusevska, Natasha Stavreva, Emilija Bajraktarova, Olga Kokoeva-Ivanovska
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Aim: White zirconia blocks are often colored for achieving better esthetic appearance. The aim of this in-vitro study was to determine if zirconia liners used for coloring of the zirconia blocks have influence on the adhesion strength to veneering ceramic material.

Materials and methods: We made two groups of twenty-four zirconia Cercon, DEGUDENT specimens. The specimens from the first group were abraded with aluminum oxide and colored with liner Cercon Ceram Kiss Liner, while control group was baked without liner. Veneering material Duceram Kiss was placed on the top using special bonding clamp. The samples were positioned in acrylic mold and tested, with the piston positioned as close to the bonded interface. The piston was moving vertically down until the zirconia/ceramic interface fractured.

Results: The results were expressed as the strength of the connection (MPa), and compared with the control samples without liner. According to descriptive statistical analysis in the group of samples without surface treatment the strength of the adhesion for p > 0.05 (p = 0.25), was slightly lower compared to the strength of adhesion in the group of samples with surface treatment liner. The resulting values of the strength of adhesion in first group vary in the interval 36.03 ± 15.33 MPa.

Conclusions: the application of porcelain liners is procedure that besides coloring has positive impact on shear bond strength.
hyperventilation attack, the patient was instructed to rest. The patient’s condition however did not improve and the tachypnea persisted; therefore, midazolam 2 mg was administered intravenously. Within a few minutes, the respiratory rate decreased significantly, and optimal sedation was obtained.

Discussion: In this case, the patient had dementia and the people around him did not adequately understand his stress or anxiety level before the surgery, which was considered as the possible cause of the event. Furthermore, this case serves to underscore the fact that the diagnosis of a hyperventilation attack can be difficult, since elderly patients are also at a high risk for structural heart disease, such as ischemic heart disease.

P367
Peripheral Compound Odontoma: A Rare Case Report
Mariem Meddeb, Sameh Sioud, Amani Aroua, Rachid Hammemi, Radhia Ben Ali, Adel Bouguerzi, Abdellatif Chokri, Jamil Selmi
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Introduction: Odontomas are one of the most common benign odontogenic tumors of epithelial and mesenchymal origin. They are considered to be hamartomatous malformation rather than neoplasm.

Case description: We describe the case report of a 12-year-old male patient with no notable medical history; referred by the pediatric dentistry department for bone swelling in relation to 12. The intraoral examination revealed the presence of a vestibular arch next to the 12 which has been in palato-position and 13 which is during the eruption. The panoramic radio shows the presence of a dense superficial image superimposed with 12. Anatomopathological examination of the specimen confirmed the diagnosis of peripheral compound odontoma.

Discussion: Odontomas are consisted essentially of enamel and dentine, but they may also contain varying amounts of cementum and pulp tissues. Odontoma commonly occur in permanent dentition and rarely reported associated with primary teeth. They can occur at any age, but are most common in the first two decades of life. The World Health Organization defines odontomas as being of two types: complex and compound odontomas. Clinically, they may be classified as central and peripheral odontomas. The extraosseous or peripheral odontomas occurring in the soft tissue covering the tooth bearing portions of the jaws, having a tendency to exfoliate. They are rare, judging from the paucity in the literature. They are usually asymptomatic and are often discovered during routine radiography, yet these are often associated with tooth eruption disturbances.

Conclusions/Clinical significance: Odontoma in an extraosseous location represents a challenge for diagnosis.

P368
Squamous Cell Carcinoma of Mandibular Gingiva in Chewing Tobacco
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Introduction: Squamous cell carcinoma is a kind of epithelial tumor and the most common malignant tumor of the oral cavity.

Case description: We describe a case report of 38-year-old male who consult for ulcerated lesion localized in the mandibular gingiva. The patient had the habit of chewing Neffa since 16 years. A biopsy was performed for this suspicious lesion and the anatomopathological examination confirmed the diagnosis of squamous cell carcinoma. The patient was referred to oncological department. We also continued the followed of this patient during and after the period of treatment. We also describe intend to highlight the association of gingival carcinoma with tobacco chewing habit.

Discussion: Frequently, carcinoma of the gingiva does not have the clinical appearance of a malignant neoplasm, and manifests initially as an area of ulceration with may be a purely erosive lesion and this leads to misdiagnoses. Several risk factors such as tobacco, human papilloma virus, alcohol have been described in the literature as causative agents for head and neck squamous cell carcinoma. Neffa is the predominant form of chewing tobacco in Tunisia. The consumption of smokeless tobacco was more widespread in rural than in urban areas and was relatively high among poorly educated men from economically deprived backgrounds. Neffa tobacco chewing has long been a social habit in Tunisia.

Conclusions/Clinical significance: All of the major forms of tobacco use like cigarettes, cigars, pipes and smokeless tobacco (chewing tobacco and snuff) are known to cause oral cancer.

P369
Inverted Left Maxillary Central Incisor: A Case Report
Neziha Kececioglu1, Erdinc Sulukan2, Ayseun Nergiz Tanidir1, Mehmet Seyrek2
1Recep Tayyip Erdogan University, Rize, Turkey, 2Inonu University, Malatya, Turkey

Introduction: Abnormal tissue interaction during tooth formation may lead to developmental problems and ectopic eruption. Trauma, impacted supernumerary tooth, endocrine disorders, hereditary factors are some of the reported reasons for the displacement of the tooth bud which may cause ectopic eruption. However, ectopic development and eruption of teeth into the other regions such as maxillary sinus, mandibular condyle, coronoid process and the nasal cavity is rare.

Case description: A 16-year-old man referred to the Department of Oral and Maxillofacial Surgery, with the chief complaint of a missing tooth in the maxillary anterior region. No history of trauma was reported and the patient was systemically healthy. The panoramic radiograph revealed the inverted eruption of the
left maxillary central incisor through the nasal cavity. Due to the inversion and inadequate space, it was decided to remove the impacted tooth under local anesthesia.

**Discussion:** Inverted teeth have been reported in both maxilla and mandible, and most of them are invertedly impacted third molars and premolars. The intraoral or extraoral ectopic tooth position was frequently encountered in patients with a trauma history or the presence of an impacted supernumerary tooth. In the present case neither a supernumerary tooth nor any history of trauma was reported. The inversion thought to be caused by other extraordinary factors.

**Conclusions/Clinical significance:** Early diagnosis of an impacted tooth is substantial. Annual visits should be made by patients even in early ages in order to prevent undesired situations.

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**P370**

**Analysis of Knowledge Regarding Oral Cancer Amongst UTech Undergraduate Students, Jamaica**

Su Hrun, Jody-Ann Rhule, Ajani Blake, Danielle Cowan-Williams, Kristina Large, April Stewart, Chantol Pringle, Irving McKenzie

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**Aim or purpose:** The aim of the study was to assess the knowledge of undergraduate students at University of Technology with regard to assess awareness, knowledge and attitude towards oral cancer.

**Materials and methods:** A questionnaire-based survey of oral cancer awareness study was performed on undergraduate students in different study groups. Data were entered by Microsoft® Excel 2007 and analyzed using SPSS (version 20) using Chi squared test with p value <0.05.

**Results:** Of most concern is the inability to identify potentially malignant lesions, which could be treated early to avoid progression to cancer. The awareness about oral cancer in an aid to early detection of oral cancer. This knowledge is essential to implement an effective health education program to reduce the incidence and mortality from oral cancer.

**Conclusions:** Dental trainees undergraduate students had a significantly better understanding of the risk factors for oral cancer when compared to other undergraduate students. Further research is required to identify areas to be addressed in targeted education of undergraduates.

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**P371**

**Analysis of Instrumentation Methods’ Cutting Ability in Flattened Channels: Reciprocating Versus Rotary**

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**Aim or purpose:** To determine the degree of intraradicular wear in flattened channels as a consequence of rotating and reciprocating files instrumentation, by means of analytical weighing.

**Materials and methods:** Ninety-six lower incisor teeth were selected and stratified into 4 groups (n = 24 teeth per group). The specimens had their crowns sectioned horizontally with the aid of a carborundum disc, respecting 2 mm limit of the coronal portion remainder. Thereby, the average length of 16 mm of the dental roots was obtained. The samples were exposed in a table at room temperature for 7 days. After that, the initial weighing (P0) was carried out on a digital analytical balance. The radicular channels were instrumented using 2 rotary systems PROTAPER NEXT and iRACE and 2 reciprocating systems RECIPROC and WAVE ONE according to each group. After instrumentation, the specimens were exposed to room temperature for 7 days and afterwards the second weighing (P1) was performed.

**Results:** The difference found among the values ascribed to the two weighings of the specimens were statistically analyzed using analysis of variance (ANOVA) and the Tukey test. When the rotary and reciprocating systems were compared, the tests showed that the reciprocating limbs increased significantly the intraradicular dentine wear related to the rotating files, in the following order (p < 0.05): WAVE ONE, RECIPROC, PROTAPER NEXT, and iRACE.

**Conclusions:** Wave One reciprocating file was considered to be the most effective system for flattened root channel wear.

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**P372**

**Treatment of Permanent Immature Teeth with Pulp Necrosis: Apexification vs Regeneration**

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**Introduction:** Treatment of permanent immature teeth with pulp necrosis has always been delicate because of the fine thickness of the roots canals and the often short root.

**Case description:** Traditional approaches like root canal therapy and apexification procedures have been successful in treating immature permanent teeth with infected root canals for many years, but these modalities fail to re-establish healthy pulp tissue in treated teeth. Regeneration-based approaches aims to offer high levels of success by replacing diseased or necrotic pulp tissues with healthy pulp tissue to revitalize teeth. The aim of this work is to present and discuss decision and treatment of two clinical cases of permanent immature teeth with pulp necrosis.
**Discussion:** The applications of regenerative approaches in dental clinics have potential to dramatically improve patients’ quality of life. This work also offers a detailed overview of present regenerative endodontic approaches aiming to revitalize teeth and also outlines the problems to be dealt before this emerging field contributes to clinical treatment protocols. It conjointly covers the basic trilogy elements of tissue engineering.

**Conclusions/Clinical significance:** Regenerative Endodontics provides the hope of converting the non-vital tooth into vital once again in comparison with apification but we should outline the problems to be dealt before this emerging field contributes to clinical treatment protocols.

**Materials and methods:** Ninety plastic resin blocks with a curved canal were prepared to a size 35/.04 taper with ProFile. All the blocks were filled with brain heart infusion broth inoculated with Enterococcus faecalis and incubated for 10 days. Specimens were assigned to four groups: CNI – conventional needle irrigation using a 30-gauge side-vented needle (Stropko NiTi Flexi-Tips), EV – EndoVac system, IS – ultrasonic irrigation using IrrSafe, and EA – sonic irrigation using EndoActivator system. The remaining bacteria were sampled with paper point and each sample was separated into two different tubes. PMA (Biotium Inc.) was added to one of the tubes, and the other was left untreated. Then, DNA extraction and real-time PCR was performed.

**Results:** A paired t test showed significant differences in the Ct values with PMA and without PMA treatment in all experimental groups (p < 0.05). The Cts values with PMA treatment of IS and EA were significantly higher than EV and CNI (p < 0.0001). There was no significant difference between the Cts values of IS and EA (p = 0.092).

**Conclusions:** PMA treatment in conjunction with real-time PCR was reliable in detecting viable cells, and was useful in analyzing the disinfection of root canals. Ultrasonic irrigation and sonic irritation produced better antibacterial efficacy than EV and CNI.

**P374**

**Antimicrobial Efficacy in the Infected Curved Canals**

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**Aim or purpose:** To evaluate the necessity of propidium monoa- zide (PMA) treatment after antibacterial irrigation methods and to compare the antibacterial efficacy of different canal irrigation method in the infected curved canals.

**Materials and methods:** The MesoCS nanoparticles were prepared using sol-gel methods. In addition, the mesoporous structure, specific surface area, pore volume and morphology of the MesoCS nanoparticles were analyzed. The apatite-mineralization ability, in vitro odontogenic differentiation, drug delivery and antibacterial properties of the MesoCS nanoparticles were further investigated.

**Results:** The results indicated that the 200 nm-sized MesoCS nanoparticles, synthesized using a facile template method, exhibited a high specific surface area and pore volume, with internal mesopores (average pore size: 3.05 nm). Furthermore, the MesoCS nanoparticles can be used as drug carriers to maintain sustained release of gentamicin and fibroblast growth factor-2 (FGF-2). The MesoCS-loaded FGF-2 might stimulate more odontogenic-related protein than CS due to the FGF-2 release.

**Conclusions:** It is to infer that MesoCS nanoparticles might be one potentially useful regenerative material in dental.
Poster Session 75 | 01.09.2017, 12:00 - 13:00 | Poster Display 1

Theme: Epidemiology

P377
Improvements in Caries Epidemiology Among Russian 12-Year-Olds From 2007–2016
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Purpose: To study changes in the prevalence and experience of caries among 12-years-old children from 2007 to 2016 in Northwest Russia.

Materials and methods: This study is a part of a nation-wide cross-sectional study. Altogether, 1234 children at the age of 12 were randomly selected in the Arkhangelsk region in 2016. Caries experience in permanent teeth was assessed by two calibrated dentists in accordance with the WHO-2013 criteria at the D3 level. The DMFT index and the Care Index (FT/D(3)MFT) with the WHO-2013 criteria at the D3 level. The DMFT index and the Care Index (FT/D(3)MFT*100) were calculated. Dichotomous and continuous data from 2016 were compared with earlier published results from 2007 from the same region using Z-tests for dichotomous and one-sample t-tests for continuous data.

Results: The prevalence of caries decreased from 93.7% in 2007 to 75.4% in 2016 (p < 0.001). Overall caries experience decreased from 2.9 in 2007 to 2.4 in 2016 (p < 0.001). The mean number of decayed teeth decreased from 1.6 to 0.9, p < 0.001. The average number of filled teeth did not change (1.4 vs. 1.5, p = 0.299), while the mean number of missing teeth increased from 0.03 to 0.04 (p = 0.035). The Care Index increased from 48.8% to 60.4% (p < 0.001).

Conclusion: The prevalence and experience of caries in Northwest Russia significantly decreased over the last decade. While the average number of decayed teeth decreased the mean number of missing teeth and the Care Index increased. Our findings may reflect improvements in both prevention and dental services in Northwest Russia over the last decade.

P378
The Oral Health of Children in Rural Part of Croatia
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Aim or purpose: The aim of the research is to establish the frequency of caries and the connection between the found state and the known risk factors for caries development on the sample of rural Croatia school children, and to establish the existence of specific caries risk factors.

Materials and methods: The oral status of children between the ages of 6 and 16 has been examined within the standardized conditions. The questionnaires for the younger (6–10) and for the older (11–16) age group have been analysed. In order to analyse the questionnaire data, the ordinal variables, such as: socioeconomic status (SES); oral hygiene (OH), and nutrition habits (PN) have been formed from a series of indicators. A total of 547 children have been examined.

Results: The middle value of DMFT 3.97 ± 3.51 and DMFS 7.43 ± 9.29, and dmft 3.29 ± 3.44 and dmfs 8.77 ± 11.97 has been established by means of clinical examination. With children at the age of 12 registered DMFT is 2.14 ± 2.99. In the first years of life and the oral health of the younger child there is no statistically significant connection (p > 0.05). Also, between the oral health of older rural children and their SES there is a statistically significant connection (p = 0.024). However, no statistically significant connection between oral health and OH (p = 0.841) and between oral health and PN (p = 0.173).

Conclusions: The registered values in the clinical part of this research and the data obtained by surveying examinees are proof that the urgent need for introducing prevention programmes within the area of the Republic of Croatia exists.

P379
Relationship Between Chewing and Malocclusion Appearance: Epidemiological Tunisian Study
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Aim or purpose: Among children, chewing plays an important role in inducing, continuous stimulations of the maxillary arches and dento-alveolar structure growth. Unfortunately, with the decline of the consistency of food, there’s a deficiency in masticatory function and many types of malocclusion may appear. The aim of this work is to analyze the relationship between chewing dysfunction and malocclusions appearance.

Materials and methods: An epidemiological study has been conducted on 2002 schoolchildren with mixed dentition, from different 7 socioeconomic areas of Tunisia during the 2006–2007 school year. The choice of governorates and schools was made randomly. In this study, we assessed the quality and efficiency of chewing by determining the importance of dental wear on temporary teeth by using the index of Knight et al (TWI: tooth wear index). And then, we related Tooth wear index of our sample to some occlusal characteristics (dental crowding and lateral crossbite).

Results: This national study included 2002 schoolchildren of 9 ± 3.15 years old mean age. 49.6 percent of them have many wear surfaces on all deciduous teeth (score 2 of TWI). We found that dental crowding was more frequent in dental wear absence (p = 0.000), but we didn’t found any statistically significant correlation between lateral crossbite and dental wear (p = 0.439).

Conclusions: Dental wear was more common in rural areas because they adopt a hard and abrasive food. Dental crowding was more frequent and severe in dental wear absence.
Prevalence of Temporomandibular Disorders Amongst Young Polish Adults
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Aim or purpose: Although, temporomandibular disorders (TMD) have become a considerable health problem of individuals in modern societies, especially among women and emotional burden sufferers, their etiopathogenesis still comes into question. The study aimed to determine the prevalence of TMD and their correlation with psychoemotional factors among young Polish adults.

Materials and methods: This epidemiological study was carried out in 456 students aged from 19 to 30 (58% females) in the years 2012–2014. First part of examination comprised a survey concerning demographic data, emotional burden, oral parafunctions, subjective symptoms of TMD, and headaches. During second part, that is clinical examination, patients were divided into three groups: (1) with muscle disorders, (2) with disc displacements, and (3) other joint disorders, according to Research Diagnostic Criteria for Temporomandibular Disorders (RDC/TMD) Axis I. The chi-square test was used to test data and 5% significance level was established.

Results: Generally, 246 participants exhibited at least one TMD symptom and among them women were significantly predominant (n = 164, p < 0.05). Muscles disorders were observed in 82 (77% females), disc displacements in 202 (65% females) and arthralgia in 81 (77% females) participants. Excitable and/or emotionally burdened students reported more often fatigue and tightness of facial muscles, cervical muscle pain and headaches (p < 0.05), and these complaints were more frequent in women (p < 0.05).

Conclusions: TMD are a considerable health problem among young Polish adults. Women are more predisposed to TMD. The psychoemotional factors, such as excitably and emotional burden are related to muscular disorders.

Estimation and Projection of Dental Manpower-A Case Study
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Aim or purpose: To find out dental personnel working and to forecast the same for the year 2027 in a defined geographic area.

Materials and methods: Data on number of dental personnel that are delivering services to the public in a defined geographic area i.e., Southern Indian State, Andhra Pradesh was obtained through multiple sources due to lack of official information and a consensus was obtained. Demand and utilization aspects were considered for projection of dental personnel. SPSS 20 version was used for statistical analyses and the tests applied are Pearson correlation, Spearman correlation coefficient and one way ANOVA. Statistical significance was set for p < 0.05.

Results: The total number of dental personnel working currently in the study area are 3300 spread over 160 205 square kilometers across 13 administrative areas for a population of 49.67 million. There is strong positive correlation (p = 0784) between the ratio of urban and rural population to the number of dental personnel availability (p = 0.002). Considering WHO and FDI method of estimating man power requirement based on effective demand the total number of dentists required for the year 2027 are 3600 for the study area.

Conclusions: Dental public health programs, oral health care services delivery and policy in dental education need estimation and projection of dental work force.
Effect of Surface Treatments on Flexural Strength Of CAD/CAM Materials
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Aim or purpose: The purpose of the study was to evaluate the effect of different surface treatment methods on the flexural strength of a lithium disilicate ceramic, a resin nano-ceramic, a hybrid nano-ceramic and a polymer-infiltrated ceramic network (PICN) material.

Materials and methods: Fifty bar-shaped specimens (4 × 1 × 14 mm) from each material (totally 200 specimens) were milled from CAD/CAM blocks and divided into 5 groups according to the surface treatment method as control (no treatment), hydrofluoric acid (5%) etching, Al2O3 sandblasting, 2W and 3W Er,Cr:YSGG laser irradiation (n = 10). Specimens were subjected to 3-point bending test and flexural strength values were statistically analyzed.

Results: Flexural strength values of the specimens in control groups revealed that lithium disilicate ceramic showed the highest and PICN material showed the lowest strength values, statistically. All surface treatment methods decreased the flexural strength of all tested materials (p < 0.05) except for 2W laser irradiated sandblasted PICN material and 2W laser irradiated resin nanoceramic of which flexural strengths were not statistically different from control groups (p > 0.05). For lithium disilicate ceramic and hybrid nano-ceramic the lowest strength values were found at sandblasting group, whereas the lowest values were detected at 3W laser and acid etching groups of PICN and resin nano-ceramic materials (p < 0.05).

Conclusions: Surface treatment methods affected the mechanical strength of CAD/CAM materials. Er,Cr:YSGG laser application with 2 W output power may be an alternative surface conditioning method to acid etching and sandblasting for chairside CAD/CAM materials.

The Effect of Surface Treatments on Translucency of Monolithic Zirconia
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Aim or purpose: The purpose of this study was to evaluate the effect of mechanical surface treatment methods on the translucency of monolithic zirconia treated at pre-sintered and sintered stage.

Materials and methods: Seventy square-shaped specimens with dimensions of 0.8 × 10 × 10 mm were milled from zirconia discs. Specimens were divided into 7 groups according to the surface treatment method (4W Er,Cr:YSGG laser irradiation; sandblasting with 120 μm Al2O3; grinding with diamond bur) and whether the treatments applied before or after sintering (pre-sintered and post-sintered) and a group was served as control with no treatment (n = 10). All specimens were immersed into coloring liquid (A2) prior to sintering and sintered at 1450°C for 8 h. CIE L* a* b* values were recorded at black and white backgrounds with a spectrophotometer and translucency parameter (TP) was calculated for each specimen. Data were statistically analyzed.

Results: There was no significant translucency difference between control group and the post-sinter groups (p > 0.05) while pre-sintered groups showed significantly higher TP values (p < 0.05). The highest TP value was detected at pre-sintered Er,Cr:YSGG laser group. No statistically significant difference was found among the surface treatment methods for post-sinter groups.

Conclusions: Application of surface treatments at pre-sintered zirconia increased the translucency of the specimens. Mechanical treatment methods at pre-sintered stage might remove material from the surface which causes a decrease in thickness and an increase in translucency. Clinicians should take into consideration that material removal due to surface treatments at pre-sintered stage may also affect the mechanical strength of zirconia.
**P386**

**Aesthetic Recovery by A Cast Post and Core**

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**Introduction:** The reconstruction of the highly dilapidated, endodontically treated teeth continues to represent a clinical challenge integral to the daily work of any practitioner active in dental prosthesis. In this field, it is not only a matter of taking into account the various aspects, both biological, but also aesthetic considerations. Cast post and core used in combination with different false stump techniques serve for the preprosthetic reconstruction of the lost hard tissues, at the same time restoring a sufficient retention surface for the prosthetic part to be sealed.

**Case description:**
- First case: realization of two cast post and core with a direct method.
- Second case: realization of two cast post and core with indirect method.
- Third case: realization of a cast post and core reinforced by composite.

**Discussion:** Perception, decision making and implementation of coronal root reconstruction have evolved over the past 20 years. Improved techniques associated intra bonding into a root with maximum economy of dental tissues offers the possibility to achieve a reinforced composite post and core. However, cast post and core still retain specific information, especially when the number of residual coronal walls is deficient.

**Conclusions/Clinical significance:** A modern dental medicine with the current knowledge must be biocompatible, functional, aesthetic and reliable.

**Poster Session 77 | 01.09.2017, 12:00 - 13:00 | Poster Display 3**

**Theme: Materials and Oral Surgery**

**P387**

**Investigation of The Retentive Strength of Orthodontic Bands Cemented With CPP-ACP-Containing GIC**

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**Aim or purpose:** This study aimed to investigate the retentive strength of orthodontic bands cemented with CPP-ACP containing GIC.

**Materials and methods:** Sixty extracted human pre-molars teeth were embedded in acrylic resin and randomly divided into two groups of 30 specimens. In group 1, bands were cemented to the tooth with a GIC. In group 2, CPP-ACP (1.56% w/w) was added to the GIC before cementation. The retentive strength of each group was determined with a universal testing machine. Further, the amount of cement remaining on the tooth surface was evaluated under a stereomicroscope, and the adhesive remnant index (ARI) score was determined.

**Results:** Results of this study showed that there were no significant differences between the groups in retentive strength and ARI score.

**Conclusions:** In conclusion, modification of GIC with 1.56% w/w CPP-ACP had no negative effects on the retentive strength of the bands so can be used during fixed orthodontic treatment.

**P388**

**Delayed Implant Placement After Enucleation of a Keratocystic Odontogenic Tumor**

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**Introduction:** The keratocystic odontogenic tumor (KCOT), previously termed an odontogenic keratocyst, is a benign intraosseous tumor of odontogenic origin. KCOTs are notorious for their high recurrence rate following treatment and their locally aggressive behavior. In this case report, a 74-year-old female patient with a large KCOT and her treatment followed by dental implants was presented.

**Case description:** A 74-year-old female patient was referred to our clinic complaining of pain and light swelling on her left mandibular molar region. The orthopantomography (OPD) showed a unilocular cystic lesion involving the roots of premolar and molar teeth and extending to the mandibular basis. According to patient’s medical history, KCOT was seen and enucleated in the same area 20 years ago. All involved teeth were extracted and the infected cyst was totally enucleated. Carnoy’s solution was applied to the bone. According to histopathological examinations, the lesion was diagnosed as a KCOT. During 2-year period, osseous healing was seen normal and no recurrence was observed on the CBCT, therefore, implant placement was planned. 4 months after the implant placement, no complications were detected on radiography and therefore, prosthetic rehabilitation was completed.

**Discussion:** Garde at al. (2010) reported that they applied implants after 6 months of KCOT enucleation and they did not encounter with any recurrence and implant failure after 7 years follow-up.

**Conclusions/Clinical significance:** Surgeons should consider the high recurrence rate after KCOT enucleation when applying implants to the enucleated area.

**P389**

**Removal of a Palatally Impacted Maxillary Second Premolar**

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**Introduction:** Dental impaction was defined as being failure of a tooth to emerge into the dental arch, usually due to blocking of its eruption.
path or lack of space. Maxillary premolars were reported to have a low incidence of impaction, especially the second premolars. Consequently, second premolar may either erupt ectopically or not erupt at all and become impacted. Position of an impacted tooth is important due to anatomical considerations such as neurovascular structures.

**Case description:** A 12-year-old male was referred to orthodontic treatment. Panoramic radiography revealed the presence impacted second premolar in the left maxillary side. Occlusal radiography was taken to understand the position of the tooth. Since there was not enough space for orthodontic retraction and it was an obstacle to orthodontic treatment, surgical removal of impacted premolar was planned. A full thickness palatal flap was raised carefully. Impacted tooth was removed, no hemorrhage occurred and flap replaced back and sutured.

**Discussion:** Most of the cases of impacted premolars are reported accidentally on routine screening of patients or when the patients report to the dental clinic with some other problem. Few of the impacted premolars are also advised for removal by the orthodontists before the start of fixed mechanotherapy.

**Conclusions/ Clinical significance:** Great care is required during elevating the flap and extracting the impacted tooth from the palate to avoid damaging the neurovascular bundle, which contains the palatal artery, vein and nerve, to prevent complications such as hemorrhage.

### P390
**Mucocele of the Hard Palate**

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**Introduction:** Oral mucoceles are benign lesions that can appear as blisters or lumps at any site of the oral cavity where minor salivary glands are present. Their etiology is associated with local trauma and consequent rupture of salivary gland duct. Clinically they are characterized by single or multiple, soft, fluctuant nodule, ranging from the normal color of the oral mucosa to deep blue. The treatment for OM shall be either complete excision, marsupialization, dissection, cryosurgery, carbon dioxide lasers, electrocautery, intra-lesional injection of sclerosing agent or steroid injection. However, recurrence can occur and a new surgical intervention is necessary.

**Case description:** A 67-year-old man presented with a 2-month history of painless swelling in the palate. The clinical examination revealed a 0.5 cm diameter bluish-purple submucosal swelling on the hard palate. There was no evidence on orthopantomography. The clinical diagnosis was mucocele. After a mucosal incision with diode laser was performed we realized that the cystic lesion was greater than clinical appearance and had grown into the bone. 1x1.5 cm cyst was removed and Protein Rich Fibrin (PRF) used to fill and close the wound. The histopathologic examination confirmed the diagnosis. The patient was healed and advised to undergo regular follow-up examinations.

**Discussion:** Mucoceles need to be surgically excised or removed by laser or cryotherapy. Other therapies that are of less well-proved efficacy.

**Conclusions/Clinical significance:** Oral mucoceles of minor salivary glands are rarely larger than 1.5 cm in diameter and are always superficial. Mucoceles found in deeper areas are usually larger.

### P391
**Mechanical Loading Improves Sealing Between Glass Ionomer Cements and Dentin**

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**Aim or purpose:** To investigate the effect of mechanical loading on the sealing ability of glass-ionomer cements bonded to sound or caries-affected dentin (CAD).

**Materials and methods:** Flat mid-coronal sound or carious human dentin surfaces were created. Carious dentin was selectively removed and CAD was exposed. Glass ionomers (conventional -CGICs- and resin modified -RMGICs-) were doped with Rhodamine-B and bonded to dentin surfaces (sound and CAD). Half of the teeth were stored for 24 h and the other half were submitted to mechanical loading. In half of the samples of each experimental group, pulpal chambers were filled with aqueous/ethanol fluorescein to ascertain for nano leakage. The rest of the molars were immersed in xylanol orange solution in order to evaluate if remineralization occurred at the underlying dentin. The bonded interfaces were analyzed with dye assisted confocal microscopy evaluation for nanoleakage, cement permeability and remineralization.

**Results:** CGICs attained adequate interfacial integrity and high sealing ability in CAD, after load cycling. Unloaded samples treated with RMGICs presented a rhodamine B-labeled absorption layer with limited nanoleakage, but after load cycling, nanoleakage, microporomeability and dye sorption decreased. Remineralization was favored by mechanical loading.

**Conclusions:** Sealing ability, interfacial integrity and dentin remineralization of RMGICs bonded to sound and CAD is improved after mechanical loading.

### P394
**Interdisciplinary Approach: The Key to Success**

**Guillermo Galván Lobo, Esther Ordax, Rosa Maria González, Jose Manuel Murciego, Ana Rey, Noelia Hernández, Alberto Rey, Camila Díez, Inés Garrachón, Rosalía Marcano, Luis Daniel Pellicer, Mario Alvarado**

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**Introduction:** According to Maslow modified pyramid, it is established that humans needs esthetics to continue up towards self-actualization. In this case, we went through several disciplines over 2 years of treatment to obtain esthetics results.
Case description: A 45-year-old man, non-smoker, was referred to orthodontic practice for concerns related to his Class II div. II bite and dental mobility in 12, 11, 21 and 22 teeth. To improve it, we used fixed multibracket appliances. After 18 months, we carried out temporary composite reconstructions in 12, 11, 21, 22, and proceed with implant (AVINENT®) placement in 36 and 46 position. After two years, due to orthodontic treatment, a periodontal regeneration was observed; it is when we placed connective tissue grafts in 12 and 21. We ended with tooth-bleaching and esthetic composite reconstructions in 12, 11, 21, 22, 32, 31, 41, 42, aluminia tooth crowns in 43, 44 and 45 and crowns on implants 36 and 46.

Discussion: Initially the periodontal defects from cementum-enamel junction to the sulcus were: 12 (8 mm), 11 (1 mm) and 21 (9 mm); after two years, a periodontal regeneration was observed, and the defects were: 12 (2 mm), 11 (0 mm) and 21 (1 mm). With proper motivation, orthodontic treatment made possible to continue with an interdisciplinary approach. Periodontal tissue regeneration was achieved, providing surgical and restorative conditions to complete the treatment plan.

Conclusions/Clinical significance: This case report demonstrates, by means of interdisciplinary approach, a pleasing treatment outcome for a patient with dental mobility and aesthetic concerns.

P395
Impacted Maxillary Canine and Fixed Prosthesis Compromise:
Clinical Case
Noelia Carolina Hernandez-Polo, Jose Manuel Murciego, Rosa Maria González, Guillermo Galván, Ana Rey, Alberto Rey, Camila Diez, Inés Garrachón, Esther Ordax, Rodrigo Quevedo, Rosalia Marcano, Luis Daniel Pellicer, Mario Alvarado
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Introduction: When it comes to frequency, the maxillary canine is the second most impacted tooth, after the third molars. The most common position to find them is palatally.

Case description: A 65-year-old male patient refers mobility in a fixed prosthesis of 22-23-24. Clinically and radiographically the presence of the 23 that is erupting trough the palate, causing mobility of the prosthesis. A total thickness flap was made, scalloped without discharges from 21 to 25 respecting the papillae, to be asatraumatic as possible. After the flap was removed, a tooth section of the coronal part of the piece was performed, followed by a longitudinal tooth section of the root, in the buccal-palatine direction. At the time of luxating the fragments, pressure was applied correctly and the fixed prosthesis had a minimal movement.

Discussion: This surgical technique was chosen to avoid the removal of the fixed prosthesis, meeting the aesthetic and functional expectations demanded by the patient. In this case, implant treatment was discarded due to the defect left by the canine.

Conclusions/Clinical significance: The fixed prosthesis presented an uncertain prognosis, but thanks to the surgical extraction performed the prosthesis could be preserved.

P396
Unusual Case of Inflammatory Myofibroblastic Tumor presenting as a jaw swelling
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Introduction: Inflammatory myofibroblastic tumor (IMT) is a benign lesion composed of myofibroblasts and inflammatory cells. It can be benign and nonrecurring, benign but locally recurring, of low-grade of malignancy or fully malignant. The diagnosis and treatment of these lesions can be difficult.

Case description: A 33-year-old man presented to dental unit with a swelling of the right cheek of 1 month duration. Intraoral examination showed a solid swelling at the site of the first and second premolars which tested positive to sensitivity test. Cone-beam computed tomographic imaging showed osteolytic lesions, suggesting an aggressive neoplasm requiring incisional biopsy. Histopathological examination indicated an IMT. The lesion was entirely removed under general anesthesia.

Discussion: The distinction between inflammatory myofibroblastic and malignant tumors is of paramount clinical importance because of the rapid growth of the tumor. Complete surgical excision is the treatment of choice because of its unpredictable clinical behavior. The patients with oral IMTs require periodic postsurgical follow-up to detect local recurrence.

Conclusions/Clinical significance: Although it is very rare, IMT should be included as a differential diagnosis in patients with compact masses in the upper jaw.

P397
Comprehensive Periodontal Treatment of a Patient with Severely Advanced Chronic Periodontitis
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Introduction: Chronic periodontitis, the most common form of periodontal disease, is an infectious disease characterized by loss of periodontal attachments and alveolar bone destruction. The base treatment of chronic periodontitis is mechanical debridement of tooth surfaces. The aim of this case report is to describe the steps taken in the long-term rehabilitation of a patient with severely advanced chronic periodontitis.

Case description: A 26-year-old, systemically healthy, nonsmoker female patient admitted to our clinical with complaints of swinging in the teeth and bleeding in gums. Initial periodontal therapy was performed after clinical measurements were recorded. The patient was called to the monthly inspections. All pathological pockets were eliminated at the third month.
Intracoronal splint was performed to keep the 2nd and 3rd degree mobile teeth in the anterior regions of upper and lower jaw in the mouth. Subsequently, the patient was followed up every 3 months. One year later, free gingival grafts were performed due to inadequate keratinized tissue in the lower anterior region. After this procedure, the patient was called to the 1st, 3rd and 6th month controls.

**Discussion:** Conservative approaches to advanced chronic periodontitis may provide more promising results than extraction of teeth. In this study, successful periodontal treatments were obtained in a patient with severely advanced chronic periodontitis.

**Conclusions/Clinical significance:** Patients with advanced chronic periodontitis can be rehabilitated very well with meticulous periodontal treatment. In this study, because of patient’s own teeth were protected, patient satisfaction was achieved and a better aesthetic results were obtained.

**Poster Session 79 | 01.09.2017, 13:15 - 14:15 | Poster Display 2**

**Theme: Materials and Oral Surgery**

**P398**

**Effect of Different Mouthwashes on Hydric Behavior of Composite Resins**

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**Aim or purpose:** This study aims to explore the hydric behavior of two composite resins under the effect of different mouthwashes.

**Materials and methods:** An in vitro study was conducted to determine the values of one-week solubility and absorption of two composite resins: the Filtek™ Z350 (3M ESPE, St Paul, MN, USA) and Amelogen® Plus (Ultradent, United States) after immersion in different solutions: artificial saliva, Paroex® (SUNSTAR GUM®), Aftamed® (SUNSTAR GUM®) and Listerine®. Data were submitted to analysis of variance (ANOVA).

**Results:** The solubility and absorption values of samples immersed in Listerine were superior than the different samples immersed in Aftamed® and Paroex®. The absorption and solubility of the Z350 XT composite resin is higher than that of the Amelogen® Plus in artificial saliva (p = .013, p = .115 respectively). The value of the solubility of the resin Z350 XT after immersion in Listerine® remains high compared to the value of the solubility of the resin Amelogen® Plus.

**Conclusions:** Using a mouthwash can change the oral conditions and therefore influence the properties of composite resins. The alcohol-free mouthwash; Paroex® and Aftamed® affect less the hydric behavior of composite resins.

**P399**

**Necrotizing Sialometaplasia of Hard Palate Mucosa in A Heavy Smoker**

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**Introduction:** Necrotizing sialometaplasia is a rare pathology of the minor salivary glands and it is thought to result from ischemia of vasculature supplying the salivary glands. Clinically, it usually presents as a painless ulceration of the oral cavity mucosa.

**Case description:** A 41-year-old, otherwise healthy male patient was reported to the Department of Oral Surgery because of a painless ulceration on the right side of the hard palate. He was a heavy smoker which can be a predisposing factor for the necrotizing process on the minor salivary glands of the hard palate. The ulceration was biopsied and the histopathological examination revealed necrotizing sialometaplasia. Additionally, systemic and local antibiotics of metronidazole were introduced. After two weeks of antimicrobial treatment, the lesion began to decrease in size, therefore the treatment was limited to local metronidazole only.

**Discussion:** Necrotizing sialometaplasia is often misdiagnosed as squamous cell carcinoma. Hence biopsy must be performed to confirm the diagnosis. In the presented case, the histopathological examination revealed necrotizing sialometaplasia and ruled out squamous cell carcinoma. According to the literature, necrotizing sialometaplasia heals by itself and no treatment is usually required. The lesion should be treated symptomatically, if pain, fever or other signs and symptoms are present. Antibiotics or steroids are usually prescribed.

**Conclusion:** Necrotizing sialometaplasia is a rare lesion of the oral mucosa and it is often misdiagnosed as squamous cell carcinoma. Thus, histopathological examination is essential to differentiate between the two entities.

**P400**

**Giant Complex Odontoma of the Mandible: A Spectacular Case Report**

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**Introduction:** Complex odontomas are relatively benign rare tumors. They are most of the time asymptomatic. In some cases, these tumors become large, causing bone expansion associated with facial asymmetry.

**Case description:** A 35-year-old male patient, reported to our department with a painless swelling on the left lower jaw lasting since 2 weeks. His medical history was unremarkable. Clinically, there was gross facial asymmetry with diffuse smooth swelling in the left mandibular angle. The buccal and lingual cortices were expanded and hard. There was no evidence of any abnormality in other teeth in the left mandibular region. The Orthopantomogram incidence showed a spectacular well-defined radiopacity, surrounded by a radiolucent halo, associated to a dentigerous cyst with secondary inferior tooth displacement. The clinical and
radiographic diagnosis evoked a complex odontoma. The treatment was based on the excision of the whole impacted teeth and the lesion all around. Which was sent to anatomopathological study and concluded a complex odontoma.

**Discussion:** Odontomas are considered as a developmental tumors rather than true neoplasm. Odontomas are generally asymptomatic, usually remain small. Occasionally it does become large and may produce expansion of bone with consequent facial asymmetry. The treatment of complex odontoma is excision of lesion and allowing impacted tooth to erupt.

**Conclusions/Clinical significance:** Despite their benign nature, large complex odontomas can cause cortical expansion facial asymmetry and traumatic ulcers. Therefore, it is important to diagnose these lesions as soon as possible and treat them appropriately so as to avoid the possible complications.

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**P401**

**Color Stability and Micro-hardness of Bulk-Fill Composite**

**Materials**

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**Aim or purpose:** Assess the micro-hardness and color stability of the new bulk-fill (BF) composite restorative materials.

**Materials and methods:** Five types of composite materials (3M Filtek Z350, 3M Filtek Bulk-Fill, Tetric N-Ceram Bulk Fill, smart dentine replacement, sonic fill 2 Kerr) were investigated. Samples from each composite material (n = 20; 10 mm in diameter and 2 mm in thickness) were assigned to one of four different solutions: Tea (G1), Turkish-Coffee (G2), Vimto (G3), and distilled water (control; G4). Baseline (T1) shade of all specimens was recorded using a spectrophotometer as well as after 10 days (T2), 1 month (T3) and 2 months (T4) of immersion. Measurements were obtained against a black background spectrophotometer and CIE L*a*b data was used to calculated ΔE for each group. Vickers Micro-hardness values were obtained by testing the same specimens before and after immersion. One-way analysis of variance (ANOVA) followed by Tukey’s post hoc test were utilized for all comparisons at 0.05 significance level.

**Results:** At T2, all BF materials showed more discoloration compared to universal composite (Z350) with G2 had the most discolored specimens. Smart dentin replacement was the most discolored at T3 and tea produced the highest ΔE values except for smart dentin composite where coffee was the most. G1 was associated with the highest ΔE values at T4. There is no significant difference in micro-hardness between 1st and 2nd values.

**Conclusions:** Bulk-fill composite materials have more tendency for discoloration with tea and coffee solutions. No significant difference micro-hardness.

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**P403**

**Oral Biofilm Microbiome of children with Dental Caries**

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**Aim or purpose:** The oral biofilm is a *sine qua non*-factor in the development of dental caries in children. The aim of this study was to evaluate the oral biofilm microbiome of children with dental caries.

**Materials and methods:** A cross-sectional descriptive study was carried out with 75 children between 5 to 9 years old from public schools in Cartagena-Colombia. All participants were diagnosed with dental caries according to the criteria of the International Caries Detection and Assessment System (ICDAS II) by a calibrated examiner. Biofilm samples were collected from dental surfaces with caries lesions. Bacterial DNA was extracted and used for analysis by HOMINGS (Human Oral Microbe Identification using Next Generation Sequencing) based on sequencing of the V3-V4 region of 16S rRNA gene using Illumina MiSeq platform. The microbiological diversity was estimated by the Shannon diversity index.

**Results:** 379 species-specific and 68 genus-specific probes were identified. The most predominant genera were Streptococcus, Lactobacillus, Fusobacterium, Leptotrichia, Veillonella and Neisseria; these representing 28% of all bacterial DNA present. The bacterial species with higher relative abundance in the oral biofilm microbiome were Streptococcus sanguinis, Streptococcus mutans, Lactobacillus salivarius, Leptotrichia sp. HOT 417, Lactobacillus acidophilus, Lachnospiraceae [G-2] sp. HOT 096, Veillonella dispar, Leptotrichia wadie, Parascardovia denticolen; these species representing 21.3% of all bacterial DNA present. The Shannon diversity index was 3.02 (SD = 0.35).

**Conclusions:** These findings show a high microbiological diversity in samples of oral biofilm present in dental surfaces with caries lesions.

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**P404**

**Streptococcus spp. in Oral Biofilm of children with Dental Caries.**

**Case-control study**

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**Aim:** There is strong evidence showing the association of *Streptococcus* spp. with the onset and development of dental decay. The
aim of this study was to evaluate and compare the presence of Streptococcus spp. in oral biofilm of children with dental caries and caries-free through Next Generation Sequencing technique.

**Materials and methods:** A case-control study was carried out with 108 children between 5 to 8 years old from Cartagena-Colombia. The study groups had a 1:1 ratio and were matched by age and gender. The diagnosis of caries was performed according to the criteria of the International Caries Detection and Assessment System (ICDAS II) by a calibrated examiner. Biofilm samples were collected from dental surfaces with caries lesions (case group) and supragingival plaque samples from caries-free tooth surfaces (control group). Bacterial DNA was extracted and used for analysis by Illumina MiSeq platform (v3-v4 primers). Statistical analysis was performed using Mann-Whitney test with Benjamini-Hochberg's correction for multiple comparisons.

**Results:** S. sanguinis, S. intermedius, S. mutans, S. anginosus, S. constellatus and S. sobrinus were present in both groups. S. sanguinis is the most abundant species 13.1% (cases) and 16.1% (controls). However, S. mutans had a relative abundance associated with caries (10.3% - Case and 0.49% - Control) (p = 0.000). The species mentioned above represent 26.2% of all bacterial DNA present. S. gordonii, S. mitis, S. oralis among others were identified with genus-specific probes.

**Conclusions:** These findings show the association of S. mutans with dental caries and the diversity of Streptococcus spp. in oral biofilm.

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**P405**

**Prevalence of Dental Caries on The Two Permanent Molars**

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**Aim or purpose:** The purpose of this work is to estimate the prevalence of caries of the first and the second permanent upper and lower molars and to identify sites and stages of dental caries concerning an adult population.

**Materials and methods:** A transversal epidemiological study was conducted on 462 adults aged between 20 and 64 years, over a period of two months from December first 2014 to the 31 January 2015. Using a 4 parts survey:

1st part: Examined adults’ Free general information.
2nd: Oral hygiene and lifestyle information.
3rd part: Periodontal status.
4th part: Dental examination of the first and the second permanent molars.

The analysis was done using SPSS software version 10.0.

**Results:** The prevalence of dental caries in the first and the second permanent molars was 48.9%, 35.7% of the patients still had the 4 first permanent molars, and 49.6% still had the 4 second permanent molars.

**Conclusions:** The prevalence of caries on the first and second molars was high, due to poor oral hygiene, high consumption of cariogenic foods and irregular visits to the dentist.

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**P406**

**Oral rehabilitation of a Patient with Osteopetrosis: Case Report**

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**Introduction:** Osteopetrosis is a disorder that includes impaired osteoclast function and increased bone density. Infantile osteopetrosis is a severe form and has characteristics such as diffusely sclerotic skeleton, monocyclic anemia, and infection susceptibility caused by granulocytopenia. Most patients with infantile osteopetrosis often experience developmental delay or dwarfism.

**Case description:** A 14-month-old girl diagnosed with osteopetrosis was referred from her pediatrician. Initiative caries on deciduous anterior teeth were observed in clinical examination. Oral hygiene management was performed. The patient revisited for caries control at age of 4. Several problems including skeletal asymmetry, growth retardation, narrow upper arch, crowding dental caries, missing teeth, and abnormal tooth development were observed. Endodontic and restorative treatments were performed on deciduous molars under sedation after prophylactic antibiotics injection. At a periodic follow-up, multiple deciduous teeth were reinfected and extracted. Oral rehabilitation with removable partial denture was conducted.

**Discussion:** In osteopetrosis patients, active involvement at medical and dental clinics for sugar intake management and oral hygiene care is obligatory. They are highly susceptible to infection due to compromised immune system along with problems associated development of osteomyelitis and sepsis. In this report, early extraction was conducted due to reinfection. Therefore, cooperation with a pediatrician and prophylactic antibiotics are mandatory before beginning therapeutic procedures for the child and a dentist should always put efforts to prevent space loss.

**Conclusions/Clinical significance:** The management of patient with osteopetrosis requires comprehensive approach to characteristic clinical problems including hematological and metabolic abnormalities, recurrent infections, bone complications, and neurological sequela.

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**P407**

**Comparative Study of The Tightness of Two Coronal Filling Techniques**

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**Aim or purpose:** The purpose of this study is to evaluate the tightness of four composites: Bulk fill, hybrid, microhybrid, nanohybrid composite, and to compare the bulkfilling technique with the oblique obturation technique.

**Materials and methods:** 120 proximal cavities (4 x 4 mm) were performed on 60 molars. The cavities were randomly assigned to 4 experimental groups (n = 30):

- Group 1: monoblock obturation technique with Bulk fill composite.
- Group 2: oblique obturation using the hybrid composite.
- Group 3: oblique obturation using the microhybrid composite.
NGS-based Analysis in Exosomes from Parp1-deficient ES Cells

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Purpose: Following observation of odontoma-like hyperplasia in the dentin of poly (ADP-ribose) polymerase (Parp1) knockout mice without bone disorder from aging, we studied the mRNA of exosomes derived from Parp1−/− ES cells to examine the role of Parp1 in cell death, differentiation, and odontogenesis.

Materials and methods: Parp1−/− ES cells were previously established from wild-type ES cells. Small RNAs were extracted from exosomes isolated from cell culture supernatants. Next-generation sequencing (NGS) was used to determine the expression levels of the various small RNAs, and Parp1 genotype-associated pathways and miRNA regulation were analyzed. The statistical significance was determined using the hypergeometric distribution (p < 0.05).

Results: 118 and 211 miRNAs were up or downregulated, respectively, more than 2-fold in Parp1−/− ES cell-derived exosomes, with upregulated miRNAs estimated to target 810 genes while downregulated miRNAs targeted 716. Pathway analysis using these target genes revealed that the upregulated miRNAs were significantly associated with MAPK signaling cascades, suggesting that the expression of genes involved in these pathways may be suppressed in Parp1−/− ES cell-derived exosomes. Based on quantitative analysis of miRNA expression, 365-3p, let7a-5p, 98-5p, 196-5p, 203-3p, and 146a-5p were increased more than 2-fold in Parp1−/− ES cell-derived exosomes, with gene ontology enrichment analysis revealing that upregulated miRNAs were significantly annotated with cell death.

Conclusions: Parp1 deficiency in ES cells leads to inhibition of cell death, possibly by affecting extracellular signals. We propose that Parp1 has an extracellular function that contributes to the control of death, differentiation, and odontogenesis through miRNA regulation in exosomes.
Conclusion: These data indicated that BG/PCL scaffolds, especially 30wt%-B-BG/PCL scaffolds potential to be an ideal clinical material for bone regeneration.

P411
Bocas Sanas Holanda-Maimon School-based Oral Health Education and Hygiene Programme
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Aim or purpose: 1) to examine whether the DMFT level has decreased among 12-year-old children in the Dominican Republic, and 2) to evaluate the impact of the School-based Oral Health Education and Hygiene programme (in line with the Fit of School method) of the Foundation Bocas Sanas Holanda-Maimon (BSHM).

Materials and methods: The DMFT and PUFA levels of 136 primary school children (intervention group N = 65 and control group N = 71) were measured in the region of Puerto Plata by two oral hygienists. Also 34 teachers and volunteers, who are involved in tooth brushing behavior of the children at six ‘BSHM-schools’, completed voluntarily an evaluation questionnaire.

Results: Findings show that in seven years the DMFT-level at ‘BSHM-schools’ has significantly decreased (from DMFT = 3.9 to DMFT = 3.6, p = 0.025). The DMFT- and PUFA-levels in both groups were significantly different (p < 0.001) i.e., less caries (p < 0.001), fillings (p = 0.001), pulp involvement (p < 0.001) and fistulas (p = 0.045). More caries has been seen at schools, which were visited by tourists (p = 0.008). The evaluation by teachers showed a moderate understanding, remembering, implementation of this BSHM-programme, and the availability of sufficient fluoride toothpaste and water were the determining factors.

Conclusions: A decreased DMFT level was found in 12-year-old children at the ‘BSHM-schools’. This BSHM-programme should be more focused on schools in regions with a negative impact of tourism on caries prevalence. It is important to create an optimal working alliance among teachers and BSHM-volunteers in the school-based oral health interventions. Moreover, longitudinal studies are needed to improve the results.

P412
Cross-Sectional Study of Defect of Dental Enamel in Preschool Children
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Aim or purpose: To investigate the prevalence of defect of dental enamel (DDE) and its associated factors in the primary teeth of children aged 3 to 5 years old in Pudong District, Shanghai, China.

Materials and methods: This is a cross-sectional study. One thousand and three hundred and seventy-three children aged 3 to 5 years old were randomly selected. The dental caries examination was visual-tactile and incorporated the World Health Organization’s (WHO) criteria for diagnosis of pit and fissure and smooth surface lesions. Modified DDE index was used in the current study according to previous literature. The questionnaire survey included the basic information and questions associated to DDE of primary teeth. Logistic regression model was performed to detect the related factors with DDE.

Results: The prevalence of DDE of the primary teeth of children aged 3 to 5 years old in Pudong District was 34.6%. Among the children, 17.3% of them have hypoplasia. Age, sex, birth height, childhood anemia and alcohol intakes in mother’s pregnancy were associated to DDE of primary teeth. Furthermore, the prevalence of dental caries of children with DDE was significantly higher than children without DDE (64.2% compared with 40.2%, p < 0.05).

Conclusions: The prevalence of DDE was relatively high compared to other countries. Since DDE was a risk factor for dental caries, the prevention and early diagnosis of DDE are very important for the prevention of dental caries.

P413
Biomin can Remineralize White Spot Lesions Surrounding Orthodontic Brackets
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Aim or purpose: The efficacy of Biomin paste in remineralization of white spot lesions developed around orthodontic brackets and compared to efficacy of fluoride gel (A.P.F. formula. Contains 1.23% fluoride ion at pH 3.5, Bee Brand pascal, USA) applied for 24 h and for 4 min.

Materials and methods: The buccal surfaces of 60 extracted human non-caries premolar were used. Orthodontic brackets were cemented on buccal surface of all specimens and then masked with acid resistant nail varnish leaving a treatment window of 3 mm. All specimens were embedded to a buffered demineralization solution (pH 4.5) for 4 days. The specimens were divided into 4 groups: Biomin paste, Fluoride (4-min application), fluoride (twenty-four hours application), and the rest of specimens served as control (n = 15). After cross sectioned 100150 μm thickness was obtained. TMR (Transverse Micro Radiography) technique was used to observe the lesion depth and the mineral density of the demineralized lesion (delta z) before and after treatment. One way ANOVA was used to compare the obtained results (p < 0.05).

Results: Delta z values and lesion depth showed statistically significant reductions in specimens treated with Biomim when compared to the other three groups (p < 0.05).

Conclusions: Biomim paste has high remineralization capacity for remineralization of white spot lesions surrounding orthodontic brackets.