

WEDNESDAY, 30 AUGUST 2017
 WDC 2017 – ABSTRACT BOOK
 FREE COMMUNICATION SESSIONS 25–48
 and POSTER SESSIONS 25–47

FREE COMMUNICATION SESSIONS 25–48

Free Communication Session 25 | 30.08.2017, 09:00–10:00 | Room A9.9

Theme: Digital Dentistry

FC097

Bone Morphometric Analysis in CBCT 4 and 128-MSCT

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Aim: The aim of this study was to evaluate the quality of images obtained by multislice computed tomography (MSCT) and cone beam computed tomography (CBCT) scanners using morphometric parameters.

Materials and methods: After approval by the Research Ethics Committee, four human dry mandibles were selected and scanned by 4- and 128-MSCT, CBCT with 0.2, 0.3 and 0.4 mm voxel sizes, and a computed microtomography (microCT). For microCT, the mandibles were sectioned and the right and left sides were analysed separately. The axial slices of both sides of the mandible were processed and analysed using ten different bone microstructure parameters. The microCT images were the gold standard. 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 and Dahlberg index. For the morphometric descriptors that passed the normality test, comparisons were made using ANOVA followed by the Dunnett Multiple Comparisons Test (using the microCT images as the gold standard). When the data did not pass the normality test, comparisons were made using the Friedman test followed by a Dunn post hoc. We adopted an error probability of 5%.

Results: The results showed a superiority of CBCT images with 0.2 mm voxel size and 128-MSCT.

Conclusions: We can conclude that the CBCT scanner with 0.2 mm voxel size and 128-MSCT performed better in terms of the quality criteria evaluated in this study.

FC098

Soft Tissue Simulator and Volume of 3D Models from CBCT

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Aim: The aim of this study is to compare the volume of virtual three-dimensional models by concomitant cone beam computed tomography (CBCT) with and without soft tissue simulator.

Materials and methods: After approval by the Research Ethics Committee, eight dry mandibles were scanned twice; and in one of the acquisitions the jaws were submerged in a container containing water, which served as a soft tissue simulator. The generated files were exported to DICOM, and then processed with software for the generation of three-dimensional models that were saved with Standard Triangle Language (STL) extension. The volume of the three-dimensional models was calculated by the same program and the data was collected in a specific worksheet for later analysis. The Wilcoxon test was applied for a margin of error of 5%.

Results: The results showed a significant difference ($p = 0.02$) between the volume of three – dimensional models in which CBCT exams were performed with and without a soft tissue simulator.

Conclusions: In experimental studies involving dry jaws, the presence of water as a soft tissue simulator changes the volume of the resulting three-dimensional images. This is likely due to the greater difficulty in defining the threshold in the segmentation phase of the images.

Keywords: Cone beam computed tomography, computed tomography, computational modelling.

P202

Treatment of Peri-Implantitis with Different Membranes: A Case Report

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Introduction: Peri-implantitis is an inflammatory disease causing advanced destruction of implant supporting tissues, even implant loss. Treatment protocol of the disease is still unclear and challenging for clinicians.

Case description: A-56-year-old female patient was referred to the Department of Periodontology, Gazi University, Turkey, for pain,

bleeding and purulent discharge on her mandibular implants. After the clinical and radiographic examinations, peri-implantitis diagnosed with advanced loss of supporting tissues, surgical approach planned for the implants on both sides of mandible. Surgical treatment for each side started with flap elevation, removal of the granulation tissues and decontamination of implant surface. On right side of mandible, first molar region implant was explanted which had bone loss more than %50 of implant length. The other two implants had intrabony defects that filled with xenogenic bone graft material. Double layers of concentrated growth factor (CGF) were used as membrane.

Left canine region implant was explanted due to mobility and advanced buccal bone defect. Other implants had intrabony defects that filled with xenogenic bone graft material. Absorbable collagen membrane used as barrier. Flaps were sutured primarily. Clinical controls performed at 1st, 3rd, 6th months.

Discussion: Complete coverage of the graft material with membrane barriers is important for treatment success. But there is no evidence for the best coverage material.

Conclusions/Clinical significance: Treatment results showed both methods are useful for peri-implantitis regeneration. After 6 months, there is no clinical difference between the treatment procedures. Therefore, CGF can be used alternative to collagen membrane.

FC100

The Impact of Intraoral Scanning in Orthodontics Practice in Germany Versus Romania

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Aim or purpose: Digital orthodontics has developed fast in the past years and offers new solutions for the clinical practice. The use of 3D intraoral scanners presents advantages both for patients and clinicians. For orthodontists, intraoral scanning leads to an accurate 3D image of the case, enabling digital analysis and treatment planning, while patients experience a comfortable impression. The aim of the study is to evaluate the view of German versus Romanian orthodontists regarding the use of intraoral scanners in their practice.

Materials and methods: An online questionnaire consisting of multiple-answer and open-answer questions was used to collect the data. The questionnaire was prepared using Google Forms platform and distributed through email and social media networks to 50 practicing orthodontists in Romania and 50 practicing orthodontists in Germany. In order to have equal sample size, the first 30 responses were taken into consideration for each country. Results were statistically analyzed.

Results: The questionnaire responses offered information regarding Romanian and German orthodontists view on the use of intraoral scanners in their practice. The data obtained refers to advantages and disadvantages of intraoral scanners in orthodontics field, the handling of the scanner, scanning time and other clinical aspects.

Conclusions: Intraoral scanning is a technology with perspectives to become a widely used method in orthodontists' daily practice.

Free Communication Session 26 | 30.08.2017, 09:00–10:00 | Room A9.10

Theme: Epidemiology

FC101

Molar Incisor Hypomineralisation Among 15-years-old Children in Northwest Russia

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Aim or purpose: Although there is a considerable amount of evidence on molar incisor hypomineralisation (MIH) originating from developed countries, the evidence from Russia is almost non-existent. The purpose was to estimate the prevalence of MIH and its association with dental caries among 15-years-old children in Northwest Russia.

Materials and methods: A cross-sectional study included 1195 randomly selected 15-years-old children from 7 urban and 5 rural areas of Arkhangelsk region. MIH and its severity were diagnosed using Weerheijm et al. (2003) and Mathu-Muju & Wright (2006) criteria, respectively. Dental caries was studied at the D3 level following WHO recommendations. Prevalence of MIH and caries means for Decayed-Missing-Filled (DMFT) scores are presented with 95% confidence intervals (CI). Pearson's chi-squared tests and Mann-Whitney tests were used for dichotomous and numerical data. The study was approved by the local ethical committee.

Results: The overall prevalence of MIH was 3.8% (95% CI: 2.90–5.10) with no difference by gender ($p = 0.582$) and was higher in urban areas (4.7% versus 1.1%, $p = 0.005$). The prevalence of mild MIH was 43.5% (95% CI: 30.2–57.8). Average (23.9% (95% CI: 13.9–37.9) and severe MIH were diagnosed in 32.6% (95% CI: 20.87–47.03) of children.

Conclusions: Although the prevalence of MIH in Northwest Russia is lower than in most other countries our finding suggest that hypomineralised molars are much more prone to caries.

FC102

Criteria for Clinical Assessment of Durability of Dental Filling

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Aim or purpose: The aim of the study was to compare the presence of secondary caries and the surface smoothness and color retention as the durability factors of composite fillings.

Materials and methods: The study was conducted on a group of 152 patients. Only fillings made of light-cured composite materials were considered. A total of 451 fillings. Each filling was assessed against the following criteria: presence of secondary caries, surface smoothness and color retention. Time of use of fillings was recorded, distinguishing the annual time periods. At each time interval calculated the

frequency of failures according to established criteria. The dynamics of the increase in the incidence of failures was also estimated.

Results: Caries has been diagnosed after two years of use with a frequency of about 6.5%, after 5 years with a frequency of about 12%. Unacceptable changes in surface smoothness occurred after 2 years of use with a frequency of about 3%, after 3 years with a frequency of 10%, after 4 years with an incidence of 18% and after five years, the rate was 56%. Unacceptable color changes occurred after 2 years of use with a frequency of about 4% and after 5 years with a frequency of 55%.

Conclusions: It has been found that changes in colour and surface smoothness occur earlier with a significantly higher incidence than caries. The dynamics of the incidence of caries is proportional to time. However, the growth dynamics of aesthetic failure is progressive.

FC103

Children's Oral Health in Slovakia – Epidemiologic Study

Simona Dianiskova

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Aim or purpose: The goal was to evaluate oral health status among 5-, 12- and 15- years old children and compare the results with previous studies, since there was no nationwide study for caries prevalence for the last 16 years in Slovakia.

Materials and methods: The sample consisted of 1022 children, divided according to the gender and corresponding age group: 5-, 12- and 15- years old children in 27 towns of Slovakia. Caries was diagnosed according to BASCD criteria, visible cavity present (D3). Data were recorded on pre-printed charts recommended by WHO. The project was approved by the Ethical Committee.

Results: In the sample of 5-years old children the average value of dmft was 2.97. We found that 144 children (36.7%) in this age group had their teeth intact. Average value of DMFT in 5-years old was 0.02. DMFT of the 12-years old was 1.77 and the group of 15-years old children had DMFT of 3.4. Among 12-years old, the intact permanent dentition was present in 149 cases (39.9%). The portion of individuals with intact permanent teeth among the group of 15-years old was lower, 56 children (21.8%).

Conclusions: We evaluated children's oral health using dmft and DMFT and compared our findings to previous results. In the group of 5-years old children, 36.7% examined individuals had intact teeth. It is a positive turn when compared to the numbers from 1987 (19.8%) and 1999 (13.48%). The effort of professionals should be focused on implementing health-promoting programs, especially in rural regions.

FC104

Oral Cavity Biopsies in Central Hospital in Coimbra, Portugal

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Aim or purpose: The aim of this study is to understand the frequency of the malignant, potentially malignant and benign lesions submitted

for biopsy in the last 11 years, in a Central Hospital in Portugal. Proper management of oral lesions requires tissues biopsies.

Proper data on soft tissue biopsies of the oral cavity is not common and in the Portuguese population it is still not well characterised.

Materials and methods: We performed a retrospective analysis of oral cavity biopsies performed in a Central Hospital, between 2006 and 2016. Information analysed was age, gender, location of the lesion and the histopathological diagnosis.

Results: A total of 948 biopsies were performed in 11 years, 57.8% in females and 42.2% in males, with a mean age of 54.6 years. 90% of biopsies were diagnosed as benign lesions, with oral fibroma being the most common diagnosis. Malignant disorders affected 8% of the total patient count, with squamous cell carcinoma being the most frequent malignant disorder. The most frequent location was the gum, corresponding to 27.2%.

Conclusions: Fortunately, benign disorders are more common than malignant ones, with fibromas being the main pathology. Nonetheless, malignant disorders seem to still be very prevalent, with squamous cell carcinoma being the most common.

This study is a huge contribution for the characterisation of oral pathology in a Portuguese hospital population.

Free Communication Session 27 | 30.08.2017, 09:00–10:00 | Room A9.11

Theme: Prosthodontics

FC105

Porcelain Shear Bond Strength to Surface Treated Soft-Milled Co-Cr Alloy

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Aim or purpose: Statement of problem: Porcelain chipping is a common problem in ceramo-metallic restorations. Adequate porcelain bond-strength to soft-milled cobalt-chromium (Co-Cr) dental alloys relative to cast Co-Cr dental alloys is essential for restorations' clinical longevity.

Purpose: Examination of porcelain shear-bond-strength (SBS) to CAD/CAM soft-milled and to conventionally cast Co-Cr alloy subjected to different surface-treatments: sandblasting, sandblasting with oxidation-cycle, and laser-etching.

Materials and methods: Seventy-two discs (2.5 × 10.0 mm) were fabricated from Co-Cr alloy. Group I (n = 36) CAD/CAM soft-milled discs, and Group II (n = 36) conventionally cast discs. Each group was sub-divided into three subgroups (n = 12) according to Co-Cr surface-treatment. Sub-Group A; sandblasting, Sub-Group B; sandblasting with oxidation-cycle, and Sub-Group C; laser-etching. Surface topography of discs was observed under scanning-electron-microscope (SEM). Layering-veneering-porcelain (3 × 5 mm) was fired onto Co-Cr discs. Shear-bond-strength testing (MPa) was performed using universal-testing-machine at cross-head speed of 0.5 mm/min till failure. Failure type (adhesive, cohesive, mixed) was examined under SEM. Differences in SBS data values according to fabrication technique and to surface-treatment were statistically analyzed and compared (p < 0.05).

Results: Statistically insignificant differences were observed in mean SBS values amongst milled versus cast Co-Cr fabrication techniques. Highest SBS values were observed with laser-etching and lowest were recorded for sandblasting with oxidation-cycle; however, these differences were statistically insignificant. All groups exhibited mixed failure type.

Conclusions: Soft-milled Co-Cr with the tested surface treatments exhibited comparable SBS results to cast Co-Cr advocating its use for clinical applications.

FC106

Adaptation of the CAD/CAM RPD Derived from Intraoral Digital Impression

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Aim or purpose: To compare the adaptation between the major connectors of removable partial dentures derived from intraoral digital impressions and extraoral digital impressions.

Materials and methods: Twenty-four volunteers were enrolled. Each volunteer received intraoral digital impressions of whole upper jaw and one conventional impression (Group E) with a silicon impression material. The conventional impressions were poured with type IV dental stone and then digitized with a laboratory scanner. After all the virtual major connectors designed from Group I and Group E were directly fabricated by three-dimensional (3D) print technique, the adaptation of the final major connectors in volunteers' mouths were measured.

Results: The adaptation of the major connectors ranged from 159.87 to 577.99 μm in Group I while the adaptation was from 120.83 to 536.17 μm in Group E. The adaptation of major connectors in Group I were found better at the midline palatine suture than at the two sides of the palatal vault ($p < 0.001$), while the adaptation of major connectors in Group E were found better at the two sides of the palatal vault ($p < 0.001$). In both groups, the highest accuracy in adaptation was revealed at the anterior margin ($p < 0.001$) and there were no significant differences in adaptation between the middle section and the posterior margin of the major connectors ($p > 0.05$).

Conclusions: Though the adaptation of major connectors derived from intraoral digital impressions were worse than that from extraoral digital impressions, both the adaptation of the two kinds of impressions were clinical acceptable.

FC107

Retention Force of Different Materials on SynCone Double Conical Crowns

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Aim or purpose: In this study we measured the difference in retention force by using different materials and different manufacturing methods.

Materials and methods: In this study we have used three different materials and three different manufacturing procedures for the outer crown. We used titanium, gold and semiprecious alloy for the outer crown. The outer crowns were produced by casting, CAD-CAM method and we used prefabricated outer crowns. For the inner crown we used original SynCone abutment. The samples were divided in 5 groups combining materials and method of manufacturing with 10 samples in each group. All the samples were mounted in dynamometer Chewing Simulator CS 4, SD Mechatronik, Feldkirchen-Westerham, Germany. Each sample was conducted thru 10.000 cycles of joining and separation, simulating the wear of 10 years of using the double conical crowns.

Results: All the samples showed similar retention force, except for the semiprecious alloys produced by casting, which showed higher values of retention force. Samples made of gold, regardless of the method of manufacturing, showed smoothly increase of retention force from the beginning to the end. Samples made of titanium, regardless of the method of manufacturing, first showed a decrease of retention force and then a smoothly increase of retention force to the end.

Conclusions: By choosing different materials and manufacturing methods we can choose how big is going to be the retention force and according to the clinical situation we can choose the best combination for our patients.

FC108

To Assess the Influence of Cleanliness of Removable Dental Prosthesis on Halitosis

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Aim or purpose: To assess the influence of cleanliness of removable dental prosthesis on halitosis.

Materials and methods: This descriptive study was conducted in Prosthodontics OPD. 200 partially edentulous patients of both genders between the ages of 18–85 years that required removable dental prosthesis were selected through non probability purposive sampling technique. A questionnaire devised for the purpose of the study was completed by the patients. Data was analyzed using SPSS version 17.0.

Results: The mean age of the patients was 52.9 ± 14.38 . 128 out of 200 (64.0%) wore partial dentures whereas 69 out of 200 (34.5%) wore complete dentures. 72 out of 200 (36%) patients washed their denture after every meal, 117 out of 200 (58.5%) patients washed it at night whereas 11 out of 200 (5.5%) patients did not wash it at all. 173 out of 200 (86.5%) patients took of their dentures at night, from which 142 (71%) kept in it water overnight and 31 (15.5%) kept it in a dry box, whereas 27 (13.5%) did not wash it at all. 155 out of 200 (77.5%) patients complained of halitosis. Significant association (p value=) was noted between the poor removable denture cleanliness habits method and the prevalence of halitosis.

Conclusions: These findings can aid a clinician and the patient to understand the causes of halitosis after wearing removable dentures. It would further make the dentist aware of what practices he has to stress upon the patient to ensure there is no halitosis caused.

Free Communication Session 28 | 30.08.2017, 09:00–10:00 | Room A9.13

Theme: Oral Surgery

FC109

An Innovative Biologically Active Dressing for the Oral Full Thickness Wound Reconstruction

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Aim or purpose: The most common cancer of the oral cavity is squamous cell carcinoma. The combination of chemotherapy, radiotherapy and surgical resection is an appropriate treatment strategy for cancer. Radiation therapy that is performed before surgery can be the cause of non-healing wound formation. A variety of free tissue flaps have been used in the reconstruction of tumor-related defects in the oral cavity. Unfortunately, the use of flaps for the treatment of non-healing oral wounds do not solve the problem efficiently. We hypothesized that the use of a decellularized and lyophilized human amniotic membrane can be an effective alternative for the reconstruction of oral defects. The aim of the present study was to develop a novel biologically active dressing, and to use it for buccal mucosa wound repair in a rat model.

Materials and methods: Novel biologically active dressing was created by using rat freeze-dried bone marrow stem cell paracrine factors and decellularized amniotic membrane. The full thickness wound on the buccal mucosa was reconstructed with biologically active dressing.

Results: Novel biologically active dressing boosts angiogenesis and increases the reparative regeneration of the damaged tissues.

Conclusions: Biologically active dressing consisting of human decellularized amniotic membrane with seeded freeze-dried bone marrow stem cell paracrine factors might be a suitable alternative for oral full thickness wound reconstruction.

FC110

Minimally Invasive Management of Oral Mucocele in Pediatric Patients

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Introduction: Salivary gland and ductal cysts are common pathologies seen in children, thanks to anatomical growth variations and masochistic habits. Literature suggests a high rate of recurrence in salivary gland disorders. Also, surgical management of these lesions are associated with its own challenges like

effective child management, pain management and possibility of repeated surgeries. Our technique revolves around use of intralesional injections and extrapolating this for management of these pediatric oral cysts.

Case description: We present a series of 4 case reports in which mucocele of various dimensions had completely regressed after multivisit intralesional injection of dexamethasone sodium phosphate and hyaluronic acid.

Discussion: The use of dexamethasone sodium phosphate and hyaluronic acid as anti-inflammatory and potent sclerosing agents is well documented in literature. Our study indicates the effective use of the above for minimally invasive treatment of pediatric mucoceles.

Conclusions/Clinical significance: Patient compliance is better with this technique as it is minimally invasive, essentially painless and requires minimal pain management. Our current clinical experience suggests that pediatric mucoceles can be effectively managed in the dental office with the use of intralesional injections.

FC111

Accuracy Evaluation of 3D Reconstructions Generated by Surgical Software

Anderson Maciel, Ana Cristina Sobreira, Inessa Barbosa, Viviane Sarmiento

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Aim or purpose: The aim of this study is to evaluate the accuracy of the three-dimensional virtual reconstructions generated by surgical planning software from different tomographic devices.

Materials and methods: Standardized defects were created in 10 dry mandibles, which were submitted to computerized tomography (CT). 3-dimensional (3-D) virtual reconstructions of them were generated from the resulting images using Dolphin 3D® imaging software. The defects were measured digitally and compared to those in the anatomical samples.

Results: The results showed that there was no statistically significant difference between them ($p = 0.226$). Although an evaluation of the mean absolute and relative dimensional errors presented a statistically significant difference ($p = 0.0165$) between the dry human mandibles and the respective 3D reconstructions generated from the different tomographic devices and at different voxel sizes, these differences were clinically irrelevant.

Conclusions: It can therefore be concluded that the Dolphin 3D® surgical planning software adequately measured the linear distances in the virtual 3-D images.

FC112

Oral Health Related Quality of Life Assessment after Orthognathic Surgery

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Aim or purpose: The aim of the present study was to see the effect of Orthognathic surgery

- On oral health-related quality of life (OHRQOL) in patients with jaw deformities and
- To identify any improvements in the patient's psychological and social behavior.

Materials and methods: This is a Prospective clinical study. The patients reported to AIIMS Bhopal with facial deformities between Dec 2014 to Dec 2016. 25 subjects in whom surgery was performed (10-BSSO, 9-LEEFORT I, 3-AMO, 3- Genioplasty) were included. The mean age of 24.6 years. The Oral health was assessed using the Japanese version of the Oral Health Impact Profile. Pre-and post-operative experience of the patients. were analysed.

Results: The oral health impact profile score which was 62 pre-operatively comes to 30 after surgery.

Conclusions: The determination of OHRQOL in patients with jaw deformities seems to be very useful in

1. Understanding the patients' problems.
2. Providing appropriate treatment and.
3. Assessing the extent of changes in terms of patient well-being.

Free Communication Session 29 | 30.08.2017, 10:15–11:15 | Room A9.9

Theme: Digital Dentistry

FC113

Experience of the Preparation the Cavity of the First Class by Black on Simulators at Different Levels of Realism

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Aim or purpose: Was to check manual skill of the preparation the cavity of the first class by Black on simulators at different levels of realism.

Materials and methods: For the research were selected 30 students who were divided into three groups: first group «I» (interactive level of realism-virtual simulator with feedback) training of drilling took place just on simulator MOOG Simodont: students were drilled on a simulator different shapes cavities. In the second group «I+T» (virtual simulator with feedback and manikin phantom head) training started on a virtual simulator with feedback, and then on plastic plates and on a manikin phantom head. In the third group «T» (tactile level of realism) students trained just on a manikin phantom head and on a plastic plate.

Results: In group "I" the mark "excellent" got 55% of students, the mark "good" – 36%, the mark "bad" got 9% of students. In group "I+T" at the stage of training the mark "excellent" got 40% of students, the mark "good" – 40%, the mark "bad" got – 20% students. At the stage of training in group "T" the mark "excellent" got 20% of students, the mark "good" – 10%, the mark "bad" got – 70% of students.

Conclusions: For teaching the manual skill for the mark "excellent" in group "I" on the average takes 25 min, in group "I+T" – 50 min, a in group "T" – 3 h.

FC114

e-Charting – Public Health Data Acquisition Efficacy Via Undergraduate Dental Students

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Aim or purpose: To evaluate a curriculum-based study to compare the ability of undergraduate dental students to master and utilize e-charting methods versus traditional analog methods (paper-based charting) in determining the potential effects of increasing available manpower resource allocation as well as increasing significant insight to dental epidemiological database creation.

Materials and methods: Materials: Online digital charting in dental college classroom and clinical settings (e-charting).

Statistical: Automatic, real-time generation of DMFT prevalence, periodontal, and other oral health parameters taken from study participants' e-charts.

Methods: A population of 180 dental students (Sophomore to Senior) were sampled comparing efficacy of e-charting and analog charting formats utilizing pre-determined, standardized patient data. Student results were evaluated against a gold-standard pro forma for each modality; 50 dental students were selected to serve as clinicians. Students were randomly assigned patients from among a 200-sample size (age 20–80 y.o.a.; 99% confidence level; 4 confidence interval) to perform either e-chart or analog chart. Both charting formats were then evaluated against a gold standard review.

Results: Feasibility was demonstrated at 100% within results of training/comparative efficacy of information obtained. Facility and use of e-format far outdistanced older, analog protocols while demonstrating statistically more accurate acquisition of DMFT, periodontal, needed treatment, and existent oral health condition data.

Conclusions: The study illuminates a currently underutilized source of dental manpower – university undergraduate dental students – allowing marshalling of valuable acquisition of significant dental databases via e-charting with immediate input into national programs for the betterment of general and underserved populations.

FC115

Marginal and Internal Fit of Copings Cast from 3D-Printed Patterns

Ehsan Farjood

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Aim or purpose: The aim of this study was to evaluate the marginal and internal fit of metal copings cast from wax patterns fabricated by rapid prototyping (RP), and to compare the results to those created by the conventional handmade technique.

Materials and methods: Twenty-four standardized brass dies were milled and divided into 2 groups (n = 12). The CAD/RP group was assigned to the experimental group, and the conventional group to the control group. The cross-sectional technique was used to assess the marginal and internal discrepancies on the master die

using a digital microscope. An independent t test was used for statistical analysis ($\alpha = 0.01$).

Results: The CAD/RP group had a total mean (\pm SD) for absolute marginal discrepancy of 117.1 (\pm 11.5) μm and a mean marginal discrepancy of 89.8 (\pm 8.3) μm , in comparison with 88.1 (\pm 10.7) μm and 69.5 (\pm 15.6) μm for the conventional group respectively. The overall mean (\pm SD) of the total internal discrepancy was 95.9 (\pm 8.0) μm for the CAD/RP group and 76.9 (\pm 10.2) μm for the conventional group. The CAD/RP group had larger discrepancies at all measured areas than the conventional group, which was statistically significant ($p < 0.01$).

Conclusions: Within the limitations of this in vitro study, the conventional method of wax pattern fabrication produced copings with better marginal and internal fit than the CAD/RP method. However, the marginal and internal fit for both groups were within clinically acceptable ranges.

Free Communication Session 30 | 30.08.2017, 10:15–11:15 | Room A9.10

Theme: Public Health

FC117

Disparities in Oral Cancer Knowledge: A Population-Base Study
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Aim or purpose: This study assessed participants' general awareness of oral cancer risk factors and signs in a developing country.

Materials and methods: This cross-sectional study involved 1312 participants, consisting of parents of public primary school students in Tehran, Iran. Schools were selected randomly from the list in different municipal regions, and participants were invited from each school. A structured self-administered questionnaire was provided. Questionnaires were distributed among parents at school and they were asked to return the questionnaire, without any time restriction. The questionnaire was included 15 questions about risk factors and 11 question about the signs of oral cancer, in the form of yes, no and "not sure". A score of 1 was given to the correct responses and score of 0 to wrong answers and if "not sure" was selected.

Results: Out of total participants 38% were male and 62% were female with the average age of 37.8 ± 9.02 . Overall, 31% of the participants had heard about oral cancer. However, 71% and 51% of participants were able to correctly identify smoking and alcohol, respectively, as a risk factor. Out of all participants, 23.5% had no knowledge about any signs of oral cancer. There was a significant difference between job and level of education and awareness of oral cancer. Male participants had less knowledge ($p < 0.05$). Knowledge among various age groups was not significantly different.

Conclusions: Participants had little information about the signs and risk factors of oral cancer, especially those with lower education and non-professional jobs.

FC118

Responding to Social Risks of Poor Oral Health Among Refugees

Parul Marwaha, Alana Russo, Ramini Shankumar, Jacquie McBride

Monash Health, Melbourne, Australia

Aim: To develop a tool that assess social risks of poor oral health among refugee clients to inform health promotion interventions, referrals, and discharge/recall process, and improve oral health outcomes for this population group.

Methods: The Social Risk Assessment Tool (SRAT) was informed by existing literature on the social determinants of poor oral health among refugees, and refined through stakeholder and community consultations.

Trained Dental Nurses administered the SRAT to all refugee clients (≥ 18 years) attending a public dental service located in a high refugee settlement area. Statistical analysis was conducted to establish correlations between identified social risks and oral health outcomes. Assessment results and clinical findings determined the overall risk level of each client and informed treatment planning.

Project received ethics approval.

Results: Over 200 refugee clients have been assessed using the SRAT. Preliminary findings indicate that this cohort experience high rates of comorbidities (34%); unemployment (28%), and unstable housing (10%). Clients also indicated low levels of formal education (58% less than primary level), and limited oral health literacy. These social risks are likely to impact clients' ability to access services and address their oral health needs. Findings have been valuable in informing tailored treatments and interventions to better meet the unique needs of each client.

Conclusions: Addressing the social risks impacting the oral health of refugees is integral to achieving optimal, sustainable oral health outcomes for this population. The SRAT can be easily incorporated into standard dental practice, and is useful for informing practice with this high-need group.

FC119

Dental Care is Safe and Important During Pregnancy

Parul Marwaha, Ramini Shankumar

Monash Health, Melbourne, Australia

Aim: To improve the knowledge of pregnant women and midwives about the importance of oral health during pregnancy, improve the referral system between pregnancy clinics and dental services and increase the number of pregnant women attending dental services.

Methods: Low attendance of pregnant women at dental services has been associated with the lack of awareness among midwives and women's beliefs around the safety of dental treatment during pregnancy.

Oral health professional development workshops were delivered to midwives and a referral template used by midwifery was adapted for referrals to dental services, in order to encourage better compliance. Dental staff conducted free dental check-ups and oral health education sessions for pregnant women at pregnancy care clinics.

Cultural beliefs and safety concerns that pregnant women hold about dental care during pregnancy were also addressed through a poster developed by the dental service, with the message in seven languages 'Dental treatment is safe and important during pregnancy'.

Results: There was a fourfold increase in the number of pregnant women accessing dental services (121 women in 2014 to 492 in 2016). Approximately 100 midwives attended the professional development workshops. The patient feedback survey indicated that the education session was useful and eliminated their fear and other cultural barriers.

Conclusions: Increasing oral health understanding and awareness among midwives and pregnant women supports improved oral health outcomes of pregnant women and their children, and a partnership between services facilitates interdisciplinary referrals. Evaluation of interventions were undertaken and results are available.

FC120

Improving Access to Dental Services for Supported Residential Services Residents

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Monash Health, Melbourne, Australia

Aim: To increase and improve access to oral health services for residents of Supported Residential Services (SRS), through the use of functioning programs and an outreach model to residents.

Material/Methods: The outreach model involves dental staff going to residential facilities to promote better oral health for residents. This includes the screening and referral for treatment for residents and individual and group information and education sessions to residents, staff and proprietors. A collaborative partnership exists with the medical and allied health access workers which assists with transport to and from treatment.

This initiative seeks to address many barriers with this client group, particularly the difficulty for residents to travel to services, and it is hoped that through the project, there will be an increase in the use of dental services and more serious long-term problems will be alleviated.

Results: In 2011/2012 92% of SRS residents screened required treatment compared to 45% requiring treatment in 2012/2013. A decline in the number of residents requiring treatment demonstrates the effectiveness of this initiative and the overall goal of decreasing long term problems.

For the 2013/2014 financial year it was planned that 255 residents would be screened and/or provided with oral health education, 352 residents received the outreach service.

Conclusions: The service model is successful in ensuring access of SRS residents to previously unattended dental care and education, which in turn improves the oral health of residents and decreases the need for emergency care and reduce the burden on the health system.

Free Communication Session 31 | 30.08.2017, 10:15–11:15 | Room A9.11

Theme: Prosthodontics

FC121

A Numerical Investigation on Preparation Parameters for Restoring Premolars

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Aim: The aim was to investigate the effect of preparation design parameters of a premolar restored with two different CAD/CAM ceramic crowns by using a numerical method.

Materials and methods: By digitizing a restored first maxillary premolar with a micro-CT scanner and using a medical image processing software (Mimics™), a 3D model was created. The surface of the restored tooth components was extracted by a surface meshing software (3-matic). To create different preparation designs, SolidWorks™ was employed, in which by considering three convergence angles (6, 8 and 12) and two preparation heights (3.1 mm and 4.1 mm), six models were created. To generate a desirable mesh network, a mesh generator software (FE-mesh) was utilized. Lithium disilicate (LD) and polymer-infiltrated ceramic (PIC) were used as ceramic crown materials. A 5.0 mm stainless steel hemispherical indenter was employed to apply load on the occlusal surface. To analyze the twelve models, Abaqus™ was used.

Results: The preparation height had a major effect in the values of stress in the restored tooth models. The maximum principal stress in contact area was lower in stiffer ceramic crown (LD) compared to PIC. Convergence angle had no considerable effect on stress distribution of ceramic crown in all models.

Conclusions: The preparation design height played a remarkable role compared to convergence angle. The enamel in the restored tooth was found as a supporter for ceramic crown. An optimum condition for a durable crown restoration in premolars depended on the restorative material and the geometry of preparation design.

FC122

Shear Bond Strength of Cast Alloys and Lithium Disilicate

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Aim or purpose: To evaluate the shear bond strength of two coping materials (non-nickel chrome-based cast alloy and lithium disilicate ceramic (IPS Empress) to four different core foundation materials (resin composite, cast metal alloy, lithium disilicate, and dentin), luted with adhesive resin cement (RelyX Unicem).

Materials and methods: Specimens (N = 56) were fabricated and divided into eight groups (n = 7 per group). Each coping material

was luted with self-adhesive resin cement (RelyX Unicem) to the core materials. Bond strength was measured in a Universal Testing Machine (0.5 mm/min). Data were statistically analyzed using a two-way analysis of variance (ANOVA) and Tukey's HSD tests ($\alpha = 0.05$).

Results: Both core ($p = 0.000$) and coping material type ($p = 0.000$) significantly affected the mean bond strength (MPa) values. Interaction terms were also significant ($p = 0.001$). The highest bond strength results were obtained when lithium disilicate was bonded to lithium disilicate (21.48) with the resin cement tested.

Conclusions: Lithium disilicate in general presented the highest bond results when bonded to all core materials tested except dentin. Both cast alloy and lithium disilicate presented the lowest bond results on dentin followed by cast-alloy-cast alloy combination.

FC123

"Unriddling the Riddle" of Resorbed Edentulous Ridge using TENS

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Introduction: Resorbed edentulous ridges present a challenging clinical situation to be rehabilitated by conventional mucosa borne complete dentures. In the current age, the advancements in science offer promising outcome one of which is by using TENS to mold the soft tissue drape around dentures.

Case description: A 66-year-old female presented with severe resorption of maxillary edentulous ridge subsequent to trauma 5 years back. Repeated attempts to rehabilitate by conventional mucosa borne complete dentures proved futile. The treatment to fabricate a mucosa borne complete denture was modified by *impression making of intaglio surface and cameo surface* by using TENS in the concerned patient. A two year follow up showed favourable outcome and functioning by the patient.

Discussion: TENS (Transcutaneous electric stimulation) of nerves is an established technique to stimulate muscles in treatment of muscular disorder. Extending the use of this technique to record impression of intaglio and cameo surface ensures physiological muscle molding with elimination of errors and inconsistency often seen with manual methods of impression making. The location of electrodes attachment and the corresponding nerve stimulation is responsible for the muscle activity thus recorded.

Conclusions/Clinical significance: TENS provides a safe and feasible option to rehabilitate for patients with resorbed edentulous ridges especially in conditions where implant supported prosthesis is contraindicated due to biological, medical or economic reasons. Thus, TENS can help to *"unriddle the riddle"* of resorbed edentulous ridges by a conservative and predictable method.

FC124

Evaluation of the Prosthesis Treatment with Mandibular Protrusion

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Introduction: There're rarely any detailed reports on the treatment of prosthesis for mandibular protrusion. The majority literatures

has orthodontics treatment. Purpose in this clinical study described to evaluation of the functional prosthetic designs for one patient with mandibular protrusion changed into normal occlusion, without orthodontics treatment.

Case description: One male treatment. The severely feature was seriously swelling and flare of gingival where #11 tooth area, in addition, occlusion was slightly, mandibular protrusion due to the cephalometric analysis when the first visited. In addition, congenital absence teeth of #13. It was assessed in the gingivitis due to the inappropriate prosthetic. Thus, to attempted new morphological that new over jet and over bite angle of incisal path of upper frontal teeth area, and disocclusion.

Discussion: The new appropriate prosthesis observed to alteration of angle of incisal path, over jet and over bite. Finally, the evaluation criteria that measurement of sagittal incisal path angle (SIPA) was 30° between 40° to 20° . And, alternated to lateral incisal path angle was 140° to 145° . Alteration of over jet that average 2.3 mm to 3.2 mm. in addition, Alteration of over bite that average 1.42 mm to 3.4 mm. This patient had been get to new morphological teeth #14 to # 13, due to that reproduce to new guidance. This patient changing to normal occlusion from mandibular protrusion. Another evaluation value observed to appropriate gingival condition.

Conclusions/Clinical significance: This study mean was successful of the prosthesis treatment who change to normal occlusion from mandibular protrusion patient, without orthodontics treatment.

Free Communication Session 32 | 30.08.2017, 10:15–11:15 | Room A9.13

Theme: Oral Surgery

FC125

Maxillofacial Fractures Epidemiology and Treatment Plans in Iran Northeast

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Aim or purpose: The authors evaluated the maxillofacial fractures epidemiology and treatment plans in hospitalized patients in Northeast of Iran (2015–2016), as the epidemiology of facial injuries varies regarding to lifestyle, cultural background and socioeconomic status in different countries and geographic zones.

Materials and methods: In this cross-sectional study, the medical records of 502 hospitalized patients were evaluated from the department of maxillofacial surgery at Kamyab Hospital of Mashhad, Khorasan province, Iran. The type and cause of fractures and treatment plans were recorded in a checklist. For data analysis, Mann–Whitney test, Chi-square and Fisher's exact test were performed, using SPSS version 21.

Results: The majority of patients were male (80.3%). Most subjects were within the age range of 20–30 years (43.2%).

Fractures were mostly caused by accidents, particularly motorcycle accidents (MCAs), and the most common site of involvement was the mandible (Body and Dentoalveolar).

Conclusions: There was a significant association between the type of treatment and age. In fact, the age range of 16–59 years underwent open reduction internal fixation (ORIF) more than other age ranges ($p < 0.001$). Also, a significant association between gender and the occurrence of fractures was observed ($p = 0.002$).

It can be concluded that patient age and gender and trauma causes significantly affect the prevalence of maxillofacial traumas and fracture types and treatment plans. This information would be useful for making better health policy strategies.

FC126

The Efficacy of Natural Oils in Treating Orofacial Pain

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Aim or purpose: Patients who underwent a tooth extraction procedure will feel orofacial pain as a consequence of the tooth extraction. Treatment for post extraction orofacial pain is the administration of analgesic. This study aimed to test the efficacy of clove-coconut oil mixture compared to virgin olive oil as an alternative treatment for treating post extraction orofacial pain.

Materials and methods: The current study was a Randomized Controlled Trial (RCT) that involved 90 patients (27 males; 63 females) that were divided randomly into two groups: a group that received clove-coconut oil mixture application and a group that received virgin olive oil to treat the orofacial pain. The first flash of pain experienced by the patient immediately after the anesthetic effect disappeared was evaluated by using Visual Analogue Scale (VAS) and re-evaluated at the 3rd, 6th, 9th, and 12th minutes post anesthetic effect for each group. All data were analyzed statistically. As the data were not normally distributed, they were analyzed by using the Mann–Whitney test to reveal the difference between two groups.

Results: The research's result showed a significant pain rate reduction ($p < 0.001$) on both groups. It was also revealed that the total pain rate reduction in the group that received clove-coconut oil mixture was significantly ($p < 0.01$) greater than the group who received virgin olive oil.

Conclusions: In conclusions, clove-coconut oil mixture was proven to be more effective in reducing post extraction orofacial pain compared to virgin olive oil.

FC127

Efficacy Differences Between Aloe Vera Leaf Gel and Eugenol in Treating Orofacial Pain Due to Tooth Extraction

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Aim or purpose: Orofacial pain is one of the consequences of tooth extraction that will be experienced by the patient that will

subside by the usage of a type of analgetic drug. The current study aimed on testing the efficacy differences between aloe vera and eugenol in overcoming orofacial pain due to tooth extraction in Exodontia Clinic, Unpad Dental Hospital.

Materials and methods: This current randomized controlled trial (RCT) study recruited sixty-four (29 men; 35 women) participants that were randomly divided into two groups. The first group was the group with aloe vera extract gel application whilst the second one is the group with eugenol application. Pain experienced by the patient immediately after the anesthesia effect subsided was evaluated by using Numeric Rating Scale (NRS) and was re-evaluated at the 5th, 10th, and 15th minutes after the application of aloe vera extract gel or eugenol. Every data was then analyzed by using statistical analysis. Since the data were not normally distributed, it was analyzed by using Mann–Whitney *U* test method to evaluate the differences between the two groups.

Results: The results revealed that there was a significant pain reduction ($p < 0.01$) in both groups immediately after the application of these ingredients. In addition, there was a significantly greater pain reduction in eugenol group ($p < 0.01$) compared to the aloe vera group.

Conclusions: The current study concluded that eugenol is more effective in treating orofacial pain due to tooth extraction compared to aloe vera.

FC128

Does Skeletal Deformity and Fixation Method Affect Paresthesia after Sagittal Split Osteotomy?

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Aim or purpose: Post-operation paresthesia is a common complication after sagittal split osteotomy (SSO). This study aimed to evaluate the effect of types of skeletal deformities and fixation methods on reported paresthesia (RP).

Materials and methods: This prospective cohort study assessed subjects in four groups: class II with a miniplate fixation (group 1), class II with three-screw fixation (group 2), class III with a miniplate fixation (group 3) and class III with three-screw fixation. Age, sex and the amount of mandibular movement were considered variables and types of skeletal deformity and fixation were the predictive factors of the study. The RP was the outcome of the study and was evaluated based on a 0–10 visual analog scale (VAS). The ANOVA was used to compare the level of RP among the groups.

Results: Eighty subjects were studied in four groups (20 subjects in each group). The Pearson correlation test demonstrated a significant correlation between the mandibular movement and RP ($p = 0.001$). Comparison of RP among the groups showed significant differences ($p < 0.05$).

Conclusions: The type of skeletal deformity did not increase the RP in patients who underwent SSO. Also, bicortical fixation by screws may be considered a risk factor of nerve damage. The magnitude of mandibular movement had a positive correlation with RP.

Free Communication Session 33 | 30.08.2017, 11:30–12:30 | Room A9.9

Theme: Digital Dentistry

FC129

Experience in Use of Local Anesthesia Simulators

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Aim or purpose: Of this study was to develop a training protocol local anesthesia students of dental faculties.

Materials and methods: The study involved 120 2nd year students of the faculty of dentistry, were divided into 3 groups according to the completed task: on the skull; hybrid simulator and a combination of methods. As an evaluation of the effectiveness of training on dry bones are getting into the area of the foramina of the mandible with a predetermined position on the condition of isolation region branch of the mandible by latex scarf. When working on the hybrid simulator criterion of efficiency is the activation light and sound.

Results: Results showed the correctness of the use of combined in the dry bones and simulator, as it gives an opportunity to learn how to search for an individual mandible foramina, which are projected onto the soft tissue at developing skills on the simulator, as it marked the relationship between the development of skills at the first attempt and experience at the second, where a difference of 75% between the positions.

Conclusions: When the initial injection finally completed their task only 4 students, while at the second attempt, the criterion of “not satisfied” response only 4 subjects.

FC130

Optical Properties of CAD-CAM Materials after Surface Treatments and Aging

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Aim or purpose: To evaluate the effect of aging in coffee thermocycling on color changes and relative translucency parameter (RTP) of CAD-CAM materials after different surface treatments.

Materials and methods: Specimens (1.5 mm-thick) (n = 35) were sectioned from zirconia reinforced lithium silicate glass-ceramic (ZLS) and lithium disilicate glass-ceramic (LDS) blocks. Two surface treatments (glazed or polished) were applied. The specimens were subjected to 5000 thermocycling in coffee solution. The color difference and RTP values of specimens before and after coffee thermocycling were measured with a spectroradiometer and calculated with CIEDE2000 color difference and TP_{CIEDE2000} formulas. ANOVA was used to analyze the CIEDE2000 color difference and relative translucency values. Any significant interaction between

surface subgroups was further analyzed with Tukey-Kramer adjustment.

Results: The material type had a significant effect on the color difference (p = 0.018). All color difference values of all materials were smaller than the clinical acceptability threshold. The color difference value of only LDS-polished material was perceivable. For relative translucency, material (p < 0.001) and coffee thermocycling had a significant effect (p = 0.014), and an interaction was found between the surface treatments and materials (p < 0.001). Tukey-Kramer test revealed a significant difference between glazed and polished subgroups of LDS material, except for ZLS-glazed and ZLS-polished subgroups (p > 0.05).

Conclusions: Different surface treatments on CAD-CAM ZLS and LDS glass ceramics resulted in clinically acceptable color changes after aging with coffee. LDS was more translucent than ZLS. Aging with coffee decreased the translucency of both materials. Different surface treatments affected the relative translucency of only LDS for tested thickness.

FC131

Effect of Thickness on Color Stability of Monolithic CAD-CAM Ceramics

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Aim or purpose: To investigate the effect of material type and different thicknesses on the color stability and relative translucency parameters (RTP) of monolithic ceramics after aging in coffee.

Materials and methods: Specimens in different thicknesses (0.5, 0.7, 1 mm; n = 4) were sectioned from monolithic ceramics [pre-shaded zirconia (MonZr), lithium disilicate (LDS) and zirconia reinforced lithium silicate (ZLS)]. The specimens were glazed, subjected to 5000 thermocycling in coffee, and their color coordinates were measured with a spectroradiometer. Color difference and RTP values were calculated with CIEDE2000 and TP_{CIEDE2000} formulas and analyzed with ANOVA.

Results: For color difference, 2-way ANOVA revealed an interaction between material and thickness (p = 0.0004). Except for 0.5 mm ZLS, all groups presented acceptable color changes (<1.8 ΔE*00 units) after aging. MonZr presented the lowest color changes. For the RTP, 3-way ANOVA revealed an interaction between material and thickness (p < 0.0001), and material and aging (p = 0.0202). The RTP decreased with the increase of the thickness of the material.

Conclusions: All color changes were clinically acceptable except for 0.5 mm ZLS. ZLS color change was significantly affected by thickness. LDS color change was very similar for its different thicknesses and perceptible. Zirconia color change was not perceptible at any thickness. The translucency ranking from high to low was LDS, ZLS and MonZr for each thickness. Aging in coffee didn't affect the translucency. Monolithic ceramic type and thickness affected the color change and relative translucency, therefore, the material and thickness selection should carefully be made by the clinicians considering the proposed restoration and esthetic factors.

Free Communication Session 34 | 30.08.2017, 11:30–12:30 |
Room A9.10

Theme: Public Health

FC133

The Efficacy of Hypnosis Music on Tooth Extraction Patients with Dental Anxiety

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Aim or purpose: This study aimed to test the efficacy of hypnosis music to reduce dental anxiety in patients who are about to undergo tooth extraction.

Materials and methods: This Randomized Controlled Trial (RCT) involved 78 patients (33 males; 45 females) that were divided randomly into two groups: the music-intervention group that listened to hypnosis music, and the control group that listened to no music. Blood pressure and heart rate were used as indicators of anxiety and were measured prior to tooth extraction, during extraction, and after the extraction.

Results: The first part of the analysis showed a significant reduction ($p < 0.001$) on blood pressure and heart rate within the music-intervention group when comparing the before and after effect of the hypnosis music. There were also several significant differences found when comparing blood pressure and heart rate of patients on the treatment group to the control group. Patients on the music intervention group showed a significant decrease on systolic blood pressure ($Z = -8.202$, $p < 0.05$), diastolic blood pressure ($Z = -7.347$, $p < 0.05$), and heart rate ($Z = -7.780$, $p < 0.05$) compared to patients on the control group.

Conclusions: In conclusions, hypnosis music is shown to be effective in significantly reducing dental anxiety on patients who are about to undergo tooth extraction procedure.

FC134

Informed Consent in Dental Practice in Bangladesh

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Aim or purpose: The aim of this study is to assess knowledge, attitudes and awareness of general dental practitioners (GDPs) regarding informed consent in Dhaka city, Bangladesh.

Materials and methods: This was a cross-sectional study comprising of 53 respondents of which general dental practitioners from Government Dental College (25) and Private Dental College (28). Subjects were collected purposively. The study involved an interview with a written self-administered structured questionnaire used to assess dental professionals' knowledge and attitudes towards informed consent.

Result: 96% of the dentists have knowledge about informed consent. In this study 94% agreed that they had sufficient knowledge about verbal and written consent as well as. On the other hand, 70% of GDPs had no idea about Implied consent.

This study revealed that 96% of respondents obtained parent's consent when treating their children.

In the current study, half 56% reported that they took only the verbal consent before treating their patients. One third 28% took written consent and only 16% of dental surgeons took both verbal and written consent before treatment.

Conclusions: The current study concludes that dental practitioners have a disparity in knowledge when it came to issues of informed consent and further showcased the fact that the attitude toward informed consent is dissatisfactory.

The findings of this paper provide an opportunity for all clinicians to improve their education and therefore their potential to comply with both the ethical obligation and the legal requirement of gaining valid consent before the start of any treatment.

FC135

Urban-Rural Disparities in Children's Caries Treatment Need

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Aim or purpose: To identify disparities in caries treatment need in children living in urban and rural area which will allow for targeted interventions to achieve national oral health goals for children.

Materials and methods: Data from a cross-sectional survey of 884 children aged 12 years living in urban and rural area in Yogyakarta Indonesia were used. Dental caries was assessed using the DMFT index according to the WHO criteria. Oral health behaviour and socio-demographic data were collected using a questionnaire administered to the children.

Results: The prevalence of children have experienced dental caries in urban area was higher (84.4%, DMFT=3.4) than those living in rural area (58.4%, DMFT=1.4). There was a significance difference in DMFT score between the two areas ($p < 0.001$). However, the percentage of children had a good oral health behaviour was higher in urban area (54.8%) than in rural area (42.3%).

Conclusions: Distinctive oral health interventions related to caries experience and oral health behaviour in urban and rural area are needed to reduce disparities and improve children's oral health.

FC136

Oral Health Knowledge, Attitudes and Practices in Pregnant Women

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Aim or purpose: To identify the knowledge, attitudes and practices on oral health of women during pregnancy attending prenatal dental care and to determine the relationship between this knowledge, attitudes and practices with their state of oral health.

Materials and methods: Inferential analytical cross-sectional study, conducted from August to September, 2015, in Odontological Outpatient Clinic of Isidro Ayora Gynecological Hospital; The sample taken at convenience was 300 pregnant women who were first coming to prenatal control excluding systemic diseases. A

survey of 29 questions was used, analyzed with SPSS v22 statistical package, chi2 test and Fisher's test.

Results: 95.3% live in urban areas, 56.7% haven't finished high school and their occupation is related to housekeeping. 86% know that caries is an infectious disease, 77.9% say the baby takes calcium from the mother, 16.4% refer they lose teeth because they don't go to the dentist, 14.7% would do nothing if their gums bleed, 85% don't know what treatments can be performed in pregnancy and 76.8% would do it only if there is no risk for the baby, being more frequent the treatment of fillings (46%). 16% haven't gone to the dentist in the past year, 66.4% change their brush every two months, 51% brush after each meal. 100% had periodontal disease and an average of 4.5 caries.

Conclusions: Oral health knowledge, attitudes and practices of pregnant women are influenced by sociodemographic factors, which advantage dental controls in pregnancy, however, the promotion of oral health has yet to be strengthened.

Free Communication Session 35 | 30.08.2017, 11:30–12:30 | Room A9.11

Theme: Prosthodontics

FC137

Patients' Expectation and Satisfaction with Removable Denture Prosthesis Therapy

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Aim or purpose: Taking into consideration the significance of patients' satisfaction with partial denture therapy and expectations regarding satisfaction with their dentures, This study aspires to appraise patients' expectation and satisfaction with partial denture after the therapy and as a derived purpose, other variables that may be connected with patient satisfaction are also evaluated.

Materials and methods: Fifty four partially edentulous patients were estimated for their expectation before therapy and satisfaction after the treatment regarding chewing, aesthetics, comfort and phonetics based on a questionnaire attain. Patient-related variables regarding age, gender and previous experience were also evaluated.

Results: Patients' rating for expectations were higher than the satisfaction following treatment relating to phonetics, chewing, comfort of exercise and aesthetics. A negative significant correlation was revealed before and after the treatment rating for phonetics, chewing and aesthetics. No statistical correlation was established among all the evaluated aspects' (i.e. phonetics, chewing, comfort of use and aesthetics) of expectation and satisfaction.

There was no noteworthy disparity in patients' evaluation of the excellence of their partial dentures between dissimilar age groups, ability of self-supporting life, socio-economic and economic status, marital status, smoking, presence of chronic diseases, number of previous dentures and age of present dentures ($p > 0.05$).

Conclusions: Patients' expectations rankings appreciably surpass their satisfactions. There was no statistically noteworthy disparity of scores to different genders, ability of self-supporting life, socio-economic and economic status, marital status, smoking, presence

of chronic diseases, number of previous dentures and age of present dentures.

FC138

Patients' Satisfaction with Removable Dental Prosthesis

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Aim or purpose: To assess factors which influence the patient's satisfaction with removable partial dentures.

Materials and methods: This descriptive study was conducted in Prosthodontics OPD. 200 partially edentulous patients of both genders between the ages of 18–85 years that required removable dental prosthesis were selected through non-probability purposive sampling technique. A questionnaire devised for the purpose of the study was completed by the patients. Data was analyzed using SPSS version 17.0.

Results: 101 patients were males whereas 99 were females. The mean age of the patients was 52.9 ± 14.38 . 155 out of 200 (77.5%) patients complained of halitosis. 93 (46.5%) patients complained of their RPD's exerting excessive forces. 101 (50.5%) patients experience nausea when they wore dentures. 37 (18.5%) patients were dissatisfied with their dentures, whereas 63 (31.5%) patients weren't sure how satisfied they were. Significant association (p value = 0.03) between the oral hygiene of patients and their satisfaction with removable dentures was observed.

Conclusions: These findings can aid a clinician in discussing a treatment plan and help a patient understand the risk of dissatisfaction in the presence of certain factors.

FC139

Wear of Double Conical Crowns Measured by 3D FEA

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Aim or purpose: Since the Finite Element Analysis (FEA) is established as a reliable method for stress analysis we have measured the wear of double conical crowns by using the 3D FEA.

Materials and methods: In this study, we have used the 3D Finite Element Analysis to establish the wear of double conical crown. Samples are digitalized by 3D digitalized ATOS (ATOS, ATOS II Rev.01, GOM mbH, Braunschweig, Germany GOM, Njemačka). Based on the 3D scan the model was formed in Geomatic software and formed in.STP format. FEA models were transferred to CATIA v5r21 (*Computer Aided Three-dimensional Interactive Application*, Dassault Systems, France) for further geometry processing. The calculation was done in ANSYS 16.2 (Swanson Analysis, Houston, PA). FEA net consists of 35.131 knots, 20.587

elements, relevance 100. Contact between crowns was set as frictional, with coefficient of friction 0.35. Newton-Raphson (unsymmetric) option was used because the coefficient of friction is bigger than 0.2. Border values are set so that the internal crowns are not moving, the displacement is on the outer crown with a value of 0.4 mm along the longitudinal axis with a shift of 0.4 mm. Characteristics for the material are set so that the crown is made of titanium, Young modulus of elasticity 1.14×10^{11} Pa, Poisson coefficient of friction 0.34. FEA was set to run 10,000 cycles.

Results: We have found that the wear appeared in amount of 10%.

Conclusions: Although this 3D analysis was not done before it could be used for wear on small elements.

FC140

Case Report of Orthopedic Treatment of False Progenia

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Introduction: Mesial occlusion of dental arches is pathological occlusion in sagittal plane. Malocclusion is a key symptom, which reflects various functional, morphological and esthetic deviations in dentofacial system. A systemic approach helps classify the occlusion by occlusal contact of dental arches in three mutually perpendicular planes.

Case description: Sometimes, dental and orthopedic practice includes the cases of artificial formation of false progenia when prosthetic appliance is made for progenic relationship of frontal group of teeth and is combined with free-end edentulous space of classes I-II by Kennedy.

This article describes the findings of our own method of treatment of false progenia resulted from wrong dental prosthetics. In addition, it substantiates two-stage treatment of this form of progenic occlusion where the first and primary stage is preliminary orthopedic functional rebuilding of myostatic reflex, and formation of constructive occlusion, which is followed by the second stage, namely, efficient prosthetics. A clear algorithm of therapy is developed.

Discussion: An effective prosthetics is impossible without elimination of occlusion distortions. The treatment was started by shortening of frontal group of teeth of protruded lower jaw by 1/3 of length of natural crowns. A dento-gingival occlusal guard was made for the upper jaw.

At the second stage, an effective prosthetics was performed.

Conclusions/Clinical significance: The experience of treatment of false progeny allows us to recommend a two-stage method of treatment.

Free Communication Session 36 | 30.08.2017, 11:30–12:30 | Room A9.13

Theme: Oral Surgery

FC141

Hemodynamic Changes During Oral Surgery with Local Anesthesia Containing Vasoconstrictor – Preliminary Results

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Purpose: Analysis of hemodynamic changes in patients undergoing oral surgery procedures following local anesthesia with a vasoconstrictor.

Materials and methods: A randomized clinical trial of patients underwent minor oral surgery procedures. The study group consisted of medically complex patients (cardiovascular conditions). The control group consisted of healthy patients. They were monitored for hemodynamic changes: blood pressure, heart rate and oxygen saturation before and during oral surgery following local anesthesia containing a vasoconstrictor (lidocaine 2% with epinephrine 1:100,000). The fluctuations of these parameters were compared to the initial values prior to the local anesthesia and before and during the procedures. The patients' status (blushing, pallor, sweating) and level of pain and anxiety were recorded.

Results: 34 patients in the study group and 56 patients in the control group were monitored. All the patients were stable hemodynamically.

We did not find statistically significant differences in blood pressure, heart rate and pulse oximetry values before, during and after local anesthesia injection in our study groups. No clinical signs as blushing, pallor and sweating were found in neither group. In the control group 12 patients experienced light and moderate pain, in the study group 4 patients experienced light and moderate pain.

Conclusions: Lidocaine with epinephrine (1:100,000) provided effective local anesthesia. Its use did not cause any significant hemodynamic changes in medically complex patients and in healthy patients thus indicating that the use of lidocaine 2% is safe in medically complex patients.

FC142

Computer Planned Jaw Surgery in Osas Patients

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Aim or purpose: Obstructive sleep apnea syndrome (OSAS) is becoming one of the main medical social topics, as there are several epidemiologic data of incidence, prevalence, morbidity and mortality that describe the essence of the problem.

The role of the maxillomandibular advancement in the OSAS pathogenesis is linked to the inner relations in the cranium and to its bowels; this relation defines the volume of the superior airway space, whereby an analysis of the soft tissue and of the mouth bowels is essential to understand their relative hyperplasia.

The aim of this study is to evaluate the ability of PROPLAN CMF in implementing the surgical outcome for OSAS surgery.

Materials and methods: Between 2014 and 2016, 12 patients with severe sleep apnea and intolerant to CPAP treatment underwent maxillo-mandibular advancement surgery.

All patients have been studied with presurgical CBCT scans and 3D stereophotogrammetry that were loaded onto ProPlan CMF to perform virtual osteotomies and soft tissue prediction.

For each patient, a counterclockwise rotation of the maxillo-mandibular complex was performed to maximize the aesthetic outcome and ensuring an advancement in order to lead to the healing the patient.

Results: The use of PROPLAN made possible to improve aesthetic outcome, considering the skeletal relationship and the soft tissue simulation during the planning.

Conclusions: Postoperative polysomnography shows the complete recovery of all patients.

The software can be considered a useful method that provides a precise and reliable prediction of facial profile after orthognathic surgery.

FC143

Prevention and Early Detection of Oral Cancer with Current Diagnostic Tools

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Aim or purpose: To examine the oral cavity of individuals in the population, seek lesions, incipient or otherwise, and raise awareness about the risks of oral cancer.

Materials and methods: Natural fluorophores in oral mucosa is excited by ViziLite PRO. Using natural tissue fluorescence to enhance the visualization of oral mucosa to help enable the earliest possible discovery of potentially malignant and cancerous lesions. Prevention and early diagnosis of oral cancer screening performed by ViziLite PRO with the participation of faculty of the Department of Maxillofacial Surgery and DMD dental students. We provide information about oral cancer, and perform clinical examination for early diagnosis in the individuals concerned. Participants of the oral cancer screening are random patients from outpatient dental clinic at College of Oral Health Sciences and patients who visit to Oral Health fare public clinics.

Results: This study reveal a level of oral cancer awareness in Jamaica.

Conclusions: Although effective, the cancer prevention and early detection of oral cancer with current diagnostic tools, it reaches only a small segment of the population. Further studies require to do island wide campaign.

FC144

A Familial Case of Cleidocranial Dysplasia in Jamaica

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Introduction: Cleidocranial dysplasia (CCD) is an autosomal dominant disorder presenting with delayed ossification of the skeletal system, characterized by clavicle hypoplasia, delayed ossification of the cranial sutures, supernumerary teeth, and delayed eruption of teeth.

Case description: A 40 years old male patient presented with bilateral clavicle hypoplasia, short stature, supernumerary teeth, delayed eruption of permanent teeth and multiple radiolucent lesions associated with un erupted teeth in both side of maxilla and mandible; his elder brother had a similar clinical history. Biopsies of radiolucent lesions reported the dentigerous cysts. Enucleation of multiple cysts and removal of unerupted 25 teeth were done in the same surgical session.

Discussion: Cleidocranial dysplasia is an autosomal-dominant hereditary skeletal disease caused by heterozygous mutations in the osteoblast-specific transcription factor Runt-related transcription factor 2 (core binding factor 1; RUNX2). CCD presents with skeletal defects of several bones.

Conclusions/Clinical significance: We found similar physical presentations of two brothers but the clinical condition of his elder brother was not described. Therefore, we were unable to compare the clinical presentations associated with this mutation. However, we believe this report provides a useful basis for phenotypic analyses in cleidocranial dysplasia.

Free Communication Session 37 | 30.08.2017, 12:45–13:45 | Room A9.11

Theme: Prosthodontics

FC145

Hybrid Ceramic Preparation for Silanization

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Aim or purpose: Study the effect of sandblasting and etching with hydrofluoric acid on the surface of hybrid ceramic Enamic. Sandblasting and etching with hydrofluoric acid are important steps before silanization during porcelain restorations cementation process. Hybrid ceramic Enamic is new material and there is no strict protocol of cementation for it.

Materials and methods: Hybrid ceramic Enamic 1sm 2 samples were prepared by diamond burs. All samples except control one were sandblasted by aluminum oxide particles 29 µm. Than all samples except one were etched with hydrofluoric acid 2% or 9% for 60 or 30 s. And for 10 s but with agitation of etching gel with

brush – dynamic etching. All samples were cleaned with hot distilled water in ultrasonic bath and air dried. After gold plating, they were examined with SEM Zeiss LEO 1430VP.

Results: Sandblasting with aluminum oxide particles 29 µm produces rich enough surface pattern. Etching with 9% HF for 60 and 30 s leads to formation of deep caverns and only fragile resin matrix left on the surface. Dynamic etching for 10 s improved the surface pattern. Etching with 2% HF haven't showed visible effect after sandblasting.

Conclusions: Only sandblasting with aluminium oxide particles 29 µm should be enough for silanization. Additional improvement could be reached with 10s dynamic etching with 9% HF. Longer etching weakens the ceramic. Etching with 2% HF is not recommended of poor effect.

FC146

Metal-Ceramic Crowns Failures Related to the Framework Manufacturing Procedure

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Aim or purpose: The objective of this study was to assess the failure behavior of metal-ceramic molar crowns related to the manufacturing procedure of the framework.

Materials and methods: The potential fabricating metallic dental components directly from digital data using automated equipment and appropriate materials led to this study. For the experimental analyses, a right first maxillary molar from a typodont model was prepared for a metal-ceramic crown and duplicated composite dies were manufactured. Samples of Co-Cr metallic frameworks were obtained using traditional casting (CST), computerized milling (MIL), selective laser sintering (SLS) and selective laser melting (SLM), as indicated by the manufacturers. These were veneered with specific hot-pressed ceramics. Crowns were tested under compressive load.

Results: Maximal compressive loads were registered. The mean values were 2432.93 N for CST (variations between 1297.11 and 2851.80), 1955.02 N for MIL (variations between 900.11 and 2459.73), 2104.96 N for SLS (variations between 1244.92 and 3142.31) and 2141.76 N for SLM (variations between 807.40 and 3165.22). Higher variations were registered when additive manufacturing procedures were used.

Conclusions: Understanding the fracture behavior of metal-ceramic crowns related to different manufacturing technologies of the framework is important from a clinical point of view. Further studies for identifying adequate processing parameters related to the new additive technologies should reduce variations in their mechanical behaviour. (This work was supported by a grant of the Romanian

National Authority for Scientific Research and Innovation CNCS-UEFISCDI, project number PN-II-RU-TE-2014-4-0476).

FC147

Effect of Substrate on Experimental Failures of Zirconia-Based Bilayered Crowns

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Aim or purpose: The objective of this study was to assess the experimental failure of bilayered all-ceramic molar crowns, related to the underlying die material.

Materials and methods: Experiments were conducted on a right first maxillary molar prepared for an all-ceramic crown. This preparation was replicated and alloy dies, respective composite dies were obtained by specific procedures. Bilayered all-ceramic crowns were obtained with an anatomical design of the zirconia milled framework veneered with hot-pressed ceramics. The crowns were cemented conventional, respective adhesive. The specimens were tested at compressive load until failure.

Results: Ceramic materials show considerable variation in strength due to the underlying die material and material used for cementation. The mean values of maximal compressive loads were significant influenced from the substrate. The registered values were 4251.25 N in case of a metallic die and conventional cemented crowns and 2184.19 N in case of a composite die adhesive cemented.

Conclusions: Understanding the fracture behavior of dental ceramics by experimental analyses is important from clinical point of view, but the effect of the die and cement materials should not be underestimated. (This work was supported by a grant of the Romanian National Authority for Scientific Research and Innovation CNCS-UEFISCDI, project number PN-II-RU-TE-2014-4-0476).

FC148

Stress Analysis of the Pier Abutment of 5-Unit FPD

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Aim or purpose: The aim of the study was to estimate the stress distribution on the all ceram 5-unit fixed prosthesis (FPD) with and without intermediate abutment.

Materials and methods: Two 3-dimensional models of mandibula supporting 5-unit FPD were simulated by using Generative Structural Analysis (GSA) module from CATIA software. The 5-unit FPD were shaped with rigid connectors, one model having the second premolar as pier abutment and the other one having a bridge

with three pontics. In the simulated models second molar and canine served as abutments. Each model was subjected to constant forces: axial of 110.1 N, horizontal of 15.3 N, acting to vestibular side and horizontal of 21.4 N, acting to distal side. To simulate the relative influence of the pier abutment, we simultaneously stressed the second molar and second premolar, and, respectively, the second premolar and canine.

Results: Maximum stress concentration was present in the load area for all simulated models. For the axial load, the highest stress was located on the cervical and connector area of the pier abutment. For the horizontal force acting to the vestibular side, the highest stress was observed on the 5-unit FPD without pier abutment. The horizontal force acting to the distal side of the bridge did not produce any noticeable effect for both models.

Conclusions: The presence of the intermediate abutment has a significant effect in reducing canine cervical stress. We noticed that this behavior is mainly related with vertical loading but also important in the horizontal vestibular loading.

Free Communication Session 38 | 30.08.2017, 12:45–13:45 | Room A9.13

Theme: Oral Surgery

FC149

Efficacy of Single or Multiple Suturing Following Third Molar Surgery

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Aim or purpose: The aim of this study is to compare the effect of single and multiple suture techniques on inflammatory complications following mandibular third molar surgery.

Materials and methods: One hundred and eighteen (118) subjects; 18 years and above, who required lower impacted third molar surgical extraction at the department of Oral and Maxillofacial surgery, in a tertiary health institution were enrolled in the study. Subjects were randomly divided into two groups of fifty-nine (59) each. Group I (the single suture group) had their flaps closed with single suture, The suture in group II (multiple suture group), was placed at the mesial and distal relieving incisions and the interdental papilla between the second and third molars.

Pain, swelling and trismus were evaluated prior to surgical procedure, immediately after surgery and on days 2 and 7 postoperatively.

Results: The study participants consisted of 51 males and 67 females, with a male to female (M: F) ratio of 1: 1.3 A statistically significant difference was observed in the level of pain immediately after surgery and postoperative day 2. Swelling was found to be reduced in the single suture group on all postoperative days, but was statistically significant only on postoperative day 2.

Conclusions: Single suture technique after surgical extraction of lower third molar is associated with less postoperative inflammatory complications compared with multiple suture technique.

FC150

Evaluation of the Anatomical Environment of Wisdom Teeth: A Cross-Sectional Study

Mariam Mezzour, Karima Elharti, Wafaa Elwady
Mohammed V University in Rabat, Rabat, Morocco

Aim or purpose: Through our study, we tried to evaluate clinically and radiologically the frequency of the anatomical situations being able to complicate the extraction of wisdom teeth.

Materials and methods: Our work is a cross-sectional study about patients of more than 16 years, who consulted at the oral surgery department of our institution, for a surgical extraction of the wisdom teeth.

Results: The sample of the study consisted of 107 superior and lower wisdom teeth, at 60 patients.

- The most frequent position and angulation of wisdom teeth, were the enclosed position 66 (61.7%), and mesial angulation 51 (47.7%).
- 28 (26.2%) wisdom teeth presented an abnormal relationship with the second molar.
- 11 (33.3%) superior wisdom teeth had a relationship with the maxillary sinus.
- 17 (23%) lower wisdom teeth presented one or several predictive signs of closeness with the mandibular canal.

Conclusions: The clinical study informed about the frequency of different positions and angulations of wisdom teeth. Such positions and angulations can cause additional difficulties during the avulsion of wisdom teeth. The clinical study also informed about the relation between wisdom teeth and adjacent anatomical structures. These anatomical structures can lead to several complications if it is not respected during the extraction.

FC151

Alveolar "Sandwich" Osteotomy in Totally Atrophic Mandible

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Introduction: Many bone graft techniques were elaborated, still there are a lot of discussions what technique is preferable in complicated situations.

Case description: 2014 year, patient B., 60 years old, turned for help of maxilla-facial surgeon due to unsatisfying fixation of the full denture. By the results of CT: in posterior part – 9 mm, frontal – 20 mm. The operation was made by general anesthesia. Unicortical bone graft from iliac crest sized 7 × 5 cm was harvested. In the oral cavity was made a horizontal incision below the mucogingival line in the edentulous area. Mucoperiosteal flap was raised to expose the mental foramen, and the mental nerve was identified. The segment was moved superiorly after all bone cuts were completed. The bone grafts were shaped and placed between the mobilized segmental osteotomy and basal bone. The fixation was made with microplates and straight screws. The remaining space was filled with cancellous bone. The wound was then closed primarily with 5-0 vicryl. Clinical examination was carried out

1 week, 1 month, 6 months and every 12 months and included visual inspection of the mucosa for inflammation signs or suture breakdown, CT. CT results in 6 month after operation: in posterior part – 16 mm, frontal – 31 mm. Dental implants, using classical approach, were successfully placed with primary dental stability after the removing of screws and microplates.

Conclusions: “Sandwich” technique remains the “golden standard” among bone graft options for treatment atrophic jaws and should be considered method of choice for the rehabilitation in totally atrophic mandible.

FC152

Modified Pederson Scale Reliability in Extraction of Mandibular Third Molars

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Aim or purpose: The aim of this study was to analyze the effectiveness and clinical reliability of Modified Pederson Scale (Kharma Scale) in comparison with classic Pederson Scale.

Materials and methods: Data were collected prospectively for 60 extracted mandibular molars. For each extraction, both Modified (Kharma) and Classic Pederson Scale, estimating the difficulty rate during extraction of mandibular third molars are utilized; pre-operative, intra-operative and postoperative scoring records are noted. Preoperative evaluation was assessed using panoramic radiograph using two scales. Furthermore, postoperative assessment of the difficulty of each extraction was assessed using Parant scale.

Results: Based on preoperative evaluation using Kharma Scale showed that 13 extractions are very difficult. Divergently, only 8 cases are classified as very difficult by Classic Pederson Scale. Correlation between both scales was found to be relatively poor (0.603). The records acquired using Classic Pederson Scale was also compared with Parant Scale, demonstrating poor correlation between both scales (0.414). The sensitivity test of both Pederson and Parant scales showed a high sensitivity value of 0.71 for Parant Scale and low sensitivity value of 0.34 for Pederson Scale. Furthermore, using the same set of tests for both Parant and Kharma scale showed higher correlation between both scales with an ordinal value of 0.723 and high sensitivity value of 0.83 for Kharma Scale, meanwhile Parant Scale has sensitivity value of 1.49.

Conclusions: Kharma Scale showed more accuracy and reliability in preoperative estimation of the difficulty of surgical extraction of impacted lower third molars than Pederson scale.

Free Communication Session 39 | 30.08.2017, 14:00–15:00 | Room A9.11

Theme: Prosthodontics

FC153

Influence of Porcelain Framework Metals and Production Techniques on Surface Roughness and Oxide Film Layer Thickness

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Aim or purpose: The purpose of this study was to evaluate influence of porcelain framework metals and production techniques on surface roughness and oxide film layer thickness.

Materials and methods: Totally 90 metal frameworks in 6 groups (n = 15) were used in this study. Casting, CAD/CAM and selective laser sintering methods were used for producing the frameworks. After the producing, the samples were sand-blasted with Al₂O₃. Prepared samples surface roughnesses were measured with contact profilometer. Titanium and cobalt-chrome groups were fired through manufacturer’s instructions. Samples cut through in two pieces. Samples abraded with 240, 400, 600, 800, 1000 ve 1200 gritlik SiC papers. Then ultrasonically cleaned in distilled water. SEM analyses were done.

Results: According to the study results, there is an statistically significant effects of materials and production methods on surface roughness and oxide film layer thickness. Highest surface roughness value was observed in cobalt-chrome groups. The thickest oxide film layers were belonged to the titanium groups.

Conclusions: Framework material selection and the production methods have an important role on the clinical success of the prosthodontic treatments.

FC154

Application of Hybrid Ceramic Cervical Inlays

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Aim or purpose: Improving the efficiency of the treatment of patients with abfractions with hybrid ceramic ENAMIC cervical inlays. Cervical inlays are the way to preserve the aesthetics, the pulp vitality and mechanical strength of a tooth.

Materials and methods: Adhesive properties to dentine were tested by Russian national standard GOST R51202-98 6.3 after 24 h after thermocycling. Samples were placed into perforated cuvette in thermostat “Reom” with 5 ± 0.5°C for 30 s. Than cuvette was stored at room temperature 23°C for 20 s. Completion of the complex manipulations accepted per cycle. A total 1200 cycles was performed. Next, samples were placed into “Instron” compressive strength testing machine. Loads were applied along the longitudinal axis.

Results: Mechanical properties of hybrid ceramic ENAMIC are close to natural dentine and enamel. In addition, the elastic

modulus during chewing allows more evenly distribute the load on the restored teeth.

Conclusions: The flexural strength, modulus of elasticity, which are similar to tooth hard tissues, make hybrid ceramics suitable for use as restoration material in cervical area.

FC155

Patients' Experiences of Therapeutic Jaw Exercises

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Aim or purpose: The aim was to study the patients' experiences of therapeutic jaw exercises in the treatment of masticatory myofascial pain.

Materials and methods: A postal questionnaire was sent to 150 consecutive patients with masticatory myofascial pain according to the Research Diagnostic Criteria for TMD. The patients were treated with jaw exercises at a TMD specialist clinic for 3 to 12 months. The postal questionnaire contained 24 statements concerning jaw exercises that the patients should answer according to a five-item verbal Likert scale that range from "Strongly agree" to "Strongly disagree".

Results: The response rate was 73% (n = 109) and 79% of the responders were women. 71% of the patients reported that it was easier to remember the jaw exercises if you put them in conjunction with an already established routine and 78% reported that information about the underlying cause of their symptoms made them more implicated in the treatment. Initially, before examination, 49% of the patients suspected serious disease behind their symptoms, 72% reported that the jaw exercises were effective in reducing their symptoms and 80% reported that it felt good to have tools to tackle the problems themselves if the symptoms should return.

Conclusions: Information about the cause of the symptoms and about the treatment is important to reassure and make the patient implicated in the treatment. Most patients report that jaw exercises is an effective treatment and that it feels good to have tools to tackle the problems themselves if the symptoms should return.

FC156

Aesthetic Management for Discolored Anterior Dental Abutments

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Introduction: Discoloration of dental abutments poses a serious problem in aesthetic zone. The prosthodontist is faced with difficult treatment decision especially when using ceramic materials. He is facing the problem which ceramic system choose?

Case description: Clinical strategies for choosing the appropriate ceramic system will be discussed, through a series of clinical situations, where patients were complaining about their poor aesthetics due to discoloration of anterior teeth.

The first was about necrotic central incisors where 2 based Zirconia crowns were performed. It was noticed that the change in color was increased gradually and that the central incisors were necrotic as a complication of orthodontic treatment performed 7 years back. The coloration of the abutment was characterized as deeper. Whereas, the second clinical situation was dealing with an endodontically treated central incisor where medium-sized defect was detected. It was restored with composite resin presenting discolored margins. A translucent ceramic system was selected in this situation.

Discussion: When the abutment tooth color has a dark shade full coverage restorations are considered as appropriate treatment approach where the core of the chosen material should be opacious in order to mask the underlying abutment tooth color. High translucency may not always be desirable and ceramic materials with lower translucency can be beneficial. Generally, it depends on the degree of the abutment discoloration.

Conclusions/Clinical significance: Aesthetic management of discolored dental abutments remains a challenge in fixed prosthodontics. ceramic system choice is a key of success.

Free Communication Session 40 | 30.08.2017, 14:00–15:00 | Room A9.13

Theme: Oral Surgery

FC157

MRONJ (BRONJ) after Tooth Extraction: Research of Opportunistic Infection

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Aim or purpose: Today the pathogenesis of medication-related osteonecrosis of a jaw (MRONJ) following the tooth extraction procedure in patients with or after the course of antiresorptive therapy is becoming clearer but the role of secondary infection is the issue for discussion. Choosing the treatment strategy based on a study of the role of opportunistic infection of the oral cavity could be very useful in everyday practice.

Materials and methods: Typical clinical cases of MRONJ were investigated (n = 37). The evaluation of qualitative and quantitative content of the microflora of the oral cavity, the wound and the affected bone tissue in patients with osteonecrosis after tooth extraction and in control group was performed with the method of real time polymerase chain reaction. Determined flora was compared to the one known to be the cause of odontogenic inflammatory diseases (n = 40). 15 conditionally pathogenic oral microorganisms were clearly identified using real time polymerase chain reaction. After the surgical treatment, all the patients have undergone flora evaluation again.

Results: It was shown that opportunistic bacterial flora and Candida spp. had a major impact on the speed of development and the

severity of osteonecrotic process. Also, it became possible to implement the specific antibacterial therapy which led to better outcome.

Conclusions: Osteonecrosis of facial bones following the tooth extraction in patients receiving antiresorptive drugs is accompanied by a wide range of bacterial species. Today we are able to reach better treatment results using acquired database of opportunistic flora species.

FC158

Predictors of Cervical Lymph Nodes Metastasis in Squamous Cell Carcinoma of the Oral Cavity

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Aim or purpose: To identify the clinical and histological parameters responsible for lymph nodes metastasis in squamous cell carcinoma of the oral cavity.

Materials and methods: A cross sectional, observational study was carried out on 50 patients with biopsy proven oral squamous cell carcinoma at Dow University of health sciences, Ojha campus. Relationship between cervical lymph nodes metastasis and age of the patient, tumor site, tumor size, tumor thickness, clinical pattern of the tumor and histological grade of the tumor was assessed. SPSS (version 19) was used to analyze the results.

Results: 68.6% patients were male with the median age of 48. The most common site was buccal mucosa (47.1%). The tumor size of majority of the patients, i.e. 72% lied in between 2 and 5 cm. 82.4% of patients presented with moderately differentiated histological grading of the primary tumor. 54% of participants had tumor thickness in the range to 1–3 cm. 38.2% of patients presented with exophytic pattern.

Conclusions: The combination of these factors can be a useful predictor of cervical lymph nodes metastasis in squamous cell carcinoma of the oral cavity.

FC159

Naevoid Basal Cell Carcinoma Syndrome-Clinicopathological Analysis of 10 Cases

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Introduction: Naevoid basal cell carcinoma syndrome (NBCCS), also known as Gorlin-Goltz syndrome is a rare and autosomal dominant inherited disease which results from mutations in the *PTCH1* gene. It is characterized by a wide range of developmental abnormalities and a predisposition to development of several types of tumours. Cerebral calcification, basal cell carcinoma of the skin and a multiple keratocystic odontogenic tumours of the jaws are the predominant findings.

Case description: We hereby present a clinicopathological analysis of 10 cases of patients diagnosed with NBCCS, who were referred to the Department of Oral Surgery due to multilocular radiolucent lesions detected upon X-ray examination. Basal cell carcinoma and skeletal anomalies associated with NBCCS were also found in several cases. Jaws lesions have been histopathologically proven to be keratocystic odontogenic tumours (KCOT). Mandibular and maxillary KCOTs were managed by enucleation or decompression with secondary curettage at the Department of Oral Surgery. In some cases, recurrence of KCOT were discovered.

Discussion: The dentist has an important responsibility in early diagnosis and referral to other specialist for further evaluation. Dentists must be aware that the detection of KCOT, especially in multifocal form, may result from NBCCS. Once the diagnosis of KCOT is made, a thorough examination in terms of other signs of NBCCS should be performed.

Conclusion: Diagnosis, therapy and regular follow-up of patients with NBCCS is required by a multi-specialist team (dentist, oral surgeon, dermatologist, neurologist, and other).

FC160

Minimally Invasive Techniques in Oral Rehabilitation – Surgical Laser

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Aim or purpose: The aim of this study was to prove the clinical benefits of the laser-assisted minimally invasive surgery.

Materials and methods: 60 patients requiring gingivectomy (n = 20), frenectomy (n = 20), and periimplantitis therapy (n = 20) were randomly assigned for treatment with either the conventional surgical technique or with the laser-assisted technique. For each procedure 20 patients were divided in two groups according to the treatment: study group (n = 10), laser-assisted surgery, and control group (n = 10), conventional surgery. All surgical procedures were performed by the same operator. Laser-assisted versus conventional surgical procedures were compared in relation to the evolution of the intraoperative (pain, bleeding) and postoperative (pain, bleeding, discomfort, healing time) clinical parameters. The postoperative evolution was recorded at 1 day, 3 days, and 7 days. Statistical tests Mann-Whitney and Wilcoxon were performed to compare the results in the laser-assisted groups and conventional surgery groups.

Results: Patients undergoing laser-assisted surgical pre-prosthetic procedures experienced less intraoperative need for anesthesia and less bleeding as well as less postoperative pain, bleeding, discomfort and shorter healing time.

Conclusions: The use of surgical lasers supports the minimal invasive approach in the pre prosthetic surgical procedures.

Free Communication Session 41 | 30.08.2017, 15:15–16:15 | Room A9.9

Theme: Pedodontics

FC161

Clinical and Radiographical Comparison of the Effectiveness of 4% Sodium Hypochlorite and 15.5% Ferric Sulphate with Formocresol as Pulpotomy Medicaments in Primary Molars

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Aim or purpose: The objective of this study is to investigate the effectiveness of 15.5% Ferric sulphate and 4% Sodium Hypochlorite as alternative pulpotomy medicaments to formocresol.

Materials and methods: 30 carious primary molars of healthy male and female children of age 5–9 years were divided into three groups, having ten participants each. After taking informed consent, pulpotomy was performed using formocresol (FC) in 1:5 dilution, 15.5% Ferric Sulphate (FS) and 4% Sodium Hypochlorite (NaOCl) in each group. Clinical signs of inflammation, pulpal necrosis, pain on percussion, sensitivity, tooth mobility and gingival swelling were observed. Radiographic assessment of internal and external root resorption and inter-radicular pathology in the form of radiolucency was assessed. The follow-up was done over a period of one, three, six, nine and twelve months.

Results: The participants treated with 15.5% FS, 5% NaOCl and FC, all showed the clinical success of 100% over a period of 6 months. The radiographic success over 6 months for FS, NaOCl and FC was 100%, 90% and 90% respectively. The clinical success for FS over 12 months was 90%, NaOCl 80% and FC 80%, while the radiographic success over 12 months for FS, NaOCl and FC was 80%, 60% and 80% respectively.

Conclusions: All three medicaments showed similar clinical and radiographical results, therefore, 15.5% Ferric Sulphate and 4% Sodium Hypochlorite can be used as alternative pulpotomy medicaments to formocresol.

FC163

Developmental Defects of the Enamel in a Group of Children

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Aim or purpose: Developmental defect of the enamel is defined as a defect of enamel matrix formation with reduced or altered amounts of enamel caused by an insult to the ameloblasts cells. The aim of this pilot study to assess the prevalence of developmental defects of the enamel (DDE) and their etiological factors in a group of children living in Istanbul.

Materials and methods: Considering the purpose of this cross-sectional study, an epidemiological index of developmental defects of dental enamel (DDE Index) was used to diagnose and classify different types of enamel hypoplasia and a questionnaire was used

including socioeconomic status, medical and dental history of children completed by the assistance of their parents.

Results: A total of 70 children, 32 girls 38 boys and aged 8–12 years were examined. According to the DDE Index, at least one tooth with an enamel defect was found in 44.3% of the total study population. Examination of the type of delivery showed no association with the presence or absence of the defects. Among the teeth, maxillary central and lateral incisors were most affected by enamel defects (39.7%). There were no gender differences in presence of the defects.

Conclusions: This study suggests that the prevalence of DDE among children who live in Istanbul was high, as the enamel defects were not associated with labor status; however, the other associations must be considered when focusing on the prevalence of DDE in the communities. Therefore, the need for further investigation suggests into the etiological factors of DDE among children.

FC164

Fused Primary Teeth and Findings in Permanent Dentition

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University of Ondokuzmayıs Faculty of Dentistry Department of Pediatric Dentistry, Samsun, Turkey

Aim or purpose: The aim of the present study was to investigate the characteristics of primary fused teeth (PFT) in a group of Turkish children.

Materials and methods: Forty PFT cases were diagnosed who attended to Pediatric Dental Clinic between 2015 and 2017 in Mid-Northern Turkey. The distribution of PFT was calculated with respect to types, sex differences, the affected jaws, associated dental anomalies, and clinical complications. Descriptive statistics were calculated and recorded.

Results: Of the 50 PFT were detected in 40 patients mean aged 6.7 years old (24 boys and 16 girls). The majority of PFT cases were observed in mandibular lateral incisors and canines (68%). Regarding the type of PFT 40% of teeth showed Type 3 PFT. Thirty-four patients (85%) with PFT also exhibited other dental anomalies in related or unrelated area such as tooth aplasia, peg shaped incisors, talon cusps, ectopic eruption and delayed tooth eruption. Fusion related tooth aplasia (63.1%) and caries formation in affected teeth (60%) were the common problems in PFT cases.

Conclusions: Primary teeth fusion itself and associated further problems in permanent dentition may have deleterious effects on oral health, occlusion and esthetics. The parents should be informed possible dental problems with related PFT and regular follow-ups schedule for these children.

Free Communication Session 42 | 30.08.2017, 15:15–16:15 | Room A9.10

Theme: Public Health

FC165

Advocacy and Understanding the Functional Gap in Dental Education, A Qualitative Study

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Aim or purpose: The purpose of this study is to evaluate Dental graduates and professionals' knowledge of the concept Advocacy and defining why these skills can affect their role in promoting health. This study is an effort in order to make this gap in dental education known through exploring the concept of advocacy by addressing health as a complex concept with social factors beyond the direct control of health workers.

Materials and methods: We conducted an extensive review of literature about the concept of advocacy, its place in public health debates and how to use it to create change. a survey was conducted among 96 dental graduates who has just finished dental school and 37 dental professionals who are working in the field in Tehran, Iran.

Results: 24 of the dental professionals and 44 of newly graduates were familiar with policy processes while only 7 of the professionals and 3 of graduates were familiar with the concept of advocacy. among these only 5 of the dental professionals and 3 of graduates answered the questions on how to use advocacy to create change.

Conclusions: It seems that even those who are familiar with policy processes and frameworks lack an efficient knowledge on advocacy which is potentially a strong tool for change. This could explain why dentists play little role in decision levels of population health. Educational content should be designed and workshops should be held to prepare future graduates to communicate with policymaking bodies and provoke them to adopt evidence-based decisions.

FC166

Methods of Sterilization and Monitoring of Sterilization in Developing Country

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Aim or purpose: The primary objective of our study was to assess methods of sterilization in dental practices in Karachi and secondary objective was to investigate methods of monitoring sterilization in dental practices in Karachi, Pakistan.

Materials and methods: This Cross sectional descriptive study was carried out over a period of three months in Dental colleges, hospitals and private clinics of Karachi, Pakistan. Study included specialists, post graduate trainees and general dentists working in Dental colleges, Hospitals and private clinics. Undergraduate dental students and dentists not having Pakistan Medical and Dental Council Pakistan (PMDC) registration were excluded from the study. Total 251 questionnaires were obtained. Descriptive

statistics were computed and differences between groups were assessed through Chi square test using Statistical Package for the Social Sciences (SPSS) version 16.0 available at university campus. p-value <0.005 was taken as statistically significant.

Results: It was observed that Autoclave 155 (61.8%) was the most common method of sterilization followed by more than one method 65 (25.9%), dry heat 24 (9.6%) and cold sterilization 7 (2.8%). Majority of dentist's 126 (50.1%) never monitored sterilization and those who did monitored mostly monthly.

Conclusions: Statistically significant difference was found in infection control practices of specialists, post graduate trainees and general dentists regarding method of monitoring sterilization with majority of dentists never monitoring sterilization.

FC167

Dental Visit and its Associated Dental Status among Schoolchildren

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Aim: The aim of this study was to establish a relationship between dental visits and dental status. The objective for determining this is to introduce a new outlook on the significance of regular dental attendance.

Materials and methods: A random sample of 420 children was selected from private schools from students of Grade 6, 7 and 8. The research was conducted through an interview-based questionnaire with demographic details, oral hygiene frequency, dental visit patterns and OHIP-14 questions. All the respondents were given a clinical examination to recognize their dental status using ICDAS. Statistical analysis was done to prove the relationship.

Results: Majority of the respondents were 13 years old (28.8%), female (60.5%), from Grade 8 (44.3%) and from a middle socioeconomic background (83.6%). 44.3% of the participants had been to a dentist with pain, filling and routine check-up being the most common reasons for a visit. Females had a better oral hygiene than males. The mean ICDAS score of the sample was 15.47 (SD ± 17.3) and the mean OHIP-14 score was 65 (SD ± 5). 95% of the respondents had high OHIP-14 scores. Chi-Square tests identified association between dental visits and Oral Health Impact Profile with p-value ≤0.05.

Conclusions: Higher attendance corresponds to a high OHIP-14 score (with 70 being the most desirable score) and low ICDAS scores (with 0 being the most desirable score). Therefore, because of the significance of this relationship, dental visits play an important role in improving the oral health profile of an individual.

FC168

Perceived Barriers of Primary Dentist Toward Implementation Indonesia Dental Insurance

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Aim or purpose: To describe primary dentists' perceived constraints toward implementation of National Health Insurance (NHI) and knowledge on managed care in Yogyakarta Indonesia.

Materials and methods: Dentists' perceptions about the implementation of NHI and their knowledge on managed care, were surveyed in a descriptive study. Two types of questionnaire were used as instruments and administered to 91 dentists who work at community health centers in Yogyakarta by using total population.

Results: A number of dentist who perceived constraints on capitation payment was 78 (71%), benefits package was 65 (72%), workload was 59 (65%), and dental health facilities was 23 (25%). The level of knowledge on managed care for good, moderate and poor category were identified on 46 primary dentists' (50.5%), 43 primary dentist's (47.3%) and 2 primary dentist's (2.2%) respectively.

Conclusions: Primary dentist's perceived constraints on managed care should be taken into account since it could affect the implementation of NHI at Yogyakarta.

Free Communication Session 43 | 30.08.2017, 15:15–16:15 | Room A9.11

Theme: Prosthodontics

FC169

Color Change in Contemporary CAD/CAM Materials and Composite Resin Cements

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Aim or purpose: The purpose of this investigation was to analyze the influence of thermal cycling on the color of the resin cements and recent CAD/CAM materials.

Materials and methods: 7 different CAD/CAM materials; composite resin, resin nanoceramic (RNC), hybrid ceramic (HC), feldspathic ceramic, leucite reinforced glass ceramic (LC), lithium disilicate glass ceramic (LDC) and zirconia reinforced lithium silicate ceramic (ZLC) blocks were cut into specimens of 0.7 mm and 1.2 mm thicknesses (n = 10) and cemented with a dual-cure resin cement, a light-cure resin cement and a preheated composite resin (N = 420). Color values were measured via spectrophotometry. Specimens were subjected to thermal cycling (5000 cycles) and the color measurements were repeated. Color changes were calculated using ΔE formula. Three- and one-way ANOVA followed by the Scheffé post-hoc test was computed to determine the significant differences among the CAD/CAM material or composite resin

cement. Unpaired two-sample *t*-test was used to determine the impact of thickness.

Results: ΔE values were significantly influenced by CAD/CAM material and resin composite cement, but they were not influenced by thickness. ZLC and HC showed significantly the lowest ΔE values while LC presented the highest ΔE values. Dual-cure resin cement showed significantly lower ΔE values compared to preheated composite resin ($p < 0.05$).

Conclusions: CAD/CAM material and composite resin cement significantly affect the color change of the restorations due to aging. ZLC and HC are the most color stable products among the tested materials. Dual-cure resin cements are more color stable compared to preheated composite resins.

FC170

The Effective Concentration of the Denture Cleanser Tablets

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Aim or purpose: The aim of this study was to assess the effect of three denture materials against *Candida albicans* biofilm and to determine effective concentrations of denture cleanser tablets.

Materials and methods: Acrylic resin, high impact acrylic resin and thermoplastic polyamide resin material (n = 45 per resin) were used, and the surface-roughness was standardized by using a profilometer. The contact angle and surface free energy were calculated. The specimens were treated with three different commercial cleanser solutions. The anticandidal activity of the tablets and resin was determined by using a MTT protocol according to the AFST-EUCAST. The anticandidal activity and surface free energy statistical parameters were calculated.

Results: The neutral peroxide enzymatic denture cleanser tablet (A) and the alkaline peroxide tablets (B and C) significantly inhibited ($p < 0.05$) proliferation of *C. albicans* tested against all denture resins at 27–37 mg/ml. We failed to find a significant relationship between surface free energy and the anticandidal effect of the resin types. However, the polarity value of the resins was statistically associated with the anticandidal activity of the resins.

Conclusions: The polarity of the resins, the concentrations of tablets and the chemical content of the cleanser may directly affect the *C. albicans* biofilm formations. A and B tablets should be suggested for patients who use any denture resin types, whereas the C tablet should only be proposed for those who use thermoplastic polyamide resin, when two tablets are dropped into 150 ml water.

FC171

Finishing Procedures, Storage and Cleaning Paste Effects on Ceramic Discoloration

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Aim or purpose: The objectives of this study are to investigate the discoloration of zirconia-reinforced lithium-silicate glass-ceramic and lithium-disilicate reinforced glass-ceramic prepared with various surface finishing procedures when stored in beverages, and the effect of cleaning-paste on the color stability of the ceramics.

Materials and methods: Lithium-disilicate glass-ceramic (IPS e.max CAD HT, Ivoclar Vivadent) (E) and zirconia-reinforced lithium-silicate ceramic (Vita Suprinity HT, Vita Zahnfabrik) (VS) CAD/CAM blocks were sectioned with diamond saw (Metkon) (1.5 mm × 7 mm × 12 mm) (N = 120). Samples were randomly divided into three surface finishing procedures as glaze (G), mechanical polishing (M), and external staining (S). Then, each group was divided into two storage subgroups, namely black tea (T) and coffee (C) (n = 10). Color values were measured in CIE-LAB with dental spectrophotometer (VITA Easyshade) at initial stage, and following 1-week, 2-weeks, 1-month, 2-months storage, and after cleaning-paste application. Color changes (ΔE) were calculated and statistically analyzed (Kruskal-Wallis, Mann Whitney U, four-way repeated measures variance analysis, NCSS).

Results: For E ceramic, G procedure showed statistically lower ΔE values than M and S surface finishing groups ($p < 0.05$), whereas for VS ceramic, G procedure showed statistically lower ΔE values than M, but statistically insignificant values with respect to S. E groups generally showed statistically lower or statistically insignificant ΔE values with respect to VS groups. Significantly lower discoloration values were obtained following cleaning paste application, with respect to 2-months storage ($p < 0.05$).

Conclusions: Glaze procedure led to more color stability than mechanical polishing and external staining for zirconia-reinforced lithium-silicate and lithium-disilicate glass-ceramic. Cleaning paste resulted in a decrease in discoloration to clinically acceptable values.

FC172

Evaluation of Implant Inclinations and Cantilever Lengths in “All-on-4” Concept

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Aim or purpose: Aim of this study was to evaluate the effect of implant inclination and cantilever length on the stress distribution in mandibular cortical bone, implant, abutment, prosthetic framework and prosthetic screw via 3-dimensional finite element analysis.

Materials and methods: Four different finite element models (0-0, 17-17, 30-30, 45-30) were designed according to the tilting angle (0-, 17-, 30- and 45-degrees) of the posterior implant and angle of multi-unit abutments. Screw-retained fixed prostheses with different cantilever lengths were modeled. A foodstuff was used for the 100-N load application. Maximum principle (Pmax), minimum

principle (Pmin) stresses were calculated for cortical bone and von Mises stress values were calculated for other components.

Results: Pmin stress values in bone were gradually decreased with the increasing inclination of both anterior and posterior implants and peak Pmax stresses were detected in 0-0 group. For the cortical bone around posterior implant, 30-30 group showed the lowest Pmax value and the highest von Mises stress on implants was found at posterior implant of 30-30 group. Highest stress values were observed in anterior implant, surrounding bone and prosthetic components of 0-0 configuration and for prosthetic screws 30-30 and 45-30 groups and for metal framework 30-30 group exhibited lower stress values.

Conclusions: Tilting the posterior implants resulted in reduction in stress in peri-implant bone, abutment, prosthetic screw, and metal framework. The groups with 30- and 45-degrees tilted posterior implants and shorter cantilever lengths showed better stress distributions.

Free Communication Session 44 | 30.08.2017, 15:15–16:15 | Room A9.13

Theme: Oral Surgery

FC173

Medication-Related Osteonecrosis of a Jaw (MRONJ): Radical or Conservative Strategy?

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Aim or purpose: Changes in bone formation and transformation processes due to intake of the bisphosphonates and some other medications like denosumab are proven to result destruction of the jaw. Such destructions produce significant morbidity rate in patients receiving chemotherapy. Strategies for management of patients are still unclear despite of all the guidelines of professional societies. The proposition of radical approach is still considered to be rather traumatic.

Materials and methods: 107 patients with MRONJ Stage 1, 2, 3 using different methods were treated – conservative treatment, block resection with undisturbed jaw continuity and radical resection of the jaw. The routine methods of evaluation were implemented. The “conservative treatment” group consisted of 27 patients who received antibiotics, antiseptic fistula treatment and mild bone debridement.

Results: The 102 patients have undergone mandible or maxilla resection. CT scan was of a good diagnostic value but did not clarify the dimensions of resection accurately. 101 wounds were closed with sutures, just 5 patients had a wound dehiscence, and 1 patient did not have any sutures at all. All 27 patients in control group did not show any signs of recovery but further developed the osteonecrotic process.

Conclusions: Aggressive surgical approach and primary wound closure rather than just debridement and mouth rinse have shown much better results in patients with MRONJ stage 1, 2 and 3.

FC174

Laser Application for Oral Surgery in Patients with Hemostatic DisordersIlana Gor¹, Elena Makarova¹, Svetlana Tarasenko¹, Anait Melikyan²¹*I.M. Sechenov First Moscow State Medical University, Moscow, Russian Federation*, ²*Federal State Budgetary Institution "Scientific Centre for Haematology" of the Ministry of Health of the Russian Federation, Moscow, Russian Federation***Aim or purpose:** To increase the efficiency of surgical treatment of patients with hemostatic diseases using the erbium laser.**Materials and methods:** We selected 2 groups of patients for oral surgical treatment. The first group included 43 patients with thrombocytopenia, thrombocytosis and other failures of platelet functions and these patients were treated erbium laser radiation during the oral surgery. The second (control) group (43 patients) without this pathology was determined for conventional surgical treatment. In the preoperative period patient of both groups were carried out clinical, radiological and laboratory study of the patients' blood. For assess tissue damage we determined the number of homocysteine in the mixed saliva. The number of fibroblast growth factors β was measured to assess the regeneration of connective tissue after tooth extraction.**Results:** In the first group, there was no postoperative bleeding, post-surgical pain, complete epithelization was during 11–12 days. The second group patients complained of pain and discomfort during several days after operation, complete wound epithelization was during 13–14 days. The results of immunoenzyme analysis confirmed a small lesion and good tissue regeneration after the erbium laser application.**Conclusions:** The application of erbium laser is a method which can be successfully used in surgical treatment of patients with hemostatic disorders.

FC175

Bone Augmentation using B-TCP in Frontal Part of Maxilla

Igor Cherkesov, Anastasia Lukyanova, Petruk Pavel, Kirill Polyakov, Lyudmila Shamaeva, Sergey Ivanov

*I.M. Sechenov First Moscow State Medical University, Moscow, Russian Federation***Aim:** The problem of deficiency of vestibular bone after teeth extractions in frontal part of maxilla is becoming increasingly important in oral surgery. The aim of our study was to evaluate the necessity of using B-TCP in frontal part of upper jaw.**Materials and methods:** The study included patients with partial anodontia in anterior part of upper jaw. All of them had defects of vestibular bone due to chronic periodontitis of the incisors. The purpose was to achieve an adequate primary dental implant stability for successful osseointegration in future. 30 patients between 2013 and 2016 were treated using B-TCP. 43 dental implants were placed. Quality criterion of surgical procedure was primary stability of implants in 6 months after bone augmentation. Local anesthesia was used. Incision was made in the place of the missing teeth. Mucosa-periosteal flap was peeled. B-TCP

applied over a bone defect with a periosteal elevator. No membrane was used. Wound was closed with 5.0 Vicryl. Patients were visually inspected in 7 days, 1 month, 3 months and 6 months. All patients were monitored for sign of infection, dehiscence or other complications. The amount of bone was measured on CT scan as far as the postoperative bone resorption. In 6 months after operation under local anesthesia dental implants were placed. Primary stability of dental implants was achieved.

Results: All implants osseointegrated successfully and underwent loading after 6 months.**Conclusions:** Given procedure achieved good aesthetics and functional results. Anterior maxilla atrophy can be successfully treated by B-TCP bone grafting.

FC176

Giant Cell Tumor of the Maxilla: An Unusual NeoplasmMariam Mezzour, Karima Elharti, Wafaa Elwady
*Mohammed V University in Rabat, Rabat, Morocco***Introduction:** Giant cell tumors (GCT) of the bone are uncommon primary bone neoplasms that occur mainly in the epiphyses of long bones. Their incidence in craniofacial skeleton is rare, particularly in the maxilla.**Case description:** We report a case of a 12-year-old patient with a GCT of the left maxilla, who underwent a surgical excision of whole mass, but showed recurrence two years after intervention.**Discussion:** To date, only a few reports of GCT arising from the craniofacial skeleton have been published. In this case report we share our experience of managing one such extremely rare case of giant cell osteoclastoma of maxilla. We discuss then the characteristics inherent to GCT, the diagnostic approach and management of this rare lesion.**Conclusions/Clinical significance:** GCT arising from the maxilla is a rare disease whose diagnosis is difficult. Imaging and clinical features are often not sufficient to make the diagnosis. Therefore, the possibility of GCT should be included in the differential diagnosis of a bony lesion of craniofacial bones until a final diagnosis is made using a permanent pathologic specimen. Wide complete excision is required since incomplete excision results in a high incidence of recurrence.**Free Communication Session 45 | 30.08.2017, 16:30–17:30 | Room A9.9****Theme: Pedodontics**

FC177

Comparison of Biodentine and MTA Pulpotomies in the Primary Molar Teeth: 3-Year Follow-UpMine Koruyucu, Ceren İlisul, Sila Yardımcı, Figen Seymen
*Istanbul University, Faculty of Dentistry, Department of Pedodontics, Istanbul, Turkey***Aim or purpose:** The aim of this study is to compare two pulpotomy medicaments in primary molars clinically.

Materials and methods: A total of 200 primary molars with deep caries were treated with two different pulpotomy medicaments (Mineral Trioxide Aggregate and Biodentine™) in this study. The inclusion criteria for tooth selection were no clinical and radiographic evidence of pulp pathology. During 36 months of follow-up at 3-month intervals, clinical and radiographic success and failures were recorded. The criteria for selecting the teeth; no clinical and radiographic symptoms no history of spontaneous pain and tenderness to percussion, swelling or sinus tracts and pathologic mobility. The differences between the groups were statistically analyzed using the Fisher Exact test, McNemar Test and Chi-square test.

Results: There was no statistically significant difference in success rates between 1st, 3th, and 6th month clinical findings ($p > 0.05$). The 12th month clinical success rate (98%) of the MTA material was found to be statistically significant ($p:0.040$; $p < 0.05$) than biodentine material (90%). There was no statistically significant difference in the success rates of the 24th and 36th months clinical findings among the materials ($p > 0.05$). The rate of extraction in MTA material was lower than biodentine material in the 12th and 24th months.

Conclusions: As specified in the literature, biodentine is an alternative to MTA but more prospective clinical studies and high quality randomised control trials and long term follow-up studies are necessary to draw definitive conclusions.

FC178

Comparison of the Success Rates of Four Different Pulpotomy Techniques

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Istanbul University, Faculty of Dentistry, Department of Pedodontics, Istanbul, Turkey

Aim or purpose: The aim of this study was to evaluate the success rates of Biodentine (BD), MTA Plus (MTA-P), ProRoot MTA (MTA-PR) and Ferric Sulfate (FS) as pulpotomy agents in primary molars.

Materials and methods: In this randomized clinical trial, 29 healthy 5- to 7-year-old children with at least 4 carious primary molars with no clinical or radiographic evidence of pulp degeneration were enrolled. The groups were assigned as follows according to the pulpotomy material; Group 1: BD; Group 2: MTA-P; Group 3: MTA-PR; and Group 4: FS. Clinical and radiographic follow-up examinations were conducted at 6, 12 and 24 months using the following criteria: the presence of pain, swelling, sinus tract, pathologic mobility, internal root resorption, and furcation and/or periapical bone destruction. Data were analyzed using chi-square tests.

Results: Total success rates at 12 months in Groups 1 to 4 were found as 89.65%, 96.55%, 93.1% and 82.75%, respectively. 24-month success rates in Groups 1 to 4 were 82.75%, 86.2%, 93.1% and 75.86%, respectively. No statistically significant differences in total success rates were determined between the groups at 6-, 12- and 24-month follow-ups ($p > 0.05$). When the groups were compared according to the time intervals, no significant

differences were observed between the 6- to 12-month or 6- to 24-month or 12- to 24-month ($p > 0.05$).

Conclusions: Although the success rates of BD, MTA-P, MTA-PR and FS did not differ significantly, MTA-PR showed more favorable results as compared to BD, MTA-P and FS at 24-month follow-up.

FC179

Comparison of a Computerized-Anesthesia-Delivery-System and A Traditional Syringe Under Sedation

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Aim or purpose: The purpose of this study was to investigate whether there is a difference in pain and distress response of the child when using a computer-controlled local anesthetic delivery system and a traditional syringe.

Materials and methods: The study was conducted among 40 children with a mean age of 8.8. Parents completed the Dental Subscale of the Children's Fear Survey Schedule (CFSS-ds). Children were selected and randomly allocated to local anesthetic delivery system (Group I) or traditional injection (Group II) groups. Children who met the selection criteria were selected (CFSS-ds: 32.2, Frankel Scale: 2.07, Family Impact Section (FIS): 2.6, Short State-Trait Anxiety Inventory (SSTAI): 3.75). The selection criteria also included patients who had a pair of mandibular/maxillary primary molars to be extracted. All patients were treated under nitrous oxide inhalation sedation. Data were analyzed by Wilcoxon signed rank test. The level of significance was set at 5%.

Results: No significant difference was found regarding pain and distress reaction (Heart rate, Visual Analogue Scale (VAS), FIS and SSTAI) of the children between Group I and II during extractions. The average delivery time of the treatment for the groups was similar. A significant lower value of SSTAI was recorded for only after the injection phase ($p = 0.011$).

Conclusions: No difference in the response of referred children was found between an injection with the computer-controlled local anesthetic delivery system and the traditional syringe. During injection phase, the mean injection time with the computer-controlled local analgesic delivery system was longer than the traditional syringe.

FC180

Laboratory and Clinical Evaluation of Uncomplicated Fragment Reattachment Using Pinholes

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Aim or purpose: To evaluate laboratory and clinically the uncomplicated fragment reattachment using pinholes.

Materials and methods: A total of 40 extracted human intact upper permanent central incisors with close similarity were selected and randomly divided into 4 groups (n = 10). The incisal third of 30 specimens were sectioned horizontally. Group I: pinholes, group II: internal dentinal groove, group III: simple reattachment, and group IV (control group): intact teeth. Each fragment was reattached to its sectioned tooth using adhesive bond and resin cement. All specimens were tested for fracture strength under standard conditions in Instron testing machine. Force was applied to each specimen in a labio-palatal direction using a small stainless steel rod. The clinical study was performed on twenty patients, aged 8–16 years, presented with uncomplicated fragments of fractured upper central incisors, and divided into two groups (10 patients each). Group I: pinholes and group II: internal dentinal groove. All patients were followed-up clinically and radiographically 3, 6, 12, and 18 months. Data were analyzed using ANOVA and post hoc test with the significant level at $p < 0.05$.

Results: The control group recorded the high strength value followed by pinholes, internal groove, and simple reattachment and the difference was statistically significant ($p < 0.05$). However, the clinical results showed no significant differences between the two techniques ($p > 0.05$).

Conclusions: It was concluded that the pinholes technique had only a significant effect on fragment reattachment success in the in vitro study.

Free Communication Session 46 | 30.08.2017, 16:30–17:30 | Room A9.10

Theme: Public Health

FC181

Studying the Effectiveness of Direct and Video Instructions of Proper Tooth Brushing in 6–7-Years-Old Schoolchildren in Saudi Arabia

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Aim or purpose: To find out the most effective mode of communication approach for delivering proper oral hygiene instructions in the first and second grades students (6–7-years-old) in primary male schools in Alkharj, by using specially made videotape and direct instructions.

Materials and methods: A special video tape was prepared informing the proper tooth brushing. The direct demonstration and instructions about the correct technique for proper tooth brushing was delivered by the dental student. All subjects at the same time were informed about the study and two questions were distributed to the students in a written paper with closed answer asking which approach was clear and you understood the correct way for cleaning their teeth. After that the subjects were asked to circle on the paper they had on the two questions of the (which is the best

informed them about the proper way of brushing their teeth? Video presentation or direct demonstration).

Results: The results showed that 55 of the study members represented a rate of 58.9% from the total of the study members preferred a video-modelling to deliver instructions about the oral hygiene and proper toothbrushing and was the best. While 40 of them represent a rate of 42.1% from the total of the study members preferred a direct delivery of instructions.

Conclusions: The indirect method of delivering proper oral health care through a video tape proved to be most effective communication approach compared to direct communication by dental students.

FC182

Evaluation of an Emancipating Oral Health Program

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Aim or purpose: The objective is to evaluate an oral health program based on the Basic Package of Oral Health (BPOH) and compare it with the Standard Dental Centre (SDC) by analyzing the benefit-cost ratio in each case and the health perspectives from an emancipating point of view.

Materials and methods: Analytical study on the social, economic and health variables of all the structures related to the BPOH and SDC of the health care centres of Zerca y Lejos NGO in the Republic of Cameroon. Assessment of trends at the moment of the investment, every year and ten years later.

Results: Access to dental care by the target community represents a cost of 13.46% of a person's monthly income in the case of the SDC and of 3.58% in the case of the BPOH. Training costs reach 29.9% in the SDC and 5.1% in the BPOH. The training period represents an inactivity risk of 2.08% in the BPOH and of 150% in the SDC.

Conclusions:

- Investment in a SDC as the single measure to preserve health is neither sustainable over time nor self-financing.
- Health preservation is sustainable by the local community through a BPOH managed by technicians specialized in dental health.
- Talking about dental health in economically deprived regions requires for a new dentistry model focused on the health autonomy of people.

FC183

Determination of School Teachers' Knowledge about Dental**Avulsion: A Survey Study**

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Aim or purpose: Especially in pediatric dentistry, although the percentage of encounters with dental traumas is highly considerable, mostly, children cannot usually get emergency help before professional treatments. Since dental traumas usually occur at schools, in this study we evaluated the school teachers' knowledge about dental avulsion.

Materials and methods: 631 school teachers (52.8% female, 47.2% male; aged 40.87 ± 8.25) attended the survey containing 21 questions about demographic details, emergency management of avulsed teeth and dental trauma education. The data were collected. The frequencies of answers were obtained and applied to the Chi-Square test.

Results: 42.8% of the teachers have encountered dental trauma and while 63.8% of the participants thought that avulsed teeth could be reimplanted, only 6.8% of them would reimplant the tooth by themselves. Most teachers (86.2%) agreed with going to the dentist in 1 h. Only 6% of them would put the tooth in milk, while 86.2% of them would prefer to bring the tooth in a dry condition. 46.1% of them had an idea about mouthguard but none of them guided their students to use it. Although 36.5% of them had no information about dental trauma, 89.9% of the teachers were dissatisfied with their dental trauma knowledge.

Conclusions: Schools are the key point to solve the lack of the dental traumatic first aid and teachers play an important role. Teachers should be educated about dental trauma management.

FC184

Relationships among dmf(t), Parental Knowledge and Perceptions on Oral Health

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Aim or purpose: The purpose of this study was to evaluate the relations among preschool children's parents sociodemographical findings, knowledge and ratings of their children's oral & general health.

Materials and methods: The study sample consisted of 122 children aged 4-5 years and their parents who visited the Istanbul University, Faculty of Dentistry, Department of Pedodontics. Data were collected through clinical examination and self-completed questionnaires. Data were analysed by using descriptive statistics, Mann Whitney U test and Spearman's correlation coefficient. IBM SPSS 21.0 statistics *package* programme was used.

Results: 122 parents and children participated in the study. Of the 122 parents, 73% were mothers, 59% had formal education of 8 years or less; 64.8% were not in employment, and %56.6 of their children were male. The mean dmf(t) score was 7.17 ± 4.05 . In this study, the Parental Oral Health Knowledge Scale Scores (POHKS) ranged from 0 to 38 (mean = 22.67, SD = 2.44). The POHKS scores were negatively correlated with monthly family income and education level ($r = -0.246$; $p = 0.006$). Parental age, employment status, daily working time, the number of children, and dmf(t) were not associated with the POHKS. Parental age was negatively correlated with dmf(t) ($r = -0.215$, $p = 0.017$). No significant correlation between parental ratings of their children's oral & general health and POHKS were determined.

Conclusions: Lower income parents and education level had worse knowledge about children's oral health and there are higher dmf(t) values in children of younger parents. The children of the parents, who evaluated their children's oral and dental health as poor, have high dmf(t) values. To reduce ECC prevalence in our country, the educational and preventive programmes should be developed for parents especially with lower income, education level and younger age.

Free Communication Session 47 | 30.08.2017, 16:30-17:30 | Room A9.11

Theme: Prosthodontics

FC185

The Comparison of Three Different Impression Materials Based on Time-Dependent Dimensional Stability with Micro-CT

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Aim or purpose: This study aims to explore time-dependent dimensional stability of three different elastomeric impression material; VPES, VPS, and PE via micro-CT imaging.

Materials and methods: A total of 30 specimens were created using 3 mm high and 30 mm wide teflon molds ($N = 10$), and stored in a 2% glutaraldehyde solution for 10 min. All were scanned with micro-CT on the 1st (T1) hour and 1st (T2), 7th (T3), and 14th (T4) days. Three dimensional models were created at the above-mentioned points in time, volumetric measurements were conducted and dimensional changes were calculated. Furthermore, the diameters and heights of each impression material were measured with 2D analyses.

Results: After evaluating the dimensional volume changes of the VPES, VPS and PE measurements statistically significant differences between the groups of T1, T2, T3 and T4 were not detected in terms of volume averages ($p > 0.05$). The T1 diameter measurements of the VPS were statistically significantly higher than those of the PE ($p < 0.017$). In addition, the T3 and T4 diameter measurements of the PE were statistically significantly lower than those of the VPES and VPS ($p < 0.017$). The T2 height measurements of the VPES were statistically significantly lower than the those of the PE ($p < 0.017$). Finally, the T3 and T4 height

measurements of the PE were statistically significantly higher than those of the VPES and VPS ($p < 0.017$).

Conclusions: The VPS was found to be the most stable of the impression materials concerning dimensional change.

FC186

Fracture Resistance of Different Cavities and CAD/CAM Ceramics

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Aim or purpose: The aim of this study is to evaluate the fracture resistance of two different cavity preparations, and CAD/CAM ceramic materials that can be used in restorative treatment of dental erosion.

Materials and methods: 60 non-carious human molar teeth were collected and divided into 5 groups. The control group consisted of unprepared teeth. Overlay and occlusal veneer cavities prepared by the same dentist and standard set of cutters. Half of the restorations manufactured with Vita Enamic, and the other half with IPS e.max CAD ceramic blocks by CEREC system.

Restorations were cemented with 3M RelyX Ultimate adhesive resin cement. After a day in distilled water, specimens subjected to artificial aging process in a mouth motion simulator (100,000 dynamic and 5000 thermal cycles). At this stage no cracks were observed, so the fracture resistance of the specimens was assessed under static-compressive load in a universal testing machine. Fractured surfaces were examined with a stereo-microscope.

Results: The obtained data was evaluated with Oneway ANOVA, Tukey HSD and student *t* test. The Control Group was found statistically resistant than others. No statistically significant difference was found among other groups. In terms of fracture patterns, occlusal veneer restorations tended to have fractures that involved only restorations, whereas Vita Enamic restorations mostly had deeper and irreparable cracks.

Conclusions: It could be concluded that although they are not as resistant as natural teeth, both of the cavity preparations and ceramic materials used are suitable for posterior dental erosion restorations.

FC187

Evaluation of the Bond Strength of Ceramics to Metal Alloys Obtained by Different Techniques using by Different Testing Methods

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Aim or purpose: This study aimed to compare the bond strength of ceramics to cobalt-chrome alloys fabricated by casting and laser sintering, using by two different testing methods.

Materials and methods: Two groups comprising of 10 Co-Cr metal frameworks fabricated by laser-sintering and the other of 10 Co-

Cr metal frameworks fabricated by conventional lost-wax cast technique. The samples were prepared with the dimensions of 0.5 mm × 3 mm × 25 mm. Porcelain layer with 1.1 mm thickness was applied onto an 8 mm × 3 mm rectangular area in the centre of each metal bar (according to ISO standard 9693). Afterwards, metal-ceramic bond strengths of the samples were assessed with 3-point bending test and shear bond strength test by using an Universal Testing Machine, and statistical analysis of the data was performed.

Results: According to the results of the 3-point bending test, no statistically significant differences was found between casting and laser-sintering groups. In the shear-bond strength test, the metal-ceramic bond strength was found statistically significantly higher for laser-sintering group. Although, in the laser-sintered group, the shear bond strength test showed statistically significantly higher results than the 3-point bending test. No significant difference was found between two test methods in the casting group.

Conclusions: Laser sintering seems to be an alternative technique to conventional casting of dental alloys for porcelain fused to metal restorations. This issue and the reasons of the different results obtained with different test methods need to be investigated with further studies.

FC188

Fea of Stresses by Complete Dentures and Implant Overdentures

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Aim or purpose: Stress distribution in the mandible beneath complete dentures and implant-supported overdentures have not been determined clearly. The aim of this study is to determine the stress distribution beneath an implant retained overdenture by finite element analysis.

Materials and methods: The mathematical model of the mandible, implants and the dentures are created with CT scans which are joined in Mimics software and converted to volumes with Catia V5 R10 Cad program. All components are positioned in Catia to place and the 2 mm space which is left between the denture base and the bone surface is defined as mucosa. The loading conditions of the laboratory tests are simulated and the data is recorded.

Results: A more uniform pattern of stress distribution is achieved with implant supported lower full dentures. The highest equivalent stresses are recorded at the retromolar path area beneath conventional full denture. For the implant supported group the area of stress bearing are the buccal pouch and the implant periphery.

Conclusions: 1 the placement of implant improves the stress distribution which we think is a stimulative for remodelling 2 single sided chewing revealed higher rate of stress around the implants, which indicates that bilateral chewing should be advised to the patients. (3) the resorption process and the stress distribution are still subject that should thoroughly be researched further.

Free Communication Session 48 | 30.08.2017, 16:30–17:30 |
Room A9.13

Theme: Oral Surgery

FC189

Objectification of Local Anesthesia Effectiveness during Mental Nerve Anesthesia

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Aim or purpose: In order to evaluate the effectiveness of local anesthesia various local anesthetics have been studied pain threshold tooth sensitivity and long-latency somatosensory evoked potentials (LLSEP) to electrical stimulation of mental nerve.

Materials and methods: In 20 healthy volunteers (11 men and 9 women). Of these, 15 were carried out after the study chin carpool disposable syringe anesthesia with 4% articaine with epinephrine 1: 200,000 (0.5 ml) at 5–3% mepivacaine without epinephrine (0.5 ml). All volunteers were studied pain sensitivity mandibular premolars via electric pulp test apparatus prior to and 2 min after injection. LLSEP cerebral examined for “Nicolet” firm unit with software “Bravo” for evoked potentials in response to electrical stimulation of the mental nerve in the projection extraosseal branches to the skin according to standard procedures of the lower lip. The study was conducted before and 2 min after injection.

Results: After 2 min, LLSEP components (400 ms) showed almost complete amplitude to decrease when stimulation on the background of the use of 4% articaine with epinephrine 1: 200,000, using a 3% mepivacaine LLSEP reduced by half. Study touch rheobasis first premolars showed a decrease electroexcitability using 4% articaine with epinephrine 1: 200,000, on average, to 96.3 ± 0.9 mA; using 3% mepivacaine – 78.4 ± 0.3 mA.

Conclusions: Objectively proven effective of mental nerve anesthesia.

FC190

Experience in Using Early Diagnosis of Carpal Syndrome in Dentists

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Aim or purpose: To conduct an epidemiological survey of dentists to identify symptoms of carpal syndrome. Dental professionals enter the occupational risk zone, for which the performance of professional duties in conditions of violation of ergonomic rules is directly related to the risks of carpal tunnel syndrome.

Materials and methods: The study involved 300 dentists aged 25–65 years, divided into 4 groups according to age: group 1, 25–35; 2 – 36–45 years; 3 – 46–55 years; 4 – 56–65 years. All doctors underwent a diagnostic test of Fallen, in which flexion (or extension) of the hand by 90 degrees results in numbness, tingling sensation or pain in less than 60 s. A healthy person can also develop similar feelings, but not earlier than 1 min later. The criterion for exclusion was the presence of diseases of the peripheral nervous system, trauma to the working hand.

Results: Of the study showed a positive Fallen test in seconds 1 group for 73 ± 0.9 ; In the 2nd group 69 ± 0.5 ; In the third group 64 ± 0.4 ; In the 4th group 58 ± 0.3 . There was also a tendency to form a carpal syndrome in doctors who have reached the age of 50.

Conclusions: The results showed the direct dependence of the appearance of clinical symptoms of carpal syndrome of the canal by age, as well as the need for a more applied introduction to the educational process of the principles of ergonomics in dentistry.

FC191

Surgical Treatment of Bone Loss in Posterior Part of the Mandible

Anastasia Lukyanova, Igor Cherkesov, Pavel Petruk, Kirill Polyakov, Lyudmila Shamanaeva, Sergey Ivanov

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Aim or purpose: This study aimed to evaluate the effectiveness of the sandwich osteotomy technique combined with interpositional bone graft in patients with bone loss in posterior part of the mandible.

Materials and methods: The study included patients with bone loss in posterior part of the mandible. 39 patients (25 women and 14 men) aged between 33 and 49 years (mean 41) were enlisted in this study. All patients were treated using the «sandwich» osteotomy technique combined with bone graft from linea obliqua. Local anesthesia was used. A 4- to 5- cm incision was made in the vestibule posterior mandible. The mucosa-periosteal flap was raised. The osteotomy lines were made by the piezoelectric device. The segment was moved superiorly after all bone cuts were completed. The bone graft harvested from linea obliqua area was placed between the mobilized segmental osteotomy and basal bone. The fixation was made with straight screws. Wounds were closed with 5.0 Vicryl. Clinical examination was carried out 1 week, 1 month, 6 months and 12 months and included visual inspection of the mucosa for inflammation signs or suture breakdown, panoramic radiographs were obtained preoperatively (before insertion of implants) and postoperatively through the follow-up appointments.

Results: The average height gain was 12.08 mm. 6 months after operation the average height of the fragment was 10.61 mm. Dental implants were successfully placed with primary dental stability after the removing of screws.

Conclusions: Sandwich osteotomy combined with interpositional bone graft is effective for patients with posterior mandibular atrophy.

FC192

Using Resorbable Collagen Plug after Teeth Extraction

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Aim or purpose: The purpose of this research was to confirm the necessity of using resorbable collagen plug after teeth extractions.

Materials and methods: The study included 200 patients, who needed teeth extraction and dental implantation in future. immediate implantation was impossible due to acute periodontitis. The preservation of the alveolar bone was the main goal to achieve good hard- and soft tissue esthetics in future.

Using local anesthesia were made teeth extractions. The extraction sockets were filled with resorbable collagen plugs. Wounds were closed with Vicryl 4.0.

Patients were visually inspected in 7 days, 1 month, 3 months and 6 months. All patients were monitored for sign of infection, dehiscence or other complications. In 3 after receiving the CT scan results, there was no necessity for bone augmentation, dental implants were placed. Primary stability of dental implants was achieved.

Results: In 3 months after teeth extraction the sockets were filled with dense bone.

Conclusions: Resorbable collagen membrane preserve alveolar ridge of bone resorption after teeth extraction before dental implant placement. Thus, there is no need in bone augmentation.

POSTER SESSIONS 25–47

Poster Session 25 | 30.08.2017, 09:30–10:30 | Poster Display 1

Theme: Materials

P123

Surface Tension and Physical Adhesion of Three Adhesive Systems

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Aim or purpose: To explore the physical component of the adhesion through an in vitro study based on the evaluation of the surface tension and the wettability of three dental adhesives.

Materials and methods: The Filtek™ Silorane P90 (a two-step self-etch), the Peak™ LC Bond (an etch-and-rinse) and Stae (a one-step self-etch) were studied. Teeth extracted for orthodontic or parodontal reasons were collected. Informed consent was obtained from the subjects before extraction to use the teeth for the study. Ten dentin disks were prepared for each material. The bonding procedure was performed following the manufacturer's recommendations for each adhesive. The contact angle with water and surface energy were measured in the native state and after each operating sequence using the sessile drop technique. A goniometer captures an image of the drop on the test material and, through

data analyses, the advancing angle at the liquid-solid interface is measured. Data were subjected to analysis of variance (ANOVA).

Results: For the Filtek™ Silorane P90, the contact angle with water and the surface energy varied significantly from one sequence to another ($p = 0.000$). For Peak™ LC Bond, this change was not significant ($p = 0.695$). For Stae, hydrophilicity was significantly improved after application of the adhesive ($p = 0.000$).

Conclusions: For Stae, the surface tension is greater than the sample surface energy. For Filtek™ Silorane P90, the surface tension is greater than the prepared surface. Peak™ LC Bond showed the best results with a high surface tension slightly lower than the etched surface.

P124

Using of Synthetic and Xenogenic Osteoplastic Materials before Dental Implantation

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Aim or purpose: To increase the efficiency of treatment of patients with dental failure.

Materials and methods: Under the supervision were 32 patients aged 21 to 65 years, who had a tooth extraction and socket preservation with osteoplastic material. In group 1 (18 patients), synthetic osteoplastic material (contains 60% hydroxyapatite, 40% beta-tricalcium phosphate, collagen type 1) was used, in group 2 (14 patients), the hole was filled with xenogeneic osteoplastic material (bovine hydroxyapatite).

Results: All patients had no specifics in the postoperative period. According to CT-scans in patients of 1st group the alveolar jaw bone width before the treatment was an average of 9.06 ± 0.6 mm, in 6 months after the operation was 7.45 ± 0.51 mm (81% of the original width). In 2nd group the alveolar bone width before treatment was 8.32 ± 0.53 mm on the average, after the operation was 6.71 ± 0.39 mm (82% of the original width). According to the histological study of bone tissue obtained in patients of 1st group, the formation of a newly formed spongy bone was noted mainly at the edges of the biopsy specimen. In the center of the biopsy bone formation is absent. In patients of the 2nd group about 30% of the shear area is occupied by the spongy bone tissue, the rest of the defect is filled with osteoplastic material.

Conclusions: A comparative analysis of the use of synthetic and xenogeneic osteoplastic materials after socket preservation has showed almost identical results.

P125

Microshear Bond Strength of Surface Treated CAD-CAM Materials to Resin Cement

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Aim or purpose: The aim of the study was to investigate the micro-shear bond strength (μ SBS) of a resin cement to lithium disilicate ceramic (LDC), 2 resin nano-ceramics (RNC) and polymer-infiltrated ceramic network (PICN) material treated with different surface treatment methods. The study also aimed to analyze the surface topography of the materials after surface treatment methods by field emission-scanning electron microscope (FE-SEM).

Materials and methods: The specimens of each CAD-CAM materials were divided according to the surface treatment method as: no treatment, 3W and 2W Er, Cr:YSGG laser irradiation, sandblasting and 5% hydrofluoric acid (HF) application. Then, μ SBS and FE-SEM analysis were performed. Data were analyzed using Mann Whitney U and Kruskal Wallis tests.

Results: For LDC, no significant differences were found among control, 2W Er, Cr:YSGG laser and sandblasting groups ($p > 0.05$), the highest values were presented in HF group ($p < 0.05$). For RNCs; 3W Er, Cr:YSGG laser treated group showed significantly lowest μ SBS values, there was no significant difference among control, 2W Er, Cr:YSGG and sandblasting groups. For PICN; significantly lowest μ SBS values were obtained in sandblasting group and highest in HF group ($p < 0.05$), whereas there was no significant difference among control, 3W and 2W laser groups ($p > 0.05$). FE-SEM images of all materials submitted to surface treatment revealed an increase in surface alterations compared to control groups.

Conclusions: It can be concluded that prior to bonding 5% HF acid treatment is the best surface treatment method regarding the bond strength for all CAD-CAM materials. Er, Cr:YSGG laser application with 3W can be recommended for LDC.

P126

Flexural Strength and Vickers Microhardness of Silorane Versus Methacrylic Resins

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Aim or purpose: The aim of this study was to determine the 3-point flexure resistance and the Vickers microhardness of silorane-based composite resin in comparison with traditional dimethacrylate-based composite resin. These proprieties were assessed before and after artificial aging.

Materials and methods: Filtek™ P90 (3M ESPE, St Paul, MN, USA) and three dimethacrylate-based materials (Filtek™ Z250 (3M ESPE, St Paul, MN, USA), Filtek™ Z350 XT (3M ESPE, St Paul, MN, USA), Amelogen® Plus (Ultradent, USA) were selected for this study. Vickers microhardness (VH) was determined before

and after 24 h immersion in artificial saliva and after thermocycling. Fifteen specimens were prepared for each material. As for the flexural strength, 45 specimens were made. The flexural strength was determined by the bending test using a universal testing machine. Data were submitted to analysis of variance (ANOVA).

Results: The flexure resistance varied significantly between silorane and Amelogen® Plus: immediately ($p = 0.002$), 24 h later ($p = 0.000$) and after accelerated aging ($p = 0.000$). Non-significant difference was observed between silorane and both Z250 and Z350 XT in term of immediate flexure resistance. Twenty-four hours later and after accelerated aging, the difference was significant between silorane and Z250 ($p = 0.015$, $p = 0.009$ respectively). As for micro-hardness, the difference was significant between silorane/Z250 and silorane/Z350 ($p = 0.000$).

Conclusions: Filtek™ Z250 and Filtek™ Z350 XT showed comparable results with a slight superiority to Filtek™ Z250. After artificial aging, silorane had better flexure resistance and micro-hardness than Filtek™ Z350.

P127

Optimisation of Composite-Resin Sealing with Sodium Hypochlorite Surface Treatment

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Aim or purpose: To explore, through an in vitro study, the effect of enamel and dentin deproteinization, with sodium hypochlorite on the sealing of three adhesive systems: Adper™ Single Bond 2 (3M ESPE, St. Paul, MN, USA), Single Bond Universal (3M ESPE, St. Paul, MN, USA) with and without previous etching.

Materials and methods: This in vitro study is based on the evaluation of the tooth-restoration seal quality by dye penetration. 30 recently extracted molars were selected for the study. Two site 2 cavities were prepared on the proximal surfaces of each tooth. One underwent a deproteinization treatment before restoration. The other cavity was considered as a control. Teeth were divided into 3 groups of 10 teeth for each adhesive system. After thermocycling, teeth were embedded in resin cubes and cut in a parapulpal plan. The observation of dye infiltration was done under stereomicroscope. Scores of infiltration were attributed to each specimen by two observers. Data were treated with a SPSS 20.0 Software.

Results: There was a significant difference in infiltration before and after pretreatment of the tooth surface with sodium hypochlorite for the Single Bond Universal after etching ($p = 0.000$) and for Adper™ Single Bond 2 ($p = 0.000$). There was a significant difference in the sealing of the three adhesive systems both before and after deproteinization ($p = 0.000$).

Conclusions: Sodium hypochlorite may be recommended to potentiate the adhesion of composite resins and to ensure sealing of the enamel/resin interface. Adhesive systems with pre-etching remain the “gold standard”.

Poster Session 26 | 30.08.2017, 09:30–10:30 | Poster Display 2

Themes: Oral Immunology and Oral Pathology

P128

Alterations in Inflammatory Responses in Neutrophils Tolerized by *P. gingivalis* LPS

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Aim or purpose: Periodontitis is a bacterially induced chronic inflammatory disease. Previous exposure of the host to periodontal pathogens or their virulence factors induces a hyporesponsiveness to subsequent challenge, which is termed endotoxin tolerance. *Porphyromonas gingivalis* (*P. gingivalis*) is one of the most important pathogenic microorganisms associated with periodontitis. The aim of this study was to explore the alterations in inflammatory responses in neutrophils, which were tolerized by *P. gingivalis* lipopolysaccharide (LPS).

Materials and methods: Neutrophils freshly isolated from healthy volunteers' blood were pretreated with 1 µg/ml *P. gingivalis* LPS (12 h), washed (2 h) and treated with *P. gingivalis* LPS again (3 h for reactive oxygen species (ROS) detection by flow cytometry and 30 min for MAPKs activation analysis by western blot) or stimulated with 10⁹ CFU FITC-labeled *P. gingivalis* W83 (1 h for phagocytosis assay by flow cytometry).

Results: Compared with neutrophils challenged with LPS only once, there were decreases in ROS production and protein expressions of p-ERK and p-JNK in *P. gingivalis* LPS-tolerized cells. In addition, *P. gingivalis* LPS pretreatment led to depressed phagocytosis of neutrophils.

Conclusions: Endotoxin tolerance induced by *P. gingivalis* LPS might lead to decreased respiratory burst and phagocytic activity, which might be related to ERK and JNK signaling pathways and contribute to depress uncontrolled immune responses.

P129

Oral Squamous Papilloma: A Rare Case Report

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Introduction: Oral squamous papillomas OSP are benign exophytic lesions. Although the etiology is not completely clear, particularly human papilloma virus 6 or 11 are isolated by %50 of cases. OSPs commonly occur in older but rarely occur before the age of 10 years. Simple papillomas are usually not infective and oral papilloma is not spread to other regions with autoinoculation. Incubation period is known as 3–12 months. It is seen equally in women and men.

Case description: A 10-year-old girl who had white, non-symptomatic papilloma-like appearance on the left tongue apex was referred to our clinic for the diagnosis of an intra-oral lesion from the dermatology clinic. The specimen taken by excisional biopsy

was sent to the pathology department with an initial diagnosis of papilloma. Findings consistent with squamous papilloma is revealed at the patient's pathology report.

Discussion: OSPs are benign lesions characterized by painless growth. Clinically, it is difficult to distinguish papillomas from oral verruca vulgaris, oral condyloma acuminatum, focal epithelial hyperplasia some skin diseases.

Conclusions/Clinical significance: Excisional biopsy should be performed to avoid further complication.

P130

Detection and Comparing Tumor-Specific Immunogenicities of Stress-Induced Proteins, hsp90 and hsp70 in Oral Tumor Cell Carcinoma

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Aim or purpose: Heat shock proteins (HSPs) of 96 kDa have been shown previously to elicit specific immunity to tumors from which they are isolated. In this report, we show that in contrast to Meth A-derived hsp70 preparations derived from normal tissues did not elicit immunity to Meth A sarcoma at any dose tested. We have compared hsp90 and hsp70 derived from sarcoma.

Materials and methods: The proteins hsp90 and hsp70 were observed to be highly and equally immunogenic, whereas the immunogenicity of hsp90 was approximately 10% of that of gp96 or hsp70. hsp90 results from its lack of a measurable ATPase activity, which has been implicated in the ability of HSPs to transfer peptide to acceptor molecules.

Results: Proteins gp96, hsp90, and hsp70 were purified simultaneously from a 50-ml pellet. The yield of gp96 and hsp90 represents a substantial fraction of the total amount present in the cells (>60%), but the recovery of hsp70 was relatively poor (<20%). We have observed that exposure of hsp70 to ATP depletes it of its immunogenic activity, by dissociating peptides bound to hsp70.

Conclusions: A comparison of the relative immunogenicities of gp96, hsp90, and hsp70 showed that although gp96 and hsp70 are equally immunogenic, the immunogenicity of hsp90 is approximately 10% that of gp96 or hsp70. This may result from one of three possibilities. There may be a smaller net quantity of associated peptides with hsp90 than with gp96 or hsp70.

P131

Metastatic Tumor in Gingiva: A Case Report

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Introduction: Metastasis is the formation of the new tumors in different location from primary lesions. Metastatic tumors are rarely occur in gingiva and alveolar bone. Metastasis to the gingiva and alveolar bone is commonly one of the complications of systemic cancer and usually develops in the end stage of a cancer lesion.

Case description: A 57-year-old female patient was referred our department with complaining of chewing difficulty related with

gingival enlargement. Gingival enlargement of the right mandibular molar region was observed in the clinical examination. There were no pathological changes in the radiological examination. Excisional biopsy was performed and pathological examination showed that the specimen has large ulcerations on the surface and mucosal tissues with multilamellar epithelium partially flattened on the surface in the other areas and a malign tumor with irregular infiltration in the submucosa. Patient was directed to oncology clinic.

Discussion: It is difficult to be diagnosed regarding metastatic tumors are not common in gingiva.

Conclusions/Clinical significance: Biopsy should be performed to avoid misdiagnosis and early detection of metastatic tumor in gingiva.

P132

Mandibular Metastasis in a Patient with Undiscovered Lung Cancer: A Case Report

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Introduction: Metastatic tumors presents 1% of all oral malignancies. Metastasis to jaw bones is common, particularly in the mandible, rare in the oral soft tissues, and its rate is only 0.1% of oral malignancies. Clinical presentation of metastatic tumors is variable, which may create diagnostic dilemma or may lead to erroneous diagnosis. This work aims to present the diagnostic and therapeutic dilemma of a case observed in the department of medicine and oral surgery.

Case description: The author reports a case of a 55-year-old man, complaining of a diffuse left mandibular ramus swelling evolving for a month. On examination, the patient presented a non-painful indurated mass of the left mandibular ramus, associated with a left side hypoesthesia of the lower lip and chin. The overlying skin appeared normal. Panoramic radiography showed a radiolucent lesion with poorly defined margins in the ramus with enlargement of mandibular foramina. Histological study revealed a metastatic tumor of lung origin.

Discussion: Most of metastatic cases (70%) reported in the literature have primary tumors located in the lung, breast, kidney and colon. Metastatic tumors clinically mimic dental infections. The majority of the cases showed that lesion is presented in oral tissues before the diagnosis of primary tumors.

Conclusions/Clinical significance: This case report showed that the practitioners should always maintain a high index of suspicion to the possibility that a radiolucent lesion may be a metastatic tumor. Lip and chin hypoesthesia is an important symptom for malignancy detection.

Poster Session 27 | 30.08.2017, 09:30–10:30 | Poster Display 3

Themes: Prosthodontics and Esthetics

P133

Clinical Evaluation of Implant Supported Cantilever Bridge Replacing Maxillary Anterior Teeth

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Aim or purpose: Assessment of clinical outcome of patients treated with implant supported cantilever fixed dental prosthesis compared to implant supported conventional fixed dental prosthesis replacing maxillary anterior teeth.

Materials and methods: Fourteen patients with missing two centrals and one lateral (6 males and 8 females) with mean age 40 years (range 30 to 50 years) were divided into two groups equally (group I: implant supported cantilever fixed dental prosthesis and group II: implant supported conventional fixed dental prosthesis). Each patient received 2 implants (13 × 3.75) according to fixed dental prosthesis design. All patients were evaluated for stability, peri-implant sulcus depth, marginal bone loss, gingival index and plaque index for two years through the following intervals (baseline, 6, 12, 18 and 24 months).

Results: The clinical results revealed that there was no significant difference between two groups through different intervals in comparing implant stability, gingival index and plaque index. On the other hand, the results for average peri-implant sulcus depth, the implant near cantilever showed results with high significant difference to other implants after 24 months with average peri-implant sulcus depth 2 mm which is still within the normal range. The average marginal bone loss results for implant near cantilever was significantly higher than other implants in two designs with value 1.8 mm after two years follow up, also within the normal range of bone loss per year.

Conclusions: Under the condition of this study, implant supported cantilever Fixed dental prosthesis can be used successfully to replace maxillary anterior teeth.

P134

Stress Distribution in Supporting Structures of Three Different Prosthodontic Designs

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Aim or purpose: This study was aimed to compare the stress distribution in the supporting tissues between the three different types of fixed partial dentures (FPDs).

Materials and methods: The cadaveric mandible, teeth and fixed prostheses were scanned using ATOS scanning technology. Three mandibular models were created: a) Model I (tooth-tooth supported FPD), b) Model II (implant-implant supported FPD) and c) Model III (tooth-implant supported FPD). A computer model of the implant system (4.1 × 10 mm) was constructed using CATIA v5 and placed in the first premolar and second molar position for Model II, and only in the second molar position for Model III. The periodontal ligament (PDL) with a thickness of 0.25 mm was created based on the root-form geometry of teeth. Stress analysis was performed using the ANSYS software with 100 N axial and oblique loads applied on the first and second premolar.

Results: Under axial load, the highest stress value was found at the cervical region of the implant in Model III as well as in the PDL of the premolar in Model I. Under oblique load, the highest stress concentration was located around the implant neck and the implant-cortical bone interface in Model III. The stresses were higher in the cortical than in the cancellous bone. Oblique load indicated higher stress in supporting structures to that of axial analog.

Conclusions: From a biomechanical perspective, the implant-implant supported FPD provided a better distribution of the stress under masticatory loads than the tooth-implant supported one.

P135

Assessment of Dimensional Stability of Casts Made from Alginate Impressions

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Aim or purpose: The aim of the present study is to determine the accuracy level of the casts made from irreversible hydrocolloid impressions with delayed pouring and different storage conditions.

Materials and methods: 90 impressions were made and grouped into 6 groups (n = 15) according to definite storage time and storage conditions. Impressions were poured with gypsum at the predetermined storage time. Casts were scanned with a

three-dimensional scanner. The digital models were measured and the measurements were subtracted from those, obtained from the master model. The absolute values of dimensional differences in transpalatal distance were statistically analysed using two-way analysis of variance (ANOVA) and post hoc Fisher LSD test (p < 0.05).

Results: According to the results of two-way ANOVA, significant differences were found regarding the time factor (p < 0.001) while storage conditions did not show statistically significant differences (p < 0.005). No statistically significant differences were found between master model and gypsum casts after 1 h, irrespective of storage time, but they were found on stone casts after 24 h and 72 h long impression storage time (p < 0.005).

Conclusions: It is not advised to use alginate in opposite jaw impression when it is not possible to pour impression immediately. In such cases preference should be given to dimensionally stable materials, such as polyether (PE) or polyvinyl siloxane (PVS).

P136

A Polydiastema Closure with Composite Resin: An Interdisciplinary Approach

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Introduction: Diastema can occur due to a variety of reasons such as labial frenulum to congenital reasons. One of the treatment techniques of the diastema closure is to restore it with a composite material. Diastema closure with a composite resin prepared by silicon index on a wax up model is practical, easy, predictable, low-cost, and minimal invasive technique.

Case description: A 22 years old female patient, applied to the Restorative Dentistry Clinics with the complaint of a polydiastema between maxillary incisors. First, a diagnostic wax-up model was prepared to see the final restorations. However, when the final restorations on the model was examined, it was found out that, especially central incisors seemed to be very larger and wider than the other incisors. Gingivectomy and frenectomy surgeries were performed to compensate the teeth sizes. After the healing process was completed (~six weeks), polydiastemas were restored with a nanohybrid composite material (Enamel Plus HRi, Micerium SpA). Polydiastema closure was performed under the guidance of a silicone index using an incremental layering technique.

Discussion: Diastema closure with a composite material is a minimally invasive, practical and time saving technique to provide an aesthetic view especially for the anterior teeth.

Conclusions/Clinical significance: Clinicians should approach to all cases interdisciplinary. They should consider not only the teeth but also the soft tissues around it together to obtain aesthetic restorations.

P137

Evaluation of Lithium Disilicate Ceramic and Polymer-Infiltrated-Ceramic Network Hybrid Abutments

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Aim or purpose: The aim of this study was to compare mechanical and bond strengths of polymer-infiltrated-ceramic network (PICN) material with lithium disilicate ceramic (LDC) used for hybrid abutments.

Materials and methods: Sixteen specimens were milled for each material in different geometries according to 3-point bending ($4 \times 1.2 \times 14$ mm, $n = 8$), microshear bond strength ($\varnothing=10$, $h = 4$ mm, $n = 16$) and fracture resistance test (hybrid abutment, $n = 8$) and were divided into 2 groups as thermocycled ($5/55^\circ\text{C}$ 10000 times) or non-thermocycled. For the microshear test, resin cement samples were prepared using a split teflon template ($\varnothing=1$, $h = 2$ mm). Specimens were placed on a universal testing machine and a load was applied (0.5 mm/min) perpendicularly using a metal wire until failure and maximum load to failure was recorded. Custom abutments were milled and cemented on Ti-bases and then fixed on implants to compare the fracture resistance. Abutments were placed on a test stand with a 30-degree angle with respect to the vertical axis of the implants. For flexural strength and fracture resistance tests, loads were applied to specimens (1 mm/min) with universal test machine and the strength values at failure were recorded. Data were statistically analyzed.

Results: Thermocycling affected the mechanical and bond strength of both materials ($p < 0.05$). LDC showed significantly higher flexural strength and fracture resistance than PICN material ($p < 0.05$). However the bond strength of PICN to resin cement was higher than LDC, statistically ($p < 0.05$).

Conclusions: LDC revealed higher mechanical strength but lower bond strength to resin cement in comparison to PICN.

Poster Session 28 | 30.08.2017, 09:30–10:30 | Poster Display 4

Theme: Orthodontics

P138

Aesthetic Consideration on the Height/Width Ratio of Maxillary Anterior Teeth

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Aim or purpose: The purpose of this study was to examine the height/width ratio (H/R ratio) of maxillary anteriors and the correlation of the changes of upper incisor axis (U1 to SN) by orthodontic treatment.

Materials and methods: The H/R ratio of maxillary anteriors was measured in 130 adult patients (65 male, 65 female). To evaluate the H/R ratio changes according to U1 to SN, it was increased by 3 degrees from 82 to 130 degrees and calculated by 3D simulation using CT images. We compared the statistical significance in tooth

size, the H/R ratio according to sex, and paired *t*-test was performed to evaluate bilateral symmetry in each patient.

Results: The H/R ratio of the maxillary anteriors was not statistically significant difference but the size of maxillary central incisor and canine showed significant difference between male and female groups. According to the paired *t*-test for evaluating the symmetry in the left and right teeth, there were no significant differences between left and right. The change of the H/R ratio decreased by 20% when the U1 to SN was increased up to 20 degrees over the normal axis, but it was only 5% increased when the U1 to SN was decreased by 20 degrees.

Conclusions: The H/R ratio of maxillary anteriors changes according to the U1 to SN and decreases rapidly with the increase of 1 to SN. Therefore, an aesthetic improvement can be obtained by the correction of anterior tooth axis through orthodontic treatment.

P139

Evaluation of Mechanical Strengths of Three Types of Mini-Implants in Artificial Bone

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Aim or purpose: We investigate the effect of the anchor area on the mechanical strengths of infrazygomatic mini-implants.

Materials and methods: Thirty mini-implants were divided into three types: Type A (titanium alloy, 2.0×12 mm), Type B (stainless steel, 2.0×12 mm), and Type C (titanium alloy, 2.0×11 mm). The mini-implants were inserted at 90° and 45° into the artificial bone to a depth of 7 mm. The mechanical strengths [insertion torque (IT), resonance frequency (RF), and removal torque (RT)] and the anchor area were measured. We hypothesized that no correlation exists among the mechanical forces of each brand.

Results: In the 90° tests, the IT, RF, and RT of Type C (8.5 N cm, 10.2 kHz, and 6.1 N cm, respectively) were significantly higher than those of Type A (5.0 N cm, 7.7 kHz, and 4.7 N cm, respectively). In the 45° test, the RFs of Type C (9.2 kHz) was significantly higher than those of Type A (7.0 kHz) and Type B (6.7 kHz). The anchor area of the mini-implants was in the order of Type C (7.06 mm^2) > Type B (6.48 mm^2) > Type A (6.21 mm^2). Type C exhibited no significant correlation in intra-group comparisons, and the hypothesis was accepted. In the 90° and 45° tests, Type C exhibited the largest anchor area and the highest mechanical strengths (IT, RF, and RT) among the three types of mini-implants.

Conclusions: The anchor area plays a crucial role in the mechanical strength of mini-implants.

P140

Efficacy of Elastic Memory Chains Versus Nickel-Titanium Coil Springs

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Aim or purpose: The use of newly introduced elastic memory chains (EMCs) in space closure is increasingly gaining popularity. However, no clinical studies have evaluated their efficacy. Therefore, this study was conducted.

Materials and methods: In this two-center split-mouth single-blind randomized controlled trial, 21 jaws were divided into 42 quadrants. The two treatments [canine retraction using EMCs versus nickel titanium (NiTi) coil springs (as control)] were randomly assigned to two quadrants of each jaw. The premolar space was measured at the baseline, and in the 1st, 2nd, and 3rd months of canine retraction, by a blinded orthodontist. Space closure rates were compared using a paired *t*-test ($\alpha=0.05$, $\beta<0.2$).

Results: The rates of space closure using NiTi springs were 1.93 ± 0.62 , 1.71 ± 0.75 , and 1.36 ± 0.51 mm/month, during the 1st, 2nd, and 3rd months of treatment, respectively. The rates of space closure using EMCs were 2.20 ± 0.74 , 1.96 ± 0.66 , and 1.52 ± 0.49 mm/month, during the 1st, 2nd, and 3rd months of treatment, respectively. The 3-month average speeds of space closure were 1.67 ± 0.39 and 1.89 ± 0.36 mm/month in the NiTi and elastic groups, respectively (faster in the elastic group, $p = 0.022$).

Conclusions: The application of elastic memory chains is clinically as effective as NiTi springs.

P141

Chronic Pain Evaluation of Patients with Orthodontic Treatment using TMJ Scale

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Aim or purpose: Chronic pain can be evaluated by applying a questionnaire covering multiple aspects, TMJ Scale – CPB, to ensure a correct management tool for evaluation and treatment of chronic pain. The purpose of the study was to assess the presence and duration of chronic pain in patients with orthodontic treatment by the questionnaire TMJ Scale, and compared to a control group of patients with orthodontic treatment which does not exhibit the same symptoms TMD.

Materials and methods: The study group included a total of 55 patients, aged between 17 and 36 years (mean age 26.5). We evaluated the Nature of pain, Intensity pain level, lateral factors and psychological factors by a specific interpretation of CPB, collecting data and statistical analysis was performed using SPSS 20.0 software.

Results: Statistically significant differences were reported for Psychological factors – Stress, Psychological dysfunction and Anxiety, a level of up to 25% ($p = 0.52$) for patients with orthodontic treatment with TMD symptoms, compared to those who did not report the presence of chronic pain, for a period varying from 1–3 months to 10–12 months.

Conclusions: This study revealed and supported the need to assess the TMJ chronic pain for patients with orthodontic treatment, and to establish a specific treatment for those who present this symptomatology.

P142

Treatment Effects of Farmand and Fränkel-2

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Aim or purpose: The present study aimed to evaluate the cephalometric changes in Class II division I mandibular deficient patients treated with Frankel 2 and Farmand appliances as a new functional appliance.

Materials and methods: Fifty-five subjects treated for Class II Division I malocclusion and mandibular deficiency were selected for the study. Twenty-seven of the subjects (17 girls, 10 boys) with the mean age of 11.1 (SD 1.4) years were treated with Farmand appliance and twenty-eight of them (15 girls, 13 boys) with the mean age of 11 (SD 1.5) years were treated with the FR-2 appliance. *T*-test, paired *t*-test, Wilcoxon and Mann-Whitney test were used to evaluate the data.

Results: A skeletal Class I relationship and a marked reduction in overjet were achieved in both treatment groups. ANB decreased significantly by 3.2 (SD 1.7) degrees in Farmand appliance group and it decreased significantly by 3.5 (SD 1.6) degrees in Frankel group.

Conclusions: Both Farmand and Frankel appliances were successful in the correction of mandibular deficiency in class II division 1 patients.

Poster Session 29 | 30.08.2017, 10:45–11:45 | Poster Display 1

Theme: Orthodontics

P143

An Evaluation of the Quality of Life between Stainless Steel Micro-implants and Titanium-Alloy Micro-Implant Patients during En-masse Retraction

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Aim or purpose: Micro-implant is used in orthodontic treatment as a temporary anchorage. Despite its advantages, patients may suffer from breakages, peri-implantitis, and pain and these will lead to discomfort. The purpose of this study was to assess the quality of life of patient using either SS micro-implants or TiA micro-implants.

Materials and methods: The study comprised twenty-seven patients (12 male: 15 females; mean age 23.7 ± 5.25 years) gathered from orthodontic clinic. All subjects were treated with extraction of upper first premolars and maximum anchorage requirement. Subjects were randomized into two groups, 13 subjects in TiA group and 14 subjects in SS group. Following alignment and leveling, 1.6 mm in diameter and 8 mm in length micro-implants were inserted between the first molar and the second premolar in the maxilla and loaded with 150 gm retraction force using Nickel-Titanium closed coil spring after 4 weeks of insertion. Oral health-related quality of life (OHRQoL) questionnaires to assess patients' discomfort prior to retraction (T0), at 1 month (T1), and 3 months (T2) were completed.

Results: ANOVA analysis and profile plots of OHIP-14 with domains consisted of functional limitation, physical pain, psychological discomfort, physical disability, psychological disability, social disability and handicap. The total mean score of OHIP-14 gradually reduce over time at T0, T1 and T2 with TiA and SS group showing $p > 0.05$.

Conclusions: There was no significant different found on quality of life between TiA micro-implants and SS micro-implants thus indicating both methods are equally compatible in term of impact on OHRQoL.

P144

Relation between Bolton Index and Malocclusion Classes in Tunisian Population

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Aim or purpose: The aim of this work is to study the variation of the Bolton index in the tunisian population depending on Angle malocclusion classes and to compare the results obtained with those of other populations.

Materials and methods: 90 models of orthodontic patients aged between 12 and 27 were selected in different groups of dental class I, class II and class III malocclusions. The mesiodistal

diameters of 12 maxillary and mandibular teeth were measured using a digital (electronic) caliper gauge. The anterior and general Bolton indices were calculated.

Results: The results were entered into the SPSS software program and analysed. The distribution of the mesiodistal widths was evaluated by the student *t*-test. This test makes it possible to compare results between 2 population samples. The results show that females have smaller teeth than males, class III malocclusion showed larger teeth than the rest of the other occlusal categories, there is no significant difference on Bolton index between the various groups of Angle malocclusion classes and that some other populations present results similar to those of the tunisian sample.

Conclusions: On the basis of our results, we can conclude that the study of the variation of the Bolton index depending on dental malocclusions shows that in the tunisian sample, there is no significant difference between the different malocclusions groups, which mean that the frequency of tooth size discrepancy and tooth size are not linked to dental occlusion class.

P145

Orthodontical, Surgical and Periodontal Approach of a Complex Clinical Case

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Introduction: A combined surgical-orthodontic treatment should aim not only obtaining an ideal occlusion in a healthy stomatognathic system, but also the aesthetic improvement of the patient's face and the establishment of a correct function, with long-term stability.

Case description: Male caucasian patient, 19 years old, presenting Angle Class III malocclusion and skeletal Class III pattern, nasal breathing, atypical swallowing, maxillary atresia associated with bilateral posterior crossbite and severe lack of space in the maxillary and mandibular arches.

Treatment plan consisted on a combined surgical-orthodontic treatment. First, surgically assisted rapid palatal expansion (SARPE) procedure was implemented. Secondly, pre-surgical orthodontic treatment proceeded with upper and lower multi-bracket appliances. Four premolar extractions were required. Following, a bimaxillary orthognathic surgery with a LeFort I osteotomy for maxillary advancement and bilateral sagittal split osteotomy was performed to correct the mandibular asymmetry. Tooth 31 ended orthodontic treatment with a 7 mm deep vestibular gingival recession, treated with a connective tissue graft and laterally positioned flap.

Discussion: For class III malocclusion surgical-orthodontic treatment, collaboration between the orthodontist and the maxillofacial surgeon is crucial, and the interaction of a periodontist is advisable. Even with the premolars extractions, a great vestibular displacement of the lower incisors was required, which must have contributed for the gingival recession of tooth 31. Periodontal plastic surgery was effective in gaining new attached gingiva, with almost complete root coverage.

Conclusions/Clinical significance: A successful treatment of complex cases frequently requires the action of a multidisciplinary team, in order to lead to the best functional and aesthetics results.

P146

Oral Rehabilitation with PAOO Combined with BCGF Procedures, Prosthodontic and Implants

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Introduction: The purpose of this case report is to present the clinical oral rehabilitation case combining the corticotomy procedure combined with Blood's Concentrated Growth Factor, a modified PAOO approach and implants to resolve the function and the smile aesthetic on a 51 years old female.

Case description: The patient is presented with broken anterior veneers because of the non-correct posterior occlusion. She had anterior Polydiastema and at the posterior region of the mandible missing the first molars. We decided to improve the anterior aesthetics with the orthodontic treatment using the corticotomy at the buccal aspects of the maxilla and mandible associated with BCGF because there was insufficient bone coverage of the anterior teeth roots. After that 2 implants were placed on the first mandibular molars. The broken veneers were changed and the occlusion was established with new therapeutic and prosthodontic treatments.

Discussion: The orthodontic treatment time was 6 months. The total treatment time was 8 months. The chosen method provided us with short term orthodontic treatment, despite the age of the patient. The functional and aesthetic problems were solved and the result seems to be long-term. This was verified with 3D CBCT before and after the treatment.

Conclusions/Clinical significance: The oral rehabilitation needs a multidisciplinary team. The non-correct occlusion is the main cause of the broken anterior teeth. The total rehabilitation of the occlusion is the crucial key for the improvement of the function, the stability and long life of the prosthodontic restorations.

P147

Multidisciplinary Management of Non-Syndromic Familial Hyperdontia: A Case Report

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Introduction: Non-syndromic multiple supernumerary teeth (NSMST) is a rare disorder of odontogenesis characterized by an excess number of teeth. Only 1% of nonsyndromic cases present MST, which occur more frequently in the area of the mandibular premolars and in the anterior region. The etiology of this alteration is still unknown. Many hypotheses have been proposed to explain the development of these teeth: atavism, tooth germ dichotomy, hyperactivity of the dental lamina, and genetic and environmental factors.

Case description: This presentation describes an unusual case of MST. A 14-year-old male patient attended the oral surgery department complaining of delayed eruption, dental malposition, occlusal problems, and diastemas. A detailed family history revealed that the patient's father, younger and elder brothers had supernumerary teeth. The mother had a normal dental formula.

Discussion: Orthodontic treatment for this type of patients is a clinical challenge because of the great number of teeth to be extracted and the alterations in the shapes of the teeth. Treatment goals should be established by a multidisciplinary team, where oral surgeon, orthodontist, periodontist, and prosthodontist come together to solve a medical and dental puzzle, eliminating the pieces that do not fit and searching for new ones to obtain an occlusion that will give the patient physiologic conditions of normality and esthetic satisfaction.

Conclusion/clinical significance: Though the occurrence of NSMST is rare, clinicians should be aware of its presence and associated problems in order to establish an early diagnosis and a multidisciplinary treatment plan to prevent any complication.

Poster Session 30 | 30.08.2017, 10:45–11:45 | Poster Display 2

Theme: Implantology

P148

A Retrospective Study of Dental Implants Placed in the Oral Surgery Department of FMDUP

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Aim or purpose: Primary goals: To determine the survival and failure rate of dental implants placed in the Oral Surgery Department of FMDUP and to identify the sites more often rehabilitated with implants. Secondary goals: to determine the peri-implantitis and mucositis rate; to verify the existence of a correlation between the failure rate and the implant brand; to verify the existence of a correlation between factors related to the surgical procedure and with the characteristics of patients and of implants and the failure rate.

Materials and methods: A total of 501 implants were placed in 131 patients. Statistical analysis was performed using the statistical software IBM SPSS Statistics v.22[®] and the significance level was 5%.

Results: The implant survival rate was 92.2%, after 14.6 years of follow-up. The early and late failure rates were, respectively, 4% and 3.8%. The results showed a very uniform distribution of implants for all tooth positions. The peri-implantitis rate observed in this study, when bone loss was greater than 0.5 mm was 8.2% and 4.6% when bone loss was greater than 2 mm. Mucositis rate was 5% and most frequently in the maxilla. Statistical analysis has shown statistically significant associations between implant failure and the following parameters: osteoporosis, implant diameter (< 4 mm), implant length (< 10 mm) and implant brand.

Conclusions: The survival rate of implants after 14.6 years of follow-up is similar to those reported in the literature. These findings demonstrate the predictability of implant treatment, either in partially or totally edentulous patients.

P149

Nitrous Oxide in Dental Implant for Seckel SyndromeHuda Alrakaf¹, Laila Alrakaf²¹Prince Sultan Military Medical City, Riyadh, Saudi Arabia,²Alfaisal University, Riyadh, Saudi Arabia

Introduction: Seckel syndrome is a rare, autosomal recessive syndrome congenital nanosomic disorder characterized by severe intrauterine and postnatal growth retardation, microcephaly, mental retardation, and typical facial appearance with beaklike protrusion of the midface. Dental abnormalities include enamel hypoplasia, microdontia, taurodontic root morphology and a high-arched palate. A literature review reveals that Seckel Syndrome and anesthesia management has been reported as mask ventilation, difficult air way management, as well as difficult venous cannulation.

Case description: To report a case of a 14-year-old male with Seckel Syndrome using nitrous oxide- sedation and local anesthesia for dental management.

Discussion: A 14-year-old Saudi male was prematurely delivered at 32 weeks. Patient is a known case of Seckel Syndrome reported to the clinic for replacement of upper anterior teeth. Intra oral examination revealed inflammation of the gingiva. Radiographic examination revealed inflammation with short root development. Hard samples were sent to the pathology lab for histologic reviewing and the findings were obliteration of the pulp with tertiary dentin and irregular cementum on the root surface. Medical clearance was achieved and implants were placed using nitrous oxide sedation and local anesthesia. The case was followed up for two years. The osseointegration was excellent with no untoward findings. To the best of the authors knowledge, this was the first case treated with Seckel Syndrome patient.

Conclusion: Based on the observation it can be concluded that nitrous oxide can be used with local anesthesia for the treatment of Seckel Syndrome as well as dental implants.

P150

One-Time Abutment Concept on Crestal Bone and Soft Tissue RemodelingSorin Mihali

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Introduction: Implant-supported restorations are in constant development on prosthetic treatment reliability. Nowadays one of the main goals is to maintain the long-term stability of the soft and hard peri-implant tissue. The manipulation of restorative components may also influence the stability of the surrounding tissues.

Case description: A 34-year-old woman was provided with a single-tooth implant on her left mandibular first molar. Before closing flap, the implant position was recorded with an impression transfer. After bone healing at the time of second-stage surgery the final hybrid Zirconia abutment and provisional crowns was inserted. Soft tissue healing took place at the definitive abutment, avoiding abutment changes. These lead to stable soft tissues with a minimum of surgery. After 3 weeks of healing, impressions were taken

directly at abutment level. Within two weeks after impressions, final cemented prosthetic restorations were delivered with functional occlusion.

Discussion: Today, the CAD/CAM-hybrid abutments can be considered as the new standard. After placement of the restoration at the time of uncovering the implant, the healing of the soft tissue takes place at the final abutment instead of a healing cap or abutment. Consequently, the emergence profile heals immediately toward an optimal shape. Avoiding changing abutments during prosthetic treatment has been shown to be superior to the traditional protocol.

Conclusions/Clinical significance: This concept offers biological advantages for practitioners and patients. With the placement of definitive abutments at the time of second-stage surgery was a positive impact on reducing the peri-implant bone and soft tissue resorption.

P151

Scanning Electron Microscopy of the Implant Surface after Laser ExposureElena Morozova, Renat Garipov, Svetlana Tarasenko, Ekaterina Diachkova

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Aim or purpose: Comparing of the implant surfaces after the laser exposure.

Materials and methods: We used E:YAG laser, Nd:YAG laser, CO₂ laser, KTP-Nd:YAG laser and "IRE-Polus" laser. As objects for study dental implants and scanning electron microscope LEO 1420 (VP) were used. The analysis of the microtopography of the implant surface after the laser exposure with power of 1.0 and 2.0 W was carried out as the point of size 2–5 microns as random given square.

Results: In the experimental research according to scanning electron microscopy a more gross violation of the implant surface integrity was detected after exposed Nd:YAG laser and minor damage was after Nd:YAG–KTP exposure. Damage of the implants was characterized with the melting of their surface and destruction depending on the wave length and modes of laser. While exposure power of 1W the least damaging effect was detected with using a Nd:YAG–KTP, CO₂- and "IRE-Polus" lasers, most destruction was after Nd:YAG and Er:YAG lasers. At a power of 2W, the aggressive influence was identified during exposure of Nd:YAG and Er:YAG lasers and minimal negative effect after Nd:YAG–KTP, "IRE-Polus" and CO₂ lasers.

Conclusions: For professional hygiene of the patients with dental implants dental lasers with a correction ablation mode and decreasing power could be used, for example, Nd:YAG-KTP laser.

P152

Fractal Dimension Analysis – Supplementary Mathematical Method for Bone Defect Regeneration Measurement

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Aim: The geometry of bone defect is very complex. Its shape is too much complicated to measure it or compare with other bone defects using only traditional measuring methods. Traditional measuring techniques based on histomorphometric analysis of bone specimen require supplementary measuring. For fractal dimension analysis (FDA) mathematic formulas are used to describe complicated and chaotic shapes, FDA offers ability of comparison between complicated and complex shapes such as histological image of bone defect. The aim of study was to evaluate the FDA of bone defects as supplementary method for defect regeneration assessment.

Materials and methods: For the purpose of this study, microscopic photographs of bone specimens obtained during block biopsy were used and stained with hematoxylin/eosin. Bone blocks used in the study were obtained during a rat animal model study. Specimens were collected from 36 Wistar rats where cranial defect was created and augmented with five different novel biomaterials and compared to the unfilled defect in control group. New bone formation in every specimen was histomorphometrically measured by 2 independent operators and compared to FDA measurements. Statistical analyses performed with GraphPad Prism 7. $p < 0.05$ was considered statistically significant.

Results: Both traditional and FDA techniques have shown statistically important differences between bone formation in test groups compared to control, no statistically important difference was found between other groups. Pearson's r-test was conducted to measure linear dependence (correlation) between standard measurements and FDA, a positive linear correlation was shown $r = 0.94$.

Conclusions: FDA can be used as supplementary method for bone regeneration measurements.

Poster Session 31 | 30.08.2017, 10:45–11:45 | Poster Display 3

Theme: Oral Surgery

P153

Collagen I Type Material for Surgical Treatment of Jaw Defects

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Aim: To increase the efficiency of surgical treatment of patients with jaw bone defects.

Materials and methods: On the base of I.M. Sechenov First Moscow State Medical University and the privacy medical clinic under

the supervision were 124 patients: 30 patients with radicular cysts upper and lower jaw; 51 patients – mandibular fractures within the dentition; 18 patients had retention dystopia of third molar; 18 patients with chronic sinusitis with oroantral fistula; 7 patients while the open sinus lifting. All patients were appropriate operated in accordance with the detected pathology and using for filling of jaw defects and bone cavities with collagen I type material in different forms (balls, flagellum, membrane, powder). For intergroup comparison, we used Mann–Whitney *U*-test.

Results: All patients had no specifics in the postoperative period. A complex medication and daily bandaging were done. Sutures were removed on 7–9 days. While X-ray and CT- scan after 1 month there were initial signs of callus formation in the field of the compromised integrity alike the forming of the bone and single newly formed bone beams. In 3 months after the operation a more pronounced x-ray signs of bone regeneration were detected. Full recovery of the bone tissue according to the data of x-ray study noted through 4–6 months after the operation.

Conclusions: The utilization of collagen I type material was showed good results during filling out the residual bone cavities. Therefore, we consider that it is a material of choice in the practice of maxillofacial surgeons and dental surgeons.

P154

Treatment of Dental Diseases Using Nd:YAG Laser in Operative Dentistry

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Aim or purpose: Improving the efficiency of surgical treatment of patients with dental diseases using Nd:YAG laser.

Materials and methods: We used Nd:YAG laser of wave length 1064 nm. In the experiment, we done histological examination of biopsy of the rabbit oral mucosa in different stages of healing. All rabbits were divided into 4 groups, depending on the method of defect formation: cutting tool, laser radiation power of 1.6 W, 2.4 W and 3.2 W, respectively. In the clinic Nd:YAG laser was used for surgical treatment of 147 patients with different dental diseases.

Results: On the results of the experimental and histological study, wound defect, caused by laser, compared to scalpel, much faster goes through all the stages of the wound healing process. The alternative processes and disorders of microcirculation, the intensity of inflammatory processes is less pronounced, reparation starts earlier and have more intensity: fibroblast proliferation, angiogenesis, collagen production, fibrillogenesis, maturation and fibrous cicatricial granulation tissue transformation, wound surface epithelialization. Analysis of clinical data showed that the using of Nd:YAG laser contributed to the unexpressed pain response, minor collateral edema in the postoperative period, reduction of healing terms.

Conclusions: The using of Nd:YAG laser enhances the effectiveness of surgical treatment of patients with dental diseases due to reducing of rehabilitation terms.

P155

Morphology of the Mandibular Midline in Jaw Deformity

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Aim or purpose: It is important to avoid any complication in order to achieve the satisfactory outcome for the orthognathic surgery to the mandible.

The aim of this study is to evaluate the morphology of the midline of the mandible including mental spine (MS) and lingual foramens (LFs) with a view of genioplasty.

Materials and methods: Cone beam CT (CBCT) data of 40 Japanese dry mandibles (DM) and CT data of 20 jaw deformity (Angle class III malocclusion) patients (JD) were used.

From the sagittal images on the mandibular midline, the mandibular vertical height, the angle to Mandibular plane (MP), and the vertical height from the MS and LF to MP were measured and analyzed.

The vessels and nerves around the midline were observed microscopically from the cadaver dissections.

Results: In JD group, the vertical height and the lingual inclination were significantly larger than that of the DM group. In both groups, there were a lot of morphological variations of MS.

Cadaver dissections revealed the vessels and nerves in LFs.

Conclusions: The vertical height and the lingual inclination of mandibular midline were larger in JD group, thus, the correction of the anterior-posterior position by the “sagittal splitting ramus osteotomy” must be difficult to improve esthetical and functional demand.

Therefore, it is concluded that it is necessary to observe the region of MS and LF carefully in the preoperative three-dimensional images.

P156

Supernumerary Lower Premolar – Case Report

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Introduction: A supernumerary tooth describe the *supplemental* teeth that can develop in a person’s mouth. They may be single or multiple and unilateral or bilateral in distribution and can occur in any region of the dental arch.

Case description: The aim of this case report is to describe a case of supernumerary lower premolar in patient without any syndrome.

Discussion: Supernumerary premolar teeth in the mandible are rare. They are *found incidentally* on a *radiograph*.

Conclusions/Clinical significance: Early diagnosis and follow-up with radiographs is of the utmost importance.

P157

Knowledge of Oral Cancer amongst Undergraduate Students at College of Oral Health Sciences, Jamaica

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Aim or purpose: The aim of the study was to assess the knowledge of undergraduate students at college of oral health sciences with regard to aspects of the aetiology, early diagnosis and prevention of oral cancer relevant for dental and auxiliary practices.

Materials and methods: A questionnaire-based survey of oral cancer awareness study was performed on undergraduate students in different study groups of DMD, DH, DA and DLT students. 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: Further research is required to clarify the role of continuing professional education in improving the knowledge of oral cancer in undergraduate students.

Poster Session 32 | 30.08.2017, 10:45–11:45 | Poster Display 4

Theme: General Dentistry

P158

Electromyographic Monitoring of Periodontal Diseases Complex Treatment

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Aim or purpose: The purpose of our research was to develop soft chewing test in patients with dental mobility and periodontal diseases and while making this test we measured bioelectric activity of masticatory muscles by using electromyography (EMG).

Materials and methods: 32 patients with moderate periodontitis aged 35–44 years were under our observation. We divided them into 2 equal groups consisting of 16 persons in each. Comparison of two types of chewing test (filbert nut in 1 group and kernels of cedar nut in 2 group) carried out.

Results: Filbert as the test material (traditional chewing test) used in the first group. It revealed the increasing of maximum values of the EMG amplitudes of masseters to $39.0 \pm 2.9\%$ ($p < 0.05$) and also increased parameters of asymmetry coefficient of masseters in average 8% compared with data of the second group.

Conclusions: The careful study of the functional state of the masticatory muscles contributes to the adequate diagnosis and choice of treatment strategy of patients with periodontal disease, complicated by impaired functional occlusion, as well as monitoring the

treatment efficiency. We offered an informative method for estimating the electromyographic activity of masticatory muscles by electromyography (EMG) in patients with periodontal disease and teeth mobility. It based on the use of soft physiological chewing test (10 kernels of cedar).

P159

Effect of Different Tooth Preparation Techniques on Bond Strength

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Aim or purpose: The aim of this study was to test, in vivo, the effect of using warm air for drying the tooth surface after conditioning, on the shear bond strength of orthodontic brackets. This shear bond strength was also compared to the shear bond strength of brackets after different tooth surface conditioning techniques with compressed air from 3-way syringe for drying etched enamel. **Materials and methods:** Eighty sound premolar teeth were divided into four groups (20 into each group). According to the methods used, brackets (mini 2000) were bonded after enamel preparation with acid etch (control), pumice prophylaxis +acid etch, pumice+sandblasting 50 microns+acid etch, pumice+sandblasting+acid etch+warm air. The teeth were mounted in metallic mold using a mounting jig to align their labial surfaces with the bonded brackets to be parallel to the applied force during the shear bond strength testing. Also after debonding, the amount of resin remaining on each tooth was evaluated.

Results: There was a statistically significant difference among the four groups increased with the following sequence; group B showed the significantly lowest shear bond strength values, then the control group, followed by group C and finally group D showed the significantly highest values. Adhesive remnant index (ARI) evaluation indicated higher frequency in group A, C and D, if compared to group B.

Conclusions: Complete enamel preparation with pumice prophylaxis, followed by sandblasting, acid etch and warm air drying significantly improved shear bond strength.

P160

Effect of Light-Emitting Diode Irradiation on Proliferation of Periodontal Ligament Cells

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Aim or purpose: Low-level light irradiation (LLLI) has been shown to enhance proliferation and cytokine secretion of a number of cells. The objective of this study was to investigate the effects on the proliferation of periodontal ligament cells (PDLs) by using red-light and blue-light light-emitting diode (LED) irradiation.

Materials and methods: Periodontal ligament cells (PDLs) were treated with single dose of LLLI either from an red LED array (630 nm) or an blue LED array (470 nm) at the irradiances of

2W/cm². The cells were irradiated for 0s, 3s, 6s, and 9s respectively. The proliferation of PDLs on 24 hr, 48 hr, and 72 hr was evaluated after illumination.

Results: For red-light LED irradiation, the proliferation of PDLs showed no difference on 24 hr. After 48 hr to 72 hr, the proliferation of irradiated cells increased significantly compared to those without irradiation, especially irradiated for 9 s. However, the proliferation of the cells was decreased after 72 hr incubation. On the other hand, the proliferation of PDLs was decreased after irradiation by blue-light LED ($p < 0.05$).

Conclusions: The results presented here indicate a promotion of proliferation of PDLs after irradiation of red-light LED but an inhibition after exposure to blue light and necessitate further study to clarify the exact mechanism underlying this effect.

P161

First and Second Year Dental Students Motivations to Choose Dentistry

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Aim: To evaluate the motivational factors that influenced dental students to choose dentistry as a career. Career selection is a critical decision of an individual's life. Research about such motivational factors can assist policymakers and academicians to introduce effective recruitment strategies and would ensure a dedicated workforce that is interested in their field of expertise. Motivations are important for efficiency and in the area of healthcare, the competency and commitment of a worker can have a huge impact on the life of other people.

Materials and methods: This was a cross-sectional, observational study. A self-administered questionnaire was designed to evaluate the factors that motivated the undergraduates to choose dentistry as a career and included demographic and socioeconomic details and a list of 25 motivational factors that were rated on a Likert scale. Data from 188 respondents was recorded and analyzed using descriptive statistics.

Results: Majority of the respondents were females (85.1%) and from the first year of study (65.4%). Age in the sample ranged from 17–21 years. The most popular reason was the opportunity to use manual skills (84.6%). Family time, helping people, numerous opportunities abroad and financial stability were also the leading factors. The presence of a dental background (17.1%) was the least motivating factor.

Conclusions: The motives for joining dentistry were primarily personal and materialistic and were accompanied by a positive approach towards the future. It would seem that these favorable and highly attractive perceptions towards their career would ensure continuous development of dentistry through these dental students.

P162

Differentiation of Mesenchymal Dental Pulp Stem Cells into Hepatocytes

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Aim or purpose: Dental pulp contains a mesenchymal stem cell (MSC) population and differentiates into cells of multi-cellular lineages. We attempted to explore the differentiation of dental pulp stem cells (DPSCs) into hepatocytes, aiming potential clinical use of DPSCs for liver diseases.

Materials and methods: MSCs were obtained from primary-cultured dental pulp cells obtained from evulsion teeth. CD90-positive cells were selected and differentiated into hepatocyte-like cells under the presence of activin, FGF, insulin, and HGF. Production of urea under the presence of ammonium chlorides was tested. The production of some liver-specific proteins were also tested.

Results: Time-dependent-increase of urea concentration in the medium was observed, suggesting the vital function of urea cycle in these cell lines. Production of fibrinogen was also confirmed. RT-PCR showed the presence of genes involving with urea production, such as arginase 1 and glutamine synthetase. The presence of fibrinogen mRNA was also confirmed.

Conclusions: Hepatocyte-like cells differentiated from DPSCs may have the capability of ammonium detoxication and produce liver specific proteins. Further studies to apply DPSCs as cellular resources to regenerative medicine for end-staged liver diseases are needed.

Poster Session 33 | 30.08.2017, 12:00–13:00 | Poster Display 1

Theme: Periodontics

P163

Hyaluronic Acid Reduces Interleukin-1 Beta Expression in Perimplantitis

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Aim or purpose: The aim was to analyze the effect of a hyaluronic acid (HA) gel on the expression of inflammatory markers in the peri-implant crevicular fluid of implants with perimplantitis.

Materials and methods: A randomized, controlled, double-blind clinical trial was designed on 100 perimplantitis affected implants placed in 61 subjects. Inclusion criteria were at least 1 year of functional loading and diagnosis of perimplantitis following the criteria from the Association of Dental Implantology. All implant received perimplantitis treatment. Each patient randomly received a 0.8% HA gel (Test), a gel without HA (Placebo) or no gel (Control). After gel application at baseline, test and placebo patients performed applications at home 3 times/day for 45 days. Peri-implant crevicular fluid was collected from each implant at

baseline and 45 days after treatment, to assess IL-1 β and TNF α levels by ELISA. Clustering analysis, considering multiple implants within each patient, was performed.

Results: 32 implants were included in the test group, 32 in the placebo group, and 36 in the control group. IL-1 β levels in the test group were significantly lower when compared to control group ($p = 0.04$) in implants with severe perimplantitis. Placebo group showed lower but non-significant IL-1 β levels compared to test ($p = 0.40$) and control ($p = 0.20$) groups. There were no differences in TNF α levels between groups after follow-up.

Conclusions: HA gel caused a reduction in IL-1 β levels in perimplantitis. There was also a reduction with placebo gel, probably attributed to a certain degree of barrier effect. TNF α levels were not affected by HA.

P164

Smile and Gingival Architecture: Perceptions of Laypersons, Students and Professionals

Nedra Naija, Aslem Guouiaa, Safa Ben Tanfous, Wafa Nasri, Leila Guezguez

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Aim or purpose: A qualitative evaluation of Tunisian patients and dental professionals and students in order to highlight differences in perception of smile esthetics and regarding gingival architecture.

Materials and methods: An observational cross sectional study in which printed images of two photographs (intra and extra-oral) taken to 30 Tunisian patients (Department of Periodontics of Dental Medicine Faculty of Monastir- Tunisia) were attached to questionnaire distributed among those patients. 30 dental students and 30 dental professionals registered gingival criteria according to Fradeani's Esthetic Checklist (2004). Descriptive statistical analysis ($n = 90$) was carried with chi square test.

Results: In all evaluated criteria, an agreement relationship was assessed between patients, dental students and professionals with occurring variation on the degree of agreement in some parameters. Further studies must be carried out to compare this qualitative evaluation to quantitative aspects of gingival architecture.

Conclusions: Smile esthetics and gingival architecture has both become major concerns among Tunisian patients and dental professionals. This study evinced the importance of assessing patient's chief complaint and clinician's requirements so as to guide treatment planning in synergy.

P165

Implant-Related Factors with Potential Impact on Crestal Bone Loss and Periimplant Inflammation

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Aim or purpose: Bone is a critical factor both for the survival and the esthetic outcome of dental implants, which naturally is more

crucial in the anterior esthetic zone. The present study aimed at analyzing the implant-related factors with a potential impact on the extent of crestal bone loss (CBL) and periimplant inflammation in the anterior esthetic zone.

Materials and methods: Only patients having bone level implants in the anterior esthetic zone, placed with double-stage surgery, conventionally loaded, and with cemented restorations were included. Standardized periapical radiographs were used for determination of CBL and were taken by a dental radiologist. The recorded parameters were platform type, time of placement, excessive cement remnants, soft tissue biotype, misfit of implant and abutment, and smoking. Further, clinical status of implant sites was classified as healthy, peri-implant mucositis and peri-implantitis. All of the clinical examinations and recordings were carried out by the same periodontist.

Results: The misfit of implant and abutment and remnants of excessive cement significantly increased periimplant inflammation ($p < 0.05$). More CBL was found at sites with thin tissue biotype ($p < 0.05$). Platform switch implants presented with less CBL than standard platform implants ($p < 0.05$), while smoking did not seem to have any impact ($p > 0.05$).

Conclusions: For the success of dental implant treatment, implant- and prosthesis-related factors together with patient-related factors need to be analyzed. Based on the potential of affecting CBL and periimplant inflammation tissue biotype, platform design, and presence of any cement remnants are likely to need additional concern.

P166

Effect of a Mouth Breathing Device in Reduction of Gingivitis at 3 months in Oral Breathers

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Aim or purpose: The objective of this study was to evaluate the evolution of gingivitis at 3 months in oral breathers patients with a specific mouth breathing device.

Materials and methods: 100 mouth breathers aged between 24 and 68 years were included in the study. They all carried the Comfort© device during sleep. The gingival index of Löe & Silness was collected at baseline, at month and at 3 months.

Results: The gingival index was 2.31 at baseline, 1.23 at 1 month and 0.82 at 3 months ($p < 0.05$) after wearing the mouth breathing device.

Conclusions: This specific mouth breathing device can reduce gingivitis at 3 months in oral breathing patients.

P167

Interleukin-1 β as a Biomarker for Periodontal Diseases

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Aim or purpose: To investigate concentration of Interleukin-1 β (IL-1 β) in the biological fluids, saliva and gingival crevicular fluid (GCF) as a potential biomarker for diagnosis of periodontal diseases.

Materials and methods: 62 individuals have been involved in the study, divided into three groups based on clinical and radiographic criteria – 19 healthy subjects (H), 19 patients with plaque-induced gingivitis (G) and 24 – with chronic periodontitis – mild and severe (CP). GCF from 6 sites and saliva were collected respectively in micropipettes and sterile tubes. The volume was determined. Interleukin-1 β concentration was measured using an enzyme-linked immunosorbent assay (ELISA).

Results: IL-1 β concentrations in GCF in H are statistically significant lower than the IL-1 β concentrations in GCF in patients with G ($p = 0.009$) and in patients with CP ($p < 0.0001$).

We do not ascertain significant differences in the concentrations of IL-1 β in GCF in patients with G and those with CP.

IL-1 β concentrations in saliva in H are statistically significant lower than the IL-1 β concentrations in saliva in patients with G ($p = 0.002$) and in patients with CP ($p = 0.025$).

We do not find significant differences in the concentrations of IL-1 β in saliva in patients with G and those with CP.

Conclusions: We confirm that the levels of IL-1 β in the GCF and saliva are relevant and objective biomarkers in the diagnosis of periodontal health and disease.

Poster Session 34 | 30.08.2017, 12:00–13:00 | Poster Display
2Theme: Caries prevention

P168

Eight Years Follow Up Effects of a School-Based Toothbrushing on Dental Caries

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Aim or purpose: Estimating the long-term effects of a school-based supervised toothbrushing program among young children on dental caries incidence.

Materials and methods: A longitudinal clinical study in two large schools randomly selected from 86 in Minsk, Belarus. In 2008, 180 first grade 7-year-old children were involved in the 2-year supervised toothbrushing program, using commercially available AmF toothpaste (500 ppm F⁻) provided free to the children. The Medical University ethical committee approved the study, and parents' consent was received. Baseline DMFT for permanent teeth was recorded twice: after 5 (in 2013) and 8 (in 2016) years. A comparison group comprises of 186 first grade 7-year-old children in two neighboring schools. The standard school oral health

education programs were provided to both groups throughout the monitoring period. The DMFT data were analyzed by Student *t*-test.

Results: At baseline average DMFT was 0.31 ± 0.94 SD in the study group and 0.37 ± 1.1 in the comparison group ($p > 0.1$). After 5 years the average DMFT was: 1.89 ± 1.74 for 143 12-year-old study group children (37 dropped out (21%)); 2.6 ± 1.81 for 160 12-year-old comparison group children (26 dropped out (14%)). The DMFT difference between groups was 0.71 (27%), ($p < 0.01$). After 8 years the average DMFT was: 2.4 ± 1.86 for 124 15-year-old study group children (56 dropped out (31%)); 2.93 ± 1.9 for 153 15-year-old comparison group children (33 dropped out (18%)). The inter-group DMFT difference was 0.53 (18%), ($p < 0.05$).

Conclusions: School-based two-year supervised toothbrushing program for young children using low fluoride concentration toothpaste was effective in long-term dental caries reduction.

P169

Silver-Diamine-Fluoride and Potassium Iodide on Secondary Caries Prevention and Discolouration

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Aim or purpose: To investigate the effect of silver diamine fluoride (SDF) and potassium iodide (KI) treatment on secondary caries prevention and tooth discolouration in glass ionomer cement (GIC) restoration.

Materials and methods: Cervical cavity was prepared on 30 premolars for the following treatments before GIC restoration: group-1, SDF+KI; group-2, SDF (positive control); group-3, no treatment (negative control). After thermal-cycling and sterilization, a multi-species cariogenic biofilm of *Streptococcus mutans*, *Streptococcus sobrinus*, *Actinomyces naeslundii* and *Lactobacillus rhamnosus* was co-cultured on the restored teeth for 7 days. The demineralisation of dentine adjacent to the GIC restoration was evaluated using micro-computed tomography (micro-CT) and Fourier transform infrared (FTIR) spectroscopy. The colour of dentine adjacent to the restoration was assessed using CIELAB system at baseline, 1 day after GIC restoration, after thermal-cycling, and after biofilm challenge. Total colour change (ΔE) was calculated and was visible if $\Delta E > 3.7$.

Results: Micro-CT showed the outer lesion depths for groups 1, 2 and 3 were $91 \pm 7 \mu\text{m}$, $80 \pm 7 \mu\text{m}$ and $119 \pm 8 \mu\text{m}$, respectively ($p < 0.001$; group-2 < group-1 < group-3). FTIR found that there was a significant difference in amide I-to-hydrogen phosphate ratio among the 3 groups ($p < 0.001$; group-2 < group-1 < group-3). ΔE of groups 1, 2 and 3 after biofilm challenge were 22.5 ± 4.9 , 70.2 ± 8.3 and 2.9 ± 0.9 , respectively ($p < 0.001$; group-3 < group-1 < group-2).

Conclusions: SDF+KI treatment reduced secondary caries formation on GIC restoration, but it was not as effective as SDF treatment alone. Moreover, a perceptible staining on the restoration

margin was observed, but the intensity of discolouration was significantly less than that with SDF treatment.

P170

Predicting Caries in Preschool Children using Salivary Mutans Streptococci

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Aim or purpose: The aim of this study was to evaluate the predictive ability of caries regarding the baseline salivary mutans streptococci (SMS) levels in preschool children according to age, and to investigate the optimal time to perform such examinations.

Materials and methods: The subjects comprised 980 healthy 2- to 5-year-old children attending kindergartens in Yokohama, Japan. The children were divided into 4 groups according to age at baseline: namely, 2, 3, 4 and 5 years. All children were clinically examined by an experienced dentist at baseline and again one year later. At the baseline examination, a Dentocult SM Strip (Orion Diagnostica) was used according to the manufacturer's instructions.

Results: The Δdmfs showed significant differences according to the SMS score in the 2, 3, 4-year-old groups ($p < 0.01$), but no difference in Δdmfs was observed according to the SMS score in the 5-year-old group. The effectual cut-off for the SMS score was 2 in the 2, 3-year-old groups and 1 in the 4, 5 year-old groups. The RR in the 2, 3, 4, 5-year-old groups was 3.19, 3.10, 2.27 and 2.18, respectively ($p < 0.01$), and the sensitivity and specificity values were 130, 139, 131 and 132, respectively.

Conclusions: However, it was reconfirmed that the caries predictive ability of SMS was high in preschool children, the caries predictive ability of SMS in preschool children varied according to age, thus suggesting that measuring the SMS levels before 3 years of age was effective.

P171

Patients' and Parents' Valuation of Fluoride Varnish in the UK and Brazil

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Aim or purpose: To determine the willingness to pay (WTP) for fluoride varnish in a sample of Brazilian adults, and UK parents. Secondary objectives were to compare values between the two countries, identify differences between WTP for the parent's own prevention and that of their child, and determine the factors which influenced any differences.

Materials and methods: Cross sectional analysis of quantitative data collected from participants attending routine dental appointments. Clinics hosted by the Pontifical Catholic University of Rio Grande do Sul (PUCRS), Brazil and Newcastle Dental Hospital, UK.

Main outcome measures: WTP for a fluoride varnish application.

Results: The mean WTP for Brazilian adults was R\$60.37 (= £15.97). WTP was highly variable and factors affecting it were difficult to identify. UK parents valued fluoride varnish at mean values of £28.21 and £28.12, for themselves and their child respectively. Regression modelling found those with higher incomes had higher WTP in both samples. In the UK, parental and child WTP increased when parents had higher self-perceived need for dental treatment, had experienced recent dental pain, or their child had received restorations in the last 2 years.

Conclusions: WTP for fluoride varnish varied dramatically between individuals. It is difficult to explain this variance as factors which would likely impact upon on WTP had a limited effect and were sometimes counter-intuitive. WTP values differed significantly between the UK and Brazil; however, WTP values for a parent and their child did not demonstrate a significant difference.

P172

Dentists' Awareness of First Dental Visit in Children

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Aim or purpose: According to the position of general dentists and fundamental rule of first dental visit on prevention, a good knowledge about first dental visit plays a key role in the oral disease prevention. The aim of this study was to evaluate dentist's knowledge about children's first dental visit.

Materials and methods: Through a random sampling, 140 general dental practitioners participated in this study. In order to assess the level of knowledge, a questionnaire was used. SPSS statistical software for data analysis and statistical tests, T-Test, ANOVA and Pearson correlation coefficient were used.

Results: Our findings revealed that level of knowledge in both sexes was equal ($0.08 = p$). The office location had no effect in the level of knowledge ($0.811 = p$), also there was no significant relationship between years of age ($0.998 = p$) and work experience ($0.505 = p$) with the level of knowledge. 41.8% of practitioners had medial interest to get the necessary training about examination and treatment of 0–2 years. About range of age of accepted pediatric patient, 51.17% of dentists, accept 8–12 years of age patient in their office. 34.5% of dentists revealed that misbehavior of children during treatment is the main reason for unwillingness to accept the pediatric patient. 46.9% of dentists, revealed that the most effective result of child's dental visit at an early age to increase parents knowledge about prevention of early childhood caries (ECC).

Conclusions: The results showed general practitioners, have a good level of knowledge of when and how to examine children in the first dental visit. But it seems to improve their knowledge and motivation to treat children, necessary training should be given in the form of workshops and seminars.

Poster Session 35 | 30.08.2017, 12:00–13:00 | Poster Display 3Theme: Oral Surgery

P173

Achieving Enhanced Bone Augmentation Using the Tunnel Technique

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Aim or purpose: Optimization of bone plasty before dental implantation using tunnel technique and autotransplants from retromolar region.

Materials and methods: Twenty-six partially edentulous patients were enrolled in our clinical study. In the main group (14 patients) we used tunnel technique and autotransplants from retromolar region while bone augmentation. In compare group (14 cases) patients were also treated with autotransplant, but with conventional surgical incisions. We compared results of study with laser doppler fluorimetry, X-ray and histology.

Results: According study results pain syndrome and collateral edema in the main group of patients wasn't significant. On data of laser fluorimetry level of tissue circulation wasn't decreased after operation in the main group and recovered faster than in the compare group. According CT-study growth of alveolar ridge height was on 2% more after tunnel technique, growth of alveolar ridge width was on 4% more after tunnel technique compare traditional.

Conclusions: The study showed that patients after tunnel technique while bone augmentation have better result of healing, bone regeneration and less complications in contrast conventional surgical incisions.

P174

Optimization of Diagnosis and Treatment of Facial Arteriovenous Malformations

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Aim or purpose: Investigation aimed to optimize diagnosis and treatment guidelines for patients with facial arteriovenous malformations.

Materials and methods: A total of 40 patients aged 15–52 years with facial arteriovenous malformations (AVM) were included in the study, 22 women and 24 men. All patients underwent diagnostic and treatment procedures and postoperative control in the period 2008–2016. Diagnosis included clinical, radiological, including high resolution ultrasonography, 64-slice multislice computer tomography angiography (MSCTA) and digital subtraction angiography, laboratory examination. Treatment options included total resection of AVM with or without preoperative embolization, partial resection with afferent vessels ligation of vast malformations as a part of step-by-step treatment, embolization without surgical stage and electrochemical lysis with preoperative embolization. Local flap, free split skin flap and free vascularized

fasciocutaneous flap techniques were used for immediate defect reconstruction. Patients were observed 3 years after surgery. All data was analyzed.

Results: AVM were most frequently localized in frontal, temporal, floor of the mouth cavity region or occupied a half of the face, 2–12 cm in diameter. MSCTA provided data concerning volume of the AVM, afferent and efferent vessels topography, number and diameter, arteriovenous fistulae, 3D reconstruction was used for detailed planning of the surgery. There were no cases of recurrence after total resection of AVM, several cases needed additional surgery for cosmetic reasons.

Conclusions: Complementary diagnostic tools allow determining different parameters of AVMs that are necessary for treatment planning. Combined use of ultrasonography and 3D MSCTA provided precise treatment planning and helped to obtain good results.

P175

Method of Treatment Patients with Mandibular Cysts

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Introduction: In dental practice, the tactics of treatment for odontogenic cysts of the jaws are determined in different ways. Often, doctors choose the tactics of tooth extraction or resection of the apex and cystectomy.

Case description: When a patient was examined on a CT, a cyst of the lower jaw in the chin region was accidentally detected. It included the roots of the teeth 4.2, 4.1, 3.1, 3.2 and had size of 2.3 * 1.5 * 1.0 cm. More than 10 years ago the patient got into a road accident, she was treated in the hospital for a mandibular fracture, passed through the tooth 4.1. At a local examination, the teeth 4.2–3.2 were mobile I degree, the gingiva- physiological color. Tooth 4.1 was devital, percussion was negative. We decided to try to save the teeth. Teeth 4.2–3.2 were splinted and endodontic treated. The fistula was placed vestibularly, the patient treated herself with antiseptics for a month. Then the fistula was removed, the root canal 4.1 was completely sealed. On control CT in 4 and 6 months after treatment bone formation was visible.

Discussion: Treatment of patients with such cysts need a decision for saving or removal of teeth standing in the cavity of the cyst, and resection of their apex.

Conclusion: This method could be applied in treatment of patients with odontogenic jaw cysts.

P176

Case of Trigeminal Neuralgia Treatment

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Introduction: Trigeminal neuralgia is a chronic pain disorder that affects the trigeminal nerve. This disease is unusual for dentist and because of this interesting. The pathogenesis isn't fully understood. It's believed that the disease most often occurs as a result of compression of the trigeminal nerve.

Case description: The patient complained of the absence of sensitivity of teeth of maxilla and periodic pain on the left side. Examination of teeth showed that 2.2, 2.3, 2.4 were intact, 2.5- restored with inlay, without sensitivity and changes on the X-ray. Palpation in the projection of the infraorbital foramen was painful. In the anamnesis, we found that about a month ago the patient participated in fight, he didn't apply for treatment to the hospital. In CT with 3D-reconstruction we found a fracture of the left zygomatic bone with displacement and compression of the infraorbital nerve. We decided to remove zygoma in the correct position and make osteosynthesis. During the surgery, we also made a decompression of the infraorbital nerve. Physiotherapy and medication were prescribed. The patient didn't complain of pain and insensitivity in 3 months after the operation.

Discussion: Patients with trigeminal neuralgia should be carefully examined to find the cause of disease and choose the treatment method.

Conclusion: Correct diagnosis and proper treatment could reduce the patient's pain and stop the disease.

P177

Bone Augmentation at the Extracted Tooth Alveoli before Dental Implantation

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Aim or purpose: How to save the alveolar bone, after removal of teeth by bone augmentation with hyaluronic acid, platelet rich fibrin (PRF), osteoplastic material in combination, before dental implantation.

Materials and methods: It has been treated and examined the number of 21 patients: For 11 patients. It has been done extractions of the teeth with subsequent bone augmentation by using modified hyaluronic acid – Hyalrepair, No. 10, osteoplastic material “Osteoplast-T”, PRF and A-PRF membranes. Removal of teeth for the standard method was performed for 10 patients in the control group. In the dynamics evaluated the severity of the collateral swelling, pain, time of epithelialization. The results of cone-beam computed tomography in the evaluation of the parameters of volume and optical density of bone tissue recovery area before, after 1, 3, 6 months.

Results: Patients of the 1st group were awarded the best results – reduction of terms of epithelialization (in 7 days after tooth extraction in 63.6% of cases showed complete healing, while in

the remaining 36.4% of cases, epithelization of the alveolus was 65–85%), mild swelling of surrounding tissue, low intensity and duration of pain. According to the results of computed tomography, atrophy of bone in height and width of the alveolar ridge in the area of the extracted teeth in patients of the 1st group was less pronounced, it was observed a higher osteoregeneration” optical density than patients of the control group.

Conclusions: Bone augmentation of the teeth” alveolus with the application of modified hyaluronic acid, PRF, osteoplastic material provides a reduction of atrophy and the increase an optical density of bone tissue.

Poster Session 36 | 30.08.2017, 12:00–13:00 | Poster Display 4
Theme: Pedodontics

P178

Microdontia in Cancer Survivors Treated with Chemotherapy. Clinical Research

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Aim or purpose: Comparative assessment of microdontia prevalence in patients treated for cancer and their non-contributory peers.

Materials and methods: 31 cancer survivors after chemotherapy and 31 randomly chosen healthy patients have been examined. Antineoplastic treatment was administered from 6 month to 8 year and 5 month of children’s age. The results of dental examination, panoramic radiographs, photo images as well as medical history of anticancer treatment were obtained. Furthermore, the efforts have been made to determine the chemotherapy responsibility for microdontia.

Results: In experimental group 37 microdontal and 33 reduced in size teeth have been noted in 19 survivors (61%). There were 21 first premolars, 15 second premolars, 24 second molars, 6 lateral incisors and 4 third molars disturbed. Examination have not revealed any abnormality in control group. The neoplastic treatment was administered to the patients at the time when most of affected teeth were at early developmental stage. An exception was one patient who has received chemotherapy 2 years after expected time of early odontogenesis. Remaining 12 survivors presenting undisturbed dentition were treated for cancer at older age except for one case with remarkably short chemotherapy administration.

Conclusions: The prevalence of microdontia in chemotherapy treated patients is significantly higher related to healthy population. The injurious impact of chemotherapy was confirmed.

P179

Clinical Evaluation of Two Esthetic Crowns Versus Stainless-Steel in Primary Molars

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Aim or purpose: To evaluate the clinical performance along with parent satisfaction of esthetic crowns compared to stainless-steel

crown (SSC) regarding retention, color stability, crown deformation, chipping of crown facing, gingival health, marginal extension, proper occlusion, proximal contact and bone condition.

Materials and methods: Twenty-four 3 to 5 years (17 females and 7 males) old children with bilateral lower first primary molars indicated for pulpotomy were classified randomly and equally into two groups according to type of esthetic crown used, G.I for pre-veneered (PVSSC) and G.II for zirconia crowns (ZRC) and a matched pair study design was performed. After pulpotomy was performed for each molar, one received a SSC while its contralateral received one of the esthetic crowns. Clinical evaluation was done postoperatively, after 1 week, 1, 3, 6, 9 and 12 months, while radiographs done postoperatively and after 12 months and parents were asked to rate the crowns on a Likert type scale from 1 to 5.

Results: SSCs scored the highest rates of retention followed by ZRC and PVSSC crowns. SSCs and ZRC showed the excellent gingival health integrity. All esthetic crowns had more than 1 mm subgingival extension compared to 0.5 to 1 mm for SSCs which was highly significant (≤ 0.001). PVSSCs were bulky and changed color. Parents were highly satisfied with ZRC followed by PVSSCs and SSCs.

Conclusions: Clinically ZRC are considered as successful as SSC with better esthetics, while PVSSC had inferior retention rates and were bulky.

P180

Neurofibromatosis Type 1 with Facial Plexiform Neurofibroma: Oral and Radiographic Manifestations

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Introduction: Facial plexiform neurofibromas (FPN) are rare tumors that appear on the face and involve the cranial and upper cervical nerves. It especially seen in childhood and shows low malignant transformation. That is also a component of the diagnostic criteria for neurofibromatosis type 1 (NF1). NF1 is a common, multisystemic syndrome which is autosomal dominant. This case was aimed to draw attention to the oral and radiographic findings of NF1 diagnosed in children.

Case description: A 9-year-old boy who had NF1 referred to the department of Pediatric Dentistry for dental examination. He had FPN on the left side of the face and cafe-au-lait spots on the skin which was found enough for the diagnosis of NF1. He had an extra-oral swelling on the left hemiface, besides a swelling on the left buccal mucosa and alveolar ridge intra-orally. Radiographically, tipping of the left permanent first molar tooth and resorption on the distal root of the left second primary molar was detected. So, it was extracted due to progressive resorption and a space retainer was placed. The patient planned to follow up till to surgical intervention for FPN.

Discussion: Half of the plexiform neurofibromas are located on head, neck, face and larynx-region having the risk of misdiagnose with other pathologies related to teeth. However, it can be resulted displacement of teeth or tooth loss as a result of atypical resorption as in this case also.

Results/Clinical Significance: Early diagnosis and long term follow up is important due to malignancy risk.

P181

Cleidocranial Dysostosis: A Case ReportOzgul Baygin, Simge Aksoy, Tamer Tuzuner*Karadeniz Technical University, Faculty of Dentistry, Department of Pediatric Dentistry, Trabzon, Turkey*

Introduction: Cleidocranial Dysostosis (CDD) is a rare genetic disorder primarily causing skeletal/dental abnormalities, characterized by autosomal dominant inheritance patterns. Characteristic features; Aplasia/hypoplasia of clavicle, craniofacial malformations, delayed tooth eruption, impacted teeth, and multiple supernumerary teeth. It is aimed to present the findings of CDD case diagnosed by pediatric dentist.

Case description: The patient, 11 years old, boy, referred to Department of Pediatric Dentistry with a complaint about delay in the eruption of his anterior permanent teeth. Intraoral findings were delayed exfoliation of primary teeth, presence of multiple retained primary teeth except 51, 71, 72 primary teeth. All permanent 1. Molars were observed in mouth. Dentine caries were observed in primary molars and in 26, 36 permanent teeth. Maxillar retrognathia, mandibular prognathia, class 3 malocclusion, flat profile and presence of small midfacial bones of face region were detected. The radiographic examination showed that permanent teeth had completed the crown mineralizations and in addition to permanent dentition was observed that there was a third series of dentition. Extraoral examination revealed that neck length was long, shoulders were narrow and low. There was a clavicular aplasia. He could easily move his shoulders in front of his chest. No findings were found in medical story of the family. The family was referred to Department of Medical Genetics. According to the genetic analysis CCD was diagnosed. Patient's treatment, under 6 months periodic follow-up, was performed.

Discussion: Pediatric dentists can have significant role in early diagnosis of CCD.

Conclusions/Clinical significance: CCD is a rare developmental defect with important skeletal/dental findings.

P182

Taurodontism and Tetrasomy X: A Case ReportMevlut Kayabasi, Fatih Oznurhan, Burak Buldur*Cumhuriyet University, Faculty of Dentistry, Department of Pediatric Dentistry, Sivas, Turkey*

Introduction: Tetrasomy X (48, XXXX) is a chromosome disorder and caused by having four copies of the X chromosome instead of two. The signs and symptoms of tetrasomy X are mild to moderate speech and learning difficulties, developmental delay, distinctive facial features, dental abnormalities, hypotonia and joint laxity, radioulnar synostosis, heart defects, hip dysplasia and problems with ovarian function and increased risk of childhood infections.

Case description: A 9-year old girl was referred to our clinic with a history of pain in her teeth. Patient was receiving special education for developmental delay and speech difficulty. The patient had epicanthus. Intraoral examination showed that mandibular first permanent molars and four primary canines have profound caries. Panoramic radiograph revealed that there was congenital absence of four primary molar teeth and shortened jaw thickness with all taurodontic permanent molars. The roots of the permanent molars are

not yet formed. Tetrasomy X with a karyotype 48, XXXX were found by the genetic examination with a doubt of genetic disorders. Tooth 46, 36, 53, 63, 73 and 83 were extracted, 16 and 26 were restored with composite resin under general anesthesia.

Discussion: This case report demonstrates a rare genetic disorder. The relationship between an extra chromosome and taurodontism has been widely described which can be associated with like tetrasomy X, trisomy 21 or Down syndrome.

Conclusions/Clinical significance: Identification of the patients with multiple taurodontic teeth could lead to early recognition of systemic disorder and improve patients' quality of life.

Poster Session 37 | 30.08.2017, 13:15–14:15 | Poster Display 1
Theme: Prosthodontics

P183

Accuracy Close Tray with Acryl Pattern Impression technique in ImplantYousef Jahandideh¹, Samira Jamali²*¹Department of Prosthetics, School of Dentistry, Guilan University of Medical Sciences, Rasht, Iran, ²Student Research Center, School of Dentistry, Guilan University of Medical Sciences, Rasht, Iran*

Aim or purpose: This study aimed to investigate the effect of the two impression techniques on the final accuracy of implant casts.

Materials and methods: In this study four DIO implant analogues are embedded on a laboratory model & were evaluated with using two impression techniques. In Close tray impression technique, it was used of special impression coping of close tray, but in Acrylic technique, It was made Acryl patterns for any abutments & are connected with duralay acryl. Four final casts are made with each of techniques. The accuracy of final cast was evaluated in dimension of x, y, z & in points spatial position (d) with same distance. Measurement of determinate distance was done by CMM with the accuracy of 0.1 micron & the size difference in the final casts with a laboratory model were analyzed by SPSS statistical soft ware.

Results: There was no differences in two techniques on dimension accuracy of the final casts in dimension of x, y & z, but in term of the points spatial position (d) there is significant statistical difference between the two techniques in d3 position. Neither two impression techniques reconstructed the specified points location on the initial laboratory model on the final cast accuracy.

Conclusions: The implant impression by Jig technique is as simple as Close tray technique & it is more accurate than Close tray technique in complex cases are preferred.

P184

Single-Tooth Replacement Using Fiber-Reinforced Composite Bridge in a Young PatientBegüm Yılmaz, Özgür Irmak, Batu Can Yaman*Eskisehir Osmangazi University, Faculty of Dentistry, Department of Operative Dentistry, Eskisehir, Turkey*

Introduction: Restoration of a missing anterior tooth in a growing individual presents a problem, since conventional treatment options

may not be suitable before the completion of the growth. Fiber reinforced composite (FRC) bridges can be an alternative in such patients.

Case description: 13-year-old girl presented with a missing maxillary central incisor (#11 (FDI)) due to periapical pathology. Following radiological and intra-oral examinations, alginate impressions were taken and stone models were obtained. Pontic was prepared on the model with light-cured resin composite (Estelite Omega, Tokuyama). After checking the occlusion, retention grooves were placed on the palatal surfaces of the pontic and the adjacent two teeth (#12, #21). The pontic and the abutment teeth were etched with phosphoric acid (Scotchbond Etchant, 3M ESPE). After water-rinsing and air-drying, a total-etch adhesive (SingleBond 2.3M ESPE) was applied and light-polymerized. A small portion of the same resin composite was placed into the grooves, followed by placement of an appropriate length of resin impregnated glass fiber (Interlig, Angelus), and light-polymerized. Grooves were then completely filled with the same resin composite. Restoration was finished and polished.

In the 6-month follow-up visit, there is no sign of debonding and the patient is complaint free.

Discussion: Resin impregnated glass fibers are used for splinting and restoration of missing anterior tooth. They offer a single visit treatment option with low costs and require minimal tooth structure removal.

Conclusions/Clinical significance: This case suggests that, FRC bridges could be a interim treatment option until definitive restorations are placed.

P185

Clinical and Technological Failures after Metallic Ceramic Restorations

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Aim or purpose: Metallic-ceramic bridges represent a therapeutic solution frequently used for their esthetic, resistance and fare price advantages. The esthetic failure has serious effects upon the patients' psychology and also on his social life.

This study evaluates the principal causes of esthetic failure of metallic-ceramic bridges.

Materials and methods: We have evaluated 186 metallic-ceramic bridges applied on 78 patients, 24–35 years old. To evaluate the esthetic success, we used the clinical and complementary examination: case study, face and profile gnatophotostatic photos.

Results: The study demonstrates that the principal causes of the esthetic failure of the metallic-ceramic bridges therapy are: insufficient and incorrect clinical and complementary examination, superficial knowledge of clinical and technological algorithm, lack of communication patient–doctor, and morphological particularities of case.

Conclusions: Reestablishing esthetic balance with metallic-ceramic bridges represents a modern therapy. Also, the frequent use and material's properties should reduce the esthetic failure rate, our study demonstrates that the rate is 10%.

P186

A Clinical Evaluation of Fixed Dental Protheses without Regular Maintenance

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Aim or purpose: The purpose of this study was to evaluate survival rate (after 8 years) and the reason of failure of fixed dental protheses without having regular maintenance in a long-term after insertion.

Materials and methods: The subjects were 320 patients who has received no regular maintenance after insertion of fixed dental protheses at the Prosthodontic Clinic, Gr.T. Popa University from Iasi, Romania, between 2005 and 2008. The subjects were contacted by letter or telephone to ask their participation. In study are included 320 patients and 659 abutments teeth were investigated (oral hygiene status; abutment teeth; FDPs; success/survival/ complication and failure rate).

Results: The survival rate of the FDPs was 58% and the failure rate was 42% with functional period 9.6 years. FDPs remaining required some types of treatment at the time of examination indicating 17% of the complication rate and 50% of the success rate. Regarding the abutment teeth, 64 was extracted, and from this result 10% rate failure. The most common reason for the complications was periodontal disease, loss of retention, endodontics, caries, poor adaptation of margin, fracture of FPD.

Conclusions:

- Abutments tests and fixed dental protheses without regular maintenance had many periodontal problems due to dental plaque.
- The fatigue-mechanism could be advocated as the main factor for the failure of all-ceramic crowns.

P187

Knowledge of Restoring Endodontically Treated Teeth among Newly Graduated Dentist in KSA

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Aim or purpose: Assess the knowledge of the materials and techniques used in the restoration of ETT by general dentist all around Saudi Arabia.

Materials and methods: Questionnaire survey containing 17 multiple choice questions was answered by 400 GP online (Google survey form).

Results: Preferred technique for restoring ETT was core build up (40%) then prefabricated fiber post and core build up (21%). Majority preferred using non-threaded post (81%) and using tapered design (67%). Cement preference was conventional (51%) then self adhesive resin (35%) then adhesive resin cement (14%). Conventional bulk fill composite Zirconia free was preferred core build up (65%) than composite with Zirconia filler. (50%) chose remaining tooth structure as the most detrimental factor for restoring ETT, while (42%) chose crown-root ratio.

Conclusions: Surveyed participants had a sound knowledge of the materials and techniques used in the restoration of ETT, more care need to be given to materials and techniques that increase fracture resistant.

Poster Session 38 | 30.08.2017, 13:15–14:15 | Poster Display
2Theme: Esthetics

P188

Aesthetic Reconstruction in Anterior Teeth

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Introduction: Rebuilding anterior upper pieces entails the difficulty of finishing the case in a very aesthetic way. In the present case, we try to determine the best sequence for a correct color taking and subsequent anatomical rehabilitation.

Case description: A 30-year-old patient comes to the clinic for a fracture of part 21, in her medical history it is detailed that she has good hygiene, is not a smoker and there are no associated pathologies.

The piece to be treated presents different colors and characterizations that we analyze in detail. First clean the tooth and remove makeup. The chromatic variations are determined in the following order: value, saturation and pitch.

For this case, we use a spectrophotometer (VITA®). Subsequently it was reconstructed with esthetic composites (CERAM X-DUO, DENTSPLY®) with the stratification technique after the correct insulation of the previous pieces with dike.

Discussion: There are discrepancies in the revised literature regarding the color of the teeth where it is described that it should be a neutral color, while in other articles it is argued that several colors must be combined.

Some authors reflect that spectrophotometers are more reliable and accurate than visual methods.

Conclusions/Clinical significance: Color is a psychophysical response. For its determination, it is necessary to keep in mind the dimensions of value, hue and color saturation.

To select the color correctly, we must follow a sequenced and scheduled shot. Having knowledge of the science of color we will be able to obtain existent and predictable results.

P189

Esthetic Rehabilitation of Anterior Teeth with Ceramic Veneers

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Introduction: Esthetic rehabilitation of anterior teeth has always been a challenge in clinical practice.

Currently, patients are more and more esthetically demanding. Thus, the improvement of dental material has been available in

these circumstances. Dentists have to choose the best alternative to optimize the esthetic outcome using ceramics for veneers or full coverage restorations.

Case description: A 27-year-old female patient was concerned about a discoloration on anterior upper incisors.

Radiographic images and clinical exam were conducted.

Clinically, enamel discoloration and shape discrepancies were observed. Diagnostic casts were waxed to define the desired shape and form to assist the treatment planning based on the specificities of the clinical situation. Ceramic laminate veneers were indicated for the anterior teeth.

Discussion: When ceramic veneers are considered due care has to be given to a relationship between the thickness of the veneer and the color of the remaining dental structure. In the case of improving esthetics by changing the form and texture of teeth with no severe discoloration, veneers of smaller thickness may be indicated.

After informing, the patient about advantages and disadvantages of each restorative option, the conservative ceramic veneers of minimum thickness were the most reliable solution to be chosen.

Conclusions/Clinical significance: The minimum thickness anterior ceramic laminate veneers may be a conservative and esthetic alternative to reestablish the form, shape, and color of anterior teeth.

P190

Rehabilitation of Fractured Anterior Teeth Using Esthetic Approach: A-Case Report

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Introduction: Traumatized anterior teeth require quick functional and esthetic repair in young patients. The conservative dental esthetic rehabilitations have been improved and evaluated with the development of composite restorative and adhesive materials. The aim of this case report is to report esthetic rehabilitation with combined intracoronal bleaching, fiber-reinforced post, and anterior restoration using silicon index-layering technique.

Case description: A 16-year-old young patient attended to the clinic due to a complaint became a staining after endodontic treatment of maxillary left central and aesthetic problems. The patient reported dental fracture to the maxillary central incisors as a result of trauma. After anamneses, clinical and radiographic examinations, intracoronal bleaching treatment was applied to the maxillary left central using the 37% carbamide-peroxide gel (Whiteness Super-Endo, FGM, Brasil) previously to the restorative treatment. One week later, fiber-reinforced post (White Post, FGM, Brasil) was used to create a central support. With the aid of the mock-up and silicon index technique, the incisal edges of the composite resin were stratified on central incisors to achieve esthetic anatomic contours. After the functional and esthetic planning, nanoparticle composite resin (Filtek Ultimate A2, Dentin, Body and Enamel, 3M ESPE, USA) was placed with layering. Finishing and polishing procedures were applied. The patient was left very satisfied from the clinic.

Discussion: Conservative treatment using direct composite resin restorations even with their specific limitations and advantages,

provide satisfactory esthetic and functional treatment results, preserving the dental structure in young patients.

Conclusions/Clinical significance: Clinical and radiographic examinations revealed successful rehabilitation of the fractured teeth at 6-month recall.

P191

Aesthetic Reestablishment of Anterior Traumatized Teeth

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Introduction: Dental trauma occurs most frequently to the maxillary central incisors, and the fracture zone may involve both enamel and dentin. The current cases offer a conservative, time saving, inexpensive treatment options of common type of esthetic problem following dental trauma.

Case description: A 14-year-old girl was referred to our department because of a crown fracture of maxillary central incisor, showing up 30 min after trauma. Intraoral clinical examination revealed a complicated crown fracture with exposed pulp. Periapical radiographic examination showed completed root formation, no periapical injury and no alveolar bone or radicular dental fractures. Pulp management included direct pulp cupping with Biodentine© and reconstruction with reattachment of the tooth fragment of the central incisor.

A 21-year-old girl was referred to our department because of an ancient crown fracture of maxillary central incisor. Intraoral clinical examination revealed complicated crown fracture (Classes IV ??). The tooth was asymptomatic and responded within normal limits to cold and electric pulp tests. The treatment procedure consisted in restoration of the tooth with composite resin.

Discussion: The therapeutic approach will depend on the clinical situation. If the coronary fracture does not exceed half the crown, the therapeutic of choice is the reconstitution with composite resin. If the fragment has been found and preserved in appropriate conditions, an attempt of fragment reattachment is then recommended.

Conclusions/Clinical significance: These minimal invasive and conservative alternative treatment options could achieve an excellent aesthetic outcome in one single session.

P192

Assessment of Esthetic Outcome Using Pink and White Score

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Introduction: Normal teeth proportions are strongly affected by gingival architecture. This fact makes White and pink score widely

used by clinicians as a valuable tool for assessing dental aesthetics results.

Case description: A 23-year-old female patient presented to department of fixed prosthodontics. She was complaining about her unaesthetic smile. Intra oral examination revealed a discolored central incisor which is restored by composite resin. Discolored margins were detected. Low situation of gingival margins, compromising the harmony between pink and white, was also detected. Radiological examination showed that the central incisor was endodontically treated. To re-establish the three-dimensional architecture of soft tissue, Surgical procedure was performed. It was followed by prosthetic treatment including full crown ceramic restoration.

Discussion: In Dentistry, aesthetic rehabilitation is achieved by restoring both pink and white. Surgical procedures such as Crown lengthening can be suggested to augment the height of the incisor which is beneficial for restoration retention. It also corrects the gingival architecture which is necessary to improve the White/Pink score.

Conclusions/Clinical significance: Aesthetic crown lengthening followed by a prosthetic approach using all ceramic restorations is an elective approach to obtain an improved Pink and white score.

Poster Session 39 | 30.08.2017, 13:15–14:15 | Poster Display 3

Theme: Periodontics

P193

Mucogingival Surgery and Dental Trauma: Outcomes after a 10 Years Follow-Up

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Introduction: Soft tissue augmentation procedures are often required to address periodontal defects after a trauma. This report describes the clinical outcome, after a ten years follow-up, of a connective tissue grafting technique applied to reconstruct an anterior defect caused by an accident.

Case description: A 31 years-old man required periodontal and implant surgery to improve esthetic, after an accident that occurred three years before. Implantation with one implant Ø 4.0 × 10 mm (AVINENT[®]) and two connective tissue grafting procedures were performed. Results after ten years are presented.

Discussion: Connective tissue graft provides excellent esthetics and good survival potential, achieve by the blood supply from the flap and the periosteum. After ten years, periodontal regeneration and esthetic outcomes are maintained.

Conclusions/Clinical significance: Major challenging cases can be treated with soft tissue augmentation procedures. The technique is well established and, in this case, offered a long-term and successful outcome.

P194

Non-Surgical Periodontal Therapy of an Aggressive Periodontitis Patient-A Case Report

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Introduction: Aggressive periodontitis is characterized by progressive attachment and bone loss in early ages with genetic predisposition. In this case report, we present non-surgical periodontal therapy of an aggressive periodontitis patient.

Case description: A systemically healthy, 37 years old man was referred to clinic of periodontology department with complaint of pain and bleeding gums. Based on clinical and radiographical examination, his condition was diagnosed as generalized aggressive periodontitis. Clinical periodontal parameters were recorded and clinic photographs were taken. Following oral hygiene instructions, scaling and root planning was performed on consecutive visits. Due to proper healing in response to mechanical therapy, adjunctive antibiotic was not administered. At first, third and sixth month recalls, clinical and radiographical recordings, scaling and root planing of pockets deeper than 4 mm were repeated.

Discussion: There is no widely accepted treatment protocol for generalized aggressive periodontitis. Treatment alternatives include scaling and root planing alone or in conjunction with systemic antibiotics, as well as surgical approaches. In this case, with proper scaling, root planning and meticulous plaque control, non-surgical periodontal treatment improved clinical periodontal condition, inhibited the progression of the disease without adjunctive antibiotic administration.

Conclusions/Clinical significance: In this case report, non-surgical periodontal therapy without adjunctive antibiotic administration provided a good clinical periodontal healing of patient with generalized aggressive periodontitis.

P195

Surgical Treatment of Oral Pyogenic Granuloma: A Case Report

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Introduction: The aim of this study was to evaluate the surgical treatment of pyogenic granuloma with the 5-month follow-up period.

Case description: A 27-year-old male patient who was systemically healthy and non-smoker applied to our clinic with a complaint of localized gingival enlargement in interdental gingiva between teeth #12 and #13. Clinical and radiographic examination also revealed external root resorption of tooth #12. Oral hygiene instructions were given to the patient and then full mouth scaling and root planning was performed. Following phase I therapy, lesion was removed by excisional surgery and histopathologically, it was diagnosed as “pyogenic granuloma”. There was no recurrence or complication in the 5th month postoperatively.

Discussion: Pyogenic granulomas or lobular capillary hemangiomas are hyperplasia characterized by endothelial proliferation

of fibrovascular tissue. It has been usually developed in the gingival tissue, but also on tongue, lips and oral mucosa. It is known that hormones, drugs and local irritations such as trauma, dental plaque may play role as etiological factors. In general, the treatment is surgical removal of the lesion and the control of traumatic and infectious factors.

Conclusions/Clinical significance: Pyogenic granulomas are rapidly developing lesions and the possibility of recurrence after surgery is frequent. Therefore, it should be kept in mind that dental plaque control and post-operative recalls are of great importance.

P196

Treatment of Amlodipine Induced Gingival Enlargement; A Case Report

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Introduction: The present case report describes the treatment of a patient who had amlodipine induced gingival enlargement.

Case description: The patient who had gingival enlargement, bleeding and halitosis applied to the clinic of Periodontology Department. Clinical and radiological examinations were performed. The patient was 57 years old, had hypertension since 2010 and stroke 3 years ago. He was using antihypertensive (Exforge®, Novartis, Swiss) drug and anticoagulant (Ecosprin®, ABDI IBRAHIM, Turkey) because of stroke. Firstly, patient was consulted Cardiology Department for antihypertensive drug replacement. Then, oral hygiene instructions were given, scaling and root planning were performed, and chlorhexidine 0.2% mouth rinse prescribed. The patient was followed up monthly for 8 months. In each visit, oral hygiene motivation, scaling and root planning repeated for pockets deeper than 3 mm.

Discussion: Amlodipine, a calcium channel blocker, is among the most widely used drugs in hypertension treatment. This kind of drugs cause gingival overgrowth, but its exact mechanism is not clear. However, dental plaque and gingival inflammation seem to contribute to development and severity of drug induced gingival overgrowth.

Conclusions/Clinical significance: Replacement of drug, effective oral hygiene procedures, supportive periodontal therapy resulted successfully in periodontal healing. The most important factor was observed effective oral hygiene and phase 1 therapy in healing procedures.

P197

Nifedipine Induced – Gingival Overgrowth: A Case Report

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Introduction: Nifedipine is often used to treat ischemic cardiovascular diseases. The use of this calcium channel blocking agent may induce gingival overgrowth.

Case description: A 64-year-old male with chronic periodontitis and gingival overgrowth referred to clinic of Periodontology

Department. Medical history revealed that the patient had hypertension and was taking nifedipine 60 mg once daily, and a former smoker. Patient consulted with cardiology and nifedipine (Adalat Crono® 60 mg, Bayer, Portuguese) replaced by perindopril + indapamide (Coversyl Plus® 10 mg/2.5 mg, Servier, Italy). The phase I periodontal therapy including oral hygiene instruction, scaling and root planning (SRP) was performed. One month after the first intervention, clinical parameters significantly improved with a considerable reduction in gingival overgrowth and patient followed for 1 year.

Discussion: In this case report, we presented a successful treatment of drug induced gingival overgrowth. Nifedipine medication and poor plaque control were identified as two possible causative agents. Therefore, there is a need for cardiologist and dentist cooperation in the treatment plan of such patients.

Conclusions/Clinical significance: We suggest that discontinuation of nifedipine and excellent plaque control are essential for treatment of gingival overgrowth and reduce the risk of recurrence.

Poster Session 40 | 30.08.2017, 14:30–15:30 | Poster Display 1

Theme: Periodontics

P198

Cone Beam Computed Tomography Assessment of Maxillary Sinus Mucosa in Periodontitis

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Aim or purpose: The aim of the study was to evaluate maxillary sinus mucosa in patients with periodontal disease with diverse type of bone loss using cone beam computed tomography (CBCT).

Materials and methods: Forty patients with chronic generalized severe periodontitis were included in the study. In total, 146 intrabony and suprabony defects, 58 furcation lesions and maxillary sinus mucosa were analyzed on CBCT scans by two previously trained examiners. CBCT images were analyzed on two separate occasions, within a 7-day interval. Bone destruction and maxillary sinus mucosa status were assessed on CBCT images.

Results: Among the 40 periodontal patients, 32 (80%) displayed sinus mucosal thickening. Sinus mucosa thickening was positively correlated with the extent of bone loss. Maxillary sinus mucosa was statistically significant thicker in patients with vertical bone loss when compared to horizontal bone loss. The extent of furcation defects was related to sinus mucosa thickening.

Conclusions: CBCT imaging provides detailed information about the morphological characteristics of maxillary sinus mucosa and characteristics of type and extent of bone loss. The presence of intrabony defects were more likely correlated to maxillary sinus mucosa thickening in periodontally compromised patients.

P199

Biochemical Correlations between Blood Glucose Values and Periodontitis

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Aim or purpose: The main objective of this study was to evaluate in a safe, fast and noninvasive manner the patient’s diabetic status by assessing sulcular blood glucose level during periodontal examination.

Materials and methods: Laboratory investigations examining the blood glucose level within the capillaries (CBGL) and gingival sulcus (SBGL) were performed upon 30 non-diabetic patients and 30 diabetics, both with moderate to severe periodontitis, randomly selected from the patients undergoing routine periodontal clinical examinations. Statistical analysis was performed using Pearson correlation coefficient and t- student test.

Results: Our study allowed comparative evaluation of the blood glucose level in the capillaries and sulcus, in order to find out whether SBGL determination in the dental office, would be an accurate and fast meaning of glycemic status preliminary investigation. The results in mg/dl recorded mean capillary (MCBG) and sulcus (MSBG) blood glucose values from all samples of 190.57 and 168.6 respectively. MCBG level was 269.73 in the diabetic group and 111.4 in the systemically healthy group, while 240.27 MSBG in diabetics and 97.03 in non-diabetics were registered. Moreover, there was a high correlation between MCBG and MSBG level in patients with various degrees of periodontal impairment.

Conclusions: Considering the good correlation between CBGL and SBGL and the evidences that almost half of the diabetics remain undiagnosed, sulcular blood test may become an appropriate, fast, cheap and reliable method for potential diabetic patients’ identification during routine dental visits.

P200

Study Regarding the LED Photo-Activated Disinfection in Patients with Periodontitis

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Aim or purpose: Adjunctive therapy methods can be added to the standard measures of etiologic therapy, including the antibiotic therapy or the host defense modulators. A method which serves this purpose is the photo-activated disinfection (PAD), addressed to the bacterial biofilm. Purpose of the study was to assess the effects of LED PAD therapy on periodontal clinical parameters in patients with chronic periodontitis.

Materials and methods: We recruited 66 patients, divided in two groups: the study group and the control group. The study group received etiologic therapy (supra- and sub-gingival scaling, root planing, professional brushing), followed by LED PAD therapy. The control group received only etiological standard therapy (supra- and sub-gingival scaling, root planing, professional brushing), without photo-activated disinfection. All subjects were

submitted to clinical periodontal evaluation (probing depth, clinical attachment loss and bleeding on probing) at baseline and one month after treatment.

Results: The clinical periodontal parameters showed significant improvement (lower probing depth, clinical attachment loss and bleeding on probing) from baseline for both groups, but the LED group presented significant better results ($p < 0.05$).

Conclusions: Our results support the benefic effects of LED photo-activated disinfection with tolonium chloride in the adjunctive periodontal treatment.

P201

Study Regarding the Oxidative Stress and Periodontal Changes in Periodontitis Patients

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Aim or purpose: Our study aimed to assess the possible differences in oxidative stress level in chronic and aggressive periodontitis patients, compared to periodontally healthy subjects.

Materials and methods: The study was conducted on 42 patients. They were divided in 3 study groups: chronic periodontitis subjects, aggressive periodontitis patients and periodontally healthy subjects. We collected gingival crevicular fluid samples and we evaluated malondialdehyde (MDA) as an enzymatic stress marker, for all the three groups of subjects using the gingival crevicular fluid (GCF) as biologic material.

Results: Despite the fact that we could not identify any statistical difference in the level of MDA between the two periodontitis groups, the separate analysis of malondialdehyde values in the CP and AP groups pointed out statistical significance of the lipoperoxidation level, consistent with the degree of periodontal alteration, when comparing with control (MDA mean value of 0.61 microM), in each of the CP (mean MDA=1.14 microM) and AP (mean MDA=1.13 microM) groups ($p < 0.0001$).

Conclusions: The present study revealed significant statistic differences between the healthy and periodontitis patients regarding the level of malondialdehyde, suggesting an increased oxidative stress risk in periodontally impaired patients.

P202

Treatment of Peri-Implantitis with Different Membranes: A Case Report

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Introduction: Peri-implantitis is an inflammatory disease causing advanced destruction of implant supporting tissues, even implant loss. Treatment protocol of the disease is still unclear and challenging for clinicians.

Case description: A-56-year-old female patient was referred to the Department of Periodontology, Gazi University, Turkey, for pain, bleeding and purulent discharge on her mandibular implants. After

the clinical and radiographic examinations, peri-implantitis diagnosed with advanced loss of supporting tissues, surgical approach planned for the implants on both sides of mandible. Surgical treatment for each side started with flap elevation, removal of the granulation tissues and decontamination of implant surface. On right side of mandible, first molar region implant was explanted which had bone loss more than %50 of implant length. The other two implants had intrabony defects that filled with xenogenic bone graft material. Double layers of concentrated growth factor (CGF) were used as membrane.

Left canine region implant was explanted due to mobility and advanced buccal bone defect. Other implants had intrabony defects that filled with xenogenic bone graft material. Absorbable collagen membrane used as barrier. Flaps were sutured primarily. Clinical controls performed at 1st, 3rd, 6th months.

Discussion: Complete coverage of the graft material with membrane barriers is important for treatment success. But there is no evidence for the best coverage material.

Conclusions/Clinical significance: Treatment results showed both methods are useful for peri-implantitis regeneration. After 6 months, there is no clinical difference between the treatment procedures. Therefore, CGF can be used alternative to collagen membrane.

Poster Session 41 | 30.08.2017, 14:30–15:30 | Poster Display 2

Theme: Oral Health and Systemic Health

P204

Clinical Study of Triclosan-Potassium Nitrate-Sodium Fluoride Formulations for Teeth Sensitivity

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Aim or purpose: Teeth sensitivity occurs when the enamel that protects teeth gets thinner, or when gum recession occurs, exposing the underlying surface of the teeth and the dentin, thus, reducing the enamel and gum protection to the tooth and root.

This study evaluated the efficacy of three pharmaceutical forms (TP, WM, GEL) containing triclosan-potassium nitrate-sodium fluoride-bioadhesive excipient in improving tooth sensitivity.

Materials and methods: 98 subjects with tooth sensitivity received randomly TP (n = 33), MW (n = 33) or GEL (n = 32) b.i.d during 28 days. Dentist evaluated oral tolerance at baseline, 7, 14 and 28 days (T0, T7, T14 and T28). Tooth sensitivity to cold and hot water was evaluated using VAS at T0/T7/T14/T28. Cosmetic acceptability was assessed by questionnaire at T28.

Results: An improvement of the clinical signs (inflammation/oedema/bleeding) in all volunteers was observed at T28/T0 (TP 34%/16%/47%; MW 27%/12%/15%; GEL: 38%/6%/41%). From T7/T0 to T28/T0 ($p < 0.001$) the tooth sensitivity decreased constantly for cold and hot water. During and immediately after the first use freshness feeling was reported by the volunteers (TP:78%, MW:82%, GEL:81%) and at T28 healthier mouth was perceived (TP:91%, MW:88%, GEL:88%). All products were well tolerated.

Conclusions: Improvement of the tooth sensitivity was observed in all volunteers after use of triclosan-potassium nitrate-sodium

fluoride-bioadhesive excipient oral care specifically designed formulations, TP, WM, GEL, for teeth sensitivity. Dentist confirmed the good tolerance of the 3 products.

P205

Oral Health Practices in Pregnant Women – General Practitioners' Recommendations

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Aim: To evaluate recommendations that are given by General Practitioners regarding tooth brushing periodicity, toothpaste fluoride content and characterize the oral pain clinical assessment done in appointments of pregnant women.

Materials and methods: Data was collected through a structured, anonymous, online questionnaire designed by authors sent to General Practitioners that were approached to voluntarily participate and fill up the questionnaire between December 2016 and March 2017.

The questionnaire consisted of questions seeking knowledge of general practitioners regarding awareness of pregnant women's oral condition. The results as obtained were subjected to statistical analysis using SPSS version 16.0 for windows (Chicago Inc., USA). The statistical significance of difference was tested using Chi-square test and Continuity Correction test. The level of significance was set at $p < 0.05$.

Results: 75% of General Practitioners recommended that pregnant women should brush their teeth, 53% of them advised 3 times a day against 47% that said 2 times a day and only 58% recommended the use of fluoride toothpastes.

Only 39% of General Practitioners admitted having dental complaints in pregnant patients and when questioned if they did dental examination, 80% of them reported that only if the pregnant have specific complaints.

Conclusions: General Practitioners need to improve their knowledge, attitudes and practices about oral health care during pregnancy because only 30% of them know the amount of fluoride that a toothpaste should contain and there are about 60% of pregnant women which during the whole pregnancy never had their oral cavity examined.

P207

Microbiome of Children with Temporary and Early Mixed Dentition

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Aim: The oral microbiome plays a vital role in oral health and the dental exfoliation can influence it. The aim of this study was to

evaluate and compare the oral biofilm microbiome of children with temporary dentition (CTD) and early mixed dentition (CEMD).

Materials and methods: A comparative descriptive study was carried out with 30 systemically healthy children between 5 to 7 years old from public schools in Cartagena-Colombia. The study groups had a 1:1 ratio and were matched by age and gender. All participants were caries-free applying the criteria of the *International Caries Detection and Assessment System* (ICDAS II) and no caries experience according to the Decayed, Missing and Filled Teeth (DMFT) index. Supragingival biofilm samples were collected. Bacterial DNA was extracted and used for analysis by HOMINGS (*Human Oral Microbe Identification using Next Generation Sequencing*) using Illumina MiSeq platform (v3-v4 primers).

Results: 360 species-specific and 65 genus-specific probes were identified. The bacterial genus most predominant in CTD were *Streptococcus*, *Actinomyces*, *Veillonella* and *Fusobacterium* (29.2% of all bacterial DNA present), while in CEMD were *Streptococcus*, *Leptotrichia*, TM7 and *Porphyromonas* (24.5% of all bacterial DNA present). The bacterial species with higher relative abundance in the oral biofilm microbiome from CTD were *Streptococcus sanguinis*, *Rothia aeria*, *Gemella haemolysans*, while in CEMD were *S. sanguinis*, *Leptotrichia* sp. HOT-417, *Leptotrichia* sp. HOT-498. The Shannon diversity index was 2.77 (SD=0.26) for CTD and 3.01 (SD=0.39) for CEMD ($p = 0.06$).

Conclusions: These findings show changes in the microbiological diversity of oral biofilm during dental exfoliation.

Poster Session 42 | 30.08.2017, 14:30–15:30 | Poster Display 3

Theme: General Dentistry

P208

The Evaluation of Relationship between Fluoride Water Concentration and DMF6 of 9–12-Year-Old Children

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Aim: Water fluoride level is unknown in many regions of Iran. One of the goals of the World Health Organization (WHO) and World Dental Federation is declining the Decay, Missing or Filled teeth (DMFT) index down to the level of 1. The aim of this study was determining of relationship between fluoride water concentration and DMF6 of 9–12-year-old children in Gorgan in 2016.

Materials and methods: This was a descriptive, ecologic study. It has been performed on 9–12 year-old children who consumed tap water and 12 schools (54 classes) were selected from regions that undercovered with Alangdare and Ziarat refinery by clustered method. 250 students (120 girls and 130 boys) were selected randomly to calculate DMF6 index.

Results: The average amount of all students DMF6 index was 2.14 and the average for the girls and boys was 2.13 and 2.16. There was no statistically significant association between the amount of DMF6 and the gender ($p > 0.05$). The most amount of decayed teeth (D) was related to 12-year-old boys with the average of 50.7%. We had 2 regions with 2 amounts of water fluoride concentration and amount of DMF6 (Alangdare, 0.1 ppm, 2.14)

(Ziarat, 0.17 ppm, 2.15). These averages showed there was no statistically significant differences between DMF6 index and water fluoride concentration ($p > 0.05$). Decayed teeth showed statistically significant differences between lower and upper teeth in each water fluoride concentration. There were more decayed teeth in lower and left side of the jaw.

Conclusion: Average DMF6 index in Gorgan was 2.14 which is higher than normal range in other places in Iran and world standard range (DMFT < 1). So, there was no statistically significant association between DMF6 index and water fluoride concentration.

P209

Anesthetic Management of a Patient with Post-Hyperventilation Apnea During Dental Treatment

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Introduction: We report a case of post-hyperventilation apnea during multiple dental treatment in a psychosomatic patient.

Case description: The patient was a 49-year-old woman. She was diagnosed with depression and panic disorder. She was performed three dental treatments. In the first and second treatment, intravenous sedation was initiated with midazolam. During dental treatment, the patient experienced a sudden attack of hyperventilation. After that, spontaneous breathing stopped shortly after and the patient was placed on mechanical ventilation. After 10–15 min, spontaneous breathing restarted followed by restoration of consciousness. The third treatment was initiated after confirming adequate sedation with a 1.6 μ /ml intravenous injection of propofol on a bispectral index monitor. The depth of sedation was maintained at a Ramsey score of 4 intraoperatively and treatment was completed without incident.

Discussion: Hyperventilation syndrome is one of psychosomatic disorders in which psychological factors are closely involved in the onset and progression. Hyperventilation syndrome is accompanied by post-hyperventilation apnea on rare occasions. In the present case, propofol was used during the third treatment to maintain a sufficient depth of sedation, which reduced psychological stress and prevented the occurrence of a hyperventilation attack until completion of treatment.

Conclusions/Clinical: Propofol is considered an effective anesthetic management for patients, such as the present patient, with a history of severe hyperventilation or post-hyperventilation apnea. This is because it facilitates regulation of sedation and is quickly metabolized.

P210

Correlation Between Articulating Paper Markings and the Applied Forces

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Aim or purpose: The aim of the present study was to investigate the correlation between the intensity of the articulating paper markings and the chewing forces applied.

Materials and methods: A chewing simulator (Sofia) was used for the reproducible application of the desired forces. The reliability and the low coefficient of variations of the device were proven in a former study. Thirty composite samples were produced out of a common clinically used light curing composite material following a protocol according to the material's clinical application guidelines. Three different loads (10N, 20N, 40N) were applied on each sample through an articulating paper. The resultant markings were subjected to image densitometric analysis to determine the correlation between marking intensity and force applied.

Results: Under the condition of the study only one of the papers presented good statistically significant correlation between marking intensity and the force. For the other two articulating papers, no increase of the marking intensity was observed together with the application of bigger forces.

Conclusions: Based on the results of the study the reliability of articulating paper use for an occlusal analysis is to be questioned. A confirmation with an alternative occlusal analysis method has to be searched before occlusal correction are undertaken.

P211

Study of Dental Materials: Simulation of Drowning in Marine Environment

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Aim or purpose: To evaluate the effect of marine drowning simulation on color stability, surface roughness and microhardness of dental restorative materials.

Materials and methods: Thirty bovine incisors consisting of healthy samples were used. After restoration, the teeth were randomly divided into three groups ($n = 10$), according to the type of dental restorative material. Cavity preparations will be performed on the vestibular face of each dental element, measuring 6.0 mm in height \times 6.00 mm in width and 2.0 mm in depth. The restorative technique was performed as instructed by the manufacturer of dental materials. Samples were analyzed by means of standardized photographs performed after the restorations were made and at each experimental time of analysis (1 month) after submission to the conditions imposed by the study, always by the same operator. Statistical analysis of 3-way ANOVA, repeated measurements and Bonferroni, evaluating time and material were performed.

Results: Analyzes were evaluated and all presented a statistically significant variation in comparison with the initial moment of evaluation.

Conclusions: Color, roughness and microhardness analyzes have variation in comparison with the initial moment of evaluation and the effect of marine drowning simulation.

Research that deals with this topic is scarce and should be stimulated by the benefit they bring to the scientific community and the recognition of the Specialty of Legal Dentistry within the activities of an interdisciplinary team.

P212

InsightDenti®: A Social Media Platform for Education, Calibration, and Consultation

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Introduction: We have developed a novel case sharing and discussion application called InsightDenti®, which provides for the first time a security compliant software to allows the dental community to share experiences and calibrate dentists, or other dental professionals, toward the standard of care adopted by a community. InsightDenti®, in addition to its system-wide features enforcing today's security standards (e.g. ISO 27001, ISO 27017, ISO 27018, FedRamp ATO, and PCI DSS v3.1), represents a state-of-the-art archive of shared cases, allowing users to read and analyze information on ongoing as well as historical basis.

Case description: The aim of this poster presentation is to share with the dental community the different current and potential uses of InsightDenti® and InsightMedi™ (the parent platform in medicine) in education, professional development, calibration, and creation of a learning organization where in-depth analysis of patient cases are analyzed and shared among dental professionals. Another major advantage of Insightdenti® is in teaching preclinical and clinical courses where students and faculty can review and evaluate each other work using the evaluation matrix used by the school.

Discussion: Insightdenti® has its own trending algorithm, which provides easy access to top cases that are being heavily discussed in the platform, with real-time updates. Insightdenti® allows faculty, students, or dentists to access in real-time case-based discussions.

Conclusions/Clinical significance: A secure and versatile online and smartphone Application has been used to create a real-time learning organization where students, faculty and dentists can share images and text and learn from each other.

Poster Session 43 | 30.08.2017, 14:30–15:30 | Poster Display 4

Theme: Caries prevention

P213

The Cytotoxicity of Various Kids' Toothpastes on L929 Cells

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Aim: The aim of this study was to assess and compare the cytotoxicity levels of different kid's toothpastes on mouse fibroblast cell line.

Materials and methods: Kids' toothpastes containing different ingredients (natural substances, plant extracts and other) were evaluated for the cytotoxic effects on mouse fibroblast cell line (L929, Sigma). Biobaby (BiotaLab/Istanbul), R.O.C.S toothpaste for Kids and Babies (WDS Lab), Bioplante (Istanbul/Turkey), Splat

Junior Bio-Active toothpaste (Splat Cosmetica/Russia) were used. The Cell Proliferation Kit II (Roche XTT) was used for cytotoxicity assay. Cells were seeded into 96-well plates (10⁴ cells/well) and were subjected to different concentrations (0.5, 0.2, 0.1 and 0.01 g/ml) of toothpastes. After 5 min incubation period, 50 µl XTT were added to each well. Then, cells were incubated at 37°C for 4 h. The absorbance was read in microplate reader at 450 nm subtracting the background measurement of 620 nm. Mean and SD were calculated. Statistical analyses were performed by using ANOVA, followed by Tukey's tests. The significance level used was $p < 0.05$.

Results: Significant differences were found between toothpastes regarding with the cell viability at the concentrations of 0.1 and 0.01 g/ml ($p < 0.05$). ROCS produced the lowest cell viability compared with other groups at the 0.2, 0.1 and 0.01 g/ml concentrations ($p < 0.05$). No significant differences were found among the tested toothpastes regarding the cell viability at the concentration of 0.2 g/ml ($p > 0.05$).

Conclusions: To maintain oral health safely in child, toothpastes ingredients should be well known since they are directly in contact with oral tissues during and after brushing and may be associated with changes cell toxicity.

P214

Mother's Education and Dental Caries Status in Scholars

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Aim or purpose: To examine associations between demographic factors, child's dental care behaviours and child's dental health.

Materials and methods: The present cross-sectional study included 406 9–11 years old children with parental consents recruited from four Mexican public schools. The sample size was calculated based on the difference of proportions formula. Children with infectious diseases were excluded. The questionnaire included inquiries about mother's educational level, family's income and about child's dental care. Two standardized examiners recorded dmft/DMFT following the WHO recommendations.

Results: 406 children were examined, of which 55.9% were girls. Mothers mainly had secondary school or its equivalent educational level (45.3%). The bivariate analysis found significant associations ($p < 0.05$) between the DMFT and maternal education, child's gender, last dental visit and receiving a dental education. The multivariate analysis found significant relationships between child's gender, maternal education and DMFT.

Conclusions: There was an association between mother's education and child's dental status. In order to improve children's dental health behaviors, educational interventions should target less educated mothers.

P215

Prevention of Demineralization Around Orthodontic Brackets

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Aim: The purpose of the study was to evaluate the effects of the fluoride-releasing adhesive on inhibition of enamel demineralization around orthodontic brackets.

Materials and methods: Twenty patients were randomly divided into 2 groups of 10 each according to the type of adhesive used: group I – brackets were bonded with the fluoride releasing Fuji Ortho LC glass ionomer, group II – brackets were bonded with the conventional non-fluoride releasing Dentaurem composite resting to upper first premolars. After 60 days, the brackets were debonded and teeth were carefully extracted. They were cleaned of remnants of periodontal ligaments, disinfected and stored in distilled water before use.

Results: SEM observation of the enamel around orthodontic brackets revealed almost normal topographic features of enamel in group I. In some cases, there were globules of calcium fluoride-like material irregularly distributed over the enamel surface. SEM examination of the enamel in the group II revealed roughened enamel surface with multiple areas of enamel erosion. Various patterns of enamel decalcification were observed around brackets in the form of open focal holes and demineralization of enamel rod core as well as cracks and accentuated perikymata which resulted in gap formation on the enamel surface.

Conclusions: The promising results of this study warrant further clinical investigation of glass ionomer adhesives as orthodontic bonding agents to minimize enamel demineralization. Current results speak in favor of the fluoride releasing Fuji Ortho LC for adhering orthodontic brackets, especially in patients exhibiting poor oral hygiene or dietary risks.

Poster Session 44 | 30.08.2017, 15:45–16:45 | Poster Display 1

Themes: Public Health and Epidemiology

P218

Acceptance of a Mouthwash in the Daily Dental Hygiene Routine

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Aim or purpose: This study aims to evaluate the reaction of patients, and the interest in maintaining its use, to the introduction of a mouthwash in their daily oral hygiene routine. Also, the perceived benefits of the mouthwash in their oral health were evaluated.

Materials and methods: A questionnaire with three dimensions (sample characterization, appetite for the use of new products and reaction to the new dental hygiene product) was applied.

Results: Sixty individuals (50% male, 50% female, and 17 to 69 years old) were randomly assigned to two groups of 30. An Essential-Oils or a Delmopinol mouthwash was introduced in their daily oral hygiene routine. The first reported reaction is of curiosity (76.7%) but there are also negative reactions, such as indifference, distrust and rejection with 10%, 8.3% and 3.3% respectively. Immediate purchase of the mouthwash was reported by 1.7% of the individuals. The intention to continue to use the mouthwash was reported by 48.3% of individuals, 25% revealed indifference in intention and 26.7% rejected the intention. The essential-oils mouthwash had a greater acceptance of the flavour ($p = 0.028$), and perceived improved breath ($p = 0.008$) when compared with delmopinol, but the burning sensation in the mouth made it difficult to use. Participants who used the delmopinol mouthwash mentioned the sensation of mucosal anaesthesia.

Conclusions: The introduction of a new product in a routine can be difficult and may not have individual's compliance in the maintenance of its use. The perceived advantages of the product may help in the assimilation of this new habit.

P219

Habits of Food Label's Reading Concerning Oral Health Related Nutrients

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Aim or purpose: This study aims to evaluate the habits of label reading looking for sugar and vitamins when buying the food stuff and related health claims.

Materials and methods: A questionnaire was applied to a stratified sample of 384 individuals (over 15 years old) living in the Lisbon area in Portugal distributed accordingly to 2001 Census. Data analysis was performed in a statistical package software.

Results: Study results show that there is a similarity between men and women in the habit of reading labels ($p = 0.857$). The relationship between food and health is recognized by the participants since 71% said they were buying food with health claims. Female participants indicate the reading, more frequently than male respondents, of the amount of sugar (52% versus 40%). Conversely, women are less likely than men to value vitamin content (23% versus 32%). The age group that least frequently searches for sugar on labels is the 65 years or older group (24% of respondents in this age group, versus percentages over 45% for the remaining age groups).

Conclusions: Getting to know the label reading habits of consumers is an important issue for oral health professionals. Sugar content is less of a concern for men than for women and that should be explored when doing oral health education. Special attention to the sugar content in food should be placed when education for oral health for elderly. When the consumer values information that is related to oral health, it should be used in favour of the oral health promotion.

P220

Association Between Caries Activity and Bacteriological Tests in 12-Year-Old School-Children

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Aim or purpose: Several bacteriological tests have been developed to assess caries activity, using biofilm and/or saliva. The aim was analyzed the association between caries activity and bacteriological tests (Snyder, Cariostat, *S. mutans* and lactobacilli counts) in a group of 12-year-old school-children.

Materials and methods: Cross-sectional study of 90 12-year-old schoolchildren, (51% female). Informed consent was obtained from the children and their parents. Two calibrated examiners (Kappa 0.92, $p < 0.001$) performed the caries evaluation according to WHO criteria. Culture media were inoculated with stimulated saliva (SS): plate count on MSB and Rogosa were expressed as the Log₁₀ CFU. The Snyder's test was done with SS, and the Cariostat test was performed with biofilm. After incubation for 4 days at 37°C, Snyder test results were compared to their control tube, Cariostat test results were evaluated against the manufacturer's charts, and CFUs were counted on MSB and Rogosa plates.

Results: The children presented an average dmfs of 1.30 ± 3.55 and DMFS 1.56 ± 2.63 . Among the children, *S. mutans* CFUs on MSB and Rogosa were high. Sixty percent of the children showed marked cariogenic activity with the Snyder test, and 54.4% moderate cariogenic activity with the Cariostat. The Snyder test results were associated with lactobacilli salivary counts, and *S. mutans* salivary counts were associated Cariostat test results ($p < 0.05$).

Conclusions: Among the cariogenic activity tests, Cariostat was associated with *S. mutans* counts. Whereas Snyder test was associated with lactobacilli counts. Caries activity (dmfs+DMFS) was associated with this cariogenic activity test.

P221

Oral Health-Related Quality of Life in Working Population (Spain)

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Aim or purpose: To analyze the oral health-related quality of life in the Spanish working population of 35–44 years of age of Valencia and Murcia regions.

Materials and methods: Study design: cross sectional study of 439 workers 35–44 years of age, who underwent a routine work-related medical check-up. Data were collected at one sampling point in Valencia region, and one sampling point in Murcia Region, from June 2009 to April 2010. Stratified random sampling. Participants fulfilled a questionnaire comprising demographic data and oral health perception in the last twelve months.

This study was part of the WORALTH (Workers' Oral Health) study. Briefly, WORALTH was an oral epidemiological survey conducted on a representative sample of the Spanish employed population, in four major geographical areas with five age strata, from April 2008 to June 2011. A stratified sampling method was followed. Strata sample size was defined in proportion with the Spanish labour Force Survey, 2nd quarter (Instituto Nacional de Estadística, 2008) by age, gender and occupation, at each geographical area.

Results: Perception of oral health level: (0.4%) excellent, (4.6%) very good, (47.4%) good, (34.3%) regular, (13.3%) poor.

Oral pain: (32.8%) never, (32.6%) rarely, (30.1%) sometimes, (4.3%) frequently, (0.2%) very frequently.

Eating problems: (45.3%) never, (31.2%) rarely, (20.1%) sometimes, (3.2%) frequently, (0.2%) very frequently.

Conclusions:

- Around half of working population of 35–44 years perceives their oral health as regular or poor.
- About 3 in 10 workers have toothaches relatively frequently.
- Low incidence of eating problems.

P222

Evaluation of a Child Oral Health Education for Pediatric Residents

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Aim or purpose: The aim of this research was to evaluate the current knowledge, behavior and attitude of the pediatric residents on child oral health and to examine the impact of education on knowledge level in short and long term.

Materials and methods: The questionnaire distributed to pediatric residents gathered data on demographic characteristics and knowledge of tooth development, dental caries and preventive measures, traumatic dental injuries as well as the current behavior and attitude regarding child oral health. After pre-test, the pediatric residents received 1-h training on child oral health. Post-test was administered immediately after training using same questionnaire. Follow-up questionnaires were applied 3 months later for long term evaluation. All data were determined statistically by using SPSS 22.0 software program with Kolmogorov-Smirnov Test, Kruskal Wallis Test and chi square test ($p < 0.05$).

Results: 55 pediatric residents participated in the study. After training, knowledge about tooth development, dental caries and preventive measures, child oral hygiene and dietary practices have increased statistically. The long-term knowledge about impact of mother's oral health during pregnancy on child, the factors affecting the time of tooth eruption, the complication of dental caries and traumatic dental injuries have decreased. There was no correlation between demographic characteristics and knowledge scores.

Conclusions: Pediatric residents' inadequate knowledge of child oral health and the overall positive attitudes suggest that further education should be planned in this regard.

Theme: Pedodontics

P223

Pulp Regeneration with New Medicament: A Pilot StudyYong Kwon Chae¹, Ok Hyung Nam², Chan Yang Moon¹,
Kyounga Cheon³, Ho-Wook Jun⁴, Sung Chul Choi²¹Department of Pediatric Dentistry, Graduate School, Kyung Hee University, Seoul, Korea, ²Department of Pediatric Dentistry, School of Dentistry, Kyung Hee University, Seoul, Korea, ³Department of Pediatric Dentistry, University of Alabama at Birmingham, Birmingham, USA, ⁴Department of Biomedical Engineering, University of Alabama at Birmingham, Birmingham, USA**Aim or purpose:** This study was designed to determine the effect of Nanomatrix gel (PA-YK-NO, Department of Biomedical Engineering, University of Alabama at Birmingham, Birmingham, AL, USA) on pulp regeneration of immature teeth with periapical lesion in a beagle model.**Materials and methods:** To evaluate the effect of new medicament on pulp regeneration, periapical lesions were induced by the application of *P. gingivalis* into the canal of beagle's teeth. Split mouth model was used and each quadrant was treated with different medicaments and method. The teeth were divided into 4 groups: 1 Ca(OH)₂ apexification, 2 Pulp regeneration with double mix (a mixture of metronidazole and ciprofloxacin), (3) Pulp regeneration with double mix and Nanomatrix gel (2 visits), and 4 Pulp regeneration with double mix and Nanomatrix gel (1 visit). All the teeth except the teeth in group 4 were restored after 3 weeks from the first experiment. Radiographic evaluation was conducted after 2, 4 and 8 weeks and the subject was sacrificed for further evaluation including micro-CT and histologic analysis.**Results:** In group 1 and 2, teeth presented periapical lesion and root resorption. Contrastingly in group 3 and 4, periapical lesion was not found and revascularization of pulp was observed from the histologic analysis.**Conclusions:** Within the limits of this study, necrotic immature teeth treated with Nanomatrix gel presented more favorable outcomes in both radiographic and histologic analysis, compared with conventional medicaments. However, owing to the limited number of sample used, further study with larger samples is needed.

P224

Double Impacted Inverted Mesiodentes: A Rare Case PresentationHayrunnisa Simsek¹, Cansu Ozsin Ozler¹, Hakan Tuz², Zafer C Cehreli¹¹Hacettepe University Faculty of Dentistry, Department of Pediatric Dentistry, Ankara, Turkey, ²Hacettepe University, Faculty of Dentistry, Department of Oral and Maxillofacial Surgery, Ankara, Turkey**Introduction:** Impacted inverted mesiodens is an extremely rare manifestation of Mesiodentes. This case report presents two impacted inverted mesiodentes, and their one-year follow-up following surgical removal.**Case description:** An 8-year-old healthy boy was referred to the Pediatric Dentistry Department with a chief complaint of unerupted maxillary central incisor. Clinical and radiographic examinations revealed two impacted inverted mesiodentes with accompanying unerupted left permanent central incisor. Following cone beam computed tomography evaluation and consultation with the oral surgery department, the inverted mesiodentes were surgically extracted under general anesthesia. The left central incisor started erupting 6 months following surgery, reaching full eruption after one year.**Discussion:** The removal of impacted double inverted mesiodentes resulted in the resolution of the eruption problem with minimal removal of surrounding tissues and no damage to neighboring teeth, owing to the controlled surgical access provided by the cone beam data.**Conclusions/Clinical significance:** Double mesiodentes is a rare condition which interferes with proper eruption of permanent teeth. As with the present case, cone beam tomography is a vital tool for both diagnosis and surgical planning.

P225

Retreatment of Failed Regenerative Endodontic Treatment of Cyst-Like Periapical Lesion

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Introduction: The treatment of large cyst-like periapical lesions in an immature tooth presents a unique challenge to the pediatric dentists. The purpose of this case report is to report a management of treatment failure of a cyst-like periapical lesion that used regenerative endodontic treatment.**Case description:** A 15-year-old girl admitted to the clinic, after 8 years of trauma. On the basis of clinical and radiographic findings, a diagnosis of necrotic pulp with a large periapical radiolucent lesion was confirmed. The regenerative endodontic treatment (RET) protocol was decided by using platelet rich fibrin (PRF) followed by calcium-hydroxide dressing. After 4 months, patient returned with a pain on anterior region and in this time upper lateral tooth was found necrosis. However, the central tooth revealed positive response to vitality testing. RET was planned for lateral tooth with the aid of platelet rich plasma (PRP). After 4 weeks tooth was treated via the revascularization protocol with PRP. After 8 months, the patient has acute pain and percussion on central and lateral teeth. The open apex central was managed by placing an apical plug with mineral trioxide aggregate and closed apex lateral was treated by conventional root canal treatment, and the apical lesion was treated surgically.**Results:** After 18 months, both teeth displayed no clinical or radiological symptoms of pathosis.**Discussion:** The indications and advantages of treatment options of cyst-like periapical lesion is going to discuss.**Conclusions/Clinical significance:** Results from this case showed that RET may not be effective treatment modality for cyst-like periapical lesions.

P226

Factors Influencing Time Elapsed to Dental Visit after Traumatic Injury

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Aim or purpose: The purpose of this study was to analyze the arrival times after traumatic dental injury (TDI) in children according to location and type of injury.

Materials and methods: In this study, we analyzed data of TDIs from 1803 children aged 1 months to 19 years and 9 months, out of a total of 3139 patients for TDI between January 2010 and December 2016. We analyzed factors influencing time elapsed to dental visit after TDI such as age, gender, type of injuries, and location.

Results: Of all 1803 patients, the average age of the patients was 4.48 ± 3.25 years with a boy/girl ratio was 1.99:1. Most patients experienced TDI at home (63.6%) and arrived in dentistry within 24 h since TDIs. Among children injured at preschool, 26.1% arrived in dentistry within 1 h after injury and 17.2% visited dentistry within 1 h among children at school. However, only 9.4% of children injured at home arrived in dentistry within 1 h. According to type of injury, the percentage of visiting within 1 h was higher in patients with soft tissue injuries than in patients with hard tissue injuries.

Conclusions: Within the limit of this study, the result shows that although most patients experienced TDI at home, the percentage of visiting within 1 h is found to be considerably lower than that of preschool or school. So parents as well as teachers who care for children should be educated about the importance of the golden time after trauma.

P227

Clinical Evaluation of Fissure Sealants on Permanent Molars: Pilot Study

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Aim or purpose: The aim of this pilot study was to evaluate and compare follow up results of the retention and surface characteristics of four pit-and-fissure sealants [glass carbomer fissure sealant (GCP Dental, The Netherlands), resin sealant (ITENA, France), glass ionomer sealant (GC Fuji Triage White, GC America), and giomer based fissure sealant (BS; Shofu Inc., Kyoto, Japan)] for 3 months with two different methods (invasive and noninvasive) in permanent molar teeth.

Materials and methods: Sixty-three children, who referred to Akdeniz University, Faculty of Dentistry, Department of Pediatric Dentistry, in the age group 8 to 14 years (mean 10.84 ± 1.91) were selected. The patients were randomly divided into 8 groups and each group consists of 30 samples. Four different fissure sealant materials were applied to 240 first permanent molar teeth.

The clinical success of the materials was examined after 3 months clinical follow up using modified USPHS criteria by same examiner.

Results: The retention rates at 3 months were 83.3% and 47.5% for invasive and non-invasive technique respectively. Glass carbomer fissure sealant was found more successful and there were no statistically significant differences in retention rates among non-invasive or invasive technique ($p > 0.05$). But there were statistically significant differences in retention rates among the resin fissure sealant was applied with noninvasive and invasive technique ($p < 0.05$).

Conclusions: It was found that Glass ionomer containing materials provide more satisfactory results than the resin materials.

Poster Session 46 | 30.08.2017, 15:45–16:45 | Poster Display 3

Theme: Materials

P228

Doxycycline-Modified Polymeric Nanoparticles Exert Antibacterial Activity Against Cariogenic BacteriaManuel Toledano-Osorio¹, Jegdish P Babu², Raquel Osorio¹, Franklin García-Godoy², Manuel Toledano¹¹University of Granada, Granada, Spain, ²University of Tennessee Health Science Center, Memphis, USA

Aim or purpose: To evaluate the antibacterial activity of bioactive polymeric nanoparticles (NPs) against *Streptococcus sobrinus*, *Streptococcus gordonii* and *Lactobacillus lactis*.

Materials and methods: NPs composed by 2-hydroxyethyl methacrylate are fabricated through polymerization precipitation. NPs were doped with doxycycline hyclate. *S. sobrinus* 33478, *S. gordonii* 10558 and *L. lactis* 12315 were grown, harvested and re-suspended in growth media. The number of bacteria per ml was determined by measuring the optical density at 600 nm and adjusting it to a standard bacterial suspension of 1×10^7 CFU/ml. NPs were suspended in PBS at concentrations (10 mg/ml, 1 mg/ml and 0.1 mg/ml) and placed into Eppendorf tubes with bacterial broths (1×10^7 CFU/ml) and incubated for 3, 12, and 24 h. The bacterial cell viability was assessed by determining their ability to cleave the tetrazolium salt (MTT) to a formazan dye. Purple formazan color produced from the MTT by viable cells was read at 560 nm using an ELISA reader. Each experiment was performed three times. Average and standard deviation were calculated and compared to non-doped nanoparticles and to values obtained for the PBS control. ANOVA and Scheffe's F were performed ($p < 0.05$).

Results: For all tested bacterial broths, doxycycline-nanoparticles exerted antibacterial activity (98% bacterial reduction, when incubated with 10 mg/ml NPs after 3 h). Doses and time-dependent effects were encountered and antibacterial activity was maintained at least during 24 h. Minimum encountered bacterial reductions were 62.56%, 21.62% and 39.72% for *L. lactis*, *S. sobrinus* and *S. gordonii* respectively.

Conclusions: Doxycycline-modified nanoparticles drastically reduced the survival rate of tested cariogenic bacteria.

P229

Zn-Complexed Polymeric Nanoparticles Increase Mechanical Properties of Eroded Cervical Dentin

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Aim or purpose: To evaluate the effect of ion-modified polymeric nanoparticles (NPs) application on nano-mechanical properties of eroded cervical dentin.

Materials and methods: NPs composed by 2-hydroxyethyl methacrylate are fabricated through polymerization precipitation. NPs were doped with calcium (Ca-NPs) and zinc (Zn-NPs) ions. Cervical human dentin surfaces were obtained and polished. Tubules were exposed by citric acid etching. Zn-NPs and Ca-NPs suspensions (10 mg/ml) were applied onto dentin surfaces. Specimens were stored in PBS (Phosphate Buffered Saline) and analyzed at 24 h and 7d time points. Nanohardness (Hi) and Young's modulus (Ei) at peritubular and intertubular dentin were assessed by means of a nanoindenter. Mean and standard deviations were calculated and analyzed by ANOVA and Student Newman Keuls multiple comparisons ($p < 0.05$). An atomic force microscope (AFM) was employed for surface imaging acquisition.

Results: It was evidenced by AFM imaging that all tested NPs were able to cover dentin surfaces after a single application, and Zn-NPs were able to produce tubule occlusion, after 7 days of storage. Specimens treated with Zn-NPs attained the highest Hi and Ei at peritubular and intertubular dentin, at both tested time points. After 7 days of storage, Ca-NPs did not produce increases in Ei or Hi values if compared to NPs.

Conclusions: Hi and Ei improvements are associated to dentin remineralization. Zn-NPs application should be considered for atraumatic treatment of non-carious cervical lesions.

P230

Endodontic Resin-Based Sealers: A Study of the Sealing Ability

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Aim or purpose: To evaluate, in vitro, the sealing ability of methacrylate resin-based root canal sealers (Endorez[®], Ultradent, USA) in comparison with calcium hydroxide cement (Acroseal, Septodont, France).

Materials and methods: 80 canals were prepared with Tilos[®] system (Ultradent, USA) and then randomly divided into four groups. Combinations of root canal sealers and cones were made as follows: Group 1: Endorez[®] cement + Endorez[®] points; Group 2: Endorez[®] cement + gutta percha cones; Group 3: Acroseal cement + gutta percha cones; Group 4: Endorez[®] cement. The best obturation system was assessed regarding the sealing ability. The apical microleakage was evaluated using a stereomicroscope after diaphonisation and dye penetration test. A statistical analysis was performed using SPSS 20.0 Software.

Results: There was a significant difference between the 4 filling systems with regard to the number of infiltrated walls ($p = 0.014$) and infiltration depth ($p = 0.025$). The group of teeth obturated by Endorez[®]- Endorez[®] points differed significantly from the group obturated by Endorez[®]- Gutta percha in terms of apical sealing ($p = 0.011$). A significant difference was observed between the group of teeth obturated by Endorez[®]- Endorez[®] points and the group obturated by Endorez[®] ($p = 0.026$).

Conclusions: In the limits of this study, Endorez[®] cement used with Endorez[®] points showed the best sealing ability especially in the apical part. Acroseal cement and Endorez[®] cement used with gutta percha points were equal in terms of sealing ability.

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Fabrication of EMPs Control-Released Nano-Multilayers Coated Electrospinning PCL Scaffolds

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Aim or purpose: This study aimed to fabricate PCL spinning membranes coated with enamel matrix proteins (EMPs) control-released nano-multilayers.

Materials and methods: The self-assembly [(PAH/EMPs)/PSS]/[COL/ALG]₂₀ nano-films were coated on the PCL spinning membranes as surface modification. The morphology was observed by SEM and the hydrophilicity of the modified membrane was detected by the contact angle test. Then, the delivery concentration of EMPs was detected via ELISA.

Results: The results demonstrated that PCL membrane coated with {(PAH/EMPs)/PSS}/[ALG.COL]₂₀ film exhibited coarser surface morphology and became more hydrophilic. ELISA detection showed that EMPs nano-film modified PCL membranes achieved continuous release of EMPs, with AMBN concentration at 10 µg/ml around (d4-d12).

Conclusions: The EMPs nano-film modified PCL membranes own a high hydrophilicity and achieve stable release of the EMPs.

P232

Effect of Surface Deproteinization on the Adhesion of Composite Resins

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Aim or purpose: The evaluation of the topographic characteristics of adhesive infiltration in deproteinized dentin with sodium hypochlorite (NaOCl).

Materials and methods: Three adhesive systems were tested: an etch-and-rinse (Adper[™] Single bond2), a two-step self-etch (Peak[®] SE+ Peak[®] Universal bond) and a one-step self-etch (Adper[™] Easy Bond). Forty five dentine discs from healthy human molars were used for this study. A groove at the center of each surface intended for adhesion allowed to define two zones for the bonding.

One of them was treated with 3% sodium hypochlorite during 90s. The samples were subsequently restored with composite resin. The dental tissue was decalcified and deproteinized. The roughness of the surfaces was measured on the resin replicas using a profilometer. Data were subjected to analysis of variance (ANOVA).

Results: Etching with ortho-phosphoric acid followed by the application of the Adper™ Single bond2 has shown an average roughness of 0.8427 μm , roughly greater than those induced by self-etching systems ($p=,000$). The pretreatment of dentin with sodium hypochlorite (NaOCl) was the source of a significant improvement of the infiltration of Adper™ Single bond2 and Peak® Universal bond ($p=,000$ and $p=,000$ respectively).

Conclusions: Deproteinization potentiates the action of the acid of different adhesive systems and allows better infiltration of resin monomers. Sodium hypochlorite, recommended for its antiseptic virtues and as an endodontic irrigation product, could be a promoter of composite resin adhesion.

Poster Session 47 | 30.08.2017, 15:45–17:00 | Poster Display 4

Theme: Endodontics

P233

Retrograde Apical Filling with Biodentine® – A Case Report

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Introduction: Apical surgery is a standard oral surgical procedure. It is often a last resort to surgically maintain a tooth with a periapical lesion that cannot be managed with conventional endodontic retreatment.

Case description: The case concerned a 70-year-old female that appear on University Dental Clinic with an abscess and referred pain.

Clinical examination revealed moderate mesial bone loss and radiographic examination showed a periapical lesion on tooth 22, that was restored with a well-fitting metaloceramic crown and a large post with a metallic core.

An apical surgery with retrograde filling was proposed.

After informed consent, local anesthetic was given and was made an incision was performed followed by osteotomy at the apical zone of the root and the apical curvature (3 mm) was resected.

The retro preparation was achieved using ultrasonic inserts to a depth of 3–4 mm and the root-end cavity was filled with Biodentine® (Septodont, Saint Maur des Fossés, France).

The flap was repositioned and sutured with nylon 6-0.

Discussion: Biodentine® has been reported to provide good biocompatibility, bioactivity, high compressive strength and quick setting (between 12 and 15 min). This is an advantage when compared to the 170 min of MTA since a delayed setting time leads to an increased risk of partial material loss and alteration of the interface.

Conclusions/Clinical significance: When a non-surgical endodontic treatment cannot be performed, apical surgery with retrograde filling can be a suitable option.

Biodentine® exhibit characteristics to be a promisor alternative as retrograde filling material in endodontic surgery.

P234

Management of an External Inflammatory Resorption: A Case Report

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Introduction: External inflammatory resorption (EIR) is a potential consequence of dental trauma that may occur when the root surface is damaged (causing cementum loss) associated to root canal system infection. EIR can ultimately lead to loss of the tooth if it is not managed in time. The treatment aims to arrest the resorption and encourage hard tissue repair.

Case description: Our case report outlines the management of an EIR process that occurred after a dental replantation in a 12-year-old boy who was referred to our pediatric dentistry department with a purulent fistula regarding the 22nd tooth, which had degree 2 of mobility and did not respond to sensitivity tests. Radiographic examination demonstrated appearance of tooth resorption with a radiolucency involving the adjacent PDL and bone. The root canal was endodontically treated and filled with calcium hydroxide for 9 months to stabilize the inflammatory process. Finally, definitive root canal obturation was performed with Tricalcium Silicate Cement.

Discussion: Many authors indicate the use of corticosteroid-antibiotic intracanal medication which is, according to them, useful in the prevention and management of EIR. In our case, we used Ca (OH)₂ for its multiple properties and its ability to encourage hard tissue repair.

Conclusions/Clinical significance: The tooth after 3, 6 and 9 months recalls was completely asymptomatic and the radiographic examination showed healing of the periradicular radiolucency with indication of bone formation. But a longer follow-up is required to avoid recurrence of the lesion.

P235

Frequency of C-Shaped Canals in Permanent Mandibular Second molars in Pakistan

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Aim or purpose: To determine the frequency of C-shaped canals in mandibular permanent second molar in Pakistani population presenting with irreversible pulpitis, to help endodontists understand how often they will come across C-shaped canals in Pakistan, while performing root canal treatment, as these are difficult to treat.

Materials and methods: It was a Cross-sectional study of 100 patients of both genders, aged 16 to 45 years having irreversible pulpitis in permanent Second mandibular molars, that required root canal treatment. Study duration was 6 months, approved by

ethical committee. Detailed history taking and radiographic examination was done of each patient. After that, each tooth was anesthetized, isolated, access cavity was prepared and flushed with 2.5% (20 ml) NAOCL sol. Chamber was assessed thoroughly to find C shaped canal morphology and their types on basis of Min's classification system by using dental loupes. Data was analyzed, stratified to address modifiers and then chi-square test was applied with p value < 0.05 as significant.

Results: Thirteen C-shaped canals were found out of 100 mandibular second molars. 03 were of Type 1 and 2 respectively and 07 were of type 4.

Conclusions: The present study demonstrated that mandibular second molars with C shaped canals vary in canal configuration. The overall prevalence of C shaped canal was found 13% in local population. The early recognition of these anatomical configurations facilitates cleaning, shaping and obturation of these roots and hence enable the Endodontists to manage these cases effectively.

P236

The Clinical Use of the MTA in Endodontic Retreatment

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Aim or purpose: Our study reveals the percentage of nonsurgically retreated teeth with mandatory use of the MTA.

Materials and methods: Over a period of 1 year 234 teeth were nonsurgically retreated. We recorded the MTA application when it was mandatory, in clinical situations such as: root end filling of the teeth with wide apices because of previous apicoectomies, external apical inflammatory root resorptions, repair of root perforations during root canal therapy.

Dental operative microscope was used to place the Angelus gray MTA. We followed the cases clinically and radiologically.

Results: In 21 (8.97%) cases out of 234 retreatments, in a period of 1 year, MTA application was needed.

Conclusions: MTA is a relatively new biomaterial, which has several important properties: bioactive, hydrophilic, antibacterial, highly biocompatible, as well as hard tissue conductive and inductive, and thus has the ability to induce mineralized tissue formation. It has excellent biological and sealing properties, which is an important feature for a material that will be in contact with the tissues, a material to seal a communication between the root canal and the periodontium and to set even in the clinical environment where complete removal of moisture is not always possible. It helped us to give a chance for a conservative treatment with predictable outcome for teeth with specific endodontic problems, iatrogenic or pathological.

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The Effect of Vibrating System on Pain During Local Anesthesia

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Aim or purpose: The present study assessed the effect of vibration on the pain associated with needle insertion and anesthesia injection in the maxillary infiltration and inferior alveolar nerve block.

Materials and methods: In this study, 60 adult patients requiring root canal therapies with two visits of local anesthesia were included. Local anesthesia injections during maxillary infiltrations or inferior alveolar nerve blocks were done by means of vibrating system in one session and conventional syringe in the next session randomly. Self-reported pain scores were calculated by a 100-scaled VAS measure during needle and anesthesia injections. Pain scores in both vibrating system and conventional groups were subjected to paired t test while the effect of vibration system on the pain scores with the controlled interfering parameters were determined by GEE (Generalized Estimating Equations) model.

Results: In the infiltration anesthesia; VAS scores of needle insertion were 12.0 ± 15.5 and 38.1 ± 26 for vibrating system and conventional groups while the scores of injections were 19.1 ± 16.1 and 48.9 ± 29.6 . In the inferior alveolar nerve block; pain scores of needle insertion were 14.1 ± 15.9 and 35.1 ± 25.8 for vibrating system and conventional groups. The scores of injections were also 17.3 ± 14.2 and 39.5 ± 25.8 respectively. VAS pain scores of needle penetration and local anesthesia injection for the vibration group were significantly lower than conventional group in both infiltration and inferior alveolar nerve block ($p < 0.0001$).

Conclusions: Vibrating system can be used as an effective method to decrease pain scores associated with the needle insertion and local anesthesia injections during maxillary infiltration and inferior alveolar nerve block.

P238

Root Anatomy of Mandibular First Molars Having Two Distal Canals

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Aim or purpose: To detect and classify the morphological characteristics of mandibular first molars having two canals in distal roots using CBCT images in a Korean population.

Materials and methods: In total, 1958 mandibular first molars were evaluated in axial, coronal, sagittal, and paraxial planes. Distal roots having two canals were classified according to their root and canal shapes (2 roots, 2 canals [2R2C], 1 root, 2 canals with

2 apical foramina [1R2C(2-2)], and 1 root, 2 canals with 1 apical foramen [1R2C(2-1)]. The curvature of distolingual (DL) roots was classified according to severity using 3D reconstructed images, and the direction of curvature was determined. Differences in the prevalence of additional roots and canals according to sex were evaluated.

Results: The prevalences of 2R2C, 1R2C(2-2), and 1R2C(2-1) were 25.89%, 10.32%, and 14.15%, respectively. The prevalence of most severely curved DL roots (type III) was 62.92%, and the

direction was commonly toward the buccolingual side (69.03%). No significant sex-related difference was detected ($p > 0.05$).

Conclusions: The prevalence of mandibular first molars having two canals in distal roots was over 50% in a Korean population. The direction of DL root curvature was mainly toward the buccolingual side, which cannot be detected readily in periapical radiographs. Prior knowledge of the prevalence and the morphological characteristics of these anatomical variations is beneficial for preoperative treatment planning and the prevention of possible complications.