Wednesday, 7 September 2016

AWDC 2016 – ABSTRACT BOOK

FREE COMMUNICATION SESSIONS 01–18

POSTER SESSIONS 01–20

FREE COMMUNICATION SESSIONS 01–18

Free Communication Session 01 | 07.09.2016, 10:00–11:00 | Pavilion 15 – level 0 – Hall 0.C

Theme: Special Care Dentistry

FC001

Cleft Lip/Palate Management in China

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Introduction: Cleft lip/palate is a common congenital maxillofacial deformity, incidence rate vary among different ethnic groups, China being 1.82‰. There is serious tissue defects with loss of maxillary bone segment and tissue displacement, affecting both appearance and function. This causes major challenges because of associated problems, i.e. feeding, conduct disorder, high treatment cost, ear infection, hearing loss, language difficulty.
Description: New surgical techniques and treatments greatly improve the effectiveness of treatment of cleft lip/palate. Current approach is beyond simple surgical repair, involving multidisciplinary approaches of restoration of appearance and function, psychology, changes in growth/development. Sequential treatment utilizing an integrated and collaborative approach is particularly important which in US and Canada is almost standard. The collaborative team include the following disciplines: plastic surgeon, anesthesiologist, pediatric dentist, orthodontist, maxillofacial surgeon, dental surgeon, speech pathologist, audiologist, nurses, pediatrician and otolaryngologist.
Discussion: Sequential treatment approaches different growth stages with different therapeutic targets. Neonatal period pursue physical appearance/functionality; prepubertal period guide arch form development and completion of alveolar bone graft; puberty aims at improvment of function; orthognathic surgery repair occur following growth and development completion.
Conclusion: This program was initially introduced in 1999 through multiple exchange programs with Canada/US. Over the past decade over 9,000 combined cleft lip/palate patients achieving optimal result were completed at the Guangzhou center alone. This is highly significant as China completely depended on external assistance previously.

FC002

Introducing NOMAD Pro in a Special Care Dental Setting

Ursala Jogezai[1], David Townsend[1], Tracey Riches[1], Catrin Abercrombie[2]
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Aim: This paper describes the pre-implementation and post-implementation tests and audits that were carried out within our service with the introduction of the Nomad Pro hand held dental X-ray unit (Nomad Pro, Aribex, Orem, USA). The aim was to determine the quality of radiographs taken as well as the clinical benefit of this device to patients in a domiciliary setting.
Materials-methods: Prior to introduction of Nomad Pro into clinical use, a detailed assessment was carried out by the medical physics team regarding dose levels and safety of the device. Additionally, a film quality audit was carried out after taking radiographs on a phantom head and compared to radiographs taken from the traditional wall mounted dental X-ray unit (Philips oralix). Following clinical introduction, a retrospective audit was carried out on 20 patients who had radiographs taken using the Nomad Pro, a total of 34, as part of their treatment planning.
Results: No significant difference was found between the ratio of quality ratings made with each of the X-ray machines. Clinical audit showed that fifteen radiographs were grade 1, 15 grade 2 and four were grade 3. In all cases radiographs made a significant contribution to the patient diagnosis and clinical management. The Nomad Pro was compliant with the Ionising Radiation Regulations 1999 and Ionising Radiation (Medical exposure) Regulations 2000.
Conclusions: Based on our results of dose measurements and pre and post-implementation quality assessment, the Nomad Pro is a safe and useful device for dental radiography when appropriate i.e., for housebound patients.

FC004

Management of Autistics in General Anesthesia in the Dental Practice

Eriola Noçka, Gurien Demiraqi, Ervin Sulaj, Edlira Baruti Papa
Demiraqi Dental, Private Clinic, Tirana, Albania

Introduction: The desire and need for implementation of interventions to patients difficult as children, autism, tension anxiety patients etc., has led many dentists to specialize in specific branches as children dentistry and also attend special courses like medical psychology and hypnosis to achieve their management.

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However sometimes despite sufficient knowledge of the dental specialist and no mater how hard they try to treat them in local anesthesia, the dentists fail to achieve their goal. Especially to be taken into consideration is the categories of the autism patients, of all ages which are very difficult to handle.
Case description: General anesthesia includes highlighting local anesthesia with anesthetic drugs with central action with different anesthetic effect and in certain cases the use of intubation and respiratory run and anesthetic gases. All these show the need for special equipment and conditions and well-trained staff in the provision of general anesthesia.
Method: We took into consideration the cases treated in our clinic with general anesthesia with an emphasis methods of endotracheal intubation and seeing the difficulties, results achieved, types of anesthesia and success for a period of 5 years.
Discussion: General anesthesia necessitates special equipment and conditions, and also well trained personnel. It significantly increases the cost of treatment, and should be used as a last resource for the treatment of dental therapeutic interventions.
Conclusion/Clinical significance: Once the necessary conditions are fulfilled general anesthesia may be the ultimate way to handle multi-disciplinary cases that can not be treated by other methods, despite difficulties during and after it.

FC122

Oral Hygiene and Dental Health among Pregnant Women Attending in a Selected Hospital in Dhaka City: A Cross Sectional Study

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Aim or purpose: The aim of this study was to assess the status of oral hygiene and dental health among pregnant women.
Materials-methods: This was a cross sectional study and carried out amongst the pregnant women who visited outpatient department of Ad-din Medical College and Hospital, Dhaka. A total of 210 study samples were taken 10th September to 10th December 2014.
Results: The mean age of the respondents was 27 ± 5 years. Majority of the respondents were illiterate. Regarding oral health care, 38% of the pregnant women were found to brush their teeth twice in a day while before pregnancy a lower proportion (27%) of them were found to brush twice in a day and the difference was statistically significant ($\chi^2 = 5.094$; $p = 0.024$). Similarly, after pregnancy significantly a higher proportion (33%) of the respondent were found to floss every day ($\chi^2 = 5.094$; $p = 0.024$). On examination it was found that majority of the pregnant women were suffering from some kind of the diseases were gum bleeding (23.8%), swelling of gum (24.0%), history of previous gum bleeding (4.0%), gingivitis (31.0%), calculus (15.0%), pregnancy epulis (11.0%), toothache (7.7%), cavities (5.5%), sensitive teeth (3.3%), angular stomatitis (6.0%), pericoronitis (4.7%), 3rd molar impacted (15.0%), swelling of face (7.0%), life threatening condition (1.0%), pain or infection with gross caries (45.0%) and tooth mobility (6.0%).
Conclusions: A higher proportion of pregnant women were found to concern more about oral health. However, majority of the pregnant women were found to suffer from some oral diseases which are known to be associated with pregnancy.

Free Communication Session 02 | 07.09.2016, 10:00–11:00 | Pavilion 15 – Level 0 – Hall 0.D

Theme 1: Oral Health and Systemic Health

FC005

Is There a Connection Between Sublingual Varices and Hypertension?

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Aim or purpose: The aim of this study was to investigate whether sublingual varices are related to presence of hypertension.
Materials-methods: In an observational clinical study among 431 dental patients tongue status and blood pressure were documented. Digital photographs of the lateral borders of the tongue for grading of sublingual varices were taken, and blood pressure was measured at the dental clinic. Patients without previous diagnosis of hypertension and with a noted blood pressure ≥140 and/or ≥90 mmHg performed complementary home blood pressure during 1 week. Those with an average home blood pressure ≥135 and/or ≥85 mmHg were referred to the primary health care centre, where three office blood pressure measurements were taken. Two independent blinded observers studied the photographs of the tongues. Each photograph was graded as none/few (grade 0) or medium/severe (grade 1) presence of sublingual varices. Pearson's Chi-square test, Student's *t*-test, and multiple regression analysis were applied. The study was approved by the Regional Research ethics Committee at the University of Lund.
Results: An association between sublingual varices and hypertension was found (OR = 2.25, $p < 0.002$). Sublingual varices indicate hypertension with a positive predictive value of 0.5 and a negative predictive value of 0.80.
Conclusions: An association was found between sublingual varices and hypertension. Examining the lateral borders of the tongue is easily done, causes no harm and could be a valuable method for the dental profession to take active part in preventive healthcare.

FC006

Children Affected with Epilepsy- Dental Caries and the State of Periodontium

Maria Mielnik Blaszczak[1], Agnieszka Skawinska[1], Jerzy Blaszczak[2]
[1]*Chair and Department of Pediatric Dentistry, Medical University of Lublin, Poland,* [2]*Chair and Department of Jaw Orthopaedics, Medical University of Lublin, Poland*

Aim: Epilepsy is one of the most common neurological disorders which is characterized by recurrent epileptical seizures. The aim of the study was the evaluation of the condition of the teeth and the periodontium treatment needs in children affected with epilepsy from Lublin region.

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Materials-methods: Clinical and questionnaire examinations encompassed a group of 107 children and young people, both sex, in the age between 6 and 18-year-old from the Lublin macroregion. Patients were divided into groups: 6–11 year old (35), 11–15 years old (36) and 16–19-year-old (36). Clinical study was conducted in the conditions of artificial light by the use of diagnostic instruments.
Results: In the examined group of youngest children the dmf number reached 6.83 and DMF 2.9. In the group 11–15-year-old the DMF was 7.89 an d in the oldest group 8.22. From the analysis of the conducted research it is clear, that the Simplified Oral Hygiene Index (OHI-S) in the entire examined group amounted 2.22. The CPITN indicator, determining healing needs of the periodontium was calculated only in the oldest age group (16–19 years old- 36 patients) and amounted average value 1.52.
Conclusions:
1 High values of dental caries indicators show that there is highly unsatisfactory condition of the health of teeth in the examined group.
2 The value of the indicator of treatment needs of the periodontium (CPITN) is high.

FC007
A Conspicuous Relation Between Metabolic Syndrome and Periodontal Disease
Esra Sinem Kemer Doğan[1], Burak Doğan[1], Fatma Yeşim Kırzıoğlu[2], Özlem Fentoğlu[2]
[1]Department of Periodontology, Faculty of Dentistry, Mustafa Kemal University, Hatay, Turkey, [2]Department of Periodontology, Faculty of Dentistry, Süleyman Demirel University, Isparta, Turkey

Aim or purpose: The purpose of this study was to reveal the relation between periodontal status and the count of the metabolic syndrome risk factors.
Materials-methods: 79 (36 women, 43 men) metabolic syndrome (MetS) patients and 80 (44 women, 36 men) healthy controls (C), between 20 and 80 years old, were enrolled in this study. MetS was classified according to The US National Cholesterol Education Programme Adult Treatment Panel III criteria and categorized considering the count of risk factors as 3, 4 or 5. Sociodemographics (age, education level, smoking, tooth brushing, body mass index (BMI), waist circumference (WC)), periodontal (plaque index, gingival index, sulcus bleeding index, probing pocket depth (PD), clinical attachment level (CAL), and number of missed teeth) and biochemical (plasma lipids, fasting blood glucose) parameters were evaluated.
Results: Periodontal and biochemical parameters, age, smoking, BMI and WC were higher in MetS than C group in whole population. Intragroup analyses showed that PD and CAL were elevated in 4 risk factors group than 3 risk factors group. All periodontal parameters were increased in 5 risk factors group than 3 risk factors group regardless of gender within MetS group.
Conclusions: It was indicated that periodontal status got worsened as the count of the risk factors increased in MetS. While studying the relation between periodontal status and metabolic syndrome, it is necessary to categorize the metabolic syndrome patients according to the count of the risk factors. This conspicuous relation must be considered in further studies.

Theme 2: Gerodontology

FC008
Epidemiology of Oral Health in Elderly-Attending Nursing Homes
Miguel Pavão, Maria Llanes, Vitor Neves, Ana Simões
Centre for Studies of NGO Mundo a Sorrir ("Smiling World"), Porto, Portugal

Aim or purpose: To assess the prevalence of dental caries, prosthetic status and oral hygienic habits in elderly Portuguese.
Materials-methods: A cross-sectional, descriptive and observational study was carried out among people over 64 years old in 235 Portuguese Nursing Homes in the 18 districts of mainland Portugal. The Standardized criteria applied, according to World Health Organization were the Decayed, Missing and Filled Teeth (DMFT) and Lobene Modified Gingival Index. Statistical analysis was made using SPSS-PC for Windows © version 12.0.
Results: 3,586 people, mean of 81.9yo, 70% females, 55.47% edentulous. DMFT index was 26.33, 30.4% of subjects with dental caries, mean of 3.0 caries (SD $\pm$ 4.8). Modified Gingival Index of 2.23 with a significant reduction after daily brushes increment ($p < 0.05$).
Conclusions: The study population has poor oral health. Therefore it is of great importance to prepare adequate protocols for oral health care among the institutionalized elderly.

Free Communication Session 03 | 07.09.2016, 10:00–11:00 | Pavilion 15 – Level 0 – Hall 0.E

Theme: Others

FC009
Atypical Post Mortem Dental Identification
Svend Richter
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Aim: Identification by dental records and radiographs is universally recognized and accurate, but there are scenarios dental records are not available or limited and the aim of the study is to focus in those cases how forensic odontologist can produce a "picture" of general features of an individual, known as post-mortem dental profiling, for comparison of ante mortem materials.
Materials-methods: Scientific literature was reviewed and own experience in forensic dental identification in mass disasters and single cases internationally and nationally was analysed.
Results: Identification from photographs, denture marking, prosthodontic and orthodontic appliances, palatal rugae, cheiloscopy, tooth marks and DNA analysis of pulp tissues are well known and age estimation in children is based on dental development, in adult regressive changes in teeth and sex determination is usually based on skull appearance, as no sex differences are apparent in tooth morphology. Cusps of Carabelli, shovel-shaped incisors and multi-cusped premolars, can assist in determination of ancestry as well as tori and exostoses can be characteristic and can refer to a probable race. Erosion with occlusal cupping can

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suggest an excessive consumption of acidic beverages, an eating disorder or hiatus hernia and excessive caries can suggest alcohol or substance abuse, while stains smoking or tetracycline use.
Conclusions: Although comparative dental identification or post mortem dental profiling are the most frequently used in forensic dental identifications, in many instances, innovative techniques can narrow down the search for identity of unidentified person.

FC010

Periodontal Status in Medieval Wroclaw Inhabitants

Tomasz Staniowski[1], Pawel Dabrowski[2]
[1]*Department of Conservative Dentistry and Pedodontics, Medical University in Wroclaw, Poland,* [2]*Department of Anatomy, Medical University in Wroclaw, Poland*

Aim or purpose: The purpose of this study was to determine the frequency, distribution of dental calculus and alveolar bone loss in medieval skeletal remains from Saint Elizabeth Church and Ołbin in Wroclaw.
Materials-methods: One hundred and eighteen skull (1,156 tooth) was examined. Dental calculus was estimated on two sufraces of the teeth (buccal and lingual) using criteria of CI-OHI index. Alveolar bone loss was measured as a distance between cemento-enamel junction (CEJ) and alveolar bone crest (ABC). Mean alveolar bone loss and BLI (Bone Loss Index) was calculated.
Results: Prevalence of dental calculus was 96.6% (114/118). Mean value of Calculu Index was 0.99 ± 0.59, higher in mandible (1.2 ± 1.05) then maxilla (0.89 ± 1.0). Prevalence of alveolar bone loss was 86.4% (102/118) and mean alveolar bone loss was 2.94 ± 1.06 mm.
Conclusions: The Wroclaw medieval population reveals prevalence of dental calculus and alveolar bone loss similar to other medieval samples. The observed periodontal status reflect past life conditions and oral status.

FC011

The Assessment of *Candida* spp. Prevalence in the Oral Ontocenosis

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[1]*Chair and Department of Paedodontics, Medical University of Lublin, Poland,* [2]*Chair and Department of Pharmaceutical Microbiology with Laboratory for Microbiological Diagnostics, Medical University of Lublin, Poland*

Aim or purpose: The aim of the study was to evaluate the prevalence of oral colonization by Candida species in healthy individuals of different age groups and to identify the species of the yeast-like fungi isolates.
Materials-methods: The fungi were isolated from the oral cavities of 654 healthy individuals of both sexes, representing different age groups. The species of the isolates were determined. An initial identification of the fungi was based on the macroscopic appearance of the colonies on Sabouraud's medium and on the growth of the coloured colonies on ChromAgar *Candida* medium. API 20 C AUX microtest (bioMerieux) was used to identify the most frequently found species of *Candida* spp.
Results: The prevalence of *Candida* spp. isolation from the oral cavity ontocenosis in healthy individuals of different age groups was 30.6%. The oral cavity ontocenosis was colonized mainly by the yeast-like fungi of *C. albicans* species: they were present in 24.5% of the tested population, while the frequency of oral cavity colonization by non-albicans *Candida* spp. was 6.1%. Seven species of non-albicans *Candida* spp. were identified: *C. glabrata*, *C. inconspicua*, *C. famata*, *C. tropicalis*, *C. parapsilosis*, *C. lusitaniae*, and *C. kefyr*. Per age group, 3–5 species were isolated. In 16 (8%) persons 2 species of *Candida* genus were found.
Conclusions: The study results confirm that *C. albicans* is the yeast-like fungus that most frequently colonizes the oral cavity ontocenosis. The prevalence of colonization of the oral cavity ontocenosis by *Candida* spp. shows a tendency to increase with age.

FC012

Evaluation of the Radiomorphometric Index and Bone Findings on Panoramic Images of the Patients with Scleroderma

Eda Didem Yalçın[1], Nihal Avcu[2], Serdar Uysal[2], Umut Arslan[3]
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Aim or purpose: Oral and perioral tissues are often affected in scleroderma. The aim of this study is to make morphometric measurements on panoramic images and evaluate the radiological findings of bones and teeth of patients with scleroderma.
Materials-methods: 49 patients with scleroderma and 72 healthy individuals who completed bone growth and had panoramic indication were included. Panoramic images were obtained using Veraview IC5 HD (Morita Corporation, Japan). Morphometric measurements were performed on 121 panoramic images with image analysis software, Image J (Image J 1.48u, NIH, Maryland, MD, USA), by two observers. The kappa value was calculated to assess intra- and interobserver agreement. The data of patients with scleroderma and healthy individuals obtained by morphometric measurements of the mandible were statistically compared with Chi-Square and Mann-Whitney U Tests. Furthermore changes of lamina dura and periodontal ligament (PDL) space, osteolytic image existence were investigated in scleroderma.
Results: All observers had excellent intra-observer agreement. There was no statistical differences were found for gonial and antegonial index among two groups ($p > 0.05$). Significant correlations were found for MCI ($p < 0.001$), mental ($p = 0.001$) and panoaramic mandibular index ($p < 0.001$) between two groups. Thickening of lamina dura (44.9%), widening of PDL (79.6%), limited mouth opening (71.4%) and osseous resorption of the mandible (8%) were detected in scleroderma.
Conclusions: The most common oral radiographic manifestation of scleroderma is widening of PDL space. In addition it is highly likely to be seen in patients with scleroderma that thickening of lamina dura, limited mouth opening and mandibular bone resorption.

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Free Communication Session 04 | 07.09.2016, 10:00–11:00 | Pavilion 15 – Level 0 – Hall 0.F

Theme 1: Prevention and Periodontal Diseases

FC013

Gingival Crevicular Fluid Levels of Human Beta-Defensins in Type 2 Diabetes Mellitus

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Aim or purpose: Human β-defensins (hBD) are small antimicrobial peptide components of the innate immunity. Deficiency in immune response is one major characteristic of type 2 diabetes mellitus (T2DM). The aim of the present study was to investigate the gingival crevicular fluid (GCF) and gingival epithelium levels of hBD-1, and hBD-3 to evaluate whether T2DM affects its expression in periodontal health and in periodontitis.

Materials-methods: 21 T2DM subjects suffering from generalized periodontitis (T2DM+GP), 18 non-diabetic GP patients (Periodontitis), 18 periodontally healthy T2DM subjects (T2DM+H), and 24 systemically and periodontally healthy subjects (Control) were recruited for the study. Plaque index (PI), gingival index (GI), probing pocket depth (PPD), and clinical attachment level (CAL) were recorded and GCF samples were collected. hBD-1 and hBD-3 levels in GCF were measured using ELISA. Parameters were compared among the study groups with *t*-test. Spearman's correlation test was used in analyses of correlations between parameters.

Results: PI, GI, PPD, and CAL values were significantly higher, while hBD-1 levels were lower in both periodontitis groups, in comparison to those of the contol group. When compared to controls, PI and GI levels were similar but hBD-1 levels lower in the T2DM+H group. In the whole population, hBD-1 levels correlated negatively with all periodontal parameters. hBD-3 levels were under detection limits of ELISA kit in all study groups.

Conclusions: Decreased GCF levels of hBD-1 were found in T2DM and in periodontitis. Impaired secretion of hBD-1 and hBD-3 in diabetics may occur as a result of deficiencies in their immune response.

FC014

A Different Perspective: Individual Risk Factors and Periodontal Disease

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[1]Department of Periodontology, Faculty of Dentistry, Mustafa Kemal University, Hatay, Turkey, [2]Department of Periodontology, Faculty of Dentistry, Süleyman Demirel University, Isparta, Turkey

Aim or purpose: The relation between periodontal status and individual risk factors for periodontal disease was assessed in this cross sectional study.

Materials-methods: 230 participants (111 men, 119 women) were included. Individual risk factors were defined as gender, smoking, hypertension, diabetes mellitus, hyperlipidaemia, obesity, abdominal obesity, osteoporosis, calcium and vitamin D deficiencies. The patients were categorized according to the number of the risk factors between non to 10 risk factors. Sociodemographics, periodontal and biochemical parameters were evaluated.

Results: Age, body mass index and waist circumference were higher in men. Greater periodontal parameters, fasting blood glucose and D vitamin levels were shown as well. Also, among the evaluated risk factors; smoking habit and prevalence of hypertension and diabetes mellitus were increased in men. Periodontal parameters were elevated by an increase in the number of risk factors regardless of gender.

Conclusions: When evaluating periodontal disease severity, the issue that patient could have multiple individual risk factors must be considered. Although men seem to have worse systemic and periodontal status than women, increase in the periodontal disease severity is related to the number of risk factors actually. Decreasing the number of individual risk factors may be an effective approach for limiting the periodontal disease severity.

FC015

Genetic and Epigenetic Markers in Periodontitis – Data from Polish Patients

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Aim or purpose: Periodontitis is a common oral disease multifactorally determined. A variability in genes related to the inflammatory response is associated with an increased risk for periodontal disease. Some of the genes are regulated by epigenetic modifications (e.g. genome-wide methylation alterations, remodeling of chromatin or dysregulation of tissue-specific microRNA expression) which can influence the production of cytokines, contributing to the development of inflammation. We search for promising genetic and epigenetic biomarkers to improve individual risk profiling of the disease.

Materials-methods: A case-control genetic association analysis between IL1-B (T[−511]C and C[+3954]T) and APOE genes polymorphisms and periodontal disease was performed with the use of PCR-RFLP approach in a Polish cohort of 189 unrelated patients suffering from periodontitis (71 cases with aggressive and 118 cases with the chronic form of the disease) and 236 control subjects.

Results: We found a significantly increased frequency of the APOE*2 allele among patients with aggressive periodontitis ($p < 0.006$, OR = 2.629) and IL1-B C*[−511] allele in patients with chronic form of the disease ($p < 0.03$, OR = 1.43).

Conclusions: Variations in IL1-B and APOE genes can be risk factors for periodontitis, different for aggressive and chronic forms of

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the pathology. However, genetic changes in patient's genome do not fully explain the complexity of the etiology of the disease. Environmental factors through epigenetic modifications may also trigger inflammatory processes. Understanding of mechanisms involving different responses in individuals and early detection of predisposition may guide in future oral treatment and disease prevention.

Theme 2: Dental Erosion and Non-Carious Lesions

FC016

12-Month Clinical Evaluation of Different Adhesives in Non-Carious Cervical Lesions

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Faculty of Dentistry, Baskent University, Ankara, Turkey

Aim: The aim of this study was to evaluate the clinical performance of one etch&rinse, one self-etch and two modes of multi-mode adhesive system in noncarious cervical lesions after 12 months.
Materials-methods: 47 patients participated in this study. The protocol was approved by the Baskent University Ethics Committee on Investigations Involving Human Subjects (Protocol No:D-KA13/02). A total of 228 noncarious cervical lesions were randomly assigned to four groups according to adhesive systems/protocols: Group I. Adper Single Bond 2 (Etch&Rinse), Group II. Clearfil SE Bond (Self-etch), Group III. Scotchbond Universal (etch&rinse mode) Group IV. Scotchbond Universal (self-etch mode) and restored with a microhybrid composite resin (Filtek Z250) (n = 57). The restorations were clinically evaluated using both modified USPHS and FDI criteria 1 week after placement (baseline), after 6 and 12 months. Statistical analysis was completed using Pearson Chi-square and Fisher's Exact Test ($p < 0.05$). The survival rates of restorations were calculated by the Kaplan-Meier procedure estimator and log-rank test ($p < 0.05$). Cochran's Q test was also employed for evaluating the difference between recall periods of the same restorative material ($p < 0.05$).
Results: The recall rate was 100% at each evaluation period. The retention rates were Group I: 93%, Group II: 96.5%, Group III: 82.5% and Group IV: 100% respectively and the difference was statistically significant ($p < 0.05$). Scotchbond Universal self-etch group showed statistically significant difference in marginal discoloration and marginal adaptation criteria between baseline and 12 months ($p < 0.05$).
Conclusion: All of the adhesive systems/protocols demonstrated acceptable clinical performance in non-carious cervical lesions over the 12-month period, except the retention rates of Scotchbond Universal self-etch group.

Free Communication Session 05 | 07.09.2016, 11:30–12:30 | Pavilion 15 – Level 0 – Hall 0.C

Theme: Periodontics

FC017

Effect of Ciprofloxacin Loaded Scaffolds on Periodontal Ligament Stem Cells

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Aim: To analyze the cytotoxicity of ciprofloxacin (CIP) loaded on chitosan bioactive glass scaffold on human periodontal ligament stem cells (PLSCs) in vitro.
Materials-methods: PLSCs were obtained from human third molars and cultured in Dulbecco's Modified Eagle's Medium. The experimental groups were: PLSCs cultures treated with fresh medium containing 15 × 15 mm chitosan/bioactive glass scaffolds without/with different percentages 0, 5, 10, and 20% of ciprofloxacin. A total of 15 × 103 cells were plated in6 well plates. The attached cells of each group were harvested from the plates after 1, 4 and 8 days of culture using 0.25% trypsin and 0.02% EDTA to detect the viability of cells. The cell number was determined using a hemocytometer and the trypan blue dye-exclusion assay. Data were explored for normality using Shapiro-Wilk test. Comparisons between groups were made using One-way ANOVA complemented by Tukey's test.
Results: When comparing the proliferation rate of cells between the four concentrations, no significant difference was found between the cellular proliferation rate of the four concentrations ($p = 0.633$). With regards to cell viability, no significant difference was found between the 0, 5, and 10% CIP concentrations, while the 20% CIP concentration demonstrated the least viability with a high statistical difference ($p = 0.003$).
Conclusion: 20% CIP demonstrated the least proliferation rate and viability. Further preclinical tests are recommended to confirm the safety and effectiveness of this drug.

FC018

Multiple Gingival Recessions Management with Tunnel Technique

Tomasz Kuszczak[1], Wojciech Eliasz[1], Kamila Gryniewicz[2], Anna Surdacka[1]
[1]*Department of Conservative Dentistry and Periodontology, Poznan University of Medical Sciences, Poland,* [2]*Private Dental Practice, Poznan, Poland*

Aim or purpose: The aim of the study was to evaluate the efficacy of treating multiple recessions with tunnel technique in comparison with other published research studies.
Materials-methods: Multiple class I and II gingival recession (GR) lesions in 13 patients (a total of 37 sites) were covered according

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to the principles of the tunnel technique with the use of subepithelial connective tissue graft (SCTG) acquired from the hard palate. The outcomes of surgery were assessed with the use of the following indices: mean root coverage (MRC), percentage of sites with complete root coverage (SCRC), mean decrease in gingival recession heigth (GRH) and gingival recession width (GRW) at a follow-up appointment 6 months after surgery. Statistical analysis of the outcomes was performed.

Results: Statistically significant decrease in GRH and GRW was observed for all lesions, except for the lesions located at molar teeth. MRC was 85.78% (±26.33), and the percentage of SCRC was 71.05%. Correlation was observed neither between root coverage and preoperative GRH, nor GRW values.

Conclusions: The paucity of data available in literature concerning long-term outcomes of root coverage procedures for multiple recessions requires that this issue should be studied to a larger extent. The results of the study seem to suggest that the discussed surgical technique, which incorporates the advantages of SCTG and tunnel technique, is effective and predictable.

FC019

Assessment of the Effects of Enamel Matrix Derivatives in Gingival Recession Treatment by CAD/CAM System in Subepithelial Connective Tissue Grafting Applications by Microsurgical Techniques

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Aim or purpose: The aim of this study was to evaluate whether enamel matrix derivatives combinated microsurgical subepithelial connective tissue grafting (SCTG) with coronally advanced flap (CAF) will improve the outcome of gingival recession treatment compared with SCTG with CAF.

Materials-methods: 46 defects, 23 in the test group (SCTG with CAF plus enamel matrix derivatives) and 23 in the control group (SCTG with CAF). The clinical parameters were evaluated at baseline 1st month and at 6th month follow-up time points. Three dimensional images were obtained by using computer aided design/computer aided manufacturing (CAD/CAM) system. Gingival volume gain (GVG) and gingival surface area gain (GSAG) were evaluated at 1st and 6th months on three dimensional images.

Results: Both treatment procedures showed statistically significant root coverage ($p < 0.05$). Differences between clinical parameters were statistically insignificant between groups ($p > 0.05$). Differences between GVG and GSAG values in test and control groups were statistically insignificant at 1st and 6th months ($p > 0.05$). Both treatment modalities, STCG with CAF plus enamel matrix derivatives and SCTG with CAF, resulted in a significant final mean root coverage ($p < 0.05$) 6 months after surgery.

Conclusions: Six month follow-up results indicate that the SCTG with CAF is predictable for the treatment of gingival recession defects. The addition of enamel matrix derivatives don't enhance the mean clinical and dimensional outcomes.

FC020

The Redox Properties Changes of Periodontal Tissues During Surgical Treatment of Patients with Generalized Periodontitis

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Aim or purpose: To investigate the dynamics of redox properties changes in patients with moderate and severe generalized periodontitis (MGP, SGP) during usage of different surgical techniques.

Materials-methods: 80 patients (age 28–60) with MGP, SGP were divided into 4 groups: I – proposed modification of flap operation with presugical prepartion (SRP + diode laser curettage (DLC)), EMD application; II – Modified Widman flap (MWF) + DLC; III – MWF + EMD; IV – MWF only. PPD = 5–10 mm, 2–6 PP per sextant, PMA = 58.4%, BOP = 87.7%, CAL = 8.7 mm, GR = 1.7 mm. Oral liquid (OL) and gingival fluid (GF) were investigated to determine SH/SS and NAD/NADH corelation in different terms: inicial status, 14 days postop, 3, 6, 12 months postop. Elman reagent was used for creation of TNPA in OL, GF and spectrometry during NADH formation in GF in presence of enzymes with $\lambda = 340$ nm.

Results: The initial SH/SS relation in OL and GF revealed reduction of oxidative reactions of SS in OL in 14 times ($p < 0.05$) and in GF in 4 times. The initial NAD/NADH was reduced in 3 times ($p < 0.05$) showing reduction of oxidative properties in OL. The dynamic changes in redox status were detected in all groups depending on pre- and postoperative terms.

Conclusions: The inicial pre- and dynamics of postoperative redox status of periodontal tissues may influence on postoperative clinical results and their longterm maintenance in patients with moderate and severe periodontal disease.

Free Communication Session 06 | 07.09.2016, 11:30–12:30 | Pavilion 15 – Level 0 – Hall 0.D

Theme: Epidemiology

FC021

Dental Status of Turkish Patients: A Retrospective Study

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Aim or purpose: The aim of this study is to investigate the dental status of Turkish patients by using panoramic radiographs.

Materials-methods: A retrospective study was performed using panoramic radiographs of 500 patients ranging in age from 20 to 65 subjected to dental treatment. The prevalence of approximal caries, missing teeth, filling teeth, the decay closer to pulp, secondary caries, periapical lesions, periapical lesions formed due to decay, root canal treatment made, inappropriate restorations,

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decay and alveolar bone defect combination, secondary caries occured in root canal treatment made teeth were evaluated for each 32 teeth for 500 patients by a single examiner.
Results: The total prevalence of approximal caries was 9%, decayed teeth was 11%, filled teeth was 7%. The decay closer to pulp was 4%. Secondary caries was 4%. Periapical lesion prevalence of all patients was 1%; decayed teeth was 6%. Root canal treatment prevalence was 2%; secondary caries prevalence in root canal treatment made teeth was 12%. Inappropriate restoration prevalence without caries of all restorations was 3%. Decay and alveolar bone defect combination was 1%.
Conclusions: Prevention of dental problems should be started with considering the current status. Advanced caries and other dental conditions can be defined by using panoramic radiographies. The results of this study point the issues should be considered for improving the clinical success of dental treatments and oral health status of this population.

FC022
Evaluation of Tooth Number Anomalies in a Turkish Subpopulation
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Aim: The aim of this study was to investigate the prevalance and characteristics of tooth number anomalies in a Turkish subpopulation.
Materials and methods: A cross-sectional study was carried out using retrospectively collected digital panoramic radiographs of 11,781 patients (5,794 females and 5,987 males) ranging in age from 6 to 18 years (mean; 14.2) between January 2013 and January 2015. All the radiographs were examined for hypodontia, oligodontia and hyperdontia. The permanent teeth were investigated except third molars. Data were collected and entered into the SPSS 20 program for statistical analysis. Pearson's Chi-squared, Mann Whitney U and Fisher exact tests were used for difference comparisons ($p < 0.05$).
Results: Hypodontia was the most frequently observed anomaly (5.8%), followed by hyperdontia (1.76%), and oligodontia (0.17%). Oligodontia and hypodontia were more frequent in females, while hyperdontia was more frequently observed in males. Hyperdontia and dental agenesis were also found to occur mostly in the maxillary arch, and maxillary lateral incisors were the most commonly effected teeth in both anomalies.
Conclusions: Knowledge about the dental agenesis and supernumerary teeth is important for dental clinicians as they are relatively common but are detected as an incidental finding in a radiograph. Epidemiological studies can be useful to dentists in the early diagnosis of these anomaly.

FC023
Dental Caries Prevalence in 3-Year-Olds in Volgograd (1996–2015)
Elena E Maslak, Lubov F Onishchenko, Oksana N Kurkina, Anastasiya S Rodionova
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Aim or purpose: To compare dental caries prevalence in children aged 3 years in 1996 and 2015.
Materials-methods: Epidemiological dental study was conducted according to WHO recommendations. Dental examination was organized in 5 city districts among 3-year-olds who were born in the city and attended municipal kindergartens. Parents' written informed consents were obtained before the research. 250 children participated in the study in 1996 and 239 children participated in 2015. Dental caries was recorded using decayed, missing, and filled teeth index (dmft index). The prevalence of dental caries (percentage of children with dmft > 0) with 95% confidence interval (CI), the mean dmft index with 95% CI and standard error of mean (±m) were calculated. The significance of differences was assessed by Student *t*-criterion at the significance level of $p \leq 0.05$.
Results: In 1996 the number of children who were free of dental caries among the examined 3 year olds was considerably less than the number of children who had caries experience. The prevalence of dental caries was 70.4% (CI 64.7–76.1%) and dmft index was 3.64 ± 0.58 (CI 2.5–4.78). In 2015 the number of caries free 3-year-olds became more than the number of children with caries. The prevalence of dental caries was 34.7% (CI 28.7–40.8%) and dmft index was 1.34 ± 0.06 (CI 1.22–1.46). The differences between the studied indexes in 1996 and 2015 were statistically significant ($p < 0.01$).
Conclusions: The prevalence of dental caries and the mean dmft index in 3-year-old city citizens over past 20 years significantly decreased.

FC024
Dental Caries Prevalence in São Tomé and Príncipe
Mariana Dolores, Joana Dias, André Peralta Santos, Maria Estrada
Centre for Studies of NGO Mundo a Sorrir ("Smiling World"), Porto, Portugal

Aim or purpose: To estimate the prevalence of dental caries in the population of São Tomé, check the differences in the pervasiveness among different districts and get to know the population oral hygiene habits.
Materials-methods: Transversal study performed with a sample of two age groups (6 and 12 years old) in 6 districts of Sao Tomé Island. Questionnaires and oral observations were carried out by three calibrated examiners, according to the World Health Organization (WHO) criteria.
Results: Data from 867 children revealed a decayed, missing and filled teeth index (DMFT) of 4.19 and 1.05, age 6 and 12 respectively. The prevalence of children free from caries at age 6 was

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37.87% and 46.61% at age 12. Concerning oral health habits, 93.10% of children brushed their teeth, 61.4% using a toothbrush; the remaining using other forms of oral hygiene.
Conclusions: The population of São Tomé needs new public health policy approaches, particularly in terms of oral health and oral diseases prevention.

Free Communication Session 07 | 07.09.2016, 11:30–12:30 | Pavilion 15 – Level 0 – Hall 0.E

Theme: Implantology

FC025
A New Era of Splinted Implant Design for Immediate Replacement of a Wide Mandibular Molar
Mostafa Helmy Mostafa
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Aim or purpose: Studies recommended the combined use of the immediate post-extraction implant placement with the immediate non-functional loading protocols for further reduction of the treatment period.
Materials-methods: Twenty patients were selected with a single mandibular first molar indicated for extraction and with specific criteria. Patients received atraumatic extraction of the mandibular first molar and by the aid of a computer-guided surgical stent; each patient immediately received two implants; one in the mesial and one in the distal socket. A plastic castable coping was screwed to each implant, shortened and a wax pattern was formed over both plastic castable, sprued and casted to form a crown assembly with a fitting surface of two custom-made abutments. The whole assembly was tried in the patient's mouth, and then finished into full porcelain crown that was screw-retained in the patient's mouth.
Results: Paired *t*-test used to study the changes by time in different parameters and revealed that: for Osstell measurements; a statistically significant increase in the mean values from 0 to 12 months of prosthesis placement. For bone height measurements; a statistically non-significant increase in the mean values-indicating non-significant bone resorption- from 0 to 12 months of prosthesis placement. For bone density measurements; a statistically non-significant decrease in the mean values of bone density from 0 to 12 months of prosthesis placement.
Conclusions: The new splinted implant design could be used successfully for immediate replacement of a single mandibular first molar tooth, without affecting the osseointegration process.

FC026
Piezotome Application in Advanced Implantology – Fast, Accurate and Safe Solution for Complicated Cases
Ziad Tarek Mahmoud Aly, Tarek Mahmoud Aly Mahmoud
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Introduction: A narrow ridge and antrum pneumatization are the most challenging obstacles that implantologists face on daily basis. Regular treatment protocol usually require a two-stage surgery for either augmenting a defective ridge or elevating a sinus for optimal implant placement.
Piezotome, with a variety of ultrasonic surgical tips provides a minimally invasive one-stage surgery solution. Crest splitting kit used for management of narrow ridge, followed by immediate implant placement and bone graft filled in the gap in one-stage surgery. Also the TKW kit for internal sinus lift allowed sinus elevation via crestal approach with no risk of perforation& immediate implant placement.
Case description: Five cases with bone width <4 mm in diameters were operated with piezotome ridge splitting after raising split thickness mucosal flap. Another two cases required implants in posterior maxilla presented with pneumatized sinuses and remaining bone height ranging between 2- 6 mm in both cases were operated with TKW intralift protocol& immediate implant placement.
Discussion: Ridge splitting cases showed excellent results regarding implant primary stability and crestal bone loss in the first 6 months. Only 1 failed implant discovered while loading in a total of 12 implants inserted.
Intralift cases showed excellent primary stability with no failure in 4 inserted implants.
Only mild unilateral epistaxis noticed in the first 48 h.
Conclusion: Piezotome application is an accurate and safe solution that allows both management of the problem and implant placement at one-stage surgery. In addition to improved patients acceptance due to reduced overall treatment time and decreased postoperative complications.

FC027
Willingness, Knowledge and Reluctance Regarding Dental Implants
Maria Sohail Ghazi, Hiba Aslam, Naseer Ahmed
Department of Prosthodontics, Altamash Institute of Dental Medicine, Karachi, Pakistan

Aim or purpose: The intend of our research was to evaluate patient's knowledge, willingness and reluctance towards dental implants as a treatment option, visiting a dental institute.
Materials-methods: This cross-sectional study was carried out through standardized questionnaire with seven multiple choice questions, which included awareness and first source of information about dental implants. Patients were also asked about their reluctance towards dental implants, their choice of dental implants over removable partial denture and any previous experience with dental implants and its successfulness as well as life expectancy and the outcome they expect from dental implants. Study was conducted over a period of 4 months on hundred patients who came to outpatient department at Altamash Institute of Dental Medicine, Karachi. The data was analyzed in SPSS software for statistical analysis.
Results: Out of 100 patients inquired about willingness, reluctance and knowledge about dental implants only 28% had knowledge of dental implants as a contemporary option of treatment and dentist were the main source of this information.13% had experience of dental implants, the main reason for reluctance was high cost, 18% were in favor of implant placement while given different

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treatment options. Life expectancy of implants in the opinion of majority was 10–12 years which shows reliability on dental implants. Proper mastication, 17%, was the main expectation from dental implant.
Conclusions: Study was carried out in a tertiary care hospital and majority were unaware of dental implants. Our study proposes a sturdy need of providing education to individuals in search of teeth replacement about dental implants.

FC028
The Effectiveness of Short Implants in the Posterior Mandible
Arkadiusz Makowiecki[1], Maciej Krawiec[2], Marzena Dominiak[2]
[1]*Armadent Private Practice, Kraków, Poland,* [2]*Chair and Department of Oral Surgery, Wroclaw Medical University, Poland*

Aim or purpose: The objective of the study was to compare levels of MBL and assess the degree of ISQ in two types of short implants with immediate and delayed loading.
Materials-methods: Conditions disqualifying patients: bruxism, the need for augmentation procedures as well as tobacco smoking (>10 cigarettes a day). Two patient group: 15 titanium implants 8 mm in length were placed in each (SPI ELEMENT RC INICELL diameter of 4.0 mm (Thommen®) and RN SLActiv diameter of 4.1 mm (Straumann®) – control group). Two protocols: early loading – Thommen® after 3 weeks, and delayed loading – Straumann® after 12 weeks. Loading conditions: no periodontitis, MBL ≤1.0 mm on an RVG (MBL measured on RVG using the right angle technique), an Osstell reading ≥65 ISQ. Radiological and implant stability (Osstell) were assessed: 0, 3 and 6 months after the procedure. The Wachtel index and the perception of pain according to the VAS scale were evaluated.
Results: An intragroup comparison revealed no significant differences in terms of primary and secondary stability and MBL 3–6 months after the procedure in the Thommen group whereas an increase in implant stability was observed after 12 weeks in the Straumann group compared with the baseline. MBL after 6 months: 0.57 ± 0.28 (Straumann) and 0.51 mm $\pm$ 0.37, (Thommen). Primary stability was higher for Thommen than for Straumann. After 12 weeks no significant differences were noted in an intergroup comparison.
Conclusions: The placement of implants with a hydrophilic conditioned surface significantly shortens the patient's treatment time.

Free Communication Session 08 | 07.09.2016, 11:30–12:30 | Pavilion 15 – Level 0 – Hall 0.F

Theme: Public Health

FC029
Oral Health and Arsenic Exposed and Non-Exposed Children in Bangladesh
Shahana Dastagir
Affiliation Missing

Aim or purpose: This cross-sectional study was conducted in rural areas of Bangladesh to assess and compare the state of oral health among the arsenic exposed population affected through drinking water with the non-exposed group.
Materials-methods: A total of 400 respondents were interviewed and examined through a structured questionnaire and a checklist. Exposed group was included those children taking water containing arsenic>0.05 mg/lwith or without the signs of arsenicosis. Children taking water containing<0.05 mg/l were treated as non exposed.
Results: Among them, 200 (50%) were found exposed to arsenic and the rest 200 (50%) were in non-exposed group. Study showed that 6% respondents were suffering from sensitivity of teeth, and 24.5% and 20% developed pigmentation on gingival and tongue surfaces, respectively, who used to take arsenic contaminated water, in comparison to non-exposed group, 10.9%, 5%, 0.5%, respectively. Arsenic exposed group had tooth abrasion 24%, while it was 4.5% in non-exposed group. Less caries (18.5%) was found among the arsenic exposed group than the non-exposed group (25.9%).
Conclusions: Arsenic might have influence on enamel hypoplasia and this low tendency of occurring caries.
Keywords: Arsenic, arsenic exposed and non-exposed patients, arsenicosis.

FC030
Each Child Its Individual eChart
Clarissa Jane Fidellaga Pe
Philippine Dental Association, Makati City, Philippines

Purpose: Assess, first time ever in the Philippines, the technical and organizational feasibility of efficiently conducting a public oral health survey while

1 Encoding patient data in the field into digital odontograms.
2 Automatically generating statistics on the population surveyed.

Survey was carried out QI 2016 by the Philippine Dental Association (PDA), in cooperation with school dentists of the Department of Education, among 6,000 pupils in 40 public elementary schools across country.
Materials-methods: *Materials*: Data collection: Online digital charting at schools (eCharting).
Statistics processing: Automatic generation of Prevalence and Incidence rates, extracted from pupils' eCharts.
Methods: PDA: Train school dentists in online eCharting.
School dentists: encode 6,000 eCharts.
PDA: Process population statistics.
Results: Feasibility was demonstrated 100%: meaningful oral health data have been collected in the field and have been processed into population Prevalence and Incidence rates on

1 Oral health statuses including caries, fillings, missing teeth.
2 Proposed treatment including extractions, fillings, oral prophylaxis, fluoride treatment, application of sealant or varnish.

Conclusions: It has been demonstrated that the absence of public oral health data in the Philippines is no longer imperative. Due to novel deployment of state of the art online digital materials and

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practical field methods, feasibility of surveying all 15 million pupils in the country's 38,000 elementary schools has come into sight.
More importantly, for the first time ever, public dental health policy formulation based on critical real field data (aimed at combating the rampant caries problem under the young), has come into focus as well.

FC031
Reduction of Sugars in Food Through Product Reformulation
Jean Luc Eiselé
Les Ligues de la santé, Lausanne, Switzerland

Dental caries is the most common chronic disease of childhood, and the most common reason children are admitted to hospital in Western countries. Dental treatment is 5–10% of the global health costs in industrialised countries. Data from the WHO Oral Health Database indicates that the global unweighted mean number of decayed, missing or filled teeth (DMFT) per 12 year old in 2004 was 2.3 worldwide. There are significant disparities among countries (www.fdiworldental.org/data-hub).
There is a progressive increase in the incidence of caries if sugar intakes are high. In addition to preventive measures including availability of fluoride in drinking water or toothpaste, structural measures are required as recommended by the 2015 WHO Guideline on Sugars intake for adults and children. In both adults and children, the intake of free sugars should be reduced to <10% of total energy intake (25 g a day). In Switzerland the consumption is over 120 g a day per inhabitant.
The food industry has demonstrated its capacity to adapt product composition through reformulation and the dental profession advocate for a rapid enforcement of the WHO recommendations to reduce the burden of dental diseases and chronic diseases. The example of the agreement signed between the Swiss health authorities and the food industry to voluntary reduce over the next 4 years the sugar content in yoghurts and breakfast cereals will be discussed. This example will be discussed in the context of other structural measures, such as tax on sodas, regulation of marketing and food labelling.

FC032
Oral Health Status, Knowledge, Practices, and Access to Dental Care Among Palestinian Women During Pregnancy
Elham Talib Kateeb
Al-Quds University, Abu Dis, Palestine

Background: Good oral health during pregnancy can not only improve the quality of life of the pregnant mother, but also potentially reduce complications during pregnancy as well as the risk of her child developing ECC in the future. Therefore, this study came to investigate pregnant women's oral health knowledge and attitude and to identify barriers to accessing care and practicing good oral hygiene.
Methods: Pregnant women visiting MCHC units at the Ministry of Health centers in East Jerusalem area were invited to participate in this study. In-person structured interview was conducted to assess study variables and a clinical examination was carried out to assess mothers' dental and gingival health status.
Results: 152 pregnant women agreed to participate in this study. 24% of them lived in houses with a monthly income <380$ and 41% did not finish their high school education. 26% of our sample did not visit a dentist in the last 3 years and 70% had no dental insurance. Mean DMFT was 15.5 ± 5 and mean DMFS was 31.8 ± 20. 33% of the mothers brushed sometimes' and 87% "Never" flossed their teeth. 57% of the mothers agreed that "A woman can lose a tooth just because she is pregnant."
Conclusions: Our sample had very high DMFT/S scores and knew little about oral health and proper oral hygiene practices. Findings from this study suggest the need for preventive and educational interventions to be incorporated in pre-natal health care programs to improve maternal and child oral health in Palestine.

Free Communication Session 09 | 07.09.2016, 13:00–14:00 | Pavilion 15 – Level 0 – Hall 0.C

Theme: Periodontics

FC033
The Role of the Cytokine Profile Changes in Pathogenesis of Chronic Periodontitis
Galina Biloklytska, Oksana Kopchak, Anna Vorobjova
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Aim or purpose: To investigate the individual profile of pro and anti-inflammatory cytokines in serum of patients with chronic periodontitis and the correlations between different cytokines levels.
Materials-methods: The prospective clinical and immunological study was performed in 54 persons, divided into two groups: the main group – 32 patients with chronic periodontitis (II-III stage) and control group – 22 patients with intact periodontium. The meean age of the patients was 35.8 ± 15 years. All patients were examined according to the standard protocol, including clinical, radiological examination and assay of IL-6, IL-8, IL-4, TNF-α in serum by ELISA. Statistical analysis was carried out using SPSS software.
Results: Analysis of immunological data revealed the increase in pro-inflammatory cytokines levels in patients of the main group. The average content of IL-6 in chronic periodontitis was 17.3 ± 3 vs. 9.8 ± 2 pg/ml in the control ($p < 0.05$), IL-1β – 53.5 ± 6.6 vs. 30.4 ± 5.3 pg/ml ($p < 0.05$), TNF-α – 23.8 ± 2.6 vs. 9.7 ± 1.7 pg/ml ($p < 0.05$), IL-8 – 7.9 ± 2.3 vs. 6.2 ± 1.1 pg/ml, ($p > 0.05$). The average content of IL-4 in the main group was 9.7 ± 1.7 vs. 16.7 ± 3.5 pg/ml but the differences were not significant ($p > 0.05$). The cytokine profile in patients with periodontal disease was characterized by changes not only in their absolute value but also in ratio of cytokine fractions.
Conclusions: Increase of pro-inflammatory cytokines along with a decrease in anti-inflammatory cytokines in periodontitis, can be considered as one of the mechanisms of chronic inflammatory process and may influence the general health state of the ptient.

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FC034

Association Between Plasma Levels of Vitamins and Severity of Periodontitis

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Aim or purpose: Periodontal disease is a common chronic inflammatory disease and an important risk factor for tooth loss. Vitamins might affect on bone mineral density or via immunomodulatory effects. The purpose of this study was to evaluate the relationship between plasma vitamin A, B12, C (ascorbic asid), D, E, K levels and severity of periodontitis.
Materials-methods: Clinical measurements were performed in 300 systemically healthy subjects, including evaluation of plaque, bleeding on probing, pocket depth and attachment loss. The selected subjects were categorized into four groups of 75 subjects differing disease severity based on CAL:healthy (group 1), early periodontitis: 1–2 mm CAL (group 2), moderate periodontitis: 3–4 mm CAL (group 3), severe periodontitis:>5 mm CAL (group 4). Blood samples were taken to measure plasma vitamin levels.
Results: A significant association was observed between severity of periodontitis and plasma vitamin levels. Significantly higher levels of plasma vitamin A, B12, C, D, were found in healthy control group compared with severe and moderate periodontitis groups ($p < 0.05$ for all). Main-Whitney U test showed an increase in the serum vitamin A, B12, C, D in group 1 when compared to group 3 and 4. There was no significant change in levels vitamin K and E.
Conclusions: The study results suggested that among the patients with periodontal disease, serum A, B12, C, D levels are directly related to inflammation and tissue destruction in periodontium.

FC035

Surgical Treatment of Interdental Papilla Evaluated by Using Digital Impression

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Aim or purpose: Formation of black triangles within the esthetic zone due to lost volume of interdental papilla predisposes to phonetic, periodontal, and esthetic problem The purpose of this prospective clinical study was to examine the clinical outcomes obtained by a novel surgical procedure using concentrated growth factor (CGF) in the reconstruction of the lost volume of interdental papilla within the maxillary anterior esthetic zone The purpose of this trial was also to present a new evaluation method by using digital impression technology (Cerec Omnicam) following esthetic reconstruction of interdental papilla loss.
Materials-methods: Sixty black holes were treated in 12 systemically healthy adults, with at least three adjacent papillary deficiencies with class I or II interdental papilla loss
Results: Differences between the lost inderdental papilla area at baseline and at the 1-month postoperative evaluation periods was statistically significant. There was no statistically significant difference between 1- and 6-month evaluation periods.
Conclusions: The surgical technique and imaging evaluation used here for reconstruction of interdental papilla was fairly successful. Use CGF to treat interdental papilla loss resulted in significant improvement at 6 months

FC036

Effect of Hyaluronic-Acid on Revascularization of Freegingivalgraft Using Laser-Doppler Flowmetry

Zeynep Turgut Çankaya, Sühan Gürbüz, Bülent Kurtiş

Department of Periodontology, Faculty of Dentistry, University of Gazi, Ankara, Turkey

Aim or purpose: Recent studies demonstrated that hyaluronic acid (HA) aids in the repair process of both soft and hard tissue and is used during the periodontal surgery to accelerate the healing process. The present randomized controlled clinical study was undertaken to evaluate the effectiveness of HA in combination with free gingival graft (FGG) by a novel application approach to enhance the inadequate zone of attached gingiva.
Materials-methods: Forty systemically healthy patients showing the inadequate width of attached gingiva (≤1 mm) were enrolled for the study. Patients were randomly assigned into test or control groups. Twenty patients, were treated by application of HA with FGG as test group. Twenty patients, were treated with only FGG as controls. After surgery, neovascularization was evaluated on the 1st, 7th, 14th and lastly 30th day by using laser doppler to measure the local microcirculatory blood perfusion in the FGG. Free gingival graft thickness (GT), width (GW) and height (GH) were also recorded. The data were analyzed statistically.
Results: Test group showed increase in vascularity and values for GW and GH were higher in test group compared to the control.
Conclusions: The results showed that HA was an effective adjunctive treatment modality in promoting reevascularization during early healing of FGG.

Free Communication Session 10 | 07.09.2016, 13:00–14:00 | Pavilion 15 – Level 0 – Hall 0.F

Theme: Materials

FC037

Evaluation of Bonding Systems Modified with Chlorhexidine Digluconate

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Aim: The modification of bonding systems with CHG and adhesive application procedures can improve their antibacterial properties. The next problem to be solved is whether change in adhesive composition and application procedure will influence the bonding strength, quality and durability of the existing bonding interface. The aims were:

1 The evaluation of antibacterial properties of different bonding systems.
2 The evaluation of antibacterial properties of bonding system with CHG addition.
3 The study on the improvement in dentine surface disinfection using CHG before adhesive application.
4 The study on the influence of these procedures on composite-dentine bonding strength, dentine surface and composite-dentine interface morphology.

Materials-method: Antibacterial study of 42 bonding systems against *S. mutans* and *E. faecalis* was performed using diffusion method with glass rings. Shear Bond Strength of original and modified bonding systems with application of standard and modified procedures were evaluated followed by the failure mode study. The SEM/EDS studies and of modified dentine surface were performed.

Results/Conclusions:

1 Contemporary used bonding systems exhibit differentiated antibacterial properties.
2 Primers/bonds upon mixing with CHG exhibited in general stronger antibacterial properties, however disinfectant application before adhesive application seems to be a more favourable solution.
3 The significant improvement in disinfecting properties of bonding systems, can be achieved by application of CHG before bonding system usage.
4 CHG application before most of bonding system do not influence negatively the bonding strength.
5 CHG applied on dentine before etching diminishes susceptibility of dentine to etching.

FC038

Evaluation of Shear Bond Strength of Different Adhesives to the Ormocer-based Conventional and Bulk-Fill Composites

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Aim or purpose: Bulk-fill composite and universal adhesives are being developed for simplifying the technique of placement of direct composite posterior restorations. This study evaluated the bond strength of different adhesive agents (5th and 6th generation, universal adhesives) to a ormocer-based conventional composite and a bulk fill composite.

Materials-methods: 80 caries free extracted human molars were used and sectioned parallel to occlusal surface to expose midcoronal dentin. The specimens were randomly divided into eight groups: two main groups, 40 of Admira Fusion (conventional, AF) and 40 of Admira Fusion X-tra (Bulkfill, AFX), and divided into four subgroups according to the adhesive agent used; these agents included Solobond M, FuturaBond NR, FuturabondU Etch&Rinse (E&R), FuturabondU Self etch (SE). After application of adhesive agent, AF and AFX were placed 4 mm thickness onto the specimens. Then they waited in distilled water (24 h/37°C). Shear bond strengths (SBS) were measured using a universal testing machine (0.5 mm/min speed). Datas were statitically evalauted by Tukey test and independent *t* test ($p < 0.05$).

Results: The highest SBS was observed in E&R application of FuturaBondU with AF (16.45 ± 2.58) and SE application of AFX showed the lowest SBS (7.13 ± 1.53). In all ormocer-composite groups; E&R and SE application of FuturaBondU had significantly higher SBS than SoloBondM and FuturaBondNR ($p = 0.0001$)

Conclusions: Ormocer based conventional and bulk fill resin showed better SBS when bonded with universal adhesives than 5th and 6th generation adhesives. There is a need for future studies about long-term bond strength and clinical success of universal adhesive and bulk-fill systems.

FC039

Repair Potential of Universal Adhesives on Aged Composite Restorations

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Purpose: The aim of this study was to investigate the adhesive performation of three different universal adhesives to repair aged composite by composite resins.

Materials-methods: Thirtysix disc-shaped composite samples (12 mm diameter × 2 mm thickness) were prepared, aged and randomly divided into 12 main groups ($n = 15$) according to adhesive procedures used (three universal and three current adhesives with and without a repair kit). A microhybride composite resin was placed to composite surface and light cured. After micro-shear bond test, the fracture surfaces were examined under the steriomicroscopy. Statistical analysis was performed using two-way ANOVA and Chi-square tests.

Results: Using e repair kit before use of adhesive system showed statistically higher bond strength (41.7 ± 10.9 MPa) than no repair groups (35.2 ± 12.7 MPa) ($p < 0.05$). Universal adhesives did not show significantly higher bond strength values with (41.5 ± 11.0 MPa) and without (35.7 ± 15.0 MPa) repair kit than current adhesives with (41.9 ± 10.9 MPa) and without (34.8 ± 10.0 MPa) repair kit ($p > 0.05$). On the other hand universal adhesives provided similar mean bond strength values (38.6 ± 13.4 MPa) with current adhesives (138.3 ± 11.0 MPa) ($p > 0.05$).

Conclusions: Although using a repair kit before adhesive aplications increased the bond strength significantly, no significiant difference in bond strength values was noted between current and universal adhesives.

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FC040

Adhesive Performations of Universal Adhesives on Aged Amalgam Restorations

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Purpose: The aim of this study was to investigate the adhesive performations of three different universal adhesives to repair aged amalgam by composite resins.

Materials-methods: Sixty amalgam samples (6 mm diameter × 2 mm thickness) were prepared, aged and randomly divided into 12 main groups (n = 15) according to adhesive procedures used (three universal and three current adhesives with and without a repair kit). A microhybride composite resin was placed to amalgam surface and light cured. After micro-shear bond test, the fracture surfaces were examined under the steriomicroscopy. Statistical analysis was performed using two-way ANOVA and Chi-square tests.

Results: Universal adhesives showed statistically higher bond strength when used with a repair kit (18.8 ± 5.4 MPa) than those of current adhesives (11.9 ± 4.3 MPa) ($p < 0.05$). However, no statistically significant differences was observed between universal (11.5 ± 2.8 MPa) and current adhesives (10.3 ± 3.1 MPa) when used without a repair kit ($p > 0.05$). On the other hand no significiant difference in bond strength values was noted for current adhesives with (11.9 ± 4.3 MPa) or without repair kit (10.3 ± 3.1 MPa) ($p > 0.05$).

Conclusions: Using a repair kit before adhesive applications increased the bond strength significantly for both universal and current adhesives. However, universal adhesives did not increased the mean bond strength when used without repair kit.

Free Communication Session 11 | 07.09.2016, 14:30–15:30 | Pavilion 15 – Level 0 – Hall 0.C

Theme: Materials

FC041

Mathematical Modeling Applied to a Database Nanofibres Based Dental Systems

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Aim or purpose: The study aims at mathematical modeling of the database nanofibres based dental systems.

Materials-methods: Some stages will be performed: evaluation and modeling of transfer of active components from topical formulations across artificial membranes; modeling, validation, optimization, testing of the new developed materials; study and modeling of transfer process through artificial membranes of PLLA from achieved formulations.

The experimental approach envisages a modeling methodology based on a MLP (6:12:18:1)-multilayer perceptron with 6 input variables, two hidden layers containing 12 and 18 neurons, respectively, and one output – was performed. The model considered: crystallite size (nm), surface area (m2/g), absorption edge (nm), initial concentration of HA and PLLA (mgL-1), time of reaction (minutes), as inputs. From the total of 6 parameters, three inputs were chosen through a sensitivity analysis to easily identify the nanocomposite type in the simulation runs.

Results: Accurate results were obtained in the validation phase of the model: relative average error under 4% and a correlation of 0.999. The values of the HA concentration and PLLA concentration were linearly interpolated in their ranges and applied to obtain important supplementary results which not belong to experimental data set for each dental system type considered.

Conclusions: The outcomes will emphasize the developing of new constitutive laws and novel algorithms to accurately model the new nanofibres based dental systems with different architectures and to predicting their efficiency, safety behaviors, long-term performance.

Acknowledgements: Scientific research is financed from "Grigore T. Popa" University of Medicine and Pharmacy of Iasi, according to the 31589/23.12.2015 research contract.

FC042

Temperature Changes During Polymerization of Bulk-Fill Resin Composites

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Aim or purpose: The purpose of this study was to investigate the pulpal temperature increase during the polymerization of bulk-fill resin composites in pulpal chamber of primary tooth.

Materials-methods: A non-retentive class I cavity was prepared in an extracted primary molar tooth, leaving a dentin layer in 1 mm thickness between pulp chamber and occlusal cavity. Three bulk-fill materials (Tetric EvoCeram Bulk Fill, X-tra fil, SonicFill) was placed to the cavity and polymerized with LED curing unit. Temperature rise during polymerization of bulk-fill resin composites were measured with a J-type thermocouple wire that was connected to a data logger. Data were analyzed with one way ANOVA and Tukey HDS tests.

Results: The highest recorded temperature rise was in SonicFill group (3.38°C), followed by Tetric EvoCeram group (2.85°C) and X-tra fil group (2.44°C). Temperature rise during polymerization of Sonic Fill was statistically different from X-tra fil ($p < 0.05$).

Conclusions: During polymerization of bulk-fill resin composites, the temperature increases recorded for all groups were below the critical value of 5.6°C. It can be concluded that, with regard to temperature increase, bulk-fill materials evaluated in this study can be used safely in primary tooth.

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FC043

Evaluation of the Cytotoxicity of Children's Toothpastes

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Aim: The aim of this in vitro study was to evaluate the cytotoxic effects of commercially available children's toothpastes.
Materials-methods: In this experimental study, 4 types of commercially available children's toothpastes (Sensodyne Pronamel, Ipana Kids, Signal Kids and Oral B Junior) were examined, and their effects were determined on L929 cells. Toothpastes were diluted in serum-free medium, centrifuged, and filter sterilized. The L929 fibroblasts were incubated in contact with eluates for 2 min at 37°C. The fibroblast cell viability was analyzed by measuring the mitochondrial activity with the methyltetrazolium test (MTT). Data were analyzed using one-way analysis of variance with a post hoc Tukey's tests.
Results: The ranking of the least to the most cytotoxic material was: Ipana Kids < Sensodyne Pronamel < Oral B Junior < Signal Kids. Toothpastes containing cocamidopropyl betaine (Sensodyne Pronamel, Ipana Kids) were not cytotoxic to L929 fibroblast cells ($p > 0.05$). However, toothpastes containing sodium lauryl sulfate (Signal Kids and Oral B Junior) were cytotoxic to L929 fibroblast cells ($p < 0.05$).
Conclusions: Taking into consideration of the limitations of this in vitro study, children's toothpastes containing sodium lauryl sulfate might have some toxic effects on the soft tissues of the oral cavity.

FC044

Influence of Water Sorption on Shrinkage Stress of Dental Composites

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Aim: Polymerization of resin composite develops polymerization shrinkage and shrinkage stress at the restoration-tooth interface (up to 20 MPa, depending on the material), leading to microleakage and clinical complications. Water sorption in oral cavity may cause an increase in restoration volume and probably a decrease in shrinkage stress. This in turn can reduce the risk of restoration debonding. The aim was to evaluate the influence of water sorption by resin composites on polymerization shrinkage stress generated on the restoration-tooth interface.
Materials-methods: Two resin composites, one compomer and one giomer were evaluated. The shrinkage stress was measured immediately after curing. The samples stored in water were evaluated after 24 h for 7 days and then once a week up to 90 days. Photoelastic study was performed on photosensitive epoxy resin plates in Transmission Polariscope FL200. The study was based on the analysis of dimension and arrangement of fringes. Shrinkage stress was calculated on the basis of elasticity theory. In order to measure the water sorption and its dynamics, the material samples were weight on analytical scale in the above mentioned time intervals.
Results: The tested materials during polymerization generated shrinkage stresses ranging from 4 to 20 MPa. After conditioning in water, the decrease in shrinkage strain after 72 h was observed. The decrease in value stress in time depended on the type of material.
Conclusions: Polymerizing dental materials generated differentiated shrinkage stress, that decrease in time due to water sorption. The dynamics of stress change is material dependant.

Free Communication Session 12 | 07.09.2016, 14:30–15:30 | Pavilion 15 – Level 0 – Hall 0.D

Theme: Endodontics

FC045

Effects of Mixing Techniques and Dentin Moisture Conditions on Push-Out Bond Strength of ProRoot MTA and Biodentine

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Aim or purpose: To evaluate the influence of manual and mechanical mixing techniques as well as the effects of moisture on the push-out bond strength of ProRoot MTA and Biodentine to radicular dentin.
Materials-methods: 240 dentin discs were assigned into 3 groups regarding moisture condition tested ($n = 80$): (i) dry: excess distilled water was removed with paper points followed by dehydration with 95% ethanol, (ii) paper points: the canals were blot-dried with paper points with the last one appearing dry, (iii) wet: the canals remained totally flooded. The discs were further divided into 4 subgroups according to the calcium silicate cements and mixing techniques used ($n = 20$): (i) ProRoot MTA mixed manually, (ii) ProRoot MTA mixed mechanically, (iii) Biodentine mixed manually, and (iv) Biodentine mixed mechanically. Bond strengths of the cements to root canal dentin were measured using a push-out test setup at a cross- head speed of 1 mm/min. The data were statistically analyzed using three-way ANOVA and Bonferroni post-hoc test $p = 0.05$.
Results: Dry conditions caused a significant decrease in bond strength values for both CSCs ($p < 0.001$). The mean bond strength of Biodentine was significantly higher than that of ProRoot MTA, regardless of the mixing techniques and moisture conditions ($p < 0.001$). Mechanical mixing favored bond strength values statistically compared to manual mixing ($p < 0.001$).
Conclusions: The mixing techniques and moisture conditions have an effect on the push-out bond strengths of ProRoot MTA and Biodentine. Dry samples and manual mixing of cements deteriorate the push-out bond strengths values.

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FC046

Laser-Assisted Endodontics: Bactericidal Efficacy of Different Laser Operation Modes

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Aim: To assess the antibacterial action of diode laser irradiation (CW – 1,500 W, IMP – 3,000 W), photo-activated disinfection (PAD), and 5.25% NaOCl on Enterococcus faecalis in an infected tooth model.
Materials-methods: Fifty freshly extracted bovine teeth with single canals were prepared to apical size 45° ISO, autoclaved and contaminated with *E. faecalis*. After a 48-h incubation the specimens were randomly divided into four treatment groups and one control group (n = 10): Group 1 was irradiated with 1,500 mW (CW); Group 2 was irradiated with 3,000 mW (IMP); Group 3 was subjected to PAD and Group 4 was irrigated with a 5.25% NaOCl. Group 5 was rinsed with saline solution (control). After treatment, the dentin samples were collected and the CFUs/mg were counted. Values were subjected to the Kruskal–Wallis test, for group comparisons – to the Mann–Whitney *U*-test.
Results: The differences in the mean number of the colony forming units (CFU/mg) between all the groups analyzed were statistically significant ($p < 0.001$). The highest number of microorganisms was observed in the control group (52.7×10^3 CFU/mg). Both diode laser applications resulted in a significant reduction in the number of *E. faecalis* cells: G1 – 1.4×10^3 CFU/mg, G2 – 4.2×10^3 CFU/mg, whereas in the group subjected to PAD the extent of reduction was significantly less (G3 – 42.8×10^3 CFU/mg).
Conclusions: The present study demonstrates that CW and pulse diode laser applications are both suitable for root canal disinfection, but do not eradicate all bacteria.

FC047

Intracanal Separated Instrument Management – Case Reports

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Introduction: During endodontic therapy, clinicians may encounter a variety of unwanted procedural difficulties at any stage of treatment. Intracanal separation of endodontic instruments could be very frustrating and may hinder cleaning and shaping procedures within the root canal system.
Case description: This article presents clinical cases and describes different techniques (ultrasonics, microtube and by-pass) for management of separated instruments.
Discussion: The presence of fractured root canal instruments may interfere in the endodontic treatment prognosis. Prior to diagnosis, the shape of the root canal, location of the fragment and the stage of root canal preparation at which the instrument was separated, should be considered during the decision-making process for its retrieval. Attempts to bypass or retrieve the instrument should always be made before any micro-surgical procedures.
Conclusion/clinical significance: The methods for retrieving separated instruments from root canals require great precision and anatomical knowledge. Modern techniques, using CBCT and magnification, are a feasible and effective method for treating teeth with broken instruments.

FC048

Fracture Resistance of Endodontically Treated Teeth – An In Vitro Study

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Aim or purpose: The aim of our study was to assess the influence of different post and core materials on the fracture resistance of endodontically treated premolars.
Materials-methods: The study involved 72 intact premolars, extracted for orthodontic or periodontal reasons. They were endodontically treated and divided into 3 groups by 24 samples each: restored with no post, a fiber post and a passive metal post. Each of the groups was further divided according to the remaining cavity walls (endodontic access only, MO/DO cavity, MOD cavity and a group with no crowns). All samples were built-up with micro-hybrid resin-composite core material. The teeth were then artificially aged through thermocycling (5,000 cycles between 5 and 55°C). Their fracture resistance was evaluated in a standard testing machine with a crosshair speed 4 mm/min and an increase in loading by 0.98 N. The results were analysed using one-way ANOVA and Tukey HSD test.
Results: The mean ± SD failure loads ranged from 707 ± 113 N to 1,590 ± 534 N. In the groups with MO cavities, fiber posts increased fracture strength ($p < 0.05$), while metal posts showed the lowest values. In all groups, the risk of failures that cannot be restored increased when a metal post was present, while the teeth restored with fiber posts showed more favourable fractures.
Conclusions: Within the limitations of this study, placement of fiber posts significantly increased the fracture resistance of teeth with MO cavities.

Free Communication Session 13 | 07.09.2016, 14:30–15:30 | Pavilion 15 – Level 0 – Hall 0.E

Theme: Pedodontics

FC049

Scanning Electron Microscopic Evaluation of Enamel and Dentin After Laser (Er,Cr:YSGG) vs. Conventional Class V Cavity Preparation in Primary Molars: In-Vitro Study

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Aim or purpose: Scanning electron Microscopic evaluation of enamel and dentin after laser (Er,Cr:YSGG) vs. conventional class V cavity preparation and after restoration of prepared primary molars with injectable Giomer.
Materials-methods: Forty primary mandibular second molars were collected. Molars were divided into four equal groups, group (I) class V prepared with the high-speed Diamond bur, group (II) class V prepared with the high-speed Diamond bur and restored with injectable Giomer after adhesive application, group (III) class V prepared with non-contact (Er,Cr:YSGG) laser and group (IV) class V prepared with non-contact (Er,Cr:YSGG) laser and restored with injectable Giomer without adhesive application. Molars were sectioned perpendicular to the long axis of the tooth using a low speed diamond disc under water coolant. Evaluation of enamel and dentin after cavity preparation, and at enamel and dentin/restoration interfaces were observed with Scanning Electron Microscope.
Results: In group (I) well-defined smooth cavity floor and walls were almost covered with a debris-like smear layer. In group (II) After acid etching, the smear layer was completely removed and enamel rods or dentinal tubules were clearly visible. In group (III) Irradiated enamel had a characteristic appearance resembling (Lava flow) with open enamel prisms. Protruding dentinal tubules were observed. No visible cracks or carbonization were detected. In group (IV) Laser produced micro-retentive morphological pattern without the production of smear layer.
Conclusions: It can be concluded that (Er,Cr:YSGG) laser can be an alternative technique for conservative caries removal and provided better bonding of the restoration to primary teeth.

FC050

Comparison of Microleakage and Bonding Strength of Two Flowable Composite Materials in Premolars Prepared by (Er,Cr: YSGG)Laser:Invitro Study

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Aim or purpose: Comparison of microleakage, enamel micro-shear bond strength and pushout dentin bonding strength between flowable composite (N-Tetric Flow) and Filtek Z350XT flowable restorative in premolars prepared by (Er,Cr:YSGG)laser.
Materials-methods: For microleakage, twenty class V cavities were prepared in premolars by laser. Teeth were equally and randomly divided into two groups according to the restorative material, Group I restored by (N-Tetric flow), group II restored by Filtek Z350 XT. Specimens were thermocycled, Samples were then sectioned and evaluated under a stereomicroscope. Microleakage was assessed and scored using linear dye penetration method. For micro-shear bond strength, the enamel surface of 20 premolars were treated with laser. Teeth were divided equally into two groups according to material used. An iris cut from micro-bore polyethylene tube (height of 1 mm and 0.9 mm internal diameter), composite was delivered, tubes were removed and micro-cylinder of materials were obtained and bonded to enamel, a shearing load with tensile mode of force was applied via materials testing machine. Finally, push-out dentin bonding strength was carried out on twenty dentin disks. Standardized cavity was prepared in each disk by laser. Samples were divided into two equal groups according to restorative material used. Discs were subjected to static loading.
Results: Although Filtek Z350 XT showed less microleakage, better bonding strength to enamel and dentin than N-tetric flow, no statistical significant difference between both groups was detected.
Conclusions: The laser preparation effect on permanent tooth structure provided better bonding to enamel and dentin regardless the restorative material used.

FC051

Clinical Image Quality Evaluation of Digital Panoramic Radiographs with Dedicated Smart Processing in Children with Mixed Dentition

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Aim or purpose: To determine the depiction of anatomical structures in digital panoramic radiographs processed with a dedicated algorithm in children with mixed dentition.
Materials-methods: Fifty panoramic images from children aged 6–12 years were retrospectively assessed before and after processing with a dedicated algorithm for smart panoramic curve adaptation to the dental arch (Vistapano S Pan, Durr Dental). All radiographs were evaluated using a modified Clinical Image Quality Evaluation Chart in different areas of the jaw bones. The evaluation aspect includes the extent of proximal overlap, dentoenamel junction and periodontal ligament space of deciduous and permanent teeth, definition of deciduous and permanent root shape, definition of permanent crown shape, definition of alveolar crest, and definition of trabecular pattern. Apart from repeated measures to determine the intra-observer variation, inter-observer variability was assessed by data observations by 2 dentomaxillofacial radiologists. A paired *t*-test was used to compare the image quality assessment results.
Results: Intra-observer and inter-observer variability showed a kappa of respectively 0.8 and 0.7, indicating strong to good agreement. Observations before and after application of the dedicated smart pan algorithm indicated a significant difference in image quality, more specifically in the premolar area of upper jaw and anterior area of both jaws ($p < 0.05$), with an overall improved of the quality scoring for the anatomical features.
Conclusions: A dedicated panoramic algorithm may aid depiction of the anatomical structures, more specifically in the anterior areas of both jaws and the premolar area of the upper jaw.

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FC052

Crown Fractures of Permanent Teeth – Retrospective Study

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Aim or purpose: To study the causes and treatment of permanent teeth crown fractures.
Materials-methods: Retrospective analysis of 79 patient records (6–18 years old with crown fractures of permanent teeth) was conducted. Recorded data included: age; sex; cause, place, type of injury; time from injury to appointment; treatment methods; complications. Crown fractures were reported in 79 patients (mean age 10.0 ± 2.64 years), most common cause was fall (32.91%), outside (45.57%) in maxillary central incisors (34.19%), the time from injury to treatment ranged from 10 min to 61 days (average 67.81 h). Enamel-dentin fractures were covered by a provisional material, then rebuilt, those with pulp exposure were biologically (16.67% unfinished root growth) or endodontically (66.67% finished root growth) treated. Statistical analysis was based on the Spearman rank correlation ($p < 0.05$).
Results: Most common complication was pulp necrosis: 14.28% (enamel-dentin fractures) and 33.33% (fractures with pulp exposure). Statistically significant negative correlation occurred between: treatment time and pulp capping; between pulp necrosis and the degree of root formation. A significant positive correlation occurred between the age, treatment time and pulp extirpation, as well as between the necrosis and partial amputation, coexistence of other trauma.
Conclusions: Crown fractures affect mostly maxillary central incisors, as a result of a fall. Significant correlations were observed: between the age of patient, treatment time and the method of treatment, as well as complications and the degree of root formation, treatment method and coexistence of other traumas.

Free Communication Session 14 | 07.09.2016, 14:30–15:30 | Pavilion 15 – Level 0 – Hall 0.F

Theme: Prosthodontics

FC053

Significance of Polymethylmethacrylate (PMMA) Modification by Zinc Oxide Nanoparticles for Fungal Biofilm Formation

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Aim or purpose: Denture stomatitis is still a clinical problem in patients particularly vulnerable to this disease. The objective of this study was to obtain a material composite with antifungal properties for dentures to be used as an alternative protocol in denture stomatitis treatment and prevention.
Materials-methods: Composites of PMMA and doped ZnONPs (weight concentrations, 2.5%, 5%, 7.5%) and PMMA with sprayed solvothermal and hydrothermal ZnONPs were tested. The following investigations of newly formed biomaterials were undertaken: influence on Candida albicans solution, biofilm staining, XTT analysis and total amount of adhered Candida cells.
Results: These studies evidenced the antifungal activity of both nanocomposites PMMA- ZnONPs and the efficacy of sputtering of zinc oxide nanoparticles on the PMMA. The study of the biofilm deposition on the surface showed that antifungal properties increase with increasing concentration of ZnONPs. The XTT assay in conjunction with testing the turbidity of solutions may indicate the mechanism by which ZnONPs exert their effect on the increased induction of antioxidative stress in microorganism cells.
Conclusions: The denture base made of the aforesaid materials may play a preventive role in patients susceptible to fungal infections. Based on the results obtained a modified treatment of denture stomatitis type II (Newton's classification) complicated by fungal infection was proposed.

FC054

Method of Assessing the Stability of the Force Retention in the Three-Element Telescopic Crown Systems

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The development of CAD/CAM technology created the possibility of using three-element telescopic crown systems. Methods of verification of new solutions are necessary before the clinical use.
Aim or purpose: The aim of the study was to develop a method of assessing the stability of the force retention in three-element telescopic crown systems in selected combinations of materials.
Materials-methods: Material for the study consisted of 15 three-element telescopic crown systems, collected in five groups representing specific combination of materials:
A (ZrO-AuGalv-ZrO), B (ZrO-PMMA-ZrO), C (ZrO-AuGalv-CrCo), D (ZrO-PMMA-CrCo), E (ZrO-AuGalv-acrylic) and a control group (K: Au-AuGalv-CrCo).
A fundamental part of the developed method was the measuring device with software, which was constructed in the Institute for Sustainable Technologies in Radom. The study was divided into two experiments. Firstly, retention force was examined in the range of 0–30,000 cycles of engagement and disengagement of crowns. Secondly, the samples were tested to the limit of 300,000 cycles. The statistical analysis was performed using STATISTICA 8.0.
Results: In the first experiment there were no significant differences between the changes of the retention force in groups A vs. B and C vs. D.
In the second experiment, only group E could be considered stable. All groups, except for groups C vs. E and D vs. B, differed from one another significantly.

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Conclusions: The CAD/CAM technology that allows to make the elements from zirconia in the three-element systems ensures the most stable retention force irrespective of the type of intermediate element.

FC055

Biomechanical Aspects of Endodontically Treated Anterior Tooth with Prosthetic Reconstruction

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Introduction: Biomechanical resistance of root-treated anterior tooth with prosthetic reconstruction depends on used biomaterial. The most common complications in such a treatment are root or post damage due to overload. As material metal alloys are commonly used but in 1980 zirconia have become an alternative, and shortly after that a composite material reinforced with fiberglass was applied.
Aim or purpose: Analysis of biomechanical properties of the tooth-cement-post made of tree different kinds of biomaterial system, based on experimental and simulation strength tests.
Materials-methods: For experimental strength tests model of tooth-cement-post was made. The posts were made of chromium-cobalt alloy by SLS method, of zirconium dioxide by CAD/CAM and by direct method using standard FRC post. In the simulation study debited model were used.
Results: In the case of a tooth-cement-chromiumcobalt post in 90% decementation occurred. In tests for the zirconia group all posts broke below the bearing surface. In the case of a FRC system high dispersion of results was observed. In a simulation study, in two first groups the greatest tension was localized around bearing surface. In FRC group stress distribution was observed. Simulation confirmed the results of experimental study.
Conclusions: A combination of mechanical properties of teeth reconstructed with different posts determines strength to the occlusal force.
Damage that make prosthetic re-treatment impossible occurs often as a complication of using the chromiumcobalt-alloy and zirconium dioxide posts, therefore, in clinical practice FRC should be taken into consideration in the first place if the indications for their use are present.

FC056

The Impact of the Use of Intraoral Mouthguards on Aerobic Capacity of Athletes

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Aim or purpose: The use of intraoral mouthguards is the basic method of preventing injuries of the stomatognathic system while practicing extreme, contact, team and recreational sports. Polymer chains, which are the main component used in the production of the mouthguards, through internal constitutional changes significantly reduce impact energy to prevent tissue damage. However, their presence in the mouth, especially when increased oxygen uptake is needed during exercise, may adversely affect the level of blood oxygenation. The aim of the study was to evaluate the effects of different intraoral mouthguard types for the cardio-respiratory capacity of athletes.
Materials-methods: 30 athletes aged 20–37, testing a total of 120 intraoral mouthguards of different types, took part in the study, in which cardio-respiratory capacity was compared using CRF, IF, METS and Watt indicators, based on tests conducted on the Fitmate device correlated with a stationary exercise bike.
Results: The analysis of variance showed no statistically significant differences between the compared parameters regardless of the tested mouthguard.
Conclusions: The use of intraoral mouthguards during exercise does not affect the cardio-respiratory endurance of athletes. In order to clearly differentiate the influence of different types of mouthguard on this parameter, it will be necessary to conduct tests on a larger group of participants.

Free Communication Session 15 | 07.09.2016, 16:00–17:00 | Pavilion 15 – level 0 – Hall 0.C

Theme: Orthodontics

FC057

Microscopic Study of Surface Roughness of Four Orthodontic Archwires

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Aim or purpose: Comparative evaluation of surface roughness of stainless steel, nitinol, TMA and copper Ni Ti Orthodontic arch wires before and after clinical use to find the smoothest wire surface best used in orthodontic sliding mechanics.
Materials-methods: Surface roughness of 40 arch wires divided into four groups (group 1:10 st st arch wires, group 2:10 Ni Ti arch wires, group 3:10 TMA arch wires and group 4:10 Cu Ni Ti arch wires) were measured at five different points for each wire before and after its clinical use in oral cavity for 4 weeks using Atomic Force microscope and Optical Digital microscope. All obtained data was statistically tested.
Results: Stainless steel arch wires had the smoothest surface (average roughness: 17.38 μm for new wires and 104.1um for used wires) and cooper Ni Ti arch wires had the roughest surface (average roughness: 221.12 um for new wires and 499 um for used wires) with high significant differences between both groups either new or used arch wires ($p < 0.001$**). High significant difference was found between new and used wires for all groups. Nitinol wires had greater surface roughness (average roughness: 211.8 um for new wires and 313.8 for used wires) than TMA wires (average roughness: 138.5 um for new wires and 221.2 um for used wires.

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Conclusions: Stainless steel orthodontic arch wires exhibited the least amount of surface roughness and advocated to be used in sliding mechanics to minimize the friction during orthodontic tooth movement.

FC058

Factors Associated with Oral Health Related Quality of Life in Children with Malocclusion

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Aim or purpose: The aim of this study is to assess the relations between oral health related quality of life, orthodontic treatment need, personality traits and household income in 11–14 year old orthodontic consultation patients.
Materials-methods: Patients were recruited for pilot study (n = 15), main study (n = 200) and retest evaluation (n = 50). Child Perceptions Questionnaire 11–14 (CPQ 11–14), Basic Personality Traits Inventory and Life Orientation Tests were administered. Objective and subjective orthodontic treatment need were assessed by the Index of Complexity, Outcome and Need (ICON) and the Aesthetic Component (AC). Monthly household income was recorded as declared by parents. Validity and reliability tests were performed for CPQ 11–14. Pearson's correlation coefficients were calculated to assess the relations between oral health related quality of life and personality traits. Tukey's multiple comparison tests were used to compare oral health related quality of life among household income groups.
Results: Patients with greater orthodontic treatment need had significantly higher CPQ 11–14 scores which indicated worse quality of life. Oral health related quality of life had significant negative correlations with neuroticism and negative valence (r:-0.228 and r:-0.146) and positive correlations with extraversion, openness to experience and optimism (r:0.265, r:0.156 and r:0.218). Patients from lower household income groups had worse oral health related quality of life.
Conclusions: Oral health related quality of life is related to personal and environmental factors in children with malocclusion. Along with the use of objective measures, quality of life assessments should be performed to improve the allocation of resources for orthodontic treatment.

FC059

A Novel Mutation in Class III Malocclusion: A Family Study

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Purpose: Class III malocclusion is a conjoint dento-skeletal phenotype along with significant genetic components. Nevertheless, very few susceptible genes have been identified for this phenotype. Asian races are showing high incidence of Class III malocclusion or mandibular prognathism. Moreover, this ethnicity became a risk factor for this phenotype. The Aim of this study was to identify the causative gene of DUSP6 mutation in a class III malocclusion.
Materials-methods: Based on clinical and radiological examination, A Malaysian Malay family including four generations with class III malocclusion was taken for genetic study. We selected one Malaysian Malay class III malocclusion case and the three generations where the age range was started from 14 and above with the help of Orthodontist. Romexis™ Software 2.3.1. R (Planmeca, Finland) was used for cephalometric analysis to decide the level of skeletal malocclusion. For genetic study, DNA extractions from buccal swab were done. Polymerase Chain Reaction and DNA sequencing were carried out to find out the result.
Results: Two heterozygous novel missense mutations 1087 C>T (p. Thr 363 Ile) and 1111 T>C (p. Tyr 371 His) were identified in DUSP6 gene.
Conclusions: Analysis of our data concluded that there is a suggestive linkage for class III malocclusion with the DUSP6 gene in Malaysian Malay population. Moreover, this verdict can pooled with previous studies for advance knowledge of the genetic basis of class III malocclusion.

FC060

Orthodontic Treatment of Oncologic Patients – Own Experience and Review of the Current Literature

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At present, the overall survival of childhood cancers is as high as 80% resulting in increasingly common contact of orthodontists with this group of patients. The aim of this study was to present own results of integrated orthodontic treatment of oncologic patients and the review of current literature.
Materials-methods: The study included 48 patients treated between 2008 and 2015 (30 male, 18 female; median age 19.1). 30 patients were cancer survivors and 18 patients were in the maintenance therapy. Moreover, 48 healthy control subjects matched for age, sex, and malocclusion served as control group. The Oral Health Impact Profile was used to assess the quality of life.
Results: The mean follow-up time was 24.3 months. In 3 and 11 patients in the oncological group we observed root resorption and oral mucositis respectively. In the control group, four patients had mucositis and two allergies to nickel. There was no statistically significant difference in outcomes achieved in both study and control assessed on cephalometric images. In 10 cases, orthodontic appliances were removed temporarily to perform imaging studies. In 9 patients, it was necessary to discontinue treatment earlier. Both short- and long-term results of the orthodontic treatment were comparable in the study and control group. The overall QoL improved significantly after the treatment.

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Conclusions: The results of properly conducted orthodontic treatment of oncologic patients do not differ significantly from the results of treatment of healthy. Close interdisciplinary cooperation with physicians leading cancer treatment and follow-up allows for appropriate treatment planning.

Free Communication Session 16 | 07.09.2016, 16:00–17:00 | Pavilion 15 – Level 0 – Hall 0.D

Theme: Materials

FC061

Fatigue Resistance of All-Ceramic Crowns Restored on Maxillary Premolars

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Purpose: The aim of this study was to investigate and compare the fatigue strength of maxillary premolars restored with two CAD/CAM ceramics, lithium disilicate e.max® CAD (LD) and polymer-infiltrated ceramic Enamic® (PIC).
Materials-methods: Twenty extracted maxillary premolars were selected and prepared for full-coverage restoration (IRB number: UW 15-578). They were randomly divided into two groups. The restorations were milled with LD and PIC ceramic blocks using Cerec system with a standardized model. The surfaces of ceramic crowns and prepared teeth were etched and the crowns were cemented on teeth by resin cement (RelyXTM Ultimate, 3M ESPE, USA). The restored teeth were embedded in acrylic resin and exposed to a 5 mm stainless steel ball-shaped indenter to simulate cyclic chewing (9 Hz). The fatigue loading was started with 500 N and increased each 100,000 cycles with a stepwise of 100 N until fracture occurred or 1,400 N (i.e. 1,000,000 cycles). Kaplan-Meier survival analysis was applied on fatigue loading of each material group and level of significance was set at 0.05.
Results: The average fatigue load of LD crowns was 1,400 N with just 30% failure rate, whilst 870 N was observed for PIC samples with no survivability. The log-rank test showed that the influence of ceramic crown on fatigue resistance is significant. Most of the failed samples of each group experienced fracture above the CEJ.
Conclusions: The fatigue resistance of LD crowns was significantly higher than PIC restorations. Most of the fractured samples are supposed to be re-restorable.

FC062

Effect of Nanofilled Self-Adhesive Protective Coating on Color Changes of Composite Resin

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Aim or purpose: To evaluate the effect of nanofilled self-adhesive protective coating on the color changes of flowable and packable composite resin after aging in artificial saliva and carbonated drink.
Materials-methods: Disc shaped (diameter: 15 mm, height: 1 mm) specimens were prepared from flowable and packable composite resin (n = 40 specimens/composite). The specimens were tested both with and without applying nanofilled self-adhesive protective coating. The baseline colour values (L*a*b*) of each specimen were measured using a chromameter according to the CIEL*a*b* color scale. A half of the specimens from each group were then aged by immersing in artificial saliva, while the remaining specimens were immersed in carbonated drink (7d, 37° C). After each immersion, the color values of each specimen were remeasured. The color change (ΔE*ab) and changes in three color coordinates (ΔL*, Δa*, Δb*) was analyzed by ANOVA ($p < 0.05$).
Results: The color change ranged from 0.49 to 2.31. Applying nanofilled self-adhesive protective coating was associated with a significant decrease in the color changes after aging condition for both flowable and packable composite resin. The changes of three color coordinates resulted in significant differences for both composite resins, with and without protective coating application.
Conclusions: The color changes of flowable and packable composite resin after aging condition was decreased by applying nanofilled self-adhesive protective coating.

FC063

Responses of Bovine Dental Pulp-Derived Cells to Dentin Desensitizing Agents

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Purpose: The purpose of this study was to evaluate the cytotoxic reaction of bovine dental pulp-derived cells after exposure to three dentin desensitizing agents.
Materials-methods: For cytotoxicity testing, bovine dental pulp-derived cells transfected with Simian virus 40 Large T antigen were exposed to different concentrations (100%, 50% and 25%) of Shield Force Plus Desensitizer (Tokuyama), Gluma Desensitizer (Heraeus Kulzer) and Teethmate Desensitizer (Kuraray). Complete medium was used as the untreated control. The bovine dental pulp-derived cell viability was evaluated using MTT assay after 24 h of exposure. The data were submitted to one-way ANOVA and Tukey-HSD post hoc tests.
Results: Original extracts (100%) and also the dilutions (50% and 25%) of Gluma Desensitizer significantly reduced the cell survival compared with the untreated control ($p < 0.05$). None of the concentrations of Shield Force Plus Desensitizer and Teethmate Desensitizer significantly reduced cell survival when compared with the untreated control ($p > 0.05$). Gluma Desensitizer was also found to be more cytotoxic than the Shield Force Plus Desensitizer and Teethmate Desensitizer ($p < 0.05$).
Conclusions: According to the findings of this study, Shield Force Plus Desensitizer and Teethmate Desensitizer were more biocompatible than Gluma Desensitizer.

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FC064

Bovine Pulp Derived Cell Response to All in One Adhesive Systems

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Aim: All in one dental adhesive systems combine materials for etching, priming, and bonding in a single solution. Studies show that these agents exhibit good bond strengths but there are a few studies about the biological compatibility. For that matter, this study evaluated the cytotoxic reaction of transfected bovine pulp derived cells after exposure to all in one adhesive systems (Nova Compo-B Plus, Single Bond Universal and Bond Force).
Materials-methods: Transfected bovine pulp derived cells (tBPDC) were exposed to culture medium containing different concentrations (100%, 50% and 25%) of Nova Compo-B Plus, Single Bond Universal and Bond Force. Complete medium was used as the untreated control. tBPDC viability was analyzed by measuring the mitochondrial activity with the methyltetrazolium assay (MTT) after 24 h of exposure. Data were submitted to one-way ANOVA and Tukey-HSD post hoc tests.
Results: tBPDC survival rates with the original extracts (100%) of Nova Compo-B Plus, Single Bond Universal and Bond Force of was 62.7%, 65.8% and 72.4% respectively and statistically different from control ($p < 0.05$). Only 50% percentage concentration of Single Bond Universal was statistically different from control ($p < 0.05$). The other concentrations of all tested materials were not cytotoxic ($p > 0.05$).
Conclusions: All in one adhesive systems showed toxic reactions for that reason pulp capping strategy is necessary especially in profound cavities for achieving good performance.

Free Communication Session 17 | 07.09.2016, 16:00–17:00 | Pavilion 15 – Level 0 – Hall 0.E

Theme: Oral Surgery

FC065

Preliminary Evaluation of the Influence of Bone Replacement Material Based on Deproteinized Human Bone, Tricalcium Phosphate and High-Calcium Bioglass Upon the Process of Surgical Wounds Healing in Humans

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The author presents preliminary results of tests on bone replacement preparation of his own design, based on deproteinized human bone, TCP and high-calcium bioglass, used for regeneration of diverse kinds of bone defects. This article is a continuation of tests carried on animals (guinea pigs). Both examinations obtained in 2006 the consent of the Bioethics Committee at the Silesian Medical University. In the examinations on animals three kinds of mixtures including the above-mentioned ingredients were used. After analyzing the results obtained during the examinations, one of the mixtures, with strictly defined composition, was selected to be used in tests on human subjects. This composition resulted in the fastest wound healing with animals.
The preparation was grafted into defects created after the removal of periapical lesions. The study group included 25 patients. The control group also included 25 patients of both genders, but their after-resection wounds were sewn only with the clot left in the wound. The control of the healing process was performed with the use of RVG Vista Scan Perio Durr device, immediately after the surgery and then after 4 weeks.
In the cases in which the bone replacement material was not implanted, the wound healing process lasted about 3 months, in some cases even longer. The presence of the bone replacement preparation resulted in much shorter healing time, visible in RVG picture. The results obtained were in line with the examinations carried out on guinea pigs.

FC066

High-Grade Central Mucoepidermoid Carcinoma of the Maxilla Mimicking Residual Cyst

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Central mucoepidermoid carcinoma (CMEC) is a very rare neoplasm comprising 2–4% of all mucoepidermoid carcinomas. It has been reported in patients of all ages, with majority occurring in 4th and 5th decade of life with a slight predilection to females and affecting the mandible twice more often than the maxilla. We herby present an unusual case of CMEC of the maxilla of a 53-year-old male patient, who was referred to the Department of Oral Surgery by a general dentist due to accidentally detected on X-ray unilocular radiolucent lesion on the left premolar region of the maxilla. Intraoral examination revealed asymmetry of the vestibule with palpable swelling in the region of 24–26 with a positive fluctuation and crepitation. After CBCT examination and Core Needle Biopsy, preliminary diagnosis of residual cyst was made, and the cystic lesion was excochleated. Histopathological examination revealed a high-grade CMEC. Patient was reported to the Department of Cranio-Maxillofacial Surgery, where he underwent a subtotal maxillectomy. The patient remains in follow-up, having had no recurrences during 6-month period after surgery.

FC067

A Novel and Conservative Method for Treating Severely Displaced Pediatric Mandibular Fractures

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Introduction: Pediatric mandibular fractures have been managed in various ways. Considering the smaller jaw size of the children, existence of active bone growth centers and the presence of permanent tooth buds of un-erupted teeth, the pediatrics mandibular fracture treatment is a real challenge.
Case description: This article presents a 4-year old boy who was treated with conservative alternative method by combination of arch bar plus a lingual splint, circum-mandibular wiring and IMF for the reduction, stabilization and fixation of a sever displaced bilateral mandibular fractures.
Discussion: Open reduction and internal fixation technique in children has complications, especially damage to the permanent tooth buds by screws and growth disturbances due to periosteal stripping in growing jaw.
Conclusion/Clinical significance: This novel technique is a reliable, noninvasive procedure; it also limits the discomfort and morbidity associated with maxillomandibular fixation or open reduction and internal fixation in pediatric patients.

FC068

Endoscopic Fixation of Mandibular Condyl Fractures

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Department of Plastic, Reconstructive Surgery, Medical Faculty, Selcuk University, Konya, Turkey

Aim or purpose: Condyl fractures is one of the most challenging problem among the maxillofacial fractures. Endoscopy is being used to prevent complications in maxillofacial fractures. We aimed to present the results of the treatment of endoscopic treatment of condyl fractures.
Materials-methods: 9 patients are included to this study which had been operated due to condyl fracture from April 2013, to September 2014. Transoral exposure was used and no additional insicion had been used. Endoscopic system was 4-mm, and 300 angle (Karl Stortz, Carver City, CA). Postero-anterior, lateral xrays, and 3D CT had been recorded for all cases to make surgical plan properly. CT had been recorded at postoperative period and compared with preoperative views. All surgical procedures had been recorded as video and photographs.
Results: The mean age of patients was 30.4 (17–51). Duration of operation was 3.2 h and main hospitalisation time was 2.2 day. There were no scar on the skin. No major complication had been observed intraoperative period, except two minor complications. Follow-up time was 6 months.
Conclusions: Endoscopic fixation of condyl fractures is minimal invasive method in order to prevent severe edema, bleeding, scar and facial nerve injury which has been seen very often in open reduction-internal fixation method. The main aim in endoscopic fixation technique is to prevent the risc of facial nerve injury. In this study there were no facial nerve injury, bleeding, malunion, and nonunion. Therefore we think that endoscopic treatment of condyl fractures is getting standart fixation method near future.

Free Communication Session 18 | 07.09.2016, 16:00–17:00 | Pavilion 15 – Level 0 – Hall 0.F

Theme: Prosthodontics

FC069

Incidence of Craniofacial Pain in Patients with Temporomandibular Joint Dysfunctions

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Temporomandibular joints and masticatory muscle pain is a main cause of craniofacial pain which is not dental in origin. Pain symptoms are also frequently located outside the masticatory organ like: frontal, parietal and temporal regions, around eyes, ears or cervical segment of the spine. The aim of purpose was to evaluate frequency of craniofacial pain in patients subjected to prosthetic treatment based on retrospective analysis of medical records of patients with TMJ disorders.
Materials-methods: The study covered with analysis medical records of 1,258 patients who had reported for prosthetic treatment because of pain form of temporomandibular joint disorders. The frequency of the face and neck pain and its character were evaluated by all patient during clinical examination or patients interview. The results were not performed statistical analysis evaluated only the percentage distribution of individual locations of pain.
Results: Myofascial pain was the most frequent symptom and occurred 563 (44.7%) patients. Temporomandibular joints pain was reported by 335 (26.6%) patients. Temporomandibular joints pain assisted with muscles pain of the masticatory organ was reported in 156 (12.4%) patients. Temporomandibular joint disorders connected with the occurrence of pain symptoms in the organs of sight (27, or 2.3%), hearing (141, or 11.8%), or the cervical section of the spine (36, or 2.9%) were observed in a relatively small group of patients, compared to group with muscle pain.
Conclusions: The results of medical records indicate frequent occurrence of pain within the area of the face in patients undergoing prosthetic treatment due to temporomandibular joint disorders

FC070

A Comparative Study to Evaluate the Effect of Surface Finish on the Color Stability of Provisional Restorative Materials- An In-Vivo Study

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Department of Prosthodontics, Manipal College of Dental Sciences, Manipal University, Mangalore, India

Aim or purpose: Provisional restorations are an integral domain of prosthodontics, thus the study was to evaluate the effect of surface finish on the color stability of an autopolymerized bis-acryl composite provisional restorative material subjected to intra-oral conditions for a period of 2 weeks

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Materials-methods: 30 disks of bis-acryl composite resin were fabricated (8 mm *1 mm). These disks were divided in 3 groups-Group 1-Unpolished, Group 2-Polished using burs and pumice and Group3- Polished and coated with nanofilled resin coating agent. Spectrophotometric baseline values were recorded for the specimens. Three disks (one from each group) were then embedded in the maxillary denture flange of complete denture patients for a period of 2 weeks. After this period a second reading of spectrophotometric values for the specimens was recorded. The color difference obtained was analyzed.
Results: The result is that the specimens coated with a curable nanofilled adhesive resin coating agent showed greatest colour stability compared to other groups (1 and 2).
Conclusions: Esthetics is an important requisite for successful treatment and rehabilitation. Frequently in dental practice prolonged usage of provisional restorations is required. Most of the current materials discolour, leading to patient dissatisfaction and additional expenses incurred. Colour stability of these materials is becoming central to the progressively increasing demands of esthetically conscious patients encountered in current prosthetic practice. Nanocomposites show promise in this discipline.

FC071

Influence of Different Surface Treatments on Bonding Composite to Zirconia as an Intraoral Repairing Method

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Purpose: The aim of this study was to investigate the bond strength of composite resin on the fracture surface of zirconia specimens on the repair system and surface roughening methods.
Materials-methods: A total of forty zirconia specimens were prepared. Specimens were divided into four groups: Group 1, no treatment (control) Group 2, irradiated diode laser Group 3, diamond bur roughening Group 4, silica coating using 30-μm Al2O3 particles modified by silica (CoJet System); (CoJet Intraoral). After surface treatment application of repair system (Intraoral Repair Kit) to all groups. All specimens shear bond strength was measured.
Results: The data were analyzed using by one-way ANOVA and Tukey's HSD. The bond strengths (mean ± SD; MPa) in the groups were as follows: Group 1, 6.02 ± 1.67 MPa; Group 2, 6.57 ± 1.19 MPa; Group 3, 7.67 ± 1.26 MPa; Group 4, 9.69 ± 1.42 MPa. For the zirconia specimens, silica coating using 30-μm Al2O3 particles modified by silica and application of repair system showed the highest shear bond strength (9.69 ± 1.42 MPa) and this group significantly different to the other groups.
Conclusion: The obtained results suggest that silica coating using 30-μm Al2O3 particles modified by silica and application of repair system can be recommended in the case of a fracture localized to the zirconia. Diamond bur roughening and irradiaded with diod laser with application of repair system used as an alternative treatment method to increase the bond strength between resin cement and fracture localized to the zirconia surface.

FC072

Limited Interarch Spaces, Flexible Treatment Care – Solution

Asha Samant
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Intoduction: Patients with partially edentulous spaces are most challenging for restoring, as non-replacement of missing teeth leads to supra eruption and available space becomes problem to fabricate the regular prosthesis The advanced care is expensive and everyone cannot afford. But patient's function of esthetic, mastication and social wellbeing is psychologically effected.
Case selection: The present patients presented with limited space to replace posterior teeth and front anterior teeth. The available space was not sufficient to give regular partials, vertical height could not be changed, and patient could not afford Implants as an option. Cast metal frame work with metal occlusal were designed. Facial and buccal surfaces of these metal teeth were completed with matching composit facings for esthetic.
Discussion: There is not one way to treat in Prosthodontics. An alternate modality where regular ideal care is not feasible, manage care with metal occlusal is a better alternate to give patient the function of esthetic, mastication and Quality of Life.
Conclusions: The problem of complex mouth situation and restorations become in fact a pleasure for the patient improving his quality of life and a success of a professional challenge for the dentist.

Poster Sessions 01–20

Poster Session 01 | 07.09.2016, 10:00–11:00 | Poster display 1

Theme: Oral Health and Systemic Health

P001

Assessment of Oral Health-Related Quality of Life (EQ5D, OHIP-14)

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Aim or purpose: Comparison of the performance of the EQ5D and the OHIP-14 as measures of the oral health-related quality of life.
Materials-methods: The study involved 150 subjects, both gender, at mean age of 59.1 ± 15.5 years. Health-related Quality of Life (HRQoL) and Oral Health-related Quality of Life (OHRQoL) were measured by the EQ-5D and OHIP-14 questionnaires, respectively. The dental condition of participants was assessed by clinical examination using DMFT. The analysing elements of the EQ-5D were index and VAS, and of OHIP -14 total score and its subscales. The distribution of responses to the EQ-5D and OHIP-14 items were assessed, and the items by factor and cluster analysis were analysed. The approval from the Bioethics Committee of Wroclaw Medical University was obtained.

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Results: DMFT value was correlated with EQ-5D ($r = 0.474$, $p < 0.01$) and EQ-5D VAS ($r = -0.458$, $p < 0.01$) as well as with OHIP-14 (0.514, $p < 0.01$). The EQ-5D items of mobility, self care, usual activity and pain/discomfort formed a separate clusters of variables, while anxiety/depression clustered with items of the OHIP-14 physical pain subscale. The OHIP-14 tended to form clusters consistent with the subscales of psychological discomfort, social disability and handicap.
Conclusions: There was separation of the EQ-5D and OHIP-14 items aside from the cluster of anxiety/depression with physical pain subscale.

P002

Salivary Lactate Dehydrogenase and Periodontal Condition in Diabetics

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Aim or purpose: The aim of the study was to compare of LDH in the saliva and clinical periodontal condition in diabetics type 1 and control subjects.
Materials-methods: The study involved 170 subjects both gender at age of 8–57, out of which 90 with diabetes type 1 and 80 healthy. Periodontal condition was evaluated by GI and SBI. In unstimulated mixed saliva salivary flow, total protein and LDH were assessed. Moreover, in diabetics level of HbA1c in blood was measured. The approval from the Bioethics Committee of Wroclaw Medical University was obtained. The obtained data were analyzed with the use of U Mann-Whitney's test and Spearman's rank correlation at a significance level of $p < 0.05$, with the use of Statistica 9.0 software.
Results: Level of LDH was ca. 2-fold higher in diabetic patients in comparison to healthy (188.51 ± 138.13 vs. 85.52 ± 66.21 mlU/ml, $p < 0.001$) as well as GI value (0.34 ± 0.41vs. 0.20 ± 0.25, $p < 0.01$). Comparing the subgroups of diabetics with healthy and affected periodontal tissues the similar LDH level was found.
Conclusions: The higher activity of lactate dehydrogenase in saliva of diabetics type 1, regardless of clinical periodontal condition, may confirm the hypothesis that salivary glands are an additional purpose of immune attack in the course of diabetes type 1.

P003

Evaluation of the Structure of Mandibular Body Among Patients with Acromegaly

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Aim or purpose: The aim of study was to evaluate size and structure of mandibular body in a group of acromegalic patients and compare it with values obtained from healthy patients.
Materials-methods: Eighteen patients with acromegaly ranging from 29 to 68 years old were included in the study. The control group comprised 18 presumably healthy subjects matched by age and gender. Selected morphological parameters of mandibular bone were measured on the basis of X-ray examination obtained by means of CBCT. The length of the body was measured from the mental foramen to the chin and to the posterior border. Cross-sectional images were used to measure some bone parameters such as: cortical thickness, mean tabercular thickness and dimensions of mandibular canal in selected areas. The results were compared with control group. The basic statistical characteristics and differences were calculated from the measured values at $p < 0.05$. The study was approved by the Ethics Committee at University of Medical Sciences, Poznan.
Results: In acromegalic patients the asymetric growth of the mandibular body in the anterior part – from mental foramen to the chin – was observed with statistically significant difference compared with control group. The bone structure also was different in group with acromegaly and statistically significant are greater values for: height of the mandibular canal, thickness of cortical bone from buccal and inferior side and thickness of tabercular bone inferior to the mandibular canal.
Conclusions: Significant changes in the size and structure of the mandibular body were observed in particular group of acromegalic patients.

P004

Dental Problems and Oral Complications Patients with Diabetes Mellitus Type 1

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Aim: Diabetes is a group of metabolic diseases characterized by hyperglycemia resulting from defects in insulin secretion or insulin action. The chronic hyperglycemia of diabetes is associated with long-term damage, dysfunction, and failure of different organs, especially the eyes, kidneys, nerves, heart, and blood vessels. Saliva is responsible for the maintenance of homeostasis and tissues integrity. The aim of the research is to assess the oral health status (teeth, oral mucosa, gum, parodontium and saliva's parameters) patients with diabetes mellitus type 1 as compared to healthy subjects.
Material-methods: Study consists of a survey, dental examination and additional tests. Medical questionnaire includes questions about health, chronic diseases, medication and hygienic procedures. People with diabetes are also questioned on the treatment of diabetes. During the dental examination it is checked teeth, cavities caries, dental fillings, removed teeth. Examined are among others indicators of oral hygiene API – Approximal Plaque Index (Lange), Dental Treatment Index, OHI-S – shorted Oral Hygiene Index (Greene and Vermillion), mSBI – modified Sulcus Bleeding Index (Muhlemann and Son), CPITN – Community Periodontal Index of Treatment Needs. There are also made additional tests exploring the measurement of pH, the rate of stimulated saliva secretion and the buffering capacity of saliva.

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Results: Patients with diabetes mellitus type 1 have a higher value of the index of gingivitis, decreased production of saliva stimulated and lower buffer capacity and lower pH.
Conclusions: Indicate greater severity of gingival inflammation and abnormal secretion of saliva in people with diabetes type 1.

P291

Knowledge, Attitude and Practice of the School Adolescent Boys About Personal Hygiene Including Oral Hygiene in Jhalkathi, Barishal City in Bangladesh

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Aim or purpose: Aim of the study was to identify the level of knowledge, attitude and practice regarding personal hygiene including oral hygiene among adolescent boys
Materials-methods: This cross sectional study was conducted among 100 adolescent boys of Monohorpur High School in Jhalkathi, Barishal city in "Bangladesh." The study period was 25th June to 24th August 2014. Data were collected by random sampling and knowledge, attitude and practice about personal hygiene including oral hygiene were seen by following interview method. Data analysis was carried out using SPSS (version 15.0). Prior to the commencement of this study, the research protocol was approved by the research committee (Local Ethical committee).
Results: Findings of the study suggested that, 99% respondents know how to wash the hands properly, 62% respondents also instructed that they use to brush twice a day, whereby only few percentage do not brush every day and 40% of the respondents have the habit of trimming nail by mouth, which may lead them toward the infection transmission. Above 51% of the other respondents mentioned that, they use tube well water.
Conclusions: The study finds that, adolescents needs appropriate knowledge for maintaining their personal hygiene as well as oral hygiene. It is necessary to initiate proper motivation and grow self interest among the adolescents to maintain health and hygiene practice and it will be a vital investment for them as well as for a healthier society in tomorrow.

Poster Session 02 | 07.09.2016, 10:00–11:00 | Poster Display 2

Theme: Digital Dentistry

P006

Diagnosis of Complex Endodontic Cases with CBCT

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Introduction: Diagnosis is an important factor in endodontic treatment. Several methods of diagnosis are included in the armamentarium of endodontology that have been in use for the last 50 years. Nevertheles there are cases that are complex and cannot be diagnosed with traditional methods like periapical Xray or pulp test. During the last 30 years dentistry underwent tremendous evolution in diagnosis. So from the traditional 2D radiography there was tremendous evolution to the 3D CBCT.
Materials and methods – discussion: The cases where the CBCT is an indication will be discussed. The advantage of the diagnosis will be quoted through complex clinical cases together with the limitations of CBCT. The cases presented are root fractures vertical and horizontal, unclear lessions of endodontic origin, a pseudofistula on the buccal mucosa, and comlex cases of retreatment.
Conclusions: In all cases CBCT gave the most presice diagnosis to the real problem.
CBCT provides a 3D diagnosis and is superior in most ways compared to the 2D diagnosis for the endodontic lessions.
The use of CBCT leads to a better diagnosis but the rule ALARA has to be fulfilled. Small field of view CBCT provides optimum detail (−72 μm) with decreased dose.
Horizontal fractures are diagnosed through sagittal cuts and vertical root fractures with transverse or coronal plane cuts.
The presence of intense radiopaque materials compromises the CBCT diagnosis and creates artefacts. Besides it does not give precise volume of the bony lessions.
CBCT cannot give the true quality and density of the alveolar bone.

P007

Microleakage of CAD/CAM Ceramic Crowns Cemented with Adhesive Resin Cements

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Aim or purpose: This study evaluated microleakage of all-ceramic crowns milled from ceramic blocks and bonded to teeth with adhesive resin cement.
Materials-methods: Forty extracted molars were prepared to receive CEREC crowns according to manufacturer's guidelines. Crowns were fabricated using CEREC AC Omnicam and MCXL milling machine and divided into four groups (n = 10) according to using adhesive cement: Panavia V5 (Kuraray), RelyX Ultimate (3M Espe), and NX3 (Kerr). After 24 h of storage in water and loaded with an axial force of 1.3 kg, 98 cycles/min for 420,000 cycles during a basic fuchsin dye percolation test for microleakage evaluation. All specimens were then sectioned mesiodistally and assessed for microleakage by stereomicroscope. A five-point scale was used to score degree of microleakage.
Results: Microleakage scores cemented with NX3 were significantly lower than the others ($p < 0.05$).
Conclusions: Compared to the three adhesive resin cements, resulted in significantly different microleakage scores.

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P008

Use of CBCT in Orthodontics Based on Difficult Clinical Cases

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Introduction: Cone beam computed tomography (CBCT) is a method of imaging hard structures based on the digital technology. It uses special software to create a 3D image from a series of 250–300 2D images. The poster presents selected CBCT diagnostic capabilities in orthodontics based on own clinical cases.
Case description: First case of a 12-years-old patient with cleidocranial dysostosis and numerous impacted teeth.
Second Case: 11-years-old patient with an erupting compound odontoma consisting of 30 odontoids.
Third case of a 29-years-old patient with a complete reinclusion of the first molar deciduous tooth accompanied with an odontoma compositum and a lack of the permanent successor.
In all cases, a panoramic X-ray was made. It helped to establish diagnosis, but to make it more precise and to plan surgery treatment, CBCT was recommended.
Discussion: CBCT eliminates the problem of image magnification and overlapping of anatomical structures. The third dimension given by this diagnostic method – the depth – enables spatial orientation of objects. CBCT allows a significant reduction of radiation dose, shorter duration of the radiological examination and higher image quality thanks to usage of isotropic voxels.
In orthodontics CBCT is useful, among others, to determine the location of: impacted teeth, additional teeth, pathological formations, to evaluate bone thickness before deciding on the location of miniscrew and for 3D virtual planning in orthognathic surgeries.
Conclusion/Clinical significance: In all presented cases panoramic X-ray wasn't sufficient to establish stages of treatment. CBCT is a tool which completes diagnostics and helps in surgery planning.

P009

A Stereolitographic Technique for Denture Fabrication

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Aim: Assessing the improved poly(methyl methacrylate)PMMA/TiO2 nanocomposite material properties for complete dentures fabrication using CAD-CAM stereolitographic technique.
Materials-methods: 35 fully edentulous patients were enrolled in this prospective clinical study, conducted according with ethical principles including the World Medical Association Declaration of Helsinki and written consent also obtained.
A 5% TiO2 nanoparticles reinforced PMMA composite with proved low adherence of microbial factors due to an induced photocatalytic production of oxygen radicals and improved mechanical strength was used according to an additive CAD-CAM protocol for complete dentures fabrication. The CAD-CAM technique utilized is a two-step appointment process: impressions, jaw relation records, occlusal plane orientation, tooth mold, shade selection and maxillary anterior tooth positioning record registration in the first appointment and the second appointment was for insertion. Clinical follow-up was performed at 6 months assessing the following parameters: denture fit, occlusal scheme, vertical dimension and lip support and quality of life using Oral Health Impact Profile for Edentulous Patients (OHIP-EDENT).
Results: At 6 month follow-up no complications were registered, no adjustments for denture fit were needed and patients oral health related quality of life was better after wearing printed dentures.
Conclusions: With CAD-CAM technology we propose shorten treatment protocol up to two visits, the new materials to be used are able to eliminate manufacturing imperfections and deliver a product that is precision engineered to custom fit the patients edentulous ridges and provide them the functional and aesthetic features they demand.
Acknowledgments: The work has been funded by the MANUNET/ERA-NET Project2016.

Poster Session 03 | 07.09.2016, 10:00–11:00 | Poster Display 3

Theme: Aesthetics

P010

Smile Analysis and Esthetic Perception in Saudi Population

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Aim or purpose: The general aim of this study is to assess the different esthetic smile criteria of adults in Jeddah. A further goal is to find the most prevalent dental shades and causes of dental stains in Saudi community.
Materials-methods: 30 subjects (15 females and 15 males) were recruited from King Abdulaziz Dental Hospital (Jeddah, Saudi Arabia). The subjects' ages ranged between 18 and 50 years with intact upper anterior teeth without or with minimal restorative restoration and healthy gingival tissues. All participants were photographed in a productive position. The following smile parameters were recorded: teeth geometries, shade, midlines, smile arc and upper lip position. The golden proportion was also checked by Smile Designer Pro software. Data was analyzed using chi square and Student's *t*-tests according to variables tested (SPSS ver. 20, SPSS Inc., Chicago, Illinois, USA).

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Results: Golden proportion was not found in the entire sample. Regardless of age and sex, 70% of the sample has an average lip position, and consonant smile arc was the most prevalent form among 73.3% of the sample. A2 was the common teeth shade regardless the tooth position. Almost half of the participants were satisfied about their overall appearance and only 6 subjects were not satisfied about the size of their teeth.
Conclusions: The golden proportion was non-existent. Most prevalent shade was A2 in both genders. The perception of smile was different from one subject to another regardless the gender.

P011

A Clinical Study on Patient Satisfaction with Tooth Bleaching

Ana Fernandes[1], Bárbara Costeira[1], Teresa Carrilho[1], Sofia Coelho[1], Miguel Marto[1], Francisco Caramelo[1], Manuel Marques[1], Lee Boushell[2], Anabela Pereira[1]
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Aim or purpose: The aims of this research study were two-fold: (i) To compare the degree of patient satisfaction among various tooth bleaching protocols and (ii) To assess long term effectiveness and associated side effects among the various tooth bleaching protocols.
Materials-methods: One hundred and one patients, that had received tooth bleaching treatment between 1992 and 2015, were included. Research study participants completed a questionnaire (right after treatment and then again in 2015) and received a clinical and radiographic examination of the maxillary anterior teeth.
Results: The questionnaire revealed that 97% of patients were satisfied with the bleaching result immediately after treatment completion. Ninety one percent of the participants reported both short term and long term satisfaction with the bleaching result. The questionnaire revealed that 18.8% of the participants had experienced some type of adverse reaction while undergoing tooth bleaching procedures. Two percent of the participants reported that they were currently still experiencing gingival sensitivity. The tendency for shade return to pretreatment levels was not found to be statistically significantly related to time. The clinical examination revealed that the shade of 53.5% of the teeth evaluated had returned to pretreatment shade. Clinical and radiograph examinations revealed normal appearance of gingival and dental tissues and normal responses to thermal stimuli.
Conclusions: A majority of participants reported tooth bleaching results in long-lasting, stable improvement in tooth shade. Clinical evaluation of participants revealed no detectable side effects with approximately one half of bleached teeth returning to a pre-bleach shade.

P012

Anterior Esthetics with Prefabricated Composite Veneers: A Novel Technique

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Introduction: Prefabricated resin composite veneers have been developed recently as an alternative to indirect ceramic laminate veneers. They are manufactured in different sizes and colors and are applied in a single session. The adhesion of these resin composite veneers to tooth structures is similar to indirect technique but without a laboratory step. This case report series aim to present the application steps and aesthetic outcomes of a prefabricated resin composite veneer system (Componeer, Coltène, Switzerland) for conservative diastema closure of 3 patients having complains of unaesthetic appearance.
Case description: Two female patients aged of 17 and 29, and one male patient aged of 54 with no systemic diseases and having good oral hygiene were treated. Intraoral examination revealed diastemas between their maxillary central incisors. The size and the color of the prefabricated resin composite veneers were selected according to the color of the natural teeth and the amounts of diastemas between the teeth. The teeth were prepared in enamel level, etching and bonding procedures were performed with an Etch&Rinse adhesive system (One Coat Bond, Coltène, Switzerland) and the selected prefabricated resin composite veneers were fixed to the teeth with a hybrid resin composite material having the same composition as the prefabricated veneers. The margin adjustments and polishing were performed with diamond burs and polishing pastes.
Conclusion: This minimal invasive and conservative alternative treatment option could achieve a very good aesthetic outcome in only a single session. The treatment procedure with Componeer systems was also very well accepted by the patients.

P013

Effect of Non-Vital Bleaching on the Durability of Resin-Dentin Bond With an Ethanol-Based Etch-and-Rinse Adhesive

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Aim: Bleaching may affect the bond strength of adhesive systems. The purpose of this study was to evaluate the immediate and laboratory-aged dentin bond strength of an etch-and-rinse adhesive after bleaching.
Methods-materials: Flat dentin surface of intact human third molars (n = 18) were randomly divided into two groups for immediate and 6-month bond strength evaluation. Specimens were further assigned into three subgroups according to treatment procedure: control: No bleaching was performed prior to bonding and subsequent build-up with composite; Subgroup B: The samples were bleached with 20% Carbamide peroxide 6 h/day for 5 consequent days prior to bonding; Subgroup C: Bleaching was performed as with subgroup B, after which 10% sodium ascorbate was applied on dentin surface for 10 min before bonding procedures. Microtensile bond strength test was performed and failure modes were evaluated under a stereomicroscope. Data were analyzed using One-way ANOVA and Tukey's post-hoc tests.
Results: Bleaching significantly decreased the immediate and 6-month bond strength. Application of sodium ascorbate had no

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significant effect on the immediate and 6-month bond strength of bleached specimens.
Conclusion: Bleaching procedure may decrease both the immediate and short-term dentin bond strength of the tested etch-and-rinse adhesive.

P014
Restoration of Missing Anterior Tooth Using Fiber-Reinforced Bridge
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Introduction: Missing anterior teeth is often seen among dental injured people. Nowadays, patients quickly can want to have an aesthetically pleasing appearance due to lack of teeth on the anterior region. Fiber reinforced composite (FRC) bridges can provide a good alternative treatment method when they ensure aesthetic requirements of patients.
Case description: 16 years old woman, who lost her tooth #11 (FDI) because of loss of more material in the tooth and periapical lesion came to our clinic. After radiological and periodontal examinations on abutment teeth pontic was prepared with composite resin. Lightcure composite resin was used to fill the intracoronal space. Retention grooves were placed into the pontic and the adjacent teeth. Pontic and the abutment teeth were etched (Etch, DTech TM). The bonding agent (SingleBond2, 3M ESPE) was applied to the acidconditioned surfaces and polymerized. An appropriate length of the fiber reinforced with the composite (Interlig, Angelus R) was cut and adapted to the lingual surface, followed by light curing. Light cure resin composite (3M, Filtek TM Supreme Ultra) was used to seal the grooves. Restoration was finished and polished. The patient is complaint free since 7 months of treatment.
Discussion: Performance of the restoration depends on good treatment plan and right material selection. FR for replacement of missing teeth is a good choice because of its natural and aesthetic appearance.
Conclusion/Clinical significance: This case shows that FRC bridges can be a good alternative to conventional prosthetic techniques. This offers an aesthetic and noninvasive treatment moreover economically more acceptable. FRC bridges can be considered as a permanent treatment or in the case of implant placement as a reversible provisional treatment.

Poster Session 04 | 07.09.2016, 10:00–11:00 | Poster Display 4

Theme: Prosthodontics

P015
Treatment of Pathological Tooth Wear Connected with Impacted Maxillary Canine
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Introduction: Treating adult patients with disoclussion and pathological tooth wear caused by diagnostics negligence in childhood is a big therapeutic challenge for many stomatological specialities.
Pathological tooth wear results in occurrence of centric and eccentric occlusal disturbances, lowering the occlusal vertical dimension, temporomandibular disorders, which has a negative influence on functioning of the whole masticatory system.
Case description: The case of patient with patological tooth wear connected with palatally displaced impacted canine located in a horizontal position and presence of persistent primary canines is presented. The decision about extraction of deciduous canines was taken. Then surgical exposure of the impacted tooth was made and it was brought to the dental arch by using a fixed brace.
In the first stage of the prosthetic treatment a 24-h occlusal acrylic splint was used to restore the correct position of the mandible and proper occlusal vertical dimension. Next this position was stabilized by making fixed dentures.
Discussion: The aim of the interdisciplinary approach was physiological activity of the masticatory system by morphological reconstruction of the lost tissues and by simultaneous restoring of the damaged functions. As a result of the treatment appropriate occlusal contacts in proper OVD, significant improvement of dental and facial esthetics was obtained, which raised the self-esteem of the patient.
Conclusion: The applied surgical, orthodontic and prosthetic treatment with the use of diagnostic wax-up made it easier for the patient to adapt to the new occlusal conditions. It helped harmoniously integrate fixed dentures with functional movements of the lower jaw.

P016
Clinical Case of Implant-Supported Fixed Dental Prostheses Using T (Transverse)-Screw System
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Introduction: The implant prosthesis can be roughly divided into the screw-retained prosthesis and cement-retained prosthesis according to the type of retention. Each type has advantages as well as disadvantages which is unfavorable to maintain the implants. By combining the advantages, T-screw system was developed to overcome these drawbacks. T-screw system which utilizes a lingual direction of the screw to retain the implant prostheses, has advantages of retrievability of the prosthesis, passive fit, and possibility to form the esthetic and functional occlusal surface. The existing prosthesis which utilized horizontal screws had difficulty in fabrication especially in the case of multiple units, and also had a limitation that cannot be used in prostheses with all ceramic, such as zirconia.
Case description: 2 cases of implant-supported fixed dental prosthesis was included, which were difficult to fabricate with the previous lateral screw retained system. The first case was the multiple-unit FDP, and the second case was multiple unit prosthesis with all-ceramic restoration.

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Discussion: Through the present case, fabricating the implant prostheses by using the T-screw system showed superior results in easy maintenance, esthetics, and also functions.
Conclusion/Clinical significance: This case report describes the method of using the lateral screw system-retained implant-supported prosthesis. Multiple units of implant prosthesis and all ceramic prosthesis was possible with the T-screw system.

P017
Classification for Partial Edentulism Criteria in Treatment Outcomes Evaluation
Roksana Bratus Hrynkiv, Andriy Kordiyak
Danylo Halytskiy Lviv National Medical University, Ukraine

Aim or purpose: There is a small number of published reports correlating diagnostic criteria with partial edentulism treatment results, so the present work aimed to study the relationship between anamnestic and clinical observation data.
Materials-methods: In the past 3 years lower overdentures were delivered to the 154 partially edentulous patients. Oral status (edentulous space, abutment teeth, occlusal plane, alveolar ridge) in 52 of them – 37 (71.2%) females, 15 (28.8%) males, aged 55–80 years – was initially categorized in Class III (substantially compromised) according to the American College of Prosthodontists (ACP) classification system (2002). These patients' records included 4-item (chewing and speaking ability, appearance, oral pain/other discomfort) self-assessment of denture quality (scale 0–8). Data were analyzed in SPSS Statistics using the paired *t*-test and Spearman's rho, statistical significance was set at $p < 0.05$.
Results: The mean self-assessment grades prior and 1 year after treatment differed insignificantly (6.8 vs. 6.7, $p > 0.05$), without essential worsening (6.7 vs. 6.3, $p < 0.05$) after 3 years – still at satisfactory level. Number of patients in the same Class III was redused to 45 persons (by 13.5%) 1 year and to 33 persons (by 36.5%) 3 years after treatment, while in the rest 19 patients oral status became severely compromised (Class IV ACP). The weak ($\rho = 0.14$) and stronger ($\rho = 0.30$) positive correlations between the oral status and denture quality were observed, respectively – 1 and 3 years after treatment (overdentures survival rate-92.3%).
Conclusions: ACP criteria aid in establishing a diagnostic scheme and treatment procedures in partially edentulous patients. Positive correlation between oral status and denture quality is highly indicative for the treatment outcomes evaluation.

P018
Evaluation of Anthropometric Measurements of the Faces of Polish Women
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Facial proportions undergo continual evaluation, both during diagnosis and prosthetic treatment.
Aim: The aim of this study was to evaluate the facial proportions of Polish women in relation to other ethnic groups.
Materials-methods: From 192 photographs of the faces of women (of mean age 17.9 years), 60 photographs were randomly selected. The photographs were made en face while maintaining constant proportions of distance between the camera lens and the subject. Using Adobe Photoshop, the midline and even anthropometric points were marked, and measurements were taken of the distance between these points. Seven vertical dimensions, three horizontal dimensions, and four proportions between the vertical and the horizontal measurement were calculated. The results were assessed in relation to the golden ratio (1.618) and to literature reports.
Results: The average values for vertical facial proportions were broadly similar to the golden ratio, amounting to 1.592 in the case of the ratio between the nasion-stomion points and between the stomion-gnation points. In the case of the nasion-subnasale points and the subnasale-gnation points, the ratio was 1.372.
The average measurements for the faces of the Polish women were similar in seven of the eleven dimensions to the Native American women, in three dimensions to the North American Caucasian women, and for the facial width to height (measured between the nasion and gnation points) was similar to the Latin American beauty contest winners.
Conclusions: The facial proportions of Polish women differ from those of American women and require different analysis.

P019
Correlation Between Mouth Opening and Length of Condylar Path
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Radiography in dentistry is a supplementary method of examination that can help with diagnosis and with establishing the correct therapy. Panoramic radiographs with full occlusion and a fully open mouth (performed separately for each joint) are among the fundamental images of the temporomandibular joints (TMJ). This technique is useful for visualizing the bone details and provides information about condylar movements.
Aim: The aim of this study was to find a correlation between the range of mouth opening, as measured by clinical examination, and the condylar path length read from x-ray images.
Materials-methods: Ten panoramic TMJ radiographs were randomly selected from a set of 256 images of volunteers and analyzed. The images were marked with a line referencing the curve of the articular tubercle and the mandibular fossa and the head of the condyle. Next, the condylar path length was measured. Using the Research Diagnostic Criteria for Temporomandibular Disorders questionnaire, data was gathered from selected volunteers regarding the maximum mouth opening and contingent size and direction of the repositioning of the mandibular midline relative to the maxilla. The data was analyzed statistically.

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Results: Analysis of measurements did not indicate any correlation between the distances covered by the head of the condyle, as calculated from the x-ray images and the clinical data on maximum mouth opening.
Conclusions: Based on this preliminary research, there is no justification for drawing conclusions about the clinical state of the position of the head of the condyle on the basis of the panoramic radiograph alone.

Poster Session 05 | 07.09.2016, 11:30–12:30 | Poster Display 1

Theme: Caries Prevention

P020

Amylase, Immunoglobulin A, G and Total Protein in Children with Caries

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Aim or purpose: Alpha amylase activity and immunoglobulin A, G, total protein concentration in saliva maybe related to the susceptibility to dental caries. The aim of this study was determination of Amylase Activity and Immunoglobulin A, G and total protein concentration in saliva in children with different level of dental caries
Materials-methods: Three groups of 106 children in the age of 4–6 years with ought any systemic disease and medication therapy after getting consent from parents were selected from Babol kindergardens. 36 Caries-free children, 38 children with 5 < dfs 10 and 32 children with dfs>10. Dental examination was performed in a chair, using a dental mirror and an explorer by one examiner under study light for determination of dfs.
Two milliliter unstimulated saliva were collected from each child and submitted to immunological and biochemical assays. Data was analyzed by student *t*-test, non parametric Mann–Whitney and ANOVA.
Results: Total protein concentration and IgA were similar between three groups ($p > 0.05$). Mean values of Amylase Activity in group3 (39.85 + 1.31 IU/I) was higher than group 1 (35.55 + 1.13 IU/I)and mean values of IgG concentration in group 3 (0.4 + 0.04 mg/dl) was higher than group 1 and 2 (0.27 + 0.03, 0.28 + 0.02 mg/dl) ($p < 0.05$).
Conclusions: Our results revealed that increase in the salivary alpha-Amylase activity and IgG concentration was associated with presence of dental caries.

P021

The Influence of Toothpaste Containing Xylitol and Bromelain on Adhesion and Cytotoxic Activity of Microorganisms of the Oral Cavity

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Aim or purpose: To assess anti-adhesive and anticytotoxic effects of toothpaste with xylitol and bromelain against oral cavity bacteria on a cell culture model.
Materials-methods: The effect of toothpaste containing 10% xylitol and 0.5% bromelain, as opposed to bromelain-free toothpaste on clinical strains of Staphylococcus aureus 20, Streptococcus salivarius 67, Streptococcus sanguis 12, and Streptococcus sobrinius 83 was measured in cultures of human embryo musculocutaneous tissue fibroblasts in 50% blood serum. Microbial load was 108 CFU/ml, and exposure was 3 min and 2 h. The morphological condition of the monolayer cells was evaluated on a 5-point FDA chemical agent cytotoxicity scale. Microbe adhesion was determined by the rate of the microbial load relative to the control group taken at 100%.
Results: The minimum inhibitory concentration (MIC) of both compounds regarding all test cultures was 0.006%. Toothpastes can display the same cytotoxicity level as bactericides, but in far lower concentrations. A 1:20,000 dilution of both compounds had no cytotoxic effects on the fibroblasts (0 on the scale). The serum made experiment conditions more realistic. The effectiveness of toothpaste compounds in suppressing adhesive properties of normal mouth microbiota was not high after 2-h (15–30%), while after 3 min it rose sharply (70–80%).
Conclusions: Toothpaste containing bromelain and xylitol possesses anti-adhesion properties. Increased exposure time of strains to toothpaste lowers the effectiveness of the compounds, seemingly linked to short-term adhesion reversibility, which occurs after introducing the strains into the model.

P022

Clinical Assessment of High Fluoride Toothpaste in Eliminating Enamel Demineralization

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Aim or purpose: The aim of the study was to conduct a clinical assessment of the enamel demineralisation changes in young adults before and after a 2-month use of the Duraphat 5,000 toothpaste.
Materials-methods: The clinical trial covered 30 people aged 19–35 and was conducted in two stages, i.e. before and after a 2-month use of the Duraphat 5,000 tooth paste. The Diagnodent device was used to assess the actual demineralisation changes. A maximum of four demineralisation spots were examined in each patient. The participants were divided into 4 groups, depending on the parameters obtained through Diagnodent examination at the first stage of the trial.
Results: The average Diagnodent indication for the upper front teeth during test 1 was 24.77 ± 13.52, while in test 2 it was statistically significant lower/with the Wilcoxon test values reaching = −3.245; $p = 0.001$/and amounted to 18.87 ± 11.85; the average indication for the upper lateral teeth during test 1 was 30.53 ± 21.04, whereas in test 2 it was lower/with the Wilcoxon test values reaching = −1.732; $p = 0.083$/and amounted to 26.13 ± 21.95. The average indication for the lower front teeth in test 1 was 28.00 ± 17.21, whereas in test 2 it was lower/with the

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Wilcoxon test values reaching = −1.931; p = 0.053/and amounted to 22.12 ± 12.93. The average indication for the lower lateral teeth in test 1 was 26.88 ± 15.78, and in test 2 it was slightly lower/with the Wilcoxon test values reaching = −1.305;p = 0.192/ and amounted to 24.29 ± 16.71.
Conclusions: Duraphat 5,000 is an efficient toothpaste that contributes to eliminating demineralisation changes in the tooth enamel.

P023
Mechanical and Antimicrobial Properties of Composite Modified with Essential Oil
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Aim or purpose: The aim of the study was to evaluate mechanical and antimicrobial properties of an experimental composite modified with essential oil.
Materials-methods: Cinnamon oil was added to a composite in three concentrations 1 µl/2 g, 2 µl/2 g and 5 µl/2 g and mixed until homogenous structure was obtained. The control was a composite sample without essential oil. Samples were polymerized according to manufacturer's recommendations. Twelve samples were prepared for each study group. The three-point bending strength (TPB), diametral tensile strength (DTS) and Vickers hardness (HV1) were performed. Afterwards, antimicrobial properties of samples with cinnamon oil in three concentrations (1 µl/2 g, 2 µl/2 g and 5 µl/2 g) against Streptococcus mutans were tested with broth dilution method. Statistical analyses comprised the Shapiro-Wilk W test for normality, Levene's test for the equality of variances and ANOVA (significance of differences).
Results: Mean values for DTS (F max) and for HV1 were lower for modified composite for each concentration in comparison to mean values of control samples (the differences for DTS are statistically significant at p = 0.019 and for HV1 at p < 0.001). Mean TPB values were higher for a modified composite for concentration 1 µl/2 g and 2 µl/2 g in comparison to mean values of control samples (the differences are statistically significant at p = 0.002). Dilution method showed, there were significantly less bacteria colonies present in comparison to the control samples.
Conclusions: The experimental material containing cinnamon oil exhibits enhanced antimicrobial properties and clinically accepted mechanical properties.

Poster Session 06 | 07.09.2016, 11:30–12:30 | Poster Display 2

Theme: Others

P024
Photodynamic Therapy Effect on Cell Growth Inhibition Induced by Radachlorin and Toluidine Blue O on *Staphylococcus aureus* and *Escherichia coli*: An In Vitro Study
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Aim or purpose: Photodynamic therapy is an innovative treatment modality, which are appropriate for tumor detection and for the treatment of cancer as well as nontumoral diseases, such as psoriasis (2), bacterial and viral eradication.
Materials-methods: Effect of two photosensitizer (toluidine blue O (TBO) and Radachlorin was investigated on *Staphylococcus aureus* ATCC 25923 (American Type Culture Collection) and *Escherichia coli* (ATCC 25922).
Results: PDI by TBO caused *S. aureus* 5.83 log10 killing (p-Value < 0.0001) and reduce 0.08 log 10 in *E. coli* (p-Value = 0.321). PDI by Radachlorin® reduce 0.17 log 10 in *E. coli* (p-Value < 0.0001) and *S. aureus* showed 6.1 log 10 colony count reduction.
Conclusions: Within the limitation of this in vitro study, we can concluded that both PS have same effect on *S. aureus* and *E. coli* that good inhibition effect on *S. aureus* and partially inhibition effect *E. coli*.

P025
Behaviour of Dental Pulp Stem Cells in Human Platelet Extracts for Regenerative Therapy
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Aim or purpose: Dental pulp tissues is known to contain highly proliferative and multipotent stem cell compartments, considered to be an alternative autologous cell source for regenerative medicine and dentistry. The objective of this study is to evaluate the Dental Pulp Stem Cells (DPSC) proiferation and diffrentation in autologous human platelet extract.
Materials-methods: Venous blood was obtained from 8 individuals and pooled. Platelet extract (PE) was prepared by repeated freeze thaw cycles. DPSC were obtained from dental pulp of extracted human third molars and expanded in different concentrations of platelet extract for 2, 4, 6 and 8 days. Immunocytochemical staining and flow cytometry confirmed existence of mesenchymal stem cells. The effect of Platelet extracts on the proliferation of dental

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pulp stem cells (DPSCs) was assessed by Resazurin Alamar blue cell viability assay and qPCR was run to evaluate the angiogenic associated regenerative genes.
Results: Cellular proliferation of DPSC were increased at 10% PE concentration but decreased at 5% and 20% concentration. Long-term treatment with 10% PRP enhanced proliferation of the DPSCs by day 8 and showed the most significant enhancement at day 6. qPCR revealed the significantly ($p < 0.001$) increased expression of VEGF-A, and angiopoietin-1 genes.
Conclusions: The appropriate concentration of the PE treatment enhanced proliferation and differentiation of human DPSC. Regenerative therapies utilizing autologous sources benefits to the fields of clinical medicine and dentistry. Harvesting these cells in autologous source of expansion witll bring them much closure to use in clinical therapies. Angiogenic and play an important role in PRP-induced tissue regeneration.

P026

Knowledge and Practical Skills of the Fifth Year Dentistry Students

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Aim or purpose: Young dentists after graduation often have to perform a wide range of dental treatments independently. The aim of this study was to assess the dental education in different Medical Universities in Poland.
Materials-methods: A questionnaire-based survey was carried out among the 5th-year dentistry students in 8 Medical Universities in Poland. Each respondent completed their questionnaire independently in the allocated time.
Results: Only 98 (19.6%) out of 500 participants feel they are well-prepared for independent work after graduation. The students do not feel prepared professionally mainly for endodontic treatment with using a rotary instrument (79.4%) and warm gutta-percha (89.2%), as well as for preparing teeth to support fixed dentures (77.2%). The students consider filling restorations (83.6%) and tooth extractions (79.8%) least difficult. Using a rubber dam (48.2%), making a complete denture (58.6%), curettage (65.6%), and teeth splinting (43.6%), are not a problem for about half of the students. The respondents perceive prosthetics (31.8%) and orthodontics (28.4%) as the most difficult theoretical subjects.
Conclusions: A great emphasis should be placed on teaching practical skills and application of new technologies, both using simulation methods and in the clinical setting.

P027

Cytotoxicity Evaluation of Dentinogenesis Inducers in Odontoblasts

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Aim or purpose: This study aims to assess the cytotoxicity of three materials – calcium hydroxide, mineral trioxide aggregate cement and calcium silicate cement.
Materials-methods: The MDPC-23 cell line was exposed to conditioned media with various concentrations (from 100% to 6.25%) during three different times (24, 72 and 120 h). The metabolic activity was evaluated by the test of 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) and protein content by SRB assay (sulphorodamine B).
Results: Mineral trioxide aggregate cement and calcium silicate cement showed similar results, with decrease of metabolic activity and viability at 24 h and increase at the subsequent evaluation times. The calcium hydroxide performance, particularly at higher concentrations, indicates a decrease in metabolic activity and an increase in cytotoxicity.
Conclusions: In vitro results show that calcium hydroxide may influence the proliferation of pulp cells. Results of the mineral trioxide aggregate cement indicate and confirm its indication for this type of therapeutics, justifying its recognition as gold-standard. The calcium silicate cement, if the preliminary results became confirmed, can be an alternative to mineral trioxide aggregate cement, since its clinical handling is simplified by its short setting time.

P028

Oral Rehabilitation in Congenital Bilateral Permanent Canine Agenesis as Well as Occlusal Abnormalities in the Form of Left-Side Crossbite – Case Report

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Introduction: Bilateral agenesis of the permanent maxillary canines in healthy individuals is extremely rare and the number of reports describing this phenomenon in the Caucasian population is very small. We want to present the case of a Polish patient diagnosed with congenital bilateral agenesis of the permanent maxillary canines as well as occlusal abnormalities in the form of left-side crossbite.
Case description: A male patient of Polish nationality, aged 23, visited an orthodontist to embark on orthodontic treatment.

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Anamnesis revealed that the patient still had primary canines, but otherwise he was generally healthy and had not suffered any other health problems. The patient had no history of having suffered any trauma within the facial skeleton. In addition, he was not aware of any instances of congenitally missing teeth in his family. After a course of orthodontic treatment involving fixed appliances on both dental arches, implantation was performed in positions 13 and 23, followed by prosthetic reconstruction. The upper incisors were prepared for porcelain veneers. After a week the final restorations were fixed.

Discussion: In this case the aim of oral rehabilitation was to restorea functional balance by obtaining proper skeletal relationships, create optimal occlusal conditions and obtain arch continuity. This involved the cooperation of a number of specialists from different fields of dentistry.

Conclusion/Clinical significance: In the case of maxillary canine agenesis accompanied by malocclusion, orthodontic treatment and prosthetic rehabilitation with the use of dental implants are recommended in order to achieve optimum aesthetic and functional results.

Poster Session 07 | 07.09.2016, 11:30–12:30 | Poster Display 3

Theme: Oral Surgery

P029

Mandibular Premolar Impaction – Extraction by Lingual Approach: Case Report

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Introduction: Mandibular premolar impactions prevalence was reported around 0.5% and literature specific to this isn't extensive. This case report describes an impacted second premolar extraction throught lingual approach presuming it will contribute toward a better knowledge regarding this issue.

Case description: An 18-year-old girl was referred before orthodontic treatment for extraction of an impacted premolar (45). Her medical and dental history weren't significant. Clinical evaluation showed 45 absence, mandibular crowding and a little bulge palpable on the 44 and 46 lingual aspect. Intraoral X-ray and orthopantomography confirmed the impactation. Computed tomography showed close relation to inferior alveolar nerve and mentonian foramen.

The tooth was extracted under local anesthesia. An incision was given in the lingual gingival sulcus from 47 to 41 and a flap raised exposing the lingual plate. Osteotomy and tooth sectioning was performed with low-speed handpiece under coolant irrigation. The crown was removed and then the root delivered. The wound was irrigated and closed with 3-0 silk suture. Sutures were removed after 7 days. The patient healed uneventfully. Clinical and radiographic follow-ups were excellent.

Discussion: Various treatment methods have been suggested for premolar impactions: observation, surgical exposition/orthodontic traction, auto-transplantation and extraction. In selecting an appropriate treatment, the etiological factors, space requirements, impaction degree and root formation shoud be considered. In this particular case, lack of space ditacted the treatment choice. Lingual approach was taken due to the tooth position.

Conclusion/Clinical significance: This relative rare case can contribute toward the minimal literature available regarding impacted premolar teeth.

P030

A Labially Positioned Inverted Mesiodens – Case Report

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Introduction: The most common type of supernumerary tooth is mesiodens, with a prevalence ranging between 0.1% and 3.8% in the permanent dentition. Inverted mesiodens constitutes 9–67% of all of the mesiodens cases.

Case description: A 10-year-old girl was referred to the Department of Oral Surgery for extraction of an impacted supernumerary. Her medical and dental history were not significant. Panoramic and periapical radiographs confirmed the presence of a mesiodens, located between the roots of 11 and 21. Computed tomography showed close relation to incisive canal and to the floor of the nasal cavity. The tooth was extracted under general anesthesia. A sulcular incision and a full-thickness flap was raised. Osteotomy was performed with low-speed handpiece under coolant irrigation and the tooth was removed. The wound was irrigated and closed with 3-0 polyamide suture. Sutures were removed after 7 days. The patient healed uneventfully. Clinical and radiographic follow-up over 1 year was excellent.

Discussion: Since the mesiodens was inverted and its eruption was unlikely, the decision to remove the tooth was consensual. Besides that, various authors recommend an early surgical removal to prevent future orthodontic problems.

Although mesiodens are often palatally located, in this case the tooth was located in a more vestibular location. A carefully and exhaustive radiographic examination must be performed in order to plane the best surgically approach.

Conclusion/Clinical significance: By early identification of these anomalies, appropriate intervention may be planned, minimizing the complications associated with them, permitting adequate development and growth, achieving functional, occlusal and esthetic harmony.

P031

Surgical Management of an Aberrant Labial Frenum: A Modified Technique

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Introduction: An abnormal frenal attachment has consequences such as gingival recession, decreased vestibular depth, decreased range of lip movement and involvement of interdental papilla causing a diastema. Moreover, it may interfere with oral hygiene. Several methods have been suggested to eliminate ectopic frenal attachments.
Case description: Our patient was a 15-year-old female with no medical history. Her chief complaint was presence of excess gingiva between the upper central incisors. The patient presented with a three-millimeter diastema between the maxillary central incisors.
Discussion: The technique presented in the current study has the following advantages: (i) Preservation of interdental papilla in cases with diastema. (ii) The frenum is not completely removed. Instead, it is positioned more apically and at the same time, attachments of the lip to the alveolar bone and gingiva maintain the natural function of the frenum.
Most of the previous techniques impair the normal function of frenum since they completely remove it. In complete elimination of frena by frenectomy, even the deepest frenal attachments are cut. For this reason, the surgical site is often extensive and usually results in an extensive scar.
Conclusion/Clinical significance: At the 3-month follow up of the patient, the papilla preservation flap in conjunction with frenectomy showed minimal surgical scarring buccally and preservation of the interdental papilla. Use of modified frenectomy along with a papilla preservation flap enables minimal changes in the height and shape of the papilla in patients with diastemas wider than two-millimeters.

P032

Reconstruction of Alveolar Bone Defect for Dental Implant Insertion in Avulsive Dentoalveolar Trauma

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Aim or purpose: One of the great tragedies after maxillofacial trauma are dentoalveolar segment avulsions and also their separation from soft tissues which challenges the reconstructive treatment in the case of necrosis and dentoalveolar separation during fixation.
In this study several effective and successful treatment plans andheir indication are presented and review.
Methods-materials: In seventeen different patients, several methods of autogenous iliac bone graft, allografts, intra oral DO (distraction osteogensis) and local flaps were used in order to reconstruct anterior alveolar bone defect due to trauma for future dental implants.
The advantages and disadvantages of each methods and their success were evaluated.
Conclusion: Autogenous grafts and distraction osteogensis can have clinical and radiographic success rates like vascularized flaps in the cases of soft and hard tissue dentoalveolar defect in controlled manners.

P033

Using of Photodynamic Therapy (PDT) and Photodynamic Diagnosis (PDD) in Case of Oral Leukoplakia and Lichen Planus

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Introduction: Photodynamic therapy (PDT) and photodynamic diagnosis (PDD) are widely used in medicine. PDT in dentistry is used in case of premalignant and malignant lesions of oral mucosa and skin. Leukoplakia and lichen planus lesions are the most important clinical problem. Photodynamic diagnosis is widely used to precise localization of premalignant and malignant lesions of skin and mucous membrane.
Case description: #1 – 58 years old man with bilateral leucoplakia foci in the region of lower first molars.
#2 – 71 years old female with one focus of leucoplakia in region of upper alveolar ridge.
#3 – 79 years old female with wide spread lichen planus lesion on the ling.
#4 – 67 years old female with multifocal lichen planus.
Discussion: In case of wide spread, multi foci types of mentioned lesions typical surgical incision is not the best way to treat due to loss of soft tissues and possibilities of massive scars forming. Scars may lead to decrease function of stomatognathic system so PDT may be an alternate treatment method.
Conclusion/Clinical significance: Photodynamic therapy used in case of wide spread lesions guarantees very good esthetic effect without scars of oral mucosa. PDT is a very promising treatment method and PDD is none invasive diagnostic method especially in case of irregular shapes of lesion.

Poster Session 08 | 07.09.2016, 11:30–12:45 | Poster Display 4

Theme: Public Health

P034

Evaluation for Oriental Medicine Learning in Dental Education

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Aim or purpose: Our Osaka Dental University is one of only two dental schools in Japan which have a Department of Oriental Medicine and curriculum for oriental medicine in dental education. A course called "Oriental Medicine in Dental Education" was started in April 2004 for third-year students. The purpose of the course is to acquire knowledge of oriental medicine and the

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basic skills. We evaluated the education of dental oriental medicine using pre- and post-questionnaire data for classes.
Materials-methods: The contents of the course are the history, concept and diagnostic method of oriental medicine to prevent of current lifestyle-related disease and accelerate curative methods, and health promotion by oriental medicine. In addition, it includes acupuncture and therapeutics for traditional oriental medicine. The methods of teaching involves lectures using Power Point as well as giving a questionnaire and post-test. Actually, hands-on-learning of acupuncture is practiced. Pre- and post-questionnaire data were collected from the third-year dental undergraduates and analyzed using mixed quantitative and qualitative methods.
Results: The questionnaires reconfirmed that active learning before and after course are very useful for improvement of the educational effects.
Conclusions: It is important for us to convey the necessity of dental oriental medicine to students, to implement strategies to improve motivation to learn, and to create an educational environment that proactively fosters studies in oriental medicine.

P035

Dental Fear and Its Effect on Dental Health Behaviour

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Purpose: The purpose of the study was to assess the prevalence of dental fear and its effect on dental health behaviour among adult patients.
Material-methods: The survey included 499 patients who were referred to dental clinic from November to December 2015. The questionnaire consisted of 14 single-choice questions and was divided into 3 parts: socio-demographic data; oral hygiene habits and past experience during dental treatment; dental anxiety using the Modified Dental Anxiety Scale (MDAS).
Results: The mean MDAS value in the study group was 10.9 ± 4.79. The majority of respondents (79%) demonstrated a low or moderate level of dental anxiety, while a high level of anxiety was observed in 21% of patients including 11% with dentophobia. A statistically significant correlation was found between the mean MDAS values and sex ($p = 0.028$), age ($p < 0.0005$), place of residence ($p = 0.014$), socioeconomic status ($p = 0.038$), subjective assessment of the oral cavity health ($p < 0.0005$), frequency of dental appointments ($p < 0.0005$), and the negative experiences connected with dental treatment in the past ($p < 0.0005$), but there was no correlation between dental anxiety and education ($p = 0.142$) or oral hygienic habits ($p = 0.064$)
Conclusions: Clinicians should be aware of the common occurrence of fear. The appropriate treatment of patients with dental anxiety allows the dentist to build a relationship with the patient based on trust and may have a direct impact on the quality of dental procedures, thus increasing effectiveness of therapy.

P036

Oral Health Literacy of Parents and Dental Status Their Children

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One of the objectives of increasing public health literacy is to develop understanding by parents the value of health of their children and the needs of their personal involvement in its preservation.
Aim: To study the impact parents' oral health literacy level to dental status of children.
Materials-methods: The inspection of dental status of 101 children, aged 12 years, and questioning of 101 parents accompanying the child to children's dental clinic have been performed. For determination of parents' oral health literacy "Oral Health Literacy Index of the Population" (OHLIP), developed at KrasSMU, was used. To assess the oral health of parents and its determinants questionnaire EGOHID was used.
Results: The parents have a low level of oral health literacy and need of dental care. The average value of OHLIP in the group of parents amounted to 8.86 ± 0.21 (maximum 15) that is assessed as unsatisfactory level of literacy. This resulted in higher prevalence rates (94.06%) and intensity of dental caries (DMFT = 4.6) of their children. An objective indicator of the dental health of children – the value of component D of the DMFT index had a correlation level of dental literacy of parents (-0.254; $p = 0.011$), the level of education of parents (-0.228; $p = 0.022$), parental income (-0.253; $p = 0.011$).
Conclusions: Parents of the children who have seeking for the dental care have the low level of oral health literacy. The consequence of unsatisfactory level of dental literacy and behavior in relation to their own dental health of the parents is their children's dental status.

P037

The Rehabilitation Skills of Oral Hygiene in Patients with Stroke

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Movement disorders are one of the most frequent and severe effects of stroke. The patients who have had a stroke can't carry out an adequate toothbrushing, there is a loss or deficiency of manual skills of oral care. In this regard, it's increasing the amount of plaque and reduces the role of oral protective mechanisms.
Aim: To assess the effect of rehabilitation course of motive functions of a brush on the level of oral hygiene of the stroke patients.
Materials-methods: The program of restoration typical brushing motility of upper limb with use of the tablet computer on Android

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has been developed. The movements were estimated on the speed and accuracy. The pilot study involved 60 participants (women – 80%, men – 20%) aged from 50 to 76 years, who passed rehabilitation after acute cerebrovascular accident.
Results: As a result of dental examination it was found that in stroke patients, who were on rehabilitation in the hospital, were registered a very low level of oral hygiene index (OHI-S) – 3.6 points. The duration of the first exercises ranged from 10 to 30 min. The duration of subsequent exercises were reduced due to the improvement of patients. After the third exercise the value of the oral hygiene index decreased to 3.4 points in 58% of patients. After 10 days of exercises the level of oral hygiene was assessed as satisfactory in all patients.
Conclusions: The results of the study demonstrated the effectiveness of this method of motor recovery of the upper limb.

P038
Optical Coherence Tomography for Dental Plaque Identification
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Aim or purpose: The aim of this study is to analyse the efficiency of professional cleaning. At the same time, a comparison is presented between the classical method of highlighting the plaque using plaque revelators and cutting edge methods like Optical Coherence Tomography (OCT).
Materials-methods: The study was performed on a sample of 25 patients aged between 18 and 35 years. The first method implemented, using Dental Plaque Desclosing Agent, Fluorescent, and UV-light from Plac-o-Tect. The second method was a dynamic but established one, using the non-invasive, real time imaging capabilities of OCT technology. The OCT system was working in Time Domain mode at 1,300 nm. 500 slices were obtained for each investigation at 10 microns distance between every slice. The bacteria quantity which exists on the surface of the teeth before professional cleaning was marked in order to compare the results obtained with the two methods. After the professional cleaning is completed, the investigations were repeated and the data obtained before and after the cleaning was compared.
Results: The results showed the presence of plaque for 88% of the patients investigated. The plaque index was initially similar for the classical method (i.e., with the dental plaque desclosing agent) and with the novel method proposed, OCT. However, after sanitization, plaque revelators showed no plaque on tooth surfaces, but OCT had the capability to show the presence of the dental plaque in the proximal areas.
Conclusions: OCT could act as a valuable tool in identifing of dental plaque.

P039
Oral Health-Sex Correlation at Prosthetic Geriatric Population in Macedonia
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Aim or purpose: Low oral health, as one important component, disrupts the general health and quality of life. Factors for perception of oral health and quality of life are social-demographic characteristics. The main purpose of this study was to perform an evaluation of quality of life at geriatric patients>65, with built-in oral prosthetic dentures depending on the sex as a socio-demographic characteristic.
Materials-methods: The survey was a prospective transversal (cross-sectional) study conducted among 165 institutionally sheltered patients at Gerontology Institute (inspected group – IG) and 170 patients from the dental specialist clinics (control group CG) at age 65 and older. Statistical program SPSS for Windows ver 13.0 was used for statistical processing.
Results: Patients with upper and lower total dentures were dominant (43.6% vs. 26.5%). The sex has a significant influence on total GOHAI sore ($p = 0.026$). Male from IG had the highest GOHAI score (30.70), while the lowest score was at the female CG patients (28.08).
Conclusions: Sex had the significant influence to the unsatisfactory level of quality of life and oral health at geriatric patients in Macedonia.

Poster Session 09 | 07.09.2016, 13:00–14:00 | Poster Display 1

Theme: Materials

P040
Surface Roughness Evaluation of Flowable Resin Composites
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Aim: This in vitro study was performed to compare the surface roughness values of five flowable resin composites [Premise Flowable (Kerr, USA), G-aenial Universal Flo (Gc, Japan), Clearfil Majesty Flow (Kuraray, Japan), Tetric N-Flow (Ivoclar, Liechtenstein), Filtek Ultimate (3M Espe, USA)].
Materials-methods: Ten samples from each tested material were prepared in standard teflon discs (2×5 mm) ($n = 10$). All materials were light cured for 20 s with a LED curing device (Valo, 1,400 mw/cm^2, Ultradent). Samples were polished with AlO3 discs (Optidisc, Kerr, USA). After polishing, surface roughness was evaluated using a profilometer (SJ-201, Mitutoyo, Japan). Results were statistically analyzed by one-way ANOVA.
Results: According to the obtained values, there were no statistically difference between the surface roughness values of tested flowable resin composites ($p > 0.05$).

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Conclusions: According to the results of this study, it can be concluded that flowable resin composites may show similar surface roughness.

P041

Effect of Saliva Contamination/Decontamination on Bond Strength of Cured Universal-Adhesive

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Aim: The aim of this in vitro study was to evaluate the effect of saliva contamination/decontamination methods on dentin bond strength of a cured universal adhesive.

Materials-methods: Seventy extracted sound human molar teeth were used for the study. After the teeth were longitudinally sectioned mesiodistally, they were grounded to obtain a standardized flat dentin surface. The teeth were randomly divided into five groups according to saliva contamination/decontamination methods (n = 14): Group I-No contamination (control); Group II: Contamination after curing of universal adhesive, Adhese (Ivoclar/Vivadent) followed by air-drying; Group III: Contamination after curing of adhesive followed by air-drying and reapplication of adhesive; Group IV: Contamination after curing of adhesive followed by water-rinsing/air-drying; Group V: Contamination after curing of adhesive followed by water-rinsing/air-drying and reapplication of adhesive. Cylinders of composite (Tetric N-Ceram) were placed on the treated area. After 24-h storage in distilled water, shear bond strength was determined using a universal testing machine. The data were analyzed using one-way ANOVA and Tukey HSD test ($p < 0.05$).

Results: The bond strength of group II and III were statistically similar to non-contaminated group, Group I ($p > 0.05$). Group IV and V showed statistically lower bond strength values than other groups tested ($p < 0.05$). No difference was observed between Group II vs. III, and Group IV vs. V ($p > 0.05$).

Conclusions: Decontamination with air-drying resulted similar bond strength values to non-contaminated group. Decontamination with water-rinsing/air-drying led to lower bond strength values. Regardless of decontamination method, reapplication of adhesive did not affect the bond strength.

P042

Surface Roughness of Nanofill/Bulkfill/Packable Resin Composites After Different Polishing Systems

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Aim: The aim of this in vitro study was to evaluate the effect of various finishing and polishing procedures on the surface roughness of three different posterior composites.

Materials-methods: The materials included three resin composites: a nanofill (Filtek Ultimate, 3M ESPE), a bulkfill (Tetric EvoCeram Bulk Fill, Ivoclar/Vivadent) and a packable (Solitaire, Heraeus Kulzer). Twenty-four specimens of each material were prepared using a Teflon mold (10 mm in diameter and 2 mm in height) covered by a Mylar strip. Specimens were stored in distilled water at 36°C for 24 h prior to testing. The Ra (baseline) was measured with "Mahr Perthometer S4P." Three tracing at different locations on each specimen were made. The specimens were then randomly divided into two finishing and polishing groups (n = 12): (i) diamond bur (Diatech)/OptiDisc (Kerr)/Hiluster plus polishing system (Kerr), (ii) diamond bur (Diatech)/SwissFlex kit (Diatech)/Hiluster plus polishing system (Kerr). After finishing and polishing surface roughness of the specimens was measured. Data were analyzed using Kruskal–Wallis and Mann–Whitney tests ($p < 0.05$).

Results: There were no significant differences in roughness values among the groups before the finishing and polishing procedures ($p > 0.05$). After finishing and polishing, significant differences were observed between Tetric EvoCeram Bulk Fill and Solitaire ($p < 0.05$). Among the polishing systems, the results showed only statistically significant difference in Ra values of Filtek Ultimate ($p < 0.05$). Ra values of Filtek Ultimate polished with OptiDisc (Kerr) were higher than Swissflex kit (Diatech).

Conclusions: The smoothest surfaces for all the resin composites tested were obtained with the Mylar strip.

P043

New Approach of Dendrimers as Additives to Dental Nanocomposite Fibers

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Aim or purpose: Development of fibrous matrices of biopolymer nanocomposite opens new perspectives in the field of imaging properties such as high quantum yield, stability, and low toxicity, and with desirable biosensing properties such as high selectivity, sensitivity, and accuracy.

Materials-methods: In order to produce electrospun fibers with homogeneous morphology, a novel method whereby the hydroxyapatite (HA) will be kept in suspension in biopolymer poly(lactic acid) (PLA) will be developed. The novel strategy was to introduce a dendrimer between the hydrophilic HA powder and the hydrophobic solvent-dissolved PLA. The HA nanopowder will be dispersed effectively in dedrimer and mixed homogeneously with PLA.

Results: A new featured and well-developed nanocomposite structure of HA nanopowder-dispersed PLA. The HA-PLA nanocomposite fibers may be potentially useful in photopolymerization.

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Conclusions: The addition of dendrimers modifies the polymerization degree. The polymerization characteristics of the experimental materials were comparable to those of reference materials.
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P044

Biocompatible and Antimicrobial Polymeric Coatings for Titanium Alloy Dental Implants

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Aim or purpose: In order to achieve osseointegration metallic implants have been coated with mineral and/or polymeric layer. Our previous work on coatings showed proper deposition of biological hydroxyapatite on titanium support in a blood plasma-like solution. The aim of this study is to obtain and characterize titanium alloy coated with antimicrobial collagen microcapsules to improve biocompatibility and microbiological properties.
Materials-methods: Ti_6Al_4V disks samples with 18 mm diameter and a thickness of 0.7 mm were sandblasted with Al2O3 powder with the mean size of particles of 29, 45, 110 and 250 μm to confer different roughness for each sample. The solution for the coating was biologic hydroxyapatite sol derived from [$Ca(NO_3)_2$,$4H_2O$] and P_2O_5 dissolved in ethylene glycol with a Ca:P molar ratio 1.67. The HAp-titanium alloy samples were then immersed in antimicrobial collagen microcapsules solution (1, 5 and 10%) and dried at 35°C. The samples coated with biologic hydroxyapatite and collagen microcapsules were characterized by SEM/EDAX and X-ray. The biocompatibility tests were performed on human osteoblast-like cells.
Results: By correlating SEM/EDAX and X-ray analyses of coated implants the best roughness was obtained for samples sandblasted with Al_2O_3 of 250 μm and coated with biological hydroxyapatite and collagen microcapsules. All samples coated with antimicrobial collagen microcapsules are more hydrophilic thus creating a good environment for osteoblast-like cells' growth.
Conclusions: The Ti_6Al_4V coated with biological hydroxyapatite and antimicrobial collagen microcapsules were proved to be biocompatible with osteoblast-like cells, this process being a good protocol for surface treatment of dental implants.

Poster Session 10 | 07.09.2016, 13:00–14:00 | Poster Display 2

Theme: Oral Medicine

P045

Salivary Profile and First Molar DMFT-Index in Children with Congenital-Heart-Disease

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Aim or purpose: To compare salivary parameters and dental status in children having congenital heart disease with healthy subjects.
Materials-methods: In this study, 40 patients aging 7–11 years old with verified diagnosis of congenital heart disease were compared to 40 healthy children in terms of salivary calcium, phosphorus, secretory IgA, pH, and flow rate as well as first permanent molar DMFT. Un stimulated whole saliva samples were collected by means of spitting method. pH meter and specialized kits were used to measure pH and salivary parameters respectively. Student's *t*-test was utilized to compare variables between groups.
Results: Eighty children, 37 (46.25%) boys and 43 (53.75%) girls, were studied with the mean age of 8.33 ± 1.14. Patients had significantly lower body mass index ($p = 0.005$) and frequency of daily tooth brushing ($p = 0.02$) than controls. Significant difference was found between groups in terms of salivary flow rate ($p = 0.0001$), pH ($p = 0.02$), phosphorus ($p = 0.01$), and secretory IgA ($p = 0.0001$), On the other hand, level of salivary calcium was not significantly different between groups ($p = 0.29$). In regard with dental status, first permanent molars DMFT was significantly higher in patients than controls ($p = 0.05$).
Conclusions: Congenital heart disease in children alters salivary parameters, which predisposes oral cavity to dental caries.

P046

Smoking Modulates NOD1 Signal Pathway and Human β-Defensins Expression

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Aim or purpose: Cigarette smoke has been confirmed to dampen innate immune in oral mucosa, and is a common pathogenic factor of oral squamous cell carcinoma (OSCC). NOD1 signaling-pathway is an important part of innate immune which mediates the defense reaction of oral mucosa by secreting human β-defensins (hBDs). The aim of this study was to evaluate potential effects of smoking on NOD1 signaling and hBDs expression in oral mucosa.
Materials-methods: Tissue specimens of oral mucosa were collected from donors undergoing routine surgical treatment. All

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participants including 20 nomal controls and 25 OSCC patients were classified as two groups: non-smokers and smokers. By using Western blotting and immunohistochemistry, we investigated differential expression of crucial molecules in NOD1 signaling-pathway, hBDs between non-smokers and smokers. Immortalized human oral mucosal epithelial (Leuk-1) cells were exposed to whole cigarette smoke (WCS) for various time periods. hBDs expression were detected by Q-PCR, immunofluorescence and confocal microscopy.

Results: The levels of NOD1, NF-κB, hBD-1 and hBD-3 significantly reduced in normal mucosa smokers compared with non-smokers. The levels of RIP2 (receptor-interacting protein 2), phospho-NF-κB (P-NF-κB) and hBD-2 remarkably enhanced in normal mucosa smokers. Smoking OSCC group expressed more Rip2 and less Nod1, NF-κB relative to non-smokers. WCS exposure attenuated hBD-1while enhanced hBD-2 by Leuk-l cells.

Conclusions: Cigarette smoke could potentially modulate the expression of crucial molecules of NOD1 signaling-pathway and hBDs in human oral mucosal epithelium. The present results may give a new perspective to investigate smoking-related local defense suppression and oral disease occurrence.

P047

Severe Congenital Neutropenia-Interdisciplinary Problem

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Severe congenital neutropenia is rare immunodeficiency characterized by persistent neutropenia and early onset severe systemic bacterial infections. 3.5 year-old Caucasian female patient was referred from Haematology to our Department for evaluation of her oral cavity condition. Medical history revealed that she had suffered from numerous severe recurrent bacterial infections since the first month of her life: furunculosis, rotavirus infection, otitis media purulent with eosinophilia, granulocytopenia, hypergammaglobulinaemia and hyperimmunoglobulinaemia G. Oral problems had included stomatitis. Multiple antibiotic treatments had been used to control recurrent infections. At the age of 15 months, based on absolute neutrophil count and bone marrow aspiration findings consistent with early maturation arrest in myelopoiesis SCN was diagnosed. 11 months after the diagnosis of Kostmann syndrome, the girl suffered from abscessus faciei multiplices and painful aphtosus ulcers. She received rhG-CSF-recombinant human granulocyte colony stimulating factor. Afterwards mentioned therapy was repeated twice in combination with antibiotic and immunoglobulin due to: painful aphtosus ulcers, pharyngotonsilitis and furunculosis.

In 2015 the girl was transferred to Haematological Unit when she remained for 5 weeks. The girl suffered from vomitus, diarrhea, dehydration, weakness, tender abdomen and had a fever 39.9°C. She was treated with the broad-spectrum antibiotics, rhG-CSF and surgical procedure. Postoperative diagnosis: cholecystis gangrene, pericholecystis.

Oral examination: mucous swelling, tenderness on palpation, gingival redness, painfulness and easily bleeding. An ortopantomogram showed extensive bone loss. After rhG-CSF therapy the percentage of neutrophils increased. Recommendation: detailed oral hygiene, regular appointments, non–surgical treatment: scaling/professional tooth cleaning with chlorhexidine 0.2% rinsing.

P048

Increased Circulating CXCR5+CD4+ T Follicular Helper Cells in Oral Lichen Planus

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Aim or purpose: To investigate the effects of Tfh cells on OLP.

Materials-methods: The frequencies of CXCR5+CD4+ Tfh cells and CD19+ B cells in peripheral blood of OLP patients and controls were evaluated by flow cytometry. Besides, the serum IL-21 concentration was measured using ELISA technology.

Results: Present study showed significantly increased circulating Tfh cells ([$p < 0.05$) and B cells ($p < 0.0001$), as well as decreased IL-21 level ($p < 0.05$) in OLP patients. Noteworthy, the proportion of Tfh cells in peripheral blood mononuclear cells of atrophic-erosive OLP was higher than reticular OLP and controls ($p = 0.012$ and 0.021, respectively). Furthermore, Tfh cells exhibited negative correlation with B cells in OLP ($r = -0.435$, $p = 0.01$).

Conclusions: In summary, Tfh cells may be involved in the pathogenesis of OLP through abnormal modulation on B cell proliferation and IL-21 production, and associated with different clinical forms of OLP.

P049

Osteomyelitis of the Mandible in a Patient with Osteopetrosis: Case Report

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Introduction: Ten percent of osteopetrosis cases develop osteomyelitis that usually involves the mandible. Osteomyelitis of the jaws following dental treatment is a rare condition. The osteomyelitis is generally caused by tooth extraction or pulpal necrosis. The leading cause of the increased rate of infection is thought to be a lack of adequate bone vasculature

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Case description: A 38 year old male, complained about mandibular pain, swelling of the left lower jaw.he is presented with diagnosis of acute Mandibular osteomyelitis which space abscess of the left side of mandible after extraction of teeth that has worsened the swelling and pain after extraction. Patient with congenital microcephaly of hands and has a deformity in the legs. in spite of incision, drainage of abscess and antibiotic therapy complains from pus discharge were remained in the retromolar pad area associated with trismus.
Discussion: This case report demonstrates a rare. Management entailed a course of antibiotics in combination with surgical debridement. Some reports have also advocated the use of hyperbaric oxygen in the treatment of this condition, especially in the irradiated mandible. High-dose intravenous antibiotics and debridement of necrotic bone is recommended.
Conclusion/Clinical significance: On clinical and radiographic review, the patient was well, completely symptom free and the osteomyelitis had fully resolved. The combination of antibiotic therapy and surgical debridement was effective in the treatment suppurative osteomyelitis of the mandible utilizing intravenous sedation, and so averting the need for a general anaesthetic.

Poster Session 11 | 07.09.2016, 13:00–14:00 | Poster Display 3

Theme: Endodontics

P050
Fragment Reattachment of Fractured Anterior Teeth with Pulp Exposure: 5 Years Follow Up
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Introduction: Coronal fractures of the anterior teeth are a common form of dental trauma that mainly affects children and adolescents.
Case description: An 12-year-old boy was referred to our clinic because of crown fractures of maxillary central incisors, presenting to the clinic 1 h after trauma. Intraoral clinical examination revaled a complicated crowns fractures (class III, Ellis's classification) with exposed pulp. Periapical radiographic examination showed completed root formation, closed apices, no periapical injury and no alveolar bone or radicular dental fractures. Pulp management included partial pulpotomy with the Cvek technique and reconstruction with reattaching of the same teeth fragments of the central inicisors. Follow up appointments were made periodically. At 5 years follow-up, the teeth were found to be vital, without periodontal or periapical pathology.
Discussion: Case report showed that tooth fragment reattachment is an alternative for restoring aesthetics and function of the injured teeth with pulp exposure
Conclusion/Clinical significance: Tooth fragment reattachment procedure offers an ultraconservative, safe, fast, and esthetically pleasing result when the fractured fragment is available. Partial pulpotomy represents an excellent alternative for the treatment of traumatized vital teeth.

P051
Treatment of Perforation in Pulp Chamber with MTA – Case Report
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Introduction: Perforation occurs as a result of ongoing patological processes or for iatrogenic reasons. Can be treated conservatively, surgical- conservatively or surgically. In conservative treatment is usually applied MTA (Mineral Trioxide Agregate).
Case description: This study presents a case of perforation treatment with MTA material. 27-year-old patient raised for follow-up endodontic treatment of tooth number 36. Inside the pulp chamber was found a perforation, with diameter of about 3 mm, located in the pulp chamber floor, on the vestibular side. After performing endodontic treatment, a perforation has been sealed with MTA. Control X-ray picture made after the end of the therapy showed a correct root canal filling and sealed perforation. After cementing two fiber posts in distal and mesio-lingual root canals, tooth structures was rebuilt with composite material and supported with zirconia- based ceramic crown. Control examinations, performed after 12 and 24 months, showed correct clinical and radiological condiotion of treated tooth.
Discussion: Perforation treatment is a complicated procedure, the success of which depends on its location and size, and the time in which treatment was carried out. An important issue is a material used to seal a perforation. In vivo and in vitro studies indicates that from many cements, used in perforation treatment, MTA is a material of choice.
Conclusion/Clinical significance: Presented clinical case shows that the correct supply, even large pulp chamber floor perforation, proper endodontic treatment and tight reconstruction of tooth crown, guarantees therapeutic success.

Poster Session 12 | 07.09.2016, 13:00–14:00 | Poster Display 4

Theme: Caries

P054
The Usefulness of Caries Indicator by Students During the Preparation
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Aim or purpose: Correct assessment of caries tissue removal is usually problematic for students in the first years of clinical practice. One of the least invasive methods of caries detection is a caries indicator which stains dentin with a damaged organic collagen matrix.
To assess the usefulness of caries indicator during removal of carious dentine by third- and fifth-year dentistry students.

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Materials-methods: 56 students of third year (beginning clinical lectures) and 58 students of fifth year (with 2-years clinical practice) removed carious dentine by mechanical preparation (depth of caries: D2 or D3 by WHO). The study consisted of qualifications of the tooth, cavity preparation and a questionnaire. Adequate removal of carious tissue was confirmed by using conventional methods (the colour and the hardness of dentine), followed by twice applications of caries indicator according to the manufacturer's recommendations.
Results: 89.3% of third – year students and 60.3% of fifth – year students assessed that the caries indicator is necessary in identifying and removing of caries. 98% of third-year students and 81.03% of fifth –year ones were more confident when treating with caries detector.
Conclusions: The use of a caries indicator helps to remove dentin caries from the cavity and is especially useful for students with small clinical experience. However, the possibility of excessive tooth preparation or leaving the infected tissue requires supervision.

P055

The Level of MMP-2 in Saliva and the Condition of Hard Dental Tissue in Students

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Aim or purpose: The aim of the study was to determine the effects of salivary MMP-2 on the hard dental tissues in smokers and nonsmokers.
Materials-methods: Clinical, laboratory and statistical examinations were carried out. The study involved 80 students (40 women and 40 men). 19 women and 20 men were smokers.
Results: The mean age was 20 years and 3 ± 12 month. The mean level of MMP-2 in the whole group was 0.77 ± 0.56 ng/ml (respectively 0.95 ± 0.49 ng/ml in smokers and 0.61 ± 0.58 ng/ml in nonsmokers; $Z = -3.95$; $p < 0.001$). The median of MMP-2 was 0.60. The mean DMFs Index in the whole group was 16.32 ± 9.13 (respectively 17.79 ± 10.13 in smokers and 14.92 ± 7.94 in nonsmokers; $Z = -0.86$; $p = 0.38$). The mean Ds Index in the whole group was 5.32 ± 4.77 (respectively 6.43 ± 5.69 in smokers and 4.26 ± 3.44 in nonsmokers; $Z = -1.59$; $p = 0.10$). The statistical analysis revealed that there was no statistically important correlation between MMP-2 and Ds Index ($\chi^2 = 1.35$, $p = 0.24$).
Conclusions: The results obtained to the following conclusions: the level of MMP-2 was higher in smokers, there was no significant correlation between the level of MMP-2 and Ds Index.

P056

Endodontic Posts – When and How? A Clinical Case Report

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Introduction: An endodontically-treated tooth may has its structural properties severely compromised due to the extent of the carious lesion and the endodontic technique used. The clinician should know the indications for endodontic posts use and advantages and disadvantages of each type of post. In this case report a fiberglass post was used to rehabilitate a severely compromised tooth.
Case description: A 32-year-old patient presented with a fracture on tooth 35 which had an endodontic treatment since 2012. The tooth was clinically and radiologically asymptomatic though severely destroyed. The root canal was drilled according to general principles and a dual-cure self-adhesive resin cement was used as a luting agent for a fiberglass endodontic post. After creating a build-up an indirect composite restoration was placed.
Discussion: Given the structural limitations of the tooth, the aesthetic and functional expectations of the patient and their economic possibilities, rehabilitation with a fiberglass endodontic post and an indirect composite restoration was the most appropriate therapeutic option.
Conclusion/Clinical significance: The use of a fiberglass post for the rehabilitation of severely destroyed endodontically-treated teeth is a conservative and aesthetic treatment that offers the possibility of creating additional retention for a restoration.

P057

Progression of Infiltrated Caries Lesions: In Vivo Study

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Aim or purpose: The aim of this study was to assess the progression of approximal caries lesions after the infiltration with a low viscosity resin.
Materials-methods: 57 patients with at least two proximal caries lesions extending radiographically up to the outer third of dentin confirmed with the diagnostic bitewings were included to the study. One of each pair of lesions was infiltrated with the low-viscous resin (study group) and the second one was left for observation (control group). After 12 and 24 months, clinical and radiological examination was performed to assess the effectiveness of treatment.
Results: 43 patients (75.4%) – 76 pairs of initial caries lesions – underwent the control examination 12 months after the procedure and after 24 months it was a group of 36 patients (63.2%) – 60 pairs of initial caries lesions. Both after 12- and 24-months follow-up, caries progression rate in the study group was significantly lower than in the control group. 12-months follow-up demonstrated caries progression of 6.94% in the study group and 26.39% in the control group ($p = 0.008$, McNemar) and after 24 months caries progression rate amounted respectively 9.26% and 35.19% ($p = 0.0079$, McNemar).

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Conclusions: It has been demonstrated that the infiltration with a low viscosity resin is an efficacious method to hamper progression of proximal lesions at the initial stage of their development. However, it requires further long-term observation.

P058

Detection of Non-Cavitated Occlusal Caries with Different Methods: In Vitro Study

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Aim or purpose: The aim of this study was to compare the efficacy of laser fluorescence device (LF), fluorescence intra-oral camera (FC) and impedance spectroscopy device (EIS) in detecting occlusal caries in permanent posterior teeth according to different cut-off values.
Materials-methods: The occlusal surfaces of 144 teeth were classified visually according to the criteria of the International Caries Detection and Assessment System (ICDAS II) as a reference standard by two examiners. After that, each tooth was assessed applying three detection methods by two examiners independently. Sensitivity and specificity of the methods were estimated at dentine caries lesions thresholds, based on visual examination and on the manufacturer's cut-off values of each device. The intra and inter-examiner reproducibility were calculated using the intra-class correlation coefficient (ICC).
Results: At readings ≥2 the fluorescence camera showed a high specificity (100%), however low sensitivity (22.7%). A similar tendency was noted for the EIS at readings ≥50 (93.1% specificity and 56.7% sensitivity). At readings ≥30 laser fluorescence device showed lower specificity (80%) and slightly higher sensitivity (60%) if compared to other devices. Receiver Operating Characteristic (ROC) curve was used to determine the best cut-off point for LF (>16), FC (>1.51) and EIS (>23.25), which featured with higher sensitivity and specificity. All methods presented high intra and inter-examiner reproducibility.
Conclusions: Detection of non-cavitated lesion might be inadequate when it is based on manufacturer's cut-off values.

Poster Session 13 | 07.09.2016, 14:30–15:30 | Poster Display 1

Theme: Prosthodontics

P059

Oral Health-Living Place Correlation at Prosthetic Geriatric Population in Macedonia

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Aim or purpose: Health is main component of quality of life, while the oral health is component of general health. Socio-demographic characteristics are one of the importanct factors for perception of oral health and quality of life. Main purpose of this study was to perform an evaluation of the quality of life at geriatric patients (older than 65) with built-in oral prosthetic dentures depending on the place of living as socio-demographic characteristic.
Materials-methods: The survey was a prospective transversal (cross-sectional) study conducted among 165 institutionally sheltered patients at Gerontology Institute (inspected group – IG) and 170 patients from the dental specialist clinics (control group CG) at age 65 and older. Statistical program SPSS for Windows ver 13.0 was used for statistical processing.
Results: Patients with upper and lower total dentures dominated (43.6% vs. 26.5%). 53.9% or 89 patients from IC and 45.9% or 78 patiens from CG are living in urban areas. The place of living in this study shows significant influence to the total score, where the patients in IC living in a cities have the highest, and the patients from CG living in rural areas have the lowest total GOHAI score.
Conclusions: Quality of life and oral health at geriatric patients are at unsatisfactory level, with significant influence of the place of living to the oral health of geriatric population.

P060

The Effect of Mandibular Flexure on Fixed Prosthesis Restorations

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Aim or purpose: The study evaluated the effect of mandibular medial flexure (MMF) on two types of minimally invasive fixed prosthesis used for the treatment of the first mandibular molar edentation.
Materials-methods: There were recorded mandibular occlusal impressions in addition silicon (Virtual Putty, IVOCLAR-VIVADENT; fast set) during rest and maximum opening (or maximum propulsion) from 11 volunteers adults. The impressions were performed before the extraction of the first mandibular molar (required by different clinical reasons but without apical bone lesions). Each impression with a digital caliper (SANTO) was scanned (BENQ SCANNER 555O) at a 1,200% magnification and a resolution of 600 pixels. One week after extraction, 3 patients were treated with direct composite prosthesis by using EverStick Ortho fiber-reinforced composite. One year after extractions, 8 patients were treated with indirect metal-composite prosthesis. Both dental prosthesis were fixed one the abutment teeth by inlay cl II. Periodical control was done at 6 months for a period of 1 year post treatment.
Results: MMF values ranged from −0.32 to +0.92 mm (maximum propulsion) and +0.12 to 1.02 mm (maximum opening), respectively. The impairment of marginal fit having an irregular pattern was observed in 2 cases only for the indirect metal-composite prosthesis. Those patients were young (22 and 24 years old) and exhibit the highest values for MMF.

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Conclusions: Considering limitations of the study related to the time and number of patients under study, the using of direct composite prosthesis is more effective on the young patients which exhibit high values for MMF.

P061
*This presentation has been moved to Poster Session 56 on 9/09

Pleomorphic Adenoma of Parotid Salivary Gland Mimicking Temporomandibular Disorders: Case Report

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Introduction: Some serious illnesses posing a threat to a patient's life can display symptoms similar to temporomandibular disorders (TMD). One of those can be pleomorphic adenoma of parotid salivary glands. Unnecessary dental treatment can delay the process of correct diagnosis.
Case description: A 53-year old woman was referred to our clinic, because she was treated for disc displacement but presented no positive results. The examination included all clinical tests according to Research Diagnostic Criteria for Temporomandibular Disorders and dynamic/static tests. Maximal mouth opening without pain was 30 mm; maximal unassisted mount opening with pain was 38 mm with mild pain at the right temporomandibular joint (TMJ); maximal assisted mount opening was 40 mm with mild pain at the right TMJ; right lateral was 15 mm; left lateral was 12 mm with mild pain at the right TMJ; and protrusion was 2 mm. There were no joint sounds; there was mild pain during palpation test of the right TMJ and masseter, but dynamic/static pain was negative. During the course of opening and movement to the left, in the vicinity of the right TMJ, there was visible 1.5 cm round tumor. No pathological changes were seen on the OPT and CBCT. Ultrasound of TMJs showed no abnormalities. However, the ultrasound presented with a 25 mm tumor of the parotid gland. Biopsy revealed pleomorphic adenoma.
Discussion: Symptoms reported in the patient's anamnesis and clinical examination did not suggest a diagnosis towards salivary gland pathology. Palpation test indicated a diagnosis towards TMD. However, the negative dynamic/static test suggested that no TMD pain was present.
Conclusion/Clinical significance: Life-threatening cancer of the salivary glands can mimick TMD. Therefore, it is crucial that treatment is not started until a valid diagnosis has been established.

Poster Session 14 | 07.09.2016, 14:30–15:30 | Poster Display 2

Theme: Endodontics

P062
Shaping Ability of Rotary Files: Continuous vs. Reciprocating Motion

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Aim or purpose: The purpose of this study was to compare the shaping ability of nickel-titanium rotary files used in conventional (ProTaper Universal, Hyflex CM) and reciprocating movements (WaveOne Gold) in a simulated canals.
Materials-methods: Thirty L-shaped canals in resin blocks were randomly allocated to 3 groups (n = 10): ProTaper Universal (group 1), Hyflex CM (group 2) and WaveOne Gold (group 3). All canals were prepared to an apical size of 25 according to the recommendations of the manufacturer. Preoperative and postoperative photographs of the simulated canals were taken under standardized conditions, after which they were accurately superimposed. The amount of resin removed on the right and left sides of the simulated canals, change of the working length and apical transportation were measured. The results were statistically analyzed. The level of statistical significance was set at $p < 0.05$.
Results: Group 3 (WaveOne Gold) maintained better coronal and apical canal curvature. The lowest average change in the working length were observed for group 2 (Hyflex CM). Canal shaping with files from group 3 (WaveOne Gold) resulted in the smallest apical transportation ($p < 0.01$).
Conclusions: Within limitation of the study, WaveOne Gold (group 3) revealed the best shaping ability in artificial L-curved canals.

P063
Managing Separated Endodontic Instruments into the Root Canal System

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Introduction: The success of endodontic treatment depends on tight sealing of the properly prepared canal. This can be prevented by a broken piece of an instrument blocking the canal. This study describes two clinical techniques in removing separated instruments from root canals.
Case description: A 35-year-old patient was referred by prosthetician in order to undergo a revision of root canal treatment of tooth 26. An analysis of a radiograph revealed incorrectly conducted root canal treatment, pathological lesions in periapical tissues and the presence of a non-transparent material. With the help of an ultrasonic tip attempts were made to remove the instrument from the canal.
A 26-year-old patient reported with the aim to perform root canal treatment of tooth 46. An analysis of radiograph confirmed the presence of a foreign body in the mesial canal with large pathological lesions in periapical tissues. An attempt was made to take the instrument out using modified injection needle.
Discussion: The cases demonstrate that even complex clinical situations, can be safely and effectively treated. In the treatment of cases with separated file in the canal, the question is whether it will be possible to remove a fragment of a canal or bypass. If the root canal is completely blocked, we can only try to remove a fragment of the tool.
Conclusion/Clinical significance: There is no standardized procedure for the safe removal of separated instruments exists.

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Separation of an endodontic instrument does not imply failure of treatment as far as elimination of root canal infection and prevention of reinfection.

P064

Mental Foramen and Accessory Mental Foramen in a Selected Polish Population – A CBCT Study

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Aim or purpose: The aim of this study was to evaluate the anatomy of mental foramen (MF) and the presence of accessory mental foramen (AMF), by means of cone-beam computed tomography (CBCT).
Materials-methods: In the present study, 96 CBCT images were evaluated. Horizontal and vertical diameter (size), type (H:V) and relationships with mandibular premolar of MF for both sides (right, left) were measured. Also, the presence of AMF were investigated. Data were statistically analyzed and compared among groups defined by age (20–45, 46–60, >60) and sex (male, female). The level of statistical significance was set at $p < 0.05$.
Results: Most of the subjects had single mental foramen on each side. Additional mental foramen was found in 32.29% patients, more often in male. The most often, in 45% cases, mental foramen had an oval horizontal form, while the most rarely form was oval vertical. In most examined patients mental foramina were situated between first and second mandibular premolar below their apical level.
Conclusions: The detailed informations about anatomy and topography of mental foramen, obtained in this study will facilitate performing local anesthesia and endodontic surgery in this region.

P065

Basic Fibroblast Growth Factor Levels in Human Periapical Granulomas After Systemic Antibiotic and Nonsteroidal Anti-Inflammatory Drug (NSAID) Therapy

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Aim: The purpose of this study was to investigate the influence of antibiotics and nonsteroidal anti-inflammatory drugs on the level of proangiogenic basic fibroblast growth factor in human periradicular lesions.
Materials-methods: bFGF concentration was quantified in granulation tissue biopsies obtained from 56 patients with chronic periapical periodontitis by RayBio Human bFGF ELISAKit (RayBiotech.Inc.). Patients were divided into 4 groups: without any drugs intake (control group, n = 23), with NSAIDs (n = 7), with antibiotics (n = 5) and with NSAIDs and antibiotics implementation (n = 5). The specimens were collected after at least 48 h of NSAIDs and 5 days of antibiotics intake. Results were analyzed with the ANOVA test ($p < 0.05$). The reverse transcriptase reaction was performed using Enhanced Avian HSRT-PCRKit (Sigma Aldrich, Germany). Presence of bFGF gene expression was checked using qualitative PCR method. Additionally in 11 periapical tissue samples immunohistochemical staining was performed.
Results: Enzyme-linked immunosorbent assay analysis revealed that bFGF levels in granulation tissue of patients classified into NSAIDs (241.4 pg/ml), antibiotics (267.8) and NSAIDs with antibiotics (304.6 pg/ml) groups were significantly lower in comparison with the patients without pharmacotherapy (744.5 pg/ml, $p = 0.007$). PCR product for bFGF gene was demonstrated in 85% of samples. IHC reaction was positive in 81.8% of biopsies.
Conclusions: The use of NSAIDs and antibiotics in patients with chronic exacerbated periodontitis decreases bFGF levels in periapical granulomas. PCR as well as immunohistochemical analysis confirm bFGF gene expression and presence of this cytokin in inflamed periapical tissues. These findings suggest that bFGF plays a key role in apical healing and/or periodontitis progression.

P066

Antifungal Efficacy of Alexidine – An In Vitro Study

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Aim or purpose: The aim of this in vitro study was to evaluate the efficacy of endodontic root canal irrigant alexidine (ALX) on Candida albicans.
Materials-methods: Fifty-five single-rooted human teeth were used in the present study. The teeth were instrumented (size 40.02) using sodium hypochlorite (5.25%). After root canal preparation, experimental teeth were inoculated with Candida albicans (ATCC 10231) and incubated for 72 h. Then specimens were divided into four groups according to the final irrigation regiment used: (1) 1 ml of 1% ALX for 1 min, (2) 1 ml of 2% chlorhexidine (CHX) for 1 min, (3) 1 ml of 2% NaOCl for 1 min, (4) 1 ml of 17% EDTA for 1 min. A positive control group and a negative control group were also included. Aliquots from the experimental teeth were plated on Sabouraud 4% dextrose agar plates and colony-forming units (CFUs) were evaluated under light microscopy (400×) as a measure of antifungal activity.
Results: There was no significant differences between 1% ALX, 2% CHX, and 2% NaOCl. All these irrigants exhibited significantly superior ($p < 0.05$) antifungal properties than 17% EDTA and sterile saline.
Conclusions: Use of 1% ALX as a final irrigant is more effective than 17% EDTA and sterile saline against Candida albicans.

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Poster Session 15 | 07.09.2016, 14:30–15:30 | Poster Display 3

Theme: Orthodontics

P067

Aesthetic Through Transparent Aligners in Unilateral Extractions of Second Premolars

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Aim: The request to have an orthodontic treatment as painless as more aesthetic and hygienic is increased in recent years in Albania, especially from the adults. Heavy crowding, class II molar and canine in our cases were treated through transparent aligners making unilateral extractions of upper and lower second premolars, to achieve a functional and aesthetic result.
Methodology: There were treated two males aged 22 and 29 years and a female aged 37 years by means of removable transparent aligners. The material for the realization of these aligners is transparent polymer for medical use. These are light materials, resistant against breakage, offer a very high transparency. They have an elasticity, allowing the gradual movement of teeth. Aligners are developed through a 3D electronic microscope, 3D laser scanner and dedicated software. It programs the teeth movement in three dimensions with a precision of 0.1 mm. Heavy crowding in these patients was treated through the unilateral extractions of upper and lower second premolars, with frequent stripping of upper and lower incisors to obtain space. Active treatment time was from 12 to 19 months. They kept on average per day from 24 to 22 h to have optimal results. Replacement of the aligners became every 2 weeks.
Results: There was achieved a liked result by our patients, with a regularly smile. Post-extractions spaces were closed as good through the transparent aligners reaching a functional occlusion. In the radiographic examination showed no roots reabsorption. Well maintained hygiene showed that did not appear any caries disease.
Conclusions: Compared with the traditional orthodontic, this treatment brings aesthetically improvement of smile. It brings a satisfactory hygiene for adult patients in public relations, decrease pains and no roots reabsorption.

P068

Orthodontic and Surgical Treatment of an Impacted Permanent Central Incisor: A Case Report

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Introduction: Although impaction of a permanent tooth is rarely diagnosed during the mixed dentition period, an impacted central incisor is usually diagnosed accurately when there is delay in the eruption of the tooth.
Case description: In this case report multidisciplinary treatment of a 10 years old male patient was presented. The patient had a skeletal class I malocclusion and balanced facial pattern. Intraoral examination revealed an early mixed dentition and an Angle's class I molar relationship. In the intraoral examination, it was observed that space of the left central incisor was closed mildly by the migration of the neighbor teeth, there was a midline deviation, and left lateral incisor had a narrow mesio-distal width. Clinical examination showed a missing maxillary permanent left central incisor. In the radiographic evaluation of upper anterior region demonstrated an impacted permanent left central incisor. Gold chain was attached on the impacted central incisor by a surgical approach. The impacted maxillary left permanent central incisor was successfully positioned into proper alignment through surgical crown exposure and the orthodontic traction.
Discussion: The impacted maxillary left permanent central incisor was successfully positioned into proper alignment through surgical crown exposure and the orthodontic traction. Ideal overjet and overbite and resolution of the insufficient space for proper alignment of impacted incisor in the maxillary arch was also achieved. The exposed incisor after complete treatment presented an acceptable gingival contour and attached gingiva.
Conclusion: At the end of treatment, the patient attained a functional occlusion and esthetic appearance.

P069

Clinical Effects of Light Therapy in Patients with Fixed Orthodontic Appliances

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Aim or purpose: To prove the clinical effectiveness of using of polychromatic polarized light in patients with FOA.
Materials-methods: The study was conducted in 30 patients with FOA, which were divided into two clinical groups. The first group (n = 15) – patients without clinical signs of complications of periodontal tissues, who underwent a course light therapy after fixation FOA; the second group (n = 15)-patients without clinical signs of complications of periodontal tissues, which light therapy has not been conducted. Periodontal and hygienic status of patients was evaluated using papillary-marginal-alveolar index (PMA) and Oral Hygiene Index-Simplified (OHI-S) Green-Vermillion, respectively, before treatment, at the 1st, 10th, 14th day of fixation FOA.
Results: Before the treatment and at the 1st day of fixation FOA significant difference between periodontal and hygienic status of patients in both groups were not observed. However, on the 10th and 14th day FOA fixation in the first group of patients the mean value of the PMA index correspond to mild gingivitis, and in the second – the average. On the 10th and 14th day of fixation FOA the oral hygiene of patients in the second study group is worse than in the first one. In the first group the index OHI-S corresponds to good hygienic condition, and in the second – satisfactory. Thus, the use of polarized polychromatic light in the patients with FOA helps to improve their hygienic and periodontal status.
Conclusions: Based on the dynamics of changes in hygienic and periodontal status of patients with FOA, the clinical effectiveness of light therapy during orthodontic treatment was proved.

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P070

The Synergistic Effect on Osteogenic Differentiation of Human Mesenchymal Stem Cell by Diode Laser-Treated Stimulating Human Umbilical Vein Endothelial Cell

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Aim or purpose: Angiogenesis play an important role in determining the biostimulation of bone regeneration, either in new bone and blood vessel formation.
Materials-methods: In this study, we used diode laser as a model biostimulation to examine the role of HUVEC on the laser stimulated osteogenesis. Several bone formation-related proteins were also significantly up regulated by the diode laser stimulation, indicating that HUVEC may participate in the diode laser stimulated osteogenesis.
Results: Interestingly, when human mesenchymal stem cells (hMSCs) cultured with HUVEC-diode laser-treated, the osteogenesis differentiation of hMSCs was significantly promoted, indicating the important role of HUVEC in diode laser-enhanced osteogenesis. Adequately activated HUVEC are vital for the success of diode laser-stimulated hard tissue regeneration.
Conclusions: These findings provided valuable insights into the mechanism of diode laser-stimulated osteogenic differentiation, and a strategy to optimize the evaluation system for the in vitro osteogenesis capacity of laser treatment in periodontal repair.

P071

Orthodontic Treatment in the Patients with Cleidocranial Dysostosis

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Introduction: Cleidocranial dysostosis is a rare, inherited autosomal dominant defect. It primarily affects bones from intramembranous ossification and is characterized by hypoplasia or aplasia of clavicles, delayed closure of cranial fontanels, brachycephalic skull and a short stature. The condition is of a clinical significance to dentistry due to the involvement of facial bones, altered tooth eruption patterns, multiple supernumerary teeth and impacted permanent teeth.
Case description: Two case reports are discussed. Intraoral photos, collection of X-Ray OPG examinations and CBCT scans are presented.
Discussion: Two female patients were orthodontically and surgically treated. Therapy included the extraction of almost all supernumerary teeth, surgical exposure of impacted proper permanent teeth and orthodontic treatment with the use of fixed appliances. In the end of long-term treatment the prosthetic restorations were fabricated. The genetic examination were done and the feminine karyotype were confirmed in both cases. Previously information from the cephalogram and orthopantomogram were completed by CBCT scans of teeth and bone morphology.
Conclusion/Clinical significance: The early surgical-orthodontic treatment avoids local and general complications, makes possible fabrication of prosthetic restorations and gives patient physiological conditions and esthetic satisfaction. The presence of teeth loss did not allow – despite long orhodontic treatment – for complete restoration of the continuity of the dental arches and the prosthetic restorations are required. The CBCT scanning gives the best picture of the reciprocal localization of impacted teeth and of the cranial morphology in this anomaly.

Poster Session 16 | 07.09.2016, 14:30–15:30 | Poster Display 4

Theme 1: Gerodontology

P072

Rate of the Binding Reaction of Selected Tissue Conditioners – An In Vitro Study

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Materials such as tissue conditioners lose their clinical characteristics over a period of several weeks following application and become unsuitable for further use. Knowledge of the rate at which polymerization occurs may provide the dentist with important information on the clinical usefulness of these materials in daily practice. The aim of the study was to determine the polymerization dynamics of selected tissue conditioners. Three selected soft lining materials were examined using a μ-Raman spectrophotometry system: GC Tissue Conditioner (GC), Softone (Bosworth), Viscogel (Dentsply De Trey) An ion argon laser with a wavelength of 488 nm was used. At a magnification of x50 the power of the beam focused on the sample did not exceed 1.5mW. Spectra were recorded in a spectral range of 100–1,800 cm^{-1}. Based on Raman's maps it was possible to observe the following:

1 Raman spectrophotometry can be an effective tool for evaluating the polymerization dynamics of soft lining materials such as tissue conditioners.
2 Optical homogeneity of the studied materials was observed within 14 days of the experiment.
3 Changes in the composition of the tissue conditioners were noticed only in a spectral range of 400–600 cm^{-1}.
4 Polymerization of those materials started immediately after mixing the powder with the liquid and was the most dynamic during the first 5 min of the process.

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P073

Dental Health Conditions in the Elderly Patients – Preliminary Study

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Aim or purpose: The aging of the population is widespread and irreversible. The aim of this study was to evaluate a quantitative and qualitative condition of teeth and periapical tissues based on an evaluation of CBCT examinations among elderly patients.
Materials-methods: 33 CBCT images analysis of patients under 60 years old reported to private dental practice in Lodz, Poland was performed. Examinations were obtained using the iCAT Vision scanner with 8.5 cm hight and diameter 8.5 or 14 cm FOV, and 0.2 or 0.125 voxel protocols. Depending on the FOV size, it was possible to visualize the maxilla, the mandible or both. The Ethics Committee of the Medical University of Lodz approved this research (RNN/333/15/KE). The following parameters was evaluated: age, gender, teeth present, condition of periapical tissues according to the CBCT-PAI.
Results: Elderly subjects aged between 60 and 77 years, 30% were male and 70% were female, and had an average of 22 teeth. A total of 727 teeth were evaluated. Intact periapical structures had 609 teeth (CBCT-PAI 0: 83.77%). The most frequent location of apical periodontitis (AP) was in molars (25.58%) and premolars (21.11%). AP prevalance was respectively: CBCT-PAI 1: 5.64%, CBCT-PAI 2: 5.78%, CBCT-PAI 3: 3.44%, CBCT-PAI 4: 0.96% and CBCT-PAI 5: 0.41%.
Conclusions: Apical periodontitis prevalence in our study is lower than in the other epidemiological studies. Further research investigating the dental health conditions in the elderly patients is necessary.

Theme 2: Dental Erosion and Non-Carious Lesions

P074

Perception and Awareness of Molar-Incisor-Hypomineralisation Among Polish Dentists

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Aim or purpose: Assessment of perception and awareness of Polish dentists concerning MIH.
Materials-methods: The questionnaire survey was directed to dentists taking part in 2 nationwide dental conference. Two hundred and twenty useable responses were received. The questionnaire has been prepared based on existing English version which was previously used in similar surveys in Iraqi, Australia and New Zeeland. Statistical analysis was performed using Chi-squared tests, significance level $p = 0.05$ has been assumed.
Results: Majority of the respondents (93%) have met with MIH changes in their practice also over half of them stated that a number of hypomineralisation increased in last years. The most frequently recognised change related to MIH was yellow-brown demarcation (68.29%), whereas most seldom was post-eruption breakdown of the enamel (21.46%). A variation in views was recorded about MIH specific aetiological factor/s: genetic predisposition was statistically more often stated as linked to MIH occurrence by dentist practicing 0–10 years, while certificated doctors pointed on the antibiotics taken during pregnancy statistically more often.
Conclusions: Molar-incisor hypomineralisation is a condition encountered by Polish dentists with a considerable disparity in perception and views regarding the prevalence of MIH amongst the study population. In agreement with other findings the majority of respondents in the present study believed that the incidence of MIH was increasing. The majority of the respondents indicated that they would benefit from education about MIH-aetiology and treatment.

P075

The Risk of Dental Erosion in Children with Gastroesophageal Reflux Disease

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Aim: The analysis of the potential risk factors of dental erosion in children with GERD.
Material-methods: The study comprised of 114 children aged 6–18 years, including 57 children with GERD and 57 healthy (the control group). GERD was diagnosed by 24-h pH-metry of esophagus. Teeth erosions were evaluated according to Lussi's erosion clinical index. In unstimulated mixed saliva pH, buffer capacity, total proteins, bicarbonates, phosphates, calcium, magnesium, sialic acid and the saliva flow rate were determined.
Results: The frequency of erosion was significantly higher in GERD patients (59.6% vs. 26.3%). Analysis of logistic regression showed that the presence of gastroesophageal reflux disease results in a four-fold increase in the risk of dental erosions. Moreover, a three-fold higher risk of erosion development was found for patients with moderate and severe degree of reflux comparing to subjects with a mild degree of reflux. In patients with GERD significantly lower levels of calcium and phosphates, and significantly higher levels of sialic acid were found. Other parameters of saliva (pH, buffer capacity, bicarbonates, protein, magnesium) did not differ significantly between groups.
Conclusion: Within the limitation of the study we can suggest that the severity of the reflux and the presence of GERD are significant predictors of erosion, however some changes in levels of salivary calcium, phosphates and sialic acid might be associated with course of dental erosion.

Poster Session 17 | 07.09.2016, 16:00–17:00 | Poster Display 1

Theme: Implantology

P076

Measuring Stress Rate Around Dental Implants with PFM and PEEK Crowns

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Aim or purpose: The aim of this study was to evaluate and compare the stress rate in bone surrounding dental implants with two kinds of crowns.
Materials-methods: Two groups, each consisting of 6 anatomic crowns, were prepared for this study. Group 1 contained highly filled composite resin–veneered crown with PEEK (Poly Ether Ether Ketone) frames, group 2 contained feldespathic-veneered crowns with base metal frames (PFM). These crowns were prepared to fit an implant-abutment assembly, which was screwed into a block of acrylic resin to simulate implantation in bone. Another implant in the second acrylic block was drilled with a 30 degree inclination to assess the effect of oblique loads. 4 strain gauges (Type GFLA-3-70, TML, Japan) were bonded to the surface of each resin block and cyclic forces (100 to 0 N) were generated by a chewing simulator machine (Omron, Germany). The Data collected with a data logger (TML, Japan) and recorded in a computer for 3 min per crown. The average of stress rates for each chewing cycle was reported.
Results: Stress rates around both straight and oblique implants with indirect composite crowns in mesial, distal, baccal and lingual portions were significantly lower than around implants with PFM crowns ($p < 0.05$). Stress values in oblique implant were significantly higher than the straight one ($p > 0.05$), however in indirect composite group, these values was significantly less than the PFM group.
Conclusions: Stress in oblique implant was higher than straight one. Materials with higher modulus of elasticity transmitted the highest impact forces to the surrounding bone.

P077

Comparative Evaluation of the Effectiveness of the Implantation in the Lateral Part of the Mandible Between Short Tissue Level (TE) and Bone Level (BL) Implant Systems

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Aim or purpose: Short dental implants can be an alternative method of treatment to a vertical bone augmentation at the sites of reduced alveolar height. However for the successful treatment, implant system that causes a minimal marginal bone loss (MBL) should be taken into consideration.
The aim of the study was to evaluate implantation effectiveness for the bone level (BL) and tissue level (TL) shorts implants provided in the lateral aspects of the mandible. The marginal bone level and the primary and secondary stability were determined.
Materials-methods: Patients were divided into two groups (G1 and G2) according to the method of treatment, n = 16 AstraTech™ (⌀ 4 mm, 8 mm), and n = 16 Straumann® (⌀ 4.1 mm, 8 mm) implants were placed.
The determination of the marginal bone level was based on radiographic evaluation after 12 and 36 weeks. Primary and secondary implant stability was measured with Osstell ISQ.
Results: The effectiveness of the implant treatment during the evaluation period of time was 100%. A good result in secondary stability was achieved in both systems after 36 weeks, however the results were higher for the G1 78.94 ISQ, compared to G2 73.94 ISQ
When comparing the two groups, after 12 weeks there was a greater amount of marginal bone loss (MBL) around G2 implants as compared to G1 implants. After the 36 weeks, there was still greater MLB in G2
Conclusions: The AstraTech BL implants showed better results for the stability measurements, and a lesser MBL.

P078

Clinical Evaluation of Medically Compromised Outpatients from 2006

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Aim: We here report current trends of patients treated by our residents in Katsutadai Dental Clinic and possible challenges in future, using statistically analyzed clinical data between 2006 to 2013.
Materials-methods: Subjects of this study were 238 people aged 20 or over out of 3,163 outpatients who visited Katsutadai Dental Clinic from 2000. The items for the evaluation were extracted from our clinical records and management software (Asano Dental Solution, formerly Yayoi Dental, Japan).
We collected the data of the number of patients by age, and proportion and types of systemic diseases, and conducted the following clinical data comparisons between healthy individuals and people with systemic diseases.
Results: The mean age of the patients was 54.3 years (male: 53.7 years, female: 54.8 years). Ninety seven (97) % of 238 patients had periodontal diseases. In this population, about 40% of patients had some types of systemic diseases, including high blood pressure (30.9%), diabetes (12.2%), osteoporosis (5.8%), angina pectoris (5.8%), respiratory disease [lung cancer, pneumonia and others (5.8%)], cerebral infarction (4.3%), gastrointestinal diseases [gastric ulcers and others (2.2%)], liver diseases (2.2%). In the male group, high blood pressure (27.5%) was the most common disease followed by diabetes (21.6%), liver diseases (5.9%) and angina pectoris (3.9%). In the female group, the most common disease was high blood pressure (33.0%), followed by osteoporosis (9.1%), diabetes (6.8%), and cardiovascular disease [ventricular septal defect and others (6.8%)].
Conclusions: It was suggested that the Periodontal disease influence to a lot of systemic diseases.

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P079

Knowledge and Attitude of Nigerian Dentists to Immediate Loading of Dental Implants

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Aim or purpose: To Evaluate the Knowledge and Attitude of Nigerian Dentists to immediate loading of dental implants.
Materials-methods: Nigeria currently boasts of over 3,000 dentists and are members of the Nigerian Dental Association. There are about 2,000 dentists who are currently working in the public and private practice in the country.
This is a self-administered questionnaire-based study. The questionnaires were distributed during a Nigerian Dental Association conference in Lagos, October, 2015 which had in attendance Dentists who are public and private practitioners from across all the states of the country. A simple random sampling was used to select participants through a simple balloting of "Yes or No." Only individuals that picked "Yes" were given the questionnaires. A total of 350 questionnaires were distributed but duly filled and returned was 250. Pretesting of the questionnaires was initially carried out on 20 dentists in Lagos University Teaching Hospital (LUTH). Analysis of data was done using SPSS Version 20.
Results: The study involved 250 dentists most within the ages 35–39 years; most being females (65.8%) and have a minimum of 10 years clinical experience. Analysis revealed that 74.4% of respondents have knowledge of immediate loading of dental implants. 66.2% of respondents do not place dental implants in their clinics while 74.4% of those that do, do not practice immediate loading of dental implants.
Conclusions: Though most dentists know about immediate loading of dental implants, only a few practice it.

Poster Session 18 | 07.09.2016, 16:00–17:00 | Poster Display 2

Theme: Oral Pathology

P080

Serum Zinc Levels in Patients with Recurrent Aphthous Stomatitis

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Aim or purpose: Recurrent aphthous stomatitis (RAS) is a disease without a clearly defined etiology. It can be attributed to a genetically conditioned abnormal cellular immune response triggered by various local and systemic factors. Zinc is a crucial element of many enzymes, which may affect immunity. Recently a correlation between zinc deficiency and RAS has been reported. The aim of the study was to evaluate the serum zinc levels in patients with RAS in comparison to healthy controls and to validate the association between zinc levels and the course of RAS.
Materials-methods: 75 patients with a history of RAS and 72 generally healthy, age and sex matched controls underwent full dental examination. Serum zinc levels were determined by flame atomic absorption spectroscopy (FAAS).
Results: No statistically significant differences were detected in serum zinc levels between the RAS patients and healthy controls. The mean serum zinc concentration was found to be 84.2 μg/dL in RAS group and 83.9 μd/dL in controls, within the accepted norms. Zinc deficiency was observed in 8 patients (10.7%) from the RAS group and in 5 controls (6.9%). No significant differences in serum zinc levels were found between patients with mild, moderate and severe courses of RAS and in patients with a low or a high number of lesions per episode of the disease.
Conclusions: Based on these results, zinc does not appear to be an important modifying factor in the development of RAS and does not seem to affect RAS severity.

P081

Interleukin 1β Genotype and Clinical Phenotype in Recurrent Aphthous Stomatitis

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Aim or purpose: Recurrent aphthous stomatitis (RAS) is a common chronic inflammatory disease of the oral mucosa of an unclear origin, largely attributed to a genetically conditioned abnormal cellular immune response triggered by various local and systemic factors. The aim of the study was to evaluate the correlation between the clinical profile and the Interleukin-1β (IL-1β) gene variability in a Polish cohort of patients with RAS.
Materials-methods: One hundred and four patients with RAS underwent a full dental examination with blood samples collected from each patient. Severity of RAS was assessed by the clinical type of the disease, the number of lesions per flare up and the length of intervals between the episodes. The genotyping of the two following SNPs: IL-1β T[−511]C and IL-1β C[+3954]T was carried out with the use of genomic DNA isolated from blood samples and PCR-RFLP approach. The results were statistically analysed with chi-square and Fisher's tests and Spearman's rank correlation, with $p < 0.05$ assumed to be a significance level.
Results: No correlation was found between the presence of*2 allele (IL-1β[−511]*C and IL-1β [+3954]*T) and type of aphthae, the number of lesions per flare up and the length of intervals between the episodes.
Conclusions: The presence of *2 allele of the IL1-β gene (IL-1β [−511]*C and IL-1 β [+3954]*T) was found neither to be a significant risk factor for a higher incidence of any type of RAS, nor did it influence the disease severity and mode of recurrences.

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P082

Basic Predictors of Oral Precancer's Malignant Transformation

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Aim: To study the proliferative activity of epithelial cells in Ki-67 antigenin patients with leukoplakia of the oral mucosa.
Materials-Method: A complex clinical and laboratory examination was performed on 155 patients with oral leukoplakia. All patients have been subjected to a careful clinical examination, biopsy of leukoplakia lesions for cytological and histological examination.
Results: 10 (14%) sites of unaltered mucosa, 10 (14%) samples of hyperkeratosis without atypia, 14 (19%) biopsy specimens of hyperkeratosis SIN1, 15 (21%) – hyperkeratosis SIN2, 10 (14%) – SIN3 and 13 (18%) cases of squamous cell carcinoma were evidenced. Immunohistochemical investigation evidenced the presence of protein Ki-67 in the nuclei of epithelial cells. In the unmodified epithelium of the oral mucosa, all epithelial cells with stained nuclei are virtually located in the basal layer.
Conclusion: Against the general increase of the proliferative activity of epithelial cells with increasing SIN, a characteristic distribution of proliferating cells in the thickness of the epithelium was revealed for each studied group, as follows: in the control group and in leukoplakia without atypia, immuno positive cells are located in the basal layer, in leukoplakia (SIN1, SIN2 and SIN3) – in parabasal position while, in squamous cell carcinoma of oral mucosa, the distribution was uniform.

P083

Epidermal and Sebaceous Cysts Treated with CO_2 Laser

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Department of Oral Surgery, Medical University of Łódź, Poland

Aim or purpose: The aim of the study was to discuss the treatment of epidermal and sebaceous cysts in the material of the Department of Dental Surgery of the Medical University of Łódź.
Materials-methods: Twenty-eight individuals were treated for epidermal and sebaceous cysts in the Department of Dental Surgery of the Medical University of Łódź from 2010 to 2013. Seven individuals underwent primary treatment, 21 required reoperation. Lesions were located on the cheek in 22, on the nape of the neck in 4 and on the neck in 2 patients. The Department of Dental Surgery of the Medical University of Łódź follows a specific regimen of management in the removal of lesions involving the head and neck with the use of a CO_2 laser.
Results: On day 14 after the procedure, the wound was completely healed and the post-operative scar was getting smaller. Half a year after the operation no relapse was found in any of the patients. The histopathological examination confirmed the initial diagnosis of sebaceous cyst in 26 patients and epidermal cyst in 2 patients.
Conclusions: Despite their almost identical clinical picture, the basis for the correct diagnosis of epidermal and sebaceous cysts is histopathological verification. Beneficial treatment should be based on the completeness of the procedure along with a satisfactory aesthetic result, which is ensured by an appropriate regimen of treatment using a CO_2 laser with its own specified minimal radiation power of 3W.

P084

Diffuse Large B-Cell Lymphoma of the Mandible: A Case Report with Follow-Up

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Introduction: Intraoral lymphomas could be misdiagnosed as inflammatory lesions or other neoplastic lesions. In this report, we present diffuse large B-cell lymphoma of the mandible with relevant follow-up data.
Case description: Sixty three years-old woman was referred to our clinic with complaints of pain in the right mandible and numbness of the right lower lip. In clinical examination, mild swelling in edentulous alveolar mucosa of right mandible and lymphadenopathy in right submandibular region were observed. Centrally located lesion was completely excised under local anesthesia. Histopathological examination confirmed the diagnosis of diffuse B-cell lymphoma. Patient was referred to medical oncology department and undergone in a chemotherapy protocol. No sign of recurrence observed after 3 months follow-up period.
Discussion: Lymphoma of the jaws typically present with non-specific signs and symptoms of vague pain and discomfort which might be easily misdiagnosed. Radiographic changes in early stages of the tumor may not be clear and usually are only detected in the late period. In our case, radiographic destruction of bone was absent in the first clinical and radiographic examination.
Conclusion/Clinical significance: The diagnosis of lymphoma in the jaws is difficult and often delayed due to the resemblance of the lesion with other benign pathologies. If persistent complaints are present, the clinician must be alert for correct differential diagnosis.

Poster Session 19 | 07.09.2016, 16:00–17:00 | Poster Display 3

Theme: Dental Erosion and Non-Carious Lesions

P085

Effect of Nanohydroxyappatite Incorporation in Acidic Beverages on Tooth Surface

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Acidic food and soft drinks represent a major etiological factor responsible for the erosive lesions of dental tissues.
Aim or purpose: To evaluate the effect of incorporation of carbonated nanohydroxyappatite (Carbonated nHAP) in acidic beverages on hard tooth surfaces.
Materials-methods: A total of 25 intact human premolars were used to prepare enamel and dentin specimens of 25 each. The Specimens were embedded in acrylic resin blocks. Then they were divided into five groups of 5 each according to immersion into the acidic

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beverages (orange juice, Cola, orange juice + (Carbonated nHAP), Cola+ (Carbonated nHAP) and artificial saliva to serve as control). All Specimens were stored for 25 h then subjected to microhardness assessment. Two selected samples were examined using SEM.
Results: The specimens immersed in cola with C- nanohydroxyappatite and artificial saliva exhibited the significantly highest microhardness mean values for both enamel and dentin. The orange juice incorporated with C-nanohydroxyappatite exhibited significantly higher mean microhardness mean values than cola and orange juice individually.
Conclusions: The incorporation of carbonated nanohydroxyappatite in acidic beverages seems to be beneficial in reducing the erosive effect on tooth surfaces (enamel and dentin).

P086

Treatment of White Spot Lesions by Resin Infiltration: Two Clinical Cases

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Introduction: The resin infiltration technique produces a positive effect on aesthetics, preserves tooth structure, delays or even eliminates the need for a restorative treatment and eliminates the risk of post-operative sensitivity and pulp inflammation.
Case description: Case 1: 19 year-old female patient, unsatisfied with the presence of white spot lesions in tooth 21 due to trauma. Case 2: 23 year-old female patient also presented with unaesthetic lesions on anterior-superior teeth, associated with enamel hypomineralization post-orthodontic treatment In order to improve the aesthetics in both cases, resin infiltration technique with ICON® (DMG, Germany) was used: hydrochloric acid 15% (ICON® Etch) for 2 min, dehydration with 99% ethanol (ICON® dry) and finally resin infiltration (ICON® infiltrant) for 3 min. The procedure was repeated in both cases. A final polish with discs and polishing paste was done.
Discussion: Resin infiltration allows an easy and effective approach for the treatment of white spot lesions. After the procedure there was a clear aesthetic improvement in both cases. Patients were satisfied with the results.
Conclusion/Clinical significance: The resin infiltration procedure is a promising minimally invasive dentistry. Although initially indicated only for treatment of enamel hypomineralization, the result of the treatment of the traumatic lesion showed very good results. However, a greater number of clinical studies on this potential indication is required, in particular with longer follow-up periods and a greater number of cases, and possibly the development of specific protocols.

P087

Risk Factors and Awareness of Dental Erosion Among Students of Melaka Manipal Medical College

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Introduction: Studies have been reported prevalence of dental erosion in children. However none have reported the awareness of adult within the age group of 17–25 years old.
Aim or purpose: Dental erosion and factors affecting the risk of its occurrence along with awareness were assessed among the students of Melaka Manipal Medical College, Malaysia.
Materials-methods: A cross sectional self-administered questionnaire with objective questions related to risk factor, oral hygiene habits and awareness of dental erosion along with instructions were provided to 210 participants from Foundation in Science (FIS) and Bachelor of Medicine, Bachelor of Surgery (MBBS) students. The participant's age ranged from 17 to 25 years. The response rate was 81% and the ratio of male to female was 3:2.
Results: Our study showed that the MBBS had more awareness about dental erosion than the FIS analysed using EpiInfo ($p < 0.05$). Among all the different ethnics, Malay ethnic group had the best awareness about dental erosion, followed by Chinese, Indian and others ($p < 0.05$).
Conclusions: We assume that the as the education level increases, the person would be more aware of dental erosion, despite that they might have started with an improper consumption behavior at the early childhood.

P088

The Prevalence of Molar-Incisor-Hypomineralisation (MIH) and Hypomineralized Second Primar Molars (HSPM) in Polish Children: A Preliminary Report

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Aim: To evaluate the prevalance of Molar-Incisor-Hypomineralisation (MIH) and Hypomineralized Second Primary Molars (HSPM) among school children in the Pomorskie voivodeship, Poland.
Materials-methods: 502 school children at the age of 6–12 years old were examined in randomly selected schools in urban and rural areas. The first permanent molars, permanent incisors and second primary molars were diagnosed by two examiners according to Weerheijm criteria and the severity of lesions were scored in accordance to the European Academy of Paediatric Dentistry criteria. Independent Bioethics Commission for Research approved the research protocol. A written informed consent was obtained from the parents before clinical examination of their children.
Results: The prevalence of MIH among school children in the Pomorskie voivodeship was 5.04%. None of examined students with MIH had only one permanent molar affected while 45% had

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all four permanent molars hypomineralized. Only those children which had affected three or four permanent first molars had demarcated opacities on permanent incisors as well. Because of extensive dental caries in primary second molars in the majority of examined children it was hard to recognize whether these teeth were affected or not.
Conclusions: Preliminary studies show that Molar-Incisor-Hypomineralisation is a quite prevalent finding among Polish school children. That is why dentists should be able to diagnose MIH and be aware of its clinically relevant implications.

Poster Session 20 | 07.09.2016, 16:00–17:15 | Poster Display 4

Theme 1: Materials

P089
The Assessment of Selected Biological Properties of the New PAS-GMA Monomer
Dariusz Skaba[1], Wojciech Król[2], Anna Mertas[2], Marta Tanasiewicz[1], Malgorzata Skucha Nowak[1], Bartosz Mosler[1], Arkadiusz Dziedzic[1]
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Aim: The main components of dental bondig systems are monomers, e.g. the Aromatic monomers Bis-GMA, UDMA, TEGDMA, HEMA are mainly responsible for the toxicity of the resin-based dental materials.
Material: The new PAS-GMA monomer formed as a result of synthesis of the glycidyl methacrylate adduct (GMA) with the derivative of 4-amino salicylic acid (PAS) has been obtained and analyzed. On the basis of new compounds, a new intermediate material of the bonding agent (WMP) has been developed and studied, as well as our own adhesive substances for enamel and dentin (PAS-WMP).
The aim of the study has been to assess the cytotoxicity of the WMP experimental PAS-GMA monomer, and its derivative PAS-WMP.
Methodology: According to normative recommendations of ISO 10993-5 in the studies concerning cytotoxicity the cell culture of mouse fibroblasts and MTT test has been used (NCTC KLON 929). 6 cycles of repetitions have been applied for the measurement of non-polymerized preparations, after 24-h cell line culture.
Results: The studied materials demonstrated different cytotoxic properties of mouse fibroblasts L929. Among the 24-h old extracts of non-polymerized materials, the lowest toxicity occurred for the pure PAS-GMA monomer diluted in the proportion of 1:10 (15.89% that is 84.11% of living cells).
Conclusions: The pure PAS-GMA monomer demonstrated a slightly negative influence upon the culture of mouse fibroblasts (84.11% of living cells in 24-h culture), which is the evidence of its slight cytotoxicity.

P090
Effect of Dark-Cure Activators in Resin Cements on Self-Etch Adhesives
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Aim or purpose: To evaluate the claimed effectiveness of dark-cure activators on shear bond strength of resin cements with self-etch-adhesive-luted, opaque and translucent, restorations on dentin.
Materials-methods: Resin composite rods were luted on human dentin using three different resin cements with self-etch adhesives: Rely X™ Ultimate cement and Single Bond Universal adhesive (RXU+SBU), Nexus® 3 cement and Optibond™ XTR (NX3 + XTR), and Nexus® 3 and Optibond™ All-In-One (NX3 + AIO). Three different curing methods were used in the luting process: first, light-cure on translucent shade resin composite rods for 20 s from 5 directions; second, light-cure from the top of opaque resin composite rods for 20 s and keeping in a dark box for 6 min; third, no light-cure but keeping in a dark box for 6 min after bonding with opaque resin composite rods. All specimens were then stored in 37°C distilled water for 24 h before testing for shear bond strength.
Results: The groups with light curing from 5 directions showed significantly higher mean shear bond strengths than the groups with partial light curing. The groups without light curing showed the lowest mean shear bond strengths ($p < 0.05$).
Conclusions: Without light curing, the mean shear bond strengths of resin cements used with self-etch adhesives were very low. The dark-cure activators in resin cements might not allow complete polymerization.

P091
Effect of Proanthocyanidin Solutions on Bond Durability to NaOCl-Treated Dentin
Sitthikorn Kunawarote[1], Pawat Logessathien[2], Sumana Jittidecharaks[1]
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Purpose: To evaluate the effect of proanthocyanidin (PA) in grape seed extract on microtensile bond strength (μTB) and bond durability to sodium hypochlorite (NaOCl)-treated dentin.
Materials-methods: Forty-eight flat ground dentin specimens were divided into one control group and 3 experimental groups, which were treated with 5.25%NaOCl for 30 s or 5.25%NaOCl for 30 s, followed by 10% or 15% PA solution for 15 s. All dentin specimens were bonded with Clearfil™ SE bond. After 24 h water storage, the bonded specimens were sectioned and trimmed to an hourglass shape with a cross-sectional area of approximately 1 mm^2. Each group of specimens was divided into three subgroups regarding storage time. Subgroup1; the μTB was tested immediately. Subgroup2 and 3 bonded specimens were subjected to 2,500 and 5,000 cycles of thermocycling before μTB test,

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respectively. The μTB of all specimens was measured at a cross head speed of 1 mm/min. All μTB data were statistically analyzed by one-way ANOVA and Tamhane's multiple comparisons ($p < 0.05$)

Results: Considering the 24 h water storage and 2,500 cycles of thermocycling subgroups, the mean value of μTB in the groups treated only with NaOCl were significantly lower than those in all other groups. However after 5,000 cycles of thermocycling, there was no significant difference between all the treatment groups.

Conclusions: Using of 10% and 15% PA solutions for 15 s on NaOCl-treated dentin could improve μTB of self-etch adhesive after 24 h storage time and bond durability after aging by thermocycling for 2,500 cycles.

P092

Bond Strength of Nanocomposites Repaired with a Bulkfill Composite

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Aim or purpose: The objective of this in vitro study was to analyse the bond strength of aged resin based nanocomposites repaired with the same and bulkfill composites.

Materials-methods: Seventy-two disc shaped resin composites consisted of three different nanocomposite resins (Filtek Ultimate/FU, Herculite XRV Ultra/HXU, Reflectys/R) were produced to evaluate the repair bond strength. After the storage of samples for 8 weeks in distilled water, each material was combined with itself or bulk-fill composite resin system for repair (Filtek Ultimate+Filtek Ultimate/Group-1; Filtek Ultimate+Tetric BF/Group-2; Herculite XRV+Herculite XRV/Group-3; Herculite XRV+Tetric BF/Group-4; Reflectys+Reflectys/Group 5; Reflectys+Tetric BF/Group-6), then specimens were subjected to shear bond strength testing (SBS), and the debonded surfaces were examined under a stereomicroscope (Olympus SZ61, Tokyo, Japan) at 40× magnification.

Results: There was a significant difference among three materials (repaired with itself+bulkfill) for SBS testing values ($p = 0.001$). FU and R were found similar, while HXU was significantly different. There was a significant difference between group 1 and 2 ($p = 0.006$), while there were no differences between group 3 and 4 ($p = 0.142$), and 5 and 6 ($p = 0.346$). Among the six groups, repair SBS testing values with TBF were higher than repair with itself except for FU.

Conclusions: In this study, the repair bond strength is affected mostly from the substrate. The bulk-fill repaired materials showed higher bond strength in all combinations except for FU, which showed the highest SBS value when repaired with itself. An increased incidence of adhesive fracture was observed at low strengths.

Theme 2: Others

P093

Colour Stability and Reflectance of Selected Dental Materials In Vitro

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Aim or purpose: To study the colour stability and reflectance of dental composites and compomers upon the exposure of to staining liquids and UVA-Vis irradiation.

Materials-methods: The selected dental materials were tested. Coffee, coffee and sugar, tea, tea and sugar, distilled water (control) were chosen as staining liquids. Disk-shaped specimens were soaked in the staining drinks up to 7 days. Colour stability and reflectance spectra were measured by a spectrocolorimeter. Immersion was stored at 37°C. UVA-Vis irradiations were made by a photoreactor for up to 5 h (UVA) and 72 h (Vis). The change of total colour upon immersion liquids and UVA-Vis irradiations has been investigated by the ΔE parameter. Additionally, diffusive-reflective spectra and Maxwell's triangle have been used.

Results: The exposure of the studied dental materials to staining liquids and UVA-Vis irradiations changes their colour and reflectance. The interactions between dental materials and immersion liquids resulted in the colour change form light cream to yellowish or light brown. Moreover, the changes of total colour involved significant changes in lightness (ΔL*) and yellowness (Δb*).

Conclusions: The total change of colour defined by ΔE parameter was much more pronounced for selected dental composites than for dental compomers after 7 days exposure to staining liquids and upon UVA compared to Vis irradiations. The Vis radiation, in contrast to the UVA, caused a small, acceptable in each case, changes of ΔE parameter.

Theme 1: Materials

P094

Surface Roughness of Dental Composites Using Different Polishing Systems

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Aim or purpose: Residual surface roughness of esthetic restorations can directly influence plaque retention, which may result in superficial staining, and secondary caries. The purpose of this

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study was to assess the effect of different finishing and polishing protocols on the surface roughness of nano composite desks.

Materials-methods: A total of 105 disks were fabricated from three Nano-composite materials (3M Filtek Z350XT (Z), Kuraray Clearfil AP-X Esthetics (C) and Dentsply Ceram X One (X)) equally divided into 3 main equal groups of 35 each. Groups were then subdivided into 7 subgroups (n = 5) according to polishing protocol used (Gp1: Control, remain unpolished, Gp2: polished with EVE Ecocomp with 1,000 RPM for 15 s with no cooling system, Gp3: Polished with Praxis abrasive at 1,200 Rpm. Gp4: Poliogloss polishing paste., Gp5: combination of previous methods without coolant, Gp6: as group 2 but with coolant, Gp7: Same as group 5 but with coolant). Surface roughness will be measured to evaluate the outcome of the polishing protocol.

Results: The highest roughness value was recorded in group 3 with Ceram X (Ra = 2.003 μm) while the least was recorded in group 7 With Z350 XT (Ra = 0.832 μm), in the meantime other groups like group 4 in Ceram X and Clearfil present intermediate values.

Conclusions: Within the limitation of this study, most of the polishing system showed satisfactory roughness values. However, was found to be the best protocol to polish teeth among other groups is combination of all protocols with cooling system.

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