AWDC 2016 – Abstract book

Thursday, 8 September 2016

FREE COMMUNICATION SESSIONS 19–35

POSTER SESSIONS 21–39

FREE COMMUNICATION SESSIONS 19–35

Free Communication Session 19 | 08.09.2016, 10:00–11:00 | Pavilion 15 – level 0 – Hall 0.C

Theme: Others

FC073

Translation and Validation of the Turkish Version of the Psychosocial Impact of Dental Aesthetics Quetionnaire

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Aim: The aim of this study was translation and validation of psychosocial impact of dental aesthetics questionnaire (PIDAQ) into Turkish and to provide cross-cultural adaption.
Materials-methods: Translation process was carried out with following steps by a translation committee: (i) Translation to Turkish (ii) Back translation to English (iii) Pre-test (iv) Cross-cultural adaptation. After translation process Turkish version of PIDAQ was formed. Validity-reliability were measured with the aesthetic component of the index of orthodontic treatment need (IOTN-AC) and perception of occlusion scale (POS). The questionnaire were administered to 260 individuals (18–30; 20.50 ± 1.9). Structural validity was assessed by means of factorial analysis, internal consistency was measured with Cronbach's Alpha coefficient.
Results: Factor analysis revealed a four-factor structure with the factor loads of items varying between 0.380 and 0.868. There was shuffling of few questions among domains various factor loadings. Cronbach's alpha of the Turkish version of PIDAQ are ranged 0.534–0.904. The mean scores of PIDAQ subscales and total PIDAQ score showed a statistically significant difference according to the IOTN-AC and POS scores.
Conclusions: This study hereby provides Turkish Version of PIDAQ, which could be a useful tool to evaluate the psychosocial impact of malocclusion in Turkish young adults.

FC074

Dentists' and Dental Students' Conceptions of Pediatric Dental Patient

Burak Buldur

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Aim or Purpose: Dentists' and dental students' (DSs) conceptions of PDPs need to be explored in order to identify a conceptual framework. The objective of this study was to describe the concept of dentists and DSs about pediatric dental patients (PDPs) using metaphor analysis.
Materials-methods: The study group (N = 249) consisted of dentists and DSs. Participants completed the sentence "A pediatric dental patient is like… because…" in order to reveal the metaphors they use about the concept of PDPs. The data were analyzed using the mixed-methods: qualitative (metaphor analysis) and quantitative (chi-square) data analysis techniques.
Results: The dentists and DSs produced 249 valid metaphors. These metaphors were gathered under six different conceptual categories that define a PDP as unpredictable, dangerous, uncontrollable, requiring care and sensitivity, valuable, and orientable. The most important factors leading to these conceptions were the uncooperativeness of some PDPs and the effectiveness of behavior management.
Conclusions: This study showed that metaphors can be used as a powerful research tool in the understanding of identification of dentists' and DSs conceptions about PDP. Future clinical or educational researches should focus on the relationship and interaction between this conception and behavior guidance.

FC075

Effect of Different Glove Contamination on Universal Adhesive Bond Strength

Fatma Cebe, Ömer Zencirli, Hasan Bıçakcı, Mehmet Ata Cebe

Department of Restorative Dentistry, University of Abant Izzet Baysal, Bolu, Turkey

Aim or Purpose: The aim of the present study was to evaluate the effect of composite resin contamination with powdered, unpowdered latex, vinil and nitril gloves on the microshear bond strength of a universal adhesive system.
Materials-methods: Standard flat dentin surfaces were prepared on the oklusal aspect of 100 human third molar teeth than randomly

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divided into five groups (n = 20). Except of control group, all groups contaminated with one of the gloves for 2 min. Then, universal adhesive (Clearfil Universal Bond) were applied and resin composite bonded to the dentin. Specimens were subjected to microshear bond strength test. One-way analysis of variance (ANOVA) and a post hoc TUKEY test were used for statistical analysis ($p < 0.05$).
Results: No statistically significant difference was found between shear bond of groups.
Conclusions: Contamination of composite with powdered latex, unpowdered latex, vinyl and nitril gloves did not influence the microshear bond strength of Clearfil Universal Bond dentin bonding system.

FC076
An 18-Months Evaluation of Different Adhesive Materials in Non-Carious Cervical Lesions
Fatma Cebe, Mehmet Ata Cebe, Ayşe Dündar, Halil Şahman
Department of Restorative Dentistry, University of Abant Izzet Baysal, Bolu, Turkey

Aim or Purpose: The aim of this study was to compare the clinical performance of five different adhesive materials for Class 5 non-carious cervical lesions (NCCLs).
Materials-methods: 39 adults were recruited with 3 or 6 NCCLs (>1.5 mm deep). Total of 211 teeth were isolated, and restored randomly with Single Bond Universal total-etch, Opti Bond XTR self etch, Clearfil S3 Bond Plus followed with a composite resin and self adhering materials GC EQUA and Vertise Flow by one operator. Restorations were evaluated at baseline, 6, 12 and 18 months for retention, marginal adaptation, marginal discoloration, secondary caries, and sensitivity to cold using modified USPHS Criteria. Patients and evaluators were blinded.
Results: The retention rates up to 18 months were 100%, 72.65%, 89%, 93.2%, 95.34% and 76.66% for Single Bond Universal total-etch, Opti Bond XTR self etch, Clearfil S3 Bond Plus, GC EQUA and Vertise Flow respectively.
Conclusions: Single Bond Universal total-etch, Clearfil S3 Bond Plus and GC EQUA showed acceptable clinical retention rates according to the ADA full acceptance criteria for enamel-bonding systems in class V non-carious lesions.

Free Communication Session 20 | 08.09.2016, 10:00–11:00 | Pavilion 15 – level 0 – Hall 0.D

Theme: Prosthodontics

FC077
Resin Composite's Bond Strength to CAD/CAM Blocks and Veneering Ceramics
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Aim or Purpose: The aim of this study was to evaluate the effect of surface treatments on the shear bond strength of resin composites to two different veneering ceramics (feldspathic ceramic and nano florapatit glass ceramic) and three different veneered CAD/CAM blocks (lithium disilicate glass ceramic, yttrium stabilized zirconia ceramic and zirconia reinforced lithium silicate glass ceramic) following thermocycling.
Materials-methods: The tested materials were divided into eight subgroups according to the surface treatment technique (Group 1: hydrofluoric acid + silane + bond, Group 2: sandblasting + silane + bond, Group 3: laser + silane + bond, Group 4: hydrofluoric acid + silane, Group 5: sandblasting + silane, Group: 6: laser + silane, Group 7: silane +bond, Group 8: silane) with two different adhesive systems (Ultradent Silane, Clearfil Ceramic Primer). Then resin composite was applied to specimen's surface. Then, specimens were stored in distilled water for 24 h at 370C. The half of specimens were subjected to thermocycling procedure (5000 cycles, 5–55 C0) Then specimens were subjected to universal testing machine for shear bond strength test. Failure modes were evaluated with an optical microscope and SEM. The data were analyzed with Mann Whitney U, Kruskal Wallis and post-hoc tests ($p < 0.05$).
Results: Statistical analysis revealed that the surface treatment technique had significant effects on shear bond strength values. However ceramic type, thermocycling and veneering procedure had not affected the shear bond strength values.
Conclusions: Increasing the surface of veneering ceramics did not improve the bond strength of resin composite.

FC078
Redefining Complete Denture Rehabilitation: Finding New Avenues for Uphill Terrains!!!
Mahesh Verma, Aditi Nanda
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Introduction: Resorbed completely edentulous ridge presents an extremely complex clinical situation to a dentist. The associated loss of retention and stability of complete dentures often fall short of expected outcome in terms of performance. The objective of this case series is to provide an alternate technique to fabricate mucosa borne complete dentures in extremely complex cases using TENS (Transcutaneous electric nerve stimulation).
Case Description: Rehabilitation of ten completely edentulous subjects belonging to Cawood and Howell's Class V and VI pattern was done by providing mucosa borne complete dentures. As an alternate to performing manual (operator guided) method of impressioning the denture bearing area, TENS (Transcutaneous electric stimulation of nerves) was used for all the ten patients.
Discussion: An improvement of patient satisfaction (as observed in response to a questionare) and clinical performance (as observed by implementing an index suggested previously in literature) was observed in all the ten subjects with the usual number of clinical steps in complete denture fabrication.
Conclusion: An attempt to use TENS as a' bioelectric tool' to enhance the denture outcome (as assessed by improved patient satisfaction and improved clinical performance of the prosthesis) was made in ten patients. Improvement was attained primarily due to

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the maximum physiological utilization of the tissues supporting the dentures. The outcome of the ten cases gives rise to an alternate viable option of rehabilitation using complete dentures, without the use of implants or other surgical interventions, thus saving the patient from invasive interventions and escalated cost of treatment.

FC079

Impact of Removable Partial Dentures on Masticatory Efficiency and Compared with Opposing Dental Arch

Linda J Dula, Kujtim Sh Shala, Teuta Pustina Krasniqi, Teuta Bicaj, Zana Lila Krasniqi, Enis Ahmedi, Arlinda Tmava Dragusha
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Aim or Purpose: Mastication is one of the most important functions of the stomatognathic system. It is a process of cutting and chewing food into small particles the first step of digestion achieved by teeth. The aim of this study was to evaluate the impact of removable partial dentures (RPDs) on masticatory efficiency compared with opposing natural and restored dentition.
Materials-methods: A total 107 patients with (RPD) participated in this study, in University Dentistry Clinical Center, Prishtina, Kosova. It was examined 138 RPD, and each prosthesis was considered statistically independent case. Peanuts are primarily used with this method. Masticatory efficiency was measured by Spectrophotometer LS-722N (Shanghai, China) in absorption of 590 μm before, after insertion the RPD, then 1 and 3 months after insertion the RPD. Level of significance was set at $p < 0.001$.
Results: A statistically significant difference was found for masticatory efficiency compared with opposing dental arch after insertion the RPD, then 1 and 3 months after insertion the RPD ($p < 0.001$) with Dunn's Multiple Comparison test. With Kruskal-Wallis test was found statistically significant differences on masticatory efficiency compared with opposing natural and restored dentition ($KW = 18.47$, $p = 0.0004$). The increased masticatory efficiency had patients with opposing natural dentition, then patients with opposing restored with RPD anchored with attachment, fixed restorations, RPD anchored with claps and in the end patients with opposing complete denture.
Conclusions: Rehabilitation of dentitions with RPD improved patients' masticatory efficiency. Increased of masticatory efficiency of RPD wearers also was associated with opposing natural and restored dentition.

FC080

Evaluatıon of the Effects of Mechanical Properties in Feldspathıc Porcelaın By Addıtıon of Bor Alloys

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Aim or Purpose: The aim of this study is to improve the mechanical strength and to reduce the micro-cracks that occur in the microstructure of the dentin ceramic, by adding various boron compounds (borax, boric acid) to the dentin ceramic.
Materials-methods: Crack lengths, flexural strength and fracture toughness values of borax and boric acid (1, 2, 3% of the weight percent) added traditional feldspathic porcelain were analyzed in this study. The data obtained in the study were statistically analyzed by one-way ANOVA ($p < 0.05$). Differences between groups were determined by the Tukey HSD method.
Results: The crack lengths were decreased, and the fracture toughness values were increased in all boric acid added groups. However, the difference between groups was not statistically significant. Also, while the crack lengths were decreased and the fracture toughness values were increased in 1% and 2% borax added groups, the addition of 3% borax had increased the crack length, and reduced the fracture toughness. However, the difference between groups was not statistically significant. On the other hand, the group containing 1% boric acid had statistically significantly decreased the biaxial flexural strength value compared to the control group ($p = 0.034$, $p < 0.05$). Differences in biaxial values between the other groups were not statistically significant. Besides, the Vicker's hardness value of the group containing 1% borax was found to be statistically significantly lower ($p = 0.042$, $p < 0.05$).
Conclusions: It was observed that various proportions of borax and boric acid addition in dentin ceramic had reduced the formation of cracks but this finding was not statistically significant.

Free Communication Session 21 | 08.09.2016, 10:00–11:00 | Pavilion 15 – level 0 – Hall 0.E

Theme: Digital Dentistry

FC081

Conventional Impression vs. Optical Impression, The Battle Has Already Begun!

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Introduction: The first essential step of the prosthetic elaboration process involves the impression. For century only conventional impression was used in dentistry. The introduction of the digital impression has revolutionized our prosthetic approach.
Case description: The optical impression is more efficient than conventional impression by:

- Elimination steps: tray selection,dispensing materials,setting of materials,disinfection and shipping,pouring plaster,base and pin,die cutting,trimming.
- Take data directly and immediate evaluation of preparations and margins in 3D in few seconds
- Benefits for dentists, patients and labs
- Productivity and quality
- Gives a competitive advantage

Discussion: The invitro studies show within their limitation that optical impression is with similar accuracy as conventional impression methods. Numerous studies have indicated that polyvinyl siloxane is the most accurate and presents the least amount of time dependent dimensional change.

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Limits of optical impression such as:high ost and specialised equipement is required,management of soft tissues.
Conclusion: These methods are totally different but leads to the same result in the end, therfore we expect that optical impression will replace gradually the conventional in the next future.

FC082

Morphology Study of the Third Cervical Vertebrae from Digital Panoramic Radiograph

Sariya Nuchanardpanit, Wichitsak Cholitgul, Khomsan Buakham, Natakan Janwatsiri, Akarapat Rattananon, Nuchanat Sakultanakalap, Anjana Srikuruwan, Pisutthinun Wongtow
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Aim or Purpose: To evaluate the morphologic findings of the third cervical vertebrae (C3) on panoramic radiograph and to study the relationship between the patient's age group and gender.
Materials-methods: Configurations and dimension of C3 from 178 digital panoramic radiographs of the patients over 50 years of age were observed and measured via the computer monitor (Romexis software version 2.4 R on Windows operating system). Chi-square test, T-test and ANOVA were used for the statistic analysis.
Results: The mean age of the 178 patients was 58.60 years old. Shape of C3 presented as rectangular 58.42%, trapezoid 39.32%, inverted trapezoid 1.68% and rounded 0.56% respectively. The bony outgrowth so called spurs were found in 21.34%. The mean height of C3 in male was 14.13 mm and 13.10 mm in female. The mean spaces between C2 and C3 were 6.31 mm in male and 5.51 mm in female. The space between C3 and C4 was 7.05 mm in male and 6.15 mm in female. There were no statistically significant ($p <= 0.05$) between gender and age groups of the shape and height of C3 but the disc space between C2–C3 and C3–C4 were statistically significant.
Conclusions: From our study that C3 displayed varieties of shapes and height from panoramic radiograph. The present of spur and also the difference of disc space among the gender and age group should be further investigated for the degenerative defects. Panoramic radiograph could be the primary tool to evaluate morphology and radiographic changes of the third cervical vertebrae.

FC083

The Prevalence of Bifid Mandibular Canal in Polish Population

Joanna Luniewska, Magdalena Swiatkowska, Aleksandra Kolodziejek
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Aim: Bifid mandibular canal is an anatomic variant of mandibular canal. Non-recognized may cause pain in patients using dentures, complicate tooth extraction or implant placement. Cone beam computed tomography (CBCT) is the most precise method to assess mandibular canal structure. The aim was to assess the prevalence of bifid mandibular canal and its connection with principal mandibular canal position in polish population.
Materials-methods: From 2290 CBCT examinations performed between 06.2012 and 06.2013, 606 mandible examination were chosen. 335 examinations were excluded from analysis (edentulous mandible, lesion, fracture, braces, osteosynthetic plates or partially visualized mandible). Finally 271 CBCT examinations were retrospectively assessed. Results were analyzed using the chi-square and t-Student tests, $p < 0.05$.
Results: Analyzed group counted 139 women (51.3%) and 132 men (48.7%) aged 14–84 (M = 40.6; SD = 14.62). Bifid mandibular canal was found in 125 cases (46.1%), in 19.9% on the right, 13.6% on the left, 12.6% bilaterally (difference insignificant, $p = 0.131$). Accessory canal was more common in females (47.4%; males – 45.0%) (difference insignificant, $p = 0.646$). Age insignificantly influenced occurrence of bifid mandibular canal ($p = 0.052$). Most common variant was forward (34.1%), then retromolar (28.3%, 49 cases) and dental (25.4%). Trifid mandibular canal was observed in 16 cases (5.9%). The principal mandibular canal coursed mostly in middle of the mandibular body (63.8%), less often higher (17.4%) or lower (18.8%) and its position was not influenced by additional canal presence.
Conclusions: The prevalence of bifid mandibular canal in the examined population is often. Gender, age and side of mandible do not influence bifid mandibular canal occurrence.

FC084

Low-Dose CBCT for Localization of Impacted-Supernumerary Teeth in Children

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Introduction: Use of cone beam computed tomography in dentistry provided a detailed three dimensional data for oral and maxillofacial structures. Introduction of the low dose-cone beam facilitated its use in children.
Case Description: Children with impacted-supernumerary teeth usually come complaining from unerupted permanent central incisors as it is asymptomatic. This might lead to esthetics and functional problems. The localization of these impacted-supernumerary teeth sometimes represents a problem before surgery as we need an anterior occlusal or periapical radiograph using paralleling technique and a panoramic radiograph. The proper location is important as not to injury the developing central incisors. Mesiodens is the most common type and usually occurs in the maxilla. Surgical treatment is needed for impacted-supernumerary teeth. A number of ten children were recruited. Periapical radiographs were done to confirm the presence of impacted-supernumerary teeth. A low-dose cone beam is done for these children with proper interpretation for sufficient measurements needed. Surgery was done after that for all cases to confirm the proper location and measurements gathered from the cone beam interpretation using a periodontal probe.
Discussion: According to AAPD 2015/2016 for oral surgery, three-dimensional information can be obtained by CBCT. During

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surgery, injury to developing roots of impacted-incisors may occur and by proper localization this can be avoided. In children, dose area product for low-dose CBCT is lower than that of panoramic radiograph and almost equivalent to two periapical radiographs (Okano and Sur, 2010).
Conclusion/Clinical Significance: Low-dose cone beam can be used for better evaluation and localization of impacted-supernumerary teeth before surgery.

Free Communication Session 22 | 08.09.2016, 10:00–11:00 | Pavilion 15 – level 0 – Hall 0.F

Theme 1: Public Health

FC085
Self-Reported Health Behaviours and Subjective and Objective State of Oral Cavity
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Aim: Evaluation of the relationship between patients' general health behaviours and objective and subjective assessment of oral health.
Materials-methods: 78 first-time dental patients from Warsaw (40 females, 38 males, Mage = 40.7) participated in the study. The Health Behaviour Questionnaire (IZZ) and self-reported health and oral hygiene statement were administered prior to treatment. DMF index, dental treatment index (DTI), and Aproximal Plaque Index (API) were assessed in clinical examination. Data were analysed using IBM SPSS Software ($p<=0.05$).
Results: A significant positive correlation was found between IZZ scores and number of filled teeth ($r = 0.15$, $p = 0.04$). There was a significant positive correlation between proper diet habits and self-reported oral health ($r = 0.30$; $p = 0.001$) and a positive correlation between preventive behaviours and declared oral health and hygiene ($r = 0.20$; $r = 0.30$ $p<=0.05$). Women presented significantly higher proper diet habits ($t = 2.6$; $p<=0.05$) and preventive behaviours ($t = 2.6$; $p<=0.05$) than men. Age positively correlates with level of proper diet habits ($r = 0.23$; $p<=0.05$), preventive behaviours ($r = 0.34$; $p<=0.05$) and health practices ($r = 0.27$; $p<=0.05$).
The lower was the level of declared health and oral hygiene, the more decayed were the teeth ($r = -0.33$; $p < 0.000$) and the higher was frequency of dental visits ($r = -0.18$; $p<=0.05$). Subjective level of oral health and hygiene ($r = 0.32$; $p < 0.000$) correlates positively with number of filled teeth ($r = 0.34$, $p < 0.000$).
Conclusions: The higher is the level of patients' declared Health Behaviours the better is both subjective and objective state of their oral cavity. There is significant relationship between subjective assessment of oral health and hygiene and DMF index.

FC086
Community Health Centers' Capacity to Deliver Oral Health Services
James J Crall, Nadereh Pourat, Ana Martinez
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Purpose: To assess the status of dental care capacity in California Community Health Centers (CHCs).
Materials & methods: We analyzed 2013 data from the California Office of Statewide Health Planning and Development (OSHPD) for CHCs that provided primary care. Of the 1,136 licensed operational CHC sites providing OSHPD data in 2013, 886 (78%) were included in this study. These included 589 Federally Qualified Health Centers (FQHCs), 68 FQHC Look-Alike clinics and 229 community clinics that provided primary care. Dental capacity was defined as clinics' having dentists or alternative practice dental hygienists on staff or reporting dentist encounters.
Results: Of the 886 CHC clinic sites, 33% reported having some level of dentists and alternative practice hygienists on-site and were identified as co-located; approximately one-third lacked co-located dental services but were part of multisite CHC organizations that had dental capacity in either a nearby site (within one mile, 8%) or a more distant site (> one mile, 27%); and 32% of CHCs had no dental providers on-site or within the larger CHC organization. 49% of FQHC sites were co-located, and another 49% reported that dental services were available at another site within their organization. Among FQHC Look-Alike sites, 28% were co-located, and another 13% provided dental care at another site within their organization.
Conclusion: CHCs are important safety net providers of primary care services, but a substantial proportion of CHC sites lack the capacity to provide dental services. Expanding their dental capacity could help increase access for vulnerable populations.

Theme 2: Caries

FC087
Blood Level of Minerals and Caries Status in GHD Children
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Aim or Purpose: The aim of this study was to evaluate the level of calcium, phosphorus and vitamin D in the blood of patients diagnosed with growth hormone deficiency (GHD) and their correlation with mean DMFT (dmft) index.
Materials-methods: The study was carried out on 110 children hospitalized for hypopituitarism with included criteria: height below the 3rd centile, assessment of GH in three tests and decreased secretion of GH. The control group (CG) consisted of 41 generally healthy children. DMFT (dmft) index was used to assess the state of permanent and primary dentition. Calcium, phosphorus and vitamin D in the examined groups has been marked in the peripheral blood.
Results: The blood level of calcium in the growth hormone deficiency group was 2.46 mmol/l and in the control group was 2.22 mmol/l. The level of phosphorus among children with hypopituitarism was 1.54 mmol/l and 1.33 mmol/l in healthy children. Vitamin D level was 25.67 ng/ml in GHD group and 16.75 ng/ml in CG group. The mean DMFT (dmft) index was 5.0

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(3.37) for short stature patients and respectively 4.31 (3.39) for healthy children. Statistical analysis revealed that both in the control group and in the group of short stature patients, there was no significant correlation between the value of DMFT (dmft) index and the level of calcium, phosphorous and vitamin D.
Conclusions: The level of calcium, phosphorus and vitamin D in the blood of examined children with growth hormon deficiency and healthy does not correspond to their dental caries indices.

Theme 3: Endodontics

FC240
In-Vitro Investigation on the Accuracy of Root Canal Instrumentation using Two Different Working Length Determination Approaches
Michael Wolgin[1], Markus Jörg Grundmann[2], Jörg Phillipp Tchorz[3], Wilhelm Frank[4], Andrej Michael Kielbassa[1]
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Aim or Purpose: The aim of the present study was to investigate the accuracy of root canal preparation regarding the integrity of the apical constriction (AC) using two different working length determination approaches, (i) the electronic method of working length determination (EAL), and (ii) the radiographic 'gold standard' method (GS).
Materials-methods: A simulation model was constructed by arranging extracted human teeth by means of a silicon bolstered gingiva mask, along with a conductive medium (alginate). After radiographic or electronic working length determinations, the manual root canal preparation was performed according to the working lengths obtained from the EAL and GS. Subsequently, root apices (n = 36) were longitudinally sectioned using a diamond coated bur. Measurements of the distance between the achieved apical point of endodontic preparation and the apical constriction (AC) were performed using digital photography. The distances between AC and the radiologically (GS-AC) achieved apical points of endodontic preparation were compared with the corresponding distances EAL-AC. Moreover, the accuracy of both preparation approaches regarding the integrity of the AC was determined. Data were checked for normal distribution using the Kolmogorov-Smirnov test. The differences between distances GS – AC and EAL – AC were compared using the Mann-Whitney-U, Levene's and Student's t-tests.
Results: The difference between the distances GS-AC and EAL-AC was not statistically significant (p = 0.673).
Conclusions: The sole use of EAL does not allow for a high accuracy of measurements only, but also grants a precise preparation of the apical regions.

Free Communication Session 23 | 08.09.2016, 11:30–12:30 | Pavilion 15 – level 0 – Hall 0.C

Theme: Oral Surgery

FC088
Indicators of Oxidative Stress in Patients Undergoing Oral Surgery
Maciej Wrzol[1], Tadeusz Morawiec[1], Patryk Kownacki[1], Rafal Rój[2], Tomasz Piekarz[1], Mateusz Bogacz[1], Jolanta Zalejska Fiolka[3], Joanna Smieszek Wilczewska[1], Jacek Kasperski[2], Iwona Niedzielska[4]
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Aim or Purpose: Oxidative stress is a factor which influence negatively on the physiological processes in the oral cavity. The aim of the study is to asses a level of oxidative stress indicators before and after dental surgery.
Materials-methods: Before surgery and 7–10 days after surgery it was taken a test material from 15 patients and from 15 patients from control group in the form of saliva. It was evaluated the levels of oxidative stress indicators in the material such as the concentration of malondialdehyde (MDA), Catalase activity (CAT), Glutathione reductase activity (GR), Total Oxidative Stress (TOS), Total Antioxidant Capacity (TAC).
Results: Study group of patients consisted of 7 women and 8 men (all – healthy, 7 cigarette smokers). Control group consisted of 12 women and 3 men (all healthy, no smokers). It was observed a decrease in the concentration of MDA in saliva after surgery an average of 0.7, a decrease in the GR activity an average of 1.26, a decrease in the CAT activity an average of 7.64, an increase of TAC indicator an average of 0.03, a decrease of TOS indicator an average of 0.28.
Conclusions: The values of selected indicators of oxidative stress were substantially changed after the surgery in in the study group. In the control group remained at a similar level.

FC089
Orbital Floor Fractures: Reconstructive Options
Muhammad Ehsan Ul Haq
Oral and Maxillofacial Surgery Department, King Edward Medical University, Lahore, Pakistan

Aim or Purpose: The purpose of current study was to analyze various commonly used materials and their outcome in orbital floor reconstruction.

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Materials-methods: Patients of all age groups and gender, presented in the Department of Oral and Maxillofacial Surgery, KEMU (King Edward Medical University)/Mayo Hospital Lahore, with pure or impure blow out fractures. Study duration between May 2011 to April 2014.
Results: Total 58 cases with orbital floor fractures were included in the study. Materials used were titanium mesh, rib graft, calvarial bone graft, medpore, prolene mesh. Results revealed risk and benefit profiles for all materials. Titanium mesh, rib graft, autologous calvarial bone grafts were most widely used for orbital floor reconstruction. Others were medpore implants, prolene mesh has increased infection rates. Diplopia was found most with prolene mesh and rib graft. Preoperative and postoperative rates for diplopia and enophthalmos varied among the materials.
Conclusions: Titanium mesh was very appropriate reconstructive material that provides exact anatomic reconstruction.

FC090

The Potential Use of Extracted Teeth as a Bone Graft Material

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Purpose: The best and also the cheapest graft materials are still being looked for in a guided bone regeneration procedure. Individual publications on the use of ground teeth as a bone graft material have been noticed in extensive literature.
The aim of the study is to evaluate the structure of ground teeth as a bone graft material.
Materials-methods: According to the qualification criteria, the study included 14 teeth which were subjected to the preparatory procedure according to the proprietary standards (cleaning, washing, sintering) and divided into two groups. In the first group, the influence of hard tissues grinding time on the structure of obtained powders was examined. In the other group, the relationship between the time of grinding the tissues and the structure and properties of obtained sinters was investigated. The structure and properties of the materials obtained were examined using electron microscopy, SEM and spectrophotometry.
Results: The results obtained research will be presented at the conference.
Conclusions: Further research, including the clinical one, aimed at the evaluation of the function of a dental sinter as a graft material is required.

FC091

Reconstruction of the Lower Floor of the Face Using Pectoralis Major Flap in the Treatment of Advanced Oral Cancer

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Department of Cranio, Maxillo, Facial Surgery, Oral Surgery and Implantology Medical University of Silesia in Katowice, Poland

Introduction: In the age of microsurgical techniques, it seems that the only effective solution that provides the correct aesthetic and functional reconstruction of the lower floor of the face are free microvascular flaps. But there are still a large group of patients who, due to the systemic diseases can not be qualified for such operations. In these cases, an alternative method of the reconstruction is the myocutaneous pectoralis major flap.
Case description: The aim of the study is a retrospective evaluation of early and late complications after reconstruction using pedicled pectoralis major flap in patients with advanced cancer of the mouth, taking into account aesthetic and functional results.
Discussion: The analysis was conducted on a group of patients undergoing resection of advanced tumors of the lower floor of the face with PMF reconstruction from October 2015. The authors evaluated radicality of surgery, early and late complications, the size and shape of the islands of the skin in relation to the stage of TNM, G, and clinical and laboratory parameters.
Conclusion/Clinical significance: The application of pectoralis major flap is often the last chance when treatment with free flaps is impossible. Despite the large range of resections this flap allows to get a satisfactory aesthetic and functional effect.

Free Communication Session 24 | 08.09.2016, 11:30–12:30 | Pavilion 15 – level 0 – Hall 0.D

Theme: Endodontics

FC092

The Prevalence of C-Shaped Root Canal System in Mandibular 2nd Molars in an Iraqi Kurdish Population Evaluated by Cone-Beam Computed Tomography

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Introduction: Cone-beam computed tomography (CBCT) was reported to be sufficiently precise to perform morphological analyses. Its advantages allow the clinician a more thorough understanding of the true morphology of root canal systems. Aim of this study was to evaluate the prevalence of the C shape canal in the Iraqi Kurdish sub population.
Material-methods: A total of 1,567 teeth were analyzed of unilateral and bilateral occurrences of C-shaped canals. The study group consisted of 452 females and 349 males, between 17 and 71 years of age. A total of 801 patients between 2013 and 2015 met the inclusion criteria:

1 Mandibular second molars with fully developed roots.
2 No periapical pathologies.
3 Not endodonticaly treated.
4 No root canals with open apices, resorption or Calcification.
5 CBCT images of good quality.

The prevalence and difference between gender Qi-square was done by using ssps software version 20.
Result: Of the 1,567 mandibular second molars examined in CBCT images, 97 (6.19%) had a C-shaped root canal system, while distribution of C-shaped canals in mandibular second molars by gender found that no significant difference between male and female.

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Conclusion: There was a significant prevalence (6.19%) of C-shaped canals in the mandibular second molars in the Kurdish population, with no predilection for gender.
CBCT can be a useful clinical tool for performing endodontic analysis, diagnosis and treatment.

FC093

Treatment Options for Endodontically Affected Immature Teeth

Emad Youssef
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Introduction: Root canal treatment in permanent teeth with pulpal necrosis and immature root development is very challenging. In these cases, the thin dentinal walls of the root and the open apex limit the mechanical instrumentation and obtaining an optimal seal of the root canal system. Conventional RCT cannot regenerate new dentin and pulp tissue in these teeth, nor prevent their susceptibility to fracture. In my oral presentation I will be presenting two case reports representing two treatment protocols for endodontically affected teeth with open apices: apexification and pulp regeneration/revascularization.
Case description: Case1: 8 years old male patient presented with pain and swelling related to left maxillary central incisor. Patient reported history of trauma. Clinical and radiographic examinations revealed broken crown of previously mentioned tooth with open apex and periapical radiolucency. MTA apexification protocol was applied in treating this case.
Case2: 12 years old female patient presented with pain in lower left premolar area. Clinical and radiographic examinations revealed deep carious lesion in left second mandibular premolar with possibility of pulpal involvement. Pulp regeneration/revascularization protocol was followed.
Discussion: The aim of apexification procedure is to limit bacterial infection and create an environment conducive to the production of mineralized tissue in the apical region. Recently the concept of "regenerative endodontics" was introduced, which is concerned with the induction of continuation of root development to increase root length and thickness.
Conclusion/Clinical significance: Both lines of treatment can be considered, however pulp revascularization may have some advantage over apexification procedure.

FC094

Analysis of the Organic Structures of Hard Tissue of Tooth

Przemyslaw Kustra[1], Joanna Zarzecka[1], Roman Pawlicki[2], Jacek Tarasiuk[3], Sebastian Wronski[3]
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Aim or Purpose: The aim of the study was to compare morphological images of organic structures present in the hard tissue of a tooth with the caries lesion and without.

Materials-methods: Consent for the study was obtained from the Bioethics Committee of the Jagiellonian University. The multi-task team have done the study: the Institute of Dentistry, Department of Histology of the Jagiellonian University and Micro and Nano Tomography Laboratory, Faculty of Physics and Applied Computer Science, University of Science and Technology in Krakow.
Teeth after the removal were prepared to the investigation in nanotomograph. The process consists in tooth demineralization and use of a special dye to demonstrate the organic structures in X-ray research. Nanotomograph Nanotom S from (f. General Electric), up to a scale of 2–5 μm without damaging sample, which is very important. was used in this study. Measurements were made without disturbing the structure of the tooth. Up to 3,600 radiographs was taken during the course of examining a single sample. Three-dimensional reconstruction of the objects was performed using the GE software dedicated to CT Nanotom S (datosX ver. 2.1.0).
Results: Using reconstruction softwer was done three dimensional model of organic structure of the tooth. The spatial models of the part of organic dentine, the course of collagenous fibres was made.
Conclusions: This study demonstrates the possibility to show the differences in the spatial orientation of organic structures in the event of tooth caries process without disturbing the sample to the teeth without caries.

FC095

Laser Doppler Flowmetry of Pulp Blood Perfusion after Direct Pulp Capping

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Department of Operative Dentistry end Endodontics, Faculty of Dental Medicine, Medical University, Plovdiv, Bulgaria

Aim: To study the pulp blood circulation of permanent teeth 6 month after direct pulp capping.
Materials-methods: The clinical research was approved by an Ethical Commission. After medical history, clinical observation, conventional pulp vitality tests and radiographic analysis, direct pulp capping with tricalcium silicate cement of 31 human permanent teeth of males and females between 18 and 35 years of age was performed. For 17 of them hard dental tissues ware prepared by Er:YAG laser and for 14 by conventional drilling. Teeth were restored on the fourteenth day with light-cured composite material. Six month later the pulp blood perfusion of the treated teeth and of vital intact teeth of the same teeth groups on the same patients' jaws was measured by laser doppler flowmetry. The mean values were calculated by licensed software. The statistical analysis was made by statistical software SPSS 16.0.
Results: The mean value of the pulp blood perfusion measured by laser doppler flowmetry on the sixth month after direct pulp capping was 22.39 ± 2.83 PU and for the control group it was 21.42 ± 2.68 PU. There was no statistically significant differences between the levels of blood circulation of the two compared groups ($p > 0.05$). The method of hard dental tissue preparation was not associated with the measured mean values of blood perfusion ($p > 0.05$).
Conclusions: Laser doppler flowmetry is an objective clinical method for assessing the result of direct pulp capping by

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measurement of pulp blood circulation of the treated teeth in comparison to healthy ones of the same patients.

Free Communication Session 25 | 08.09.2016, 11:30–12:30 | Pavilion 15 – level 0 – Hall 0.E

Theme: Pedodontics

FC096

Comparing Maxillary Frenectomy Procedure by Diode Laser vs. Conventional Surgery in Children: Randomized Clinical Trial

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Aim or Purpose: To Compare Clinically the use of Diode Laser with conventional Surgery in Maxillary Frenectomy Procedure regarding post operative pain, bleeding, post operative complications (swelling, infection), need of suture, operative working time and needed time for healing.
Materials-methods: Twenty medically free patients (11 females and 9 males) with an age range from 4 to 6 years needing full mouth rehabilitation secondary to early childhood caries under general anesthesia. Patients had high maxillary ferenum attachment pathologically extending to the palatal inter-incisal region. Patients were treated for early childhood caries and as a final procedure frenectomy was conducted. Patients were randomly divided into two equal groups. Group (I) frenectomy performed with the conventional surgical technique, Group (II) frenectomy performed by Diode laser with parameters 1.5 W at 980 nm continuous wave. Both groups were evaluated clinically regarding postoperative pain (using Wong-Baker Faces Pain Rating Scale), bleeding (by WHO bleeding scale), post operative complications (infection and/or swelling), operative working time and needed time for healing. Data were collected and analysed statistically.
Results: Conventional surgery showed statistically significantly higher pain score than Diode Laser group. Conventional surgery group showed statistically significantly higher prevalence of Grade 1 bleeding and need of suture than Diode Laser group. There was no statistically significant difference between complications in the two groups. Conventional surgery showed statistically significantly higher working and healing time than Diode Laser group.
Conclusions: Diode laser provided minimal post operative pain, excellent visualization of the operating field, reduced operating time, elimination of suturing, best healing and minimal post operative complications.

FC097

The Influence of Early Life Events on Adult Oral Health

Gajanan Kulkarni
University of Toronto, Canada

Introduction: Review of new research from various health and science disciplines point to the profound and long-term impact early life events can have on oral health long beyond childhood. These diverse streams of new knowledge bolster the already well established role and need for dentistry for children starting from early infancy. Family dentists, working interdisciplinarily with other pediatric health professionals, are uniquely positioned to influence many of those events to alter the trajectory of oral health or disease.
Description: Emerging evidence in the following fields: mode of birth, early childhood food preferences, feeding habits, illnesses and medical treatments, environmental exposures, and early childhood dental disease, points to sequelae beyond childhood. Each of the above will be illustrated with cases.
Results: Taken together, the emerging body of evidence points towards the influence of early childhood events on the lifelong oral health of an individual.
Discussion: Oral consequences of some medically necessary interventions will sometimes be unavoidable, and will have to be managed by a dentist. However, an updated perspective on the etiology of early childhood conditions might lead to more prudent and judicious advice to families for improved oral health outcomes not just in childhood but also adulthood.
Conclusion/Clinical Significance: Early anticipatory guidance should now include discussions and counselling to families regarding: prenatal influences on oral health, influence of the mode of birthing, promotion of breastfeeding, and healthy food preferences, prevention of illness and unnecessary medications in infancy, avoidance of toxic environmental exposures, and prevention of early childhood caries.

FC098

Dental Age Estamation in Egyptians Using Canine Three Dimensional Images

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Aim or Purpose: The aim of the study was to investigate an age estimation method based on the ratio of the pulp/tooth volume for Egyptians.
Materials-methods: A random selection of 150 sets of 3D cone Beam CT tooth images of mandibular canines were collected. DICOM FILES were used for tooth and pulp segmentation to form a 3D model to calculate volume of both pulp and tooth. Linear regression analyses is then performed to establish a correlation between the chronological age and the pulp/tooth volume ratio.
Results: Pulp/Tooth volumes (PTV) showed no statistically significant difference between males and females. PTV values yielding the linear regression formula: Age = 80.755–805.599 X (PTV).
Conclusions: Using Cone-beam CT 3D images; the ratio of pulp/tooth volume can be calculated for age estimation based on this ratio.

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FC099

Children's Responses to Sensory Stimuli and Their Behavior in the Dental Office

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Aim or Purpose: To evaluate children's behavior during dental examinations, their reactions to various selected sensory stimuli and the association between them.

Materials-methods: Sixty-three children (28 boys and 35 girls) aged 5–12 years (mean age 7.9 ± 1.6 years) participated in the study. Their parents were asked to complete a questionnaire while in the dentist's waiting room. The dentists evaluated the children's behavior in the dental office using Frankl's behavioral scale and noted the children's reactions to the sensory stimuli of touch, noise, smell and backward tilting of the examination chair.

Results: Most of the children cooperated during the dental examination. Lack of cooperation was significantly associated with adverse reactions to all selected sensory stimuli: when entering the room, during examination and during taking bite-wings ($p < 0.05$). There was also an association between resistance to brushing teeth and adverse reaction to touch ($p = 0.049$). Children who reacted negatively to touch and noise during dental examinations were more likely to have needed advanced management techniques during past dental treatment ($p = 0.008$ and 0.001 respectively).

Conclusions: Children's behavior during dental examinations is well known to be affected by many factors, including age, previous experiences, anxiety and fear and others. This investigation demonstrates that it is also associated with their reactions to various sensory stimuli.

Free Communication Session 26 | 08.09.2016, 11:30–12:30 | Pavilion 15 – level 0 – Hall 0.F

Theme: Oral Pathology

FC100

Effect of Laser Biostimulation on Mandibular Distraction Osteogenesis: (Experimental Study)

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Aim: To evaluate the osseous response to laser biostimulation radiographically and histologically during distraction osteogenesis (DO) induced in the mandibles of mongrel dogs.

Materials-methods: Eighteen dogs were divided into 3 groups I, II and III according to sacrification periods (2, 4 &8 weeks postdistraction), each of six animals were subdivided into two subgroup (3 laser, 3 control). (Do) was made between mandibular 2nd& 3rd premolars using internal linear distractor. After 7 days a latency period, the distractor was activated in the rate of 1 mm/day for 10 days followed by consolidation period during which the test right mandibular side was laser irradiated using laser 970 nm, 2W, spot size 320 nm. Cone beam CT radiographs at sacrification periods were taken and histological specimens were prepared.

Results: Radiographic examinations revealed that low intensity laser affect the quality and quantity of newly formed bone in the DO in laser groups rather than control groups at early stages of bone formation (2&4weeks). Histopathological sections in laser groups I, II and III illustrated the biostimulatory effect of laser on new bone through increased rate of osteoblasts proliferation and differentiation, accelerated rate of intramembraneous ossification, increased neoangiogenesis, compared to control animals. Moreover, the histomorphometric results revealed that the mean bone trabecular size, bone trabecular total area & the bony area fraction of the regenerate were higher & statistically significant ($p < 0.05$) laser groups I & II compared to control animals.

Conclusion: Low level laser is potential bio-stimulator and local inducer factor in enhancing bone formation.

FC101

Intrabony Schwannoma of the Mandibular Symphysis: Rare Case Report

Soukaina Oujdad, Mounia Elbouhairi, Sofia Haitami, Ihsane Benyahya

Casablanca Faculty of Dental Medicine, Morocco

Introduction: Schwannomas are a benign type of nerve sheath tumors, rarely disclosed in the oral cavity.

The present case is an intraosseous schwannoma located in the mandibular symphysis.

Case description: A 31 years old male patient was referred to our department regarding a slowgrowth swelling with no acute signs.

The clinical examination confirmed the presence of a symphyseal expansion, tender to pressure. Panoramic radiograph and CT scan revealed a unilocular radiolucency of a 40 × 22 × 10 and no involvement of the mental or the inferior alveolar nerves.

The finding data suggested a benign lesion with a cystic appearance.

Under local anesthesia, surgical enucleation was performed.

The pathological diagnosis was a schwannoma. The patient did not experience any postoperative complications.

Discussion: Intra oral Schwannomas are unusual, the intraosseous location have less than 1% of occurring. The symphyseal location is extremely rare (Kawasaki 2010). In the present case, it was probably associated with the nervous plexus of the anterior region of the mandible.

Clinical and radiographic data are usually nonspecific, generally referring to an odontogenic cyst. The diagnosis is confirmed with histology and immunohistochemistry (Zhang2011).

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Because of the encapsulated nature of schwannoma and its symphyseal location with no involvement of the mental or inferior alveolar nerve, the conservative surgical excision was relatively easy.
Recurrence is attributed to the non-complete excision, and malignant transformation is rare, therefore the treatment included a periodic follow-up.
Conclusion/Clinical significance: In encountering a symphyseal swelling, non odontogenic lesions, such as schwannomas must be considered in the list of diagnosis.

FC102
Effectiveness of Low Level Laser Therapy on Oral Mucositit in Children with Leukemia
Paula Mroz, Katarzyna Emerich
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Aim or Purpose: The aim of the study was to investigate the incidence of oral mucositis and initial evaluation of the effectiveness of low level laser therapy on OM in paediatric oncology patients.
Materials-methods: 20 neutropenic children diagnosed with leukemia (3–18 y.o), admitted to Department of Paediatric Hematology, Medical University of Gdansk from December 2014 to January 2016 were selected for the study. Clinical investigation assessed the incidence of chemotherapy-induced OM graded with WHO and NCI scale. Since January 2016, 4 patients with high risk of OM have been treated with LLLT using the LiteMedics 970 nm wavelength diode laser according to literature recommendations. Laserotherapy was performed every 24 or 48 h with dosages of 2, 4, 8, 16 or 30 J/cm^2.
Results: In LLLT group all patients developed OM of 2 or 3 WHO grade. The mean time of OM onset was 4 days with a mean duration of 6 days. After the treatment a lower painscore was recorded indicating 3 and 2 on the VAS scale. Eight neutropenic patients from control group (5 boys, 3 girls) developed OM at least once during cytostatic treatment with the mean time of OM onset 6 days with a mean duration of 7 days. From the group of 8 patents with OM,7 suffered from oral mucositis grade 3–4 of WHO and NCI scale,only 1 patient experienced grade 1–2.
Conclusions: LLLT seems to have an analgesic effect, provides faster wound healing and reduction of the OM intensity.

FC103
Mammary Analogue Secretory Carcinoma (MASC) of the Salivary Glands: A Diagnostic Dilemma
Nishma Hindocha, Mark Wilson, Miranda Pring, Ceri Hughes, Steven Thomas
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Introduction: Mammary Analogue Secretory Carcinoma (MASC) is a salivary gland neoplasm that was first formally described in 2010. Current literature suggests that it most frequently presents in the major salivary glands. MASC tumours can mimic other salivary gland tumours such as Acinic Cell Carcinoma (ACC) and Cystadenocarcinoma. They are distinguished from these entities through identification of an ETV6-NTRK3 translocation (12;15) (p13;q25) that is also found in Secretory Carcinoma (SC) of the breast.
Case Description: We report 2 cases of MASC affecting a minor salivary gland in the lip, which demonstrated an infiltrative growth pattern. The first case was a 27 year-old female who presented with a 1-year history of a slow growing 1.5 cm lump on her upper lip and the second case was a 51-year-old male who presented with a 3-year history of an asymptomatic firm, mobile lump in his upper lip. Both cases required multiple excisions to achieve adequate surgical clearance. They have not had any evidence of recurrence at 6-months follow-up.
Discussion: Existing literature suggest that surgical management of MASC probably should be similar to that of ACC. Although, histologic behavior at this anatomical site have in our 2 cases shown to be more aggressive with inability to obtain microscopically clear margins despite the surgical impression of good macroscopic clearance.
Conclusion/Clinical Significance: The cases we present involving the lip appeared to have an infiltrative growth pattern and required a more aggressive surgical approach and re-excisions were needed to achieve clear margins.

Free Communication Session 27 | 08.09.2016, 13:00–14:15 | Pavilion 15 – level 0 – Hall 0.C

Theme: Periodontics

FC104
Biofilm Removal Methods from Implants Titanium Surface: Comparative Study in Vivo
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Aim: To evaluate the efficacy of laser technology for eliminating of oral biofilm attached to titanium implants.
Materials-methods: For study were used 3 types of titanium disks: machined surfaces; titanium-nitride coating; acid etched and sand blasting titanium surface.
Titanium specimens were fixed into individual removable acrylic upper jaw splints (12 discs in each splint), which worn by nine volunteers (6-women, 3-man, age 20–25 year) for 24 h. All discs were divided into six groups: 1 group – control, 2 group – cleaning with Er:YAG (Erbium-doped:Yttrium–Aluminum–Garnet) laser, 3 group PDT (photodynamic therapy), 4 group – combination of mechanical debridement and cleaning with Er:YAG laser, 5 group – combination of mechanical debridement and PDT, 6 group – mechanical debridement.
After cleaning all discs were giving under microbiological evaluations. Three types of grows media were used (blood agar, medium

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Saburo, Mitis salivarius agar). Samples were incubated under aerobic conditions (t – 37°C, 24 h).
For visualization and identifying the impact of methods, the samples were giving under scanning electron microscopy and chemical analysis.
Results: Statistical analysis showed that 4-th group has demonstrated the best results on all samples. ($p < 0.001$). Other groups (2, 3, 5, 6) showed lower rate of growth of bacteria compared with group 1 ($p < 0.05$).
Conclusion: All methods were able to reduce the total number of microorganisms from titanium implants. The best results of eliminating biofilms on different titanium surfaces were achieved by synergistic effect (combination of mechanical debridement and cleaning with Er:YAG laser).

FC105

The Relationship between Periodontal Diseases and Coronary Heart Disease (CHD)

Seyed Ali Banihashemrad[1], Seyed Hashem Danesh Sani[2], Mojtaba Mehri[3], Seyed Ahmad Banihashemrad[1]
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Aim or Purpose: Human studies have shown that patient with cardiovascular disease have worse periodontal status. Therefore, this study aimed to investigate the periodontal health in patients with coronary heart disease who underwent angiography.
Materials-methods: In this cross-sectional study, 80 patients participated, 40 cases with coronary heart disease (CHD) who underwent angiography and 40 others hospitalized patients who had normal coronary heart disease. The two groups, in terms of age, gender, body mass index, triglycerides, cholesterol, diabetes, smoking, family history of CHD, were considered identical. Periodontal Indices include: Bleeding on probing (BOP), plaque index (PI), probing pocket depth (PPD), gingival index (GI), clinical attachment loss (CAL), the number of missing teeth, decay and tooth restoration were evaluated. According to angiography result, the presence of coronary artery stenosis and its severity were recorded based on the number of involvement arteries. Data was analyzed by t-test and using SPSS software (version 16).
Results: According to the result of angiography, there were 40 patients with CHD that among them, 65% were with periodontitis, 35% had gingivitis. Patient with normal of CHD that among them, 35% were with periodontitis, 60% had gingivitis and 5% with healthy periodontium. Probing depth index, CAL, BOP and missing were significant difference between patient with and without coronary heart disease ($p < 0.05$) whereas there was no significant difference between patients with other periodontal indices (GI, PI, caries, filling) ($p > 0.05$).
Conclusions: Patients with coronary heart disease had worse periodontal status compared to individual with normal coronary heart disease.

FC106

Impact of Scaling and Root Planning on Visfatin and Chemerin Levels in Gingival Crevicular Fluid

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Aim or Purpose: Recent years, some adipokines have been reported that may play role in periodontal inflammation. The aim of the this study is to evaluate the gingival crevicular fluid (GCF) levels of visfatin and chemerin in periodontitis and compare these adipokine levels with the levels following the scaling and root planning (SRP).
Materials-methods: Seventeen patients with chronic periodontitis and seventeen healthy subjects were included in the study. The clinical periodontal parameters were measured and GCF samples were collected. Three months after SRP, samples were collected again. The levels of adipokines were analyzed with standard enzyme-linked immunosorbent assay.
Results: The levels of visfatin [108.1 (51.8–143.5) ng/ml] and chemerin [2.40 (1.13–5.28) ng/ml] were statistically significantly higher at periodontitis group as compared to healthy group visfatin [17.1 (1.5–46.6) ng/ml] and chemerin levels [1.58 (0.45–5.49) ng/ml]. Visfatin and chemerin levels were significantly decreased 3 months after SRP [78.20 (20.90–136.5), 0.81 (0.35–7.98) ng/ml respectively]. GCF visfatin and chemerin levels were positively related to all periodontal parameters.
Conclusions: These results demonstrated that the higher levels of visfatin and chemerin in GCF were correlated with degree of tissue destruction. Moreover, clinical improvements were reflected by visfatin and chemerin levels in GCF.

FC107

The Assessment of the Influence of Physicochemical Properties of Oligomineral Water Upon the Condition of Oral Cavity

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The third part of the study regarding the influence of oligomineral water on oral cavity environment involved in vivo examination. It assessed the impact of oral cavity pH on the species of bacterial flora in dental plaque and periodontal pockets. In order to achieve the soundest results the inoculation was done on four media: Columbia Agar with 5% sheep blood (COS), Sabouraud Gentamicin Chloramphenicol agar (SGC), Schaedler Neomycin Vancomycin + 5% sheep blood agar (SCS) and MacConkey agar (MCK).
The second parameter under examination was the period of time in which the plaque developed while using alkaline water for drinking and oral hygiene as compared to using acidic water.

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Next, we examined the influence of oligomineral water on saliva pH value after 2 months of using it and we inspected teeth colour before and after the experiment. The CPITN index was checked on a monthly basis and it was compared with patients' age, saliva pH and treatment index. DMFT number was compared against the patients' age and saliva pH.
The following conclusions can be drawn from the examinations:

1 Oligomineral water diminishes the number of bacterial colonies in the oral cavity.
2 In alkaline environment temporarily created through the use of oligomineral water, dental plaque formation is slower, and after 2 months no tartar formation was observed in the experimental group.
3 Oligomineral water does not cause any permanent change in saliva pH value, the alkaline environment in the oral cavity persist for about half an hour after teeth brushing.

Theme 2: Endodontics

FC242
Dentin Thickness at Apical Area of Root Canal Using CBCT
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Aim or Purpose: The study is to evaluate the effect of Multiple file systems and Single file systems on the dentine thickness in the apical area of the root canal using CBCT.
Materials-methods: 100 freshly extracted human mandibular first molars were taken and mesiobuccal canal was selected for the study. The teeth were categorised into 5 groups viz Group I – Protaper, Group II – Protaper Next, Group III – Wave One, Group IV – One Shape,GroupV – Reciproc. Multiple file systems included Protaper, Protaper Next. Single file systems included Wave One, One shape,Reciproc. Conventional endodontic access was prepared in each tooth and working length was determined using 15-k file. Preoperative CBCT scan of the teeth were taken. Cleaning and shaping of the canal was done according to the respective file system following manufacturer's instructions. Post instrumentation CBCT scan of teeth were taken. The pre and post instrumentation images of the teeth were superimposed. The difference in the area was calculated and statistical difference was analysed using One Way ANOVA test.
Results: Protaper, Reciproc, One shape showed statistically significant difference in remaining dentin thickness over the different intervals (0–7 mm) of root canal length compared to Wave One andProtaper Next. Protaper Next removed less dentin followed by Wave One.
Conclusions: It was concluded that Protaper Next file system removed less residual dentine than other file systems used.

Free Communication Session 28 | 08.09.2016, 13:00–14:00 | Pavilion 15 – level 0 – Hall 0.F

Theme: Implantology

FC108
Successful Implant Osseointegration in Rheumatoid Arthritis Patients: Two Case Reports
Mehran Shokri
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Introduction: Low dose Methotrexate (MTX) in combination with Glucocorticoid, Remicade infusion and sulfasalazine which are used by rheumatoid arthritis patients may jeopardize implant osseointegration.
Case description: Case 1: A 65 years old women full edentulous with moderate to severe ridge resorption who has taken 2.5 mg MTX twice a week and 5 mg Prednisolone daily (for 11 years) and 1000 mg Metformine due to her diabetes for 9 years. After consultation with her rheumatologist and endocrinologist and taking lab tests, based on available bone and prosthodontist consultation, 4 implants in maxilla and 4 implants in mandible installed to build removable implant supported overdentures.
Case 2: A 51 years old women suffering from severe rheumatoid arthritis with total joint replacement (TJR) on her left knee has used 2.5 mg MTX twice a week and 5 mg Prednisolone daily since 13 years ago and sulfasalazine daily for 4 years. Also there was a 2.5 years chemotherapy treatment period in her PMH and after chemotherapy she has taken a 100 mg Remicade Ampula (IV infusion) every 2 months. After rheumatology consultation and taking lab tests, she got 6 implants to replace her missed teeth.
Discussion: Although it seems the rheumatoid arthritis medicines are able to interfere with implant osseointegration, there is no serious risk for implant osseointegration.
Conclusion/Clinical significance: All implants were integrated and loaded successfully, and 2.5 follow up shows no clinical and radiografical problems around all implants. With further studies, it seems these patients can be benefitted by successful implant supported prostheses.

FC109
Bite Reconstruction Using One-Piece Bicortical Screws
Lukasz Palka[1], Stefan Ihde[2]
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Introduction: The aim of this case was to present a new, smooth, one- piece bicortical screw implant to achieve good and durable restoration of function and aesthetics of two frontal incisors in a short time.
Case description: An 18-year old, healthy male patient with history of total dislocation and replantation of teeth number 11, 21 in early childhood presented to the clinic. Because of active fistula and severe bone loss we decided to extract the teeth and use one-piece immediate loading smooth surface bicortical screw implants anchorage in the floor of the nose. Two long one- piece implants with diameter of 3.5 and length 22 mm were used. The extraction socket was filled with collagen sponge and temporary composite crowns were given

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to the patient during the same visit. After 6 months, the temporary crowns were replaced by single metal ceramic crowns with papillas preservation and good aesthetic result.
Discussion: The bicortical implant anchorage is an option which allows us to predict the future of our treatment because of anatomically stable position of at least one cortical bone. The polished surface of an implant prevents bacterial contamination and allows bone regeneration in future if needed.
Conclusion/Clinical significance: Radiographic and clinical evaluations after 12 months showed satisfactory amounts of bone and acceptable by patient soft tissue health and aesthetic. Immediately loaded one piece implants are not different from conventional two stage screw implants in terms of effect.

FC110

SOS – Innovative Concept of Implant Treatment for Edentulous Mandible

Christoph T Sliwowski, Dominika Sliwowska
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Introduction: The patient with edentulous mandible has serious problem to stabilize denture. There is a need for the offer a simple, save, quick and not expensive treatment concept to this patient. The SOS-Sliwowski-Overdenture-System enables a quick and non-invasive immediate loading of the edentulous mandible with prefabricated parts – abutments, bar and bar casing. The implants are inserted transgingivally with a previously designed surgical template based on a CBCT-scan.
Case description: The SOS bar-based retention system enables the surgeon to prepare full denture stabilized on prefabricated bar fixed on two implants. The implants are inserted in a flapless approach with the use of a surgical template prepared based on CT or CBCT modeling. The immediate compete of the treatment is possible due to use of a set of two matching elements: the bar and its casing. The bar is fixed on the implants direct after surgery, whereas the casing is mounted in the denture base. The implantation is minimally invasive and takes only around 15 min and does not cause any swelling or post-operative pain. The whole procedure is concluded within one day. The prefabricated parts ensure high quality and a perfect fit which is hard to achieve with the usual conservative methods. Compared to individually fabricated bar systems it is much cheaper. The bolt mechanism enables a stable fit and erases any loss of stability due to pulling forces.
Discussion: Such implantation enable a dentist to immediately fix denture, at the same day of implantation, sparing the trouble related to prolonged time for the preparation of individual fixing components.
Conclusion/clinical significance: In the observation period of over 10 years over 300 patients have been treated with this method with only little mechanical and biological complications.

FC111

Dental Implants for Reconstructed Jaw Bones after Extensive Bone Loss: A Single Center Experience and Protocol

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Introduction: There are algorithms to place Dental implants (DI) in atrophic jaws but no such procedure exists for reconstructed jaw bone. The aim of study is to present difference in design, algorithm and placement of DI in reconstructed bone.
Material and Method: This retrospective, case-control study included all patients who had undergone DI for oligodontic jaw (<= 6 teeth) who had earlier undergone any type of segmental jaw reconstructed procedures. Type of bone reconstruction, Age, gender and number of units of DI placed formed predictor variables and success of DI placement was the outcome variable. All details from patient records were collected and analyzed.
Result: Twelve patients, who have been rehabilitated with DI after reconstruction of jaw bone, formed the cases. All were male patients between age group of 16–54 years. The DI's were placed after a mean of 18 $\pm$ 6 months after the regeneration procedure. Eight patients underwent reconstruction with rib graft while others had rhBMP2 with graft reconstruction. Ten patients were tumor ablation cases and remaining were hereditary ectodermal dysplasia cases. The mean DI placed was 8 $\pm$ 2. The time lapse between DI placements to super structure placement varied between 15.3 $\pm$ 4.2 weeks. There was no statistical difference in terms of jaws and gender between cases/controls. A significant difference between case/control was observed for stability. The algorithm for DI placement in extensively regenerated bone is presented.
Conclusion: Dentists needs to be aware of the innate difference in DI placement in normal and regenerated bone.

Free Communication Session 29 | 08.09.2016, 14:30–15:30 | Pavilion 15 – level 0 – Hall 0.C

Theme: Orthodontics

FC112

Three Dimensional Evaluation of Social Smile Symmetry

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Aim or Purpose: To evaluate the social smile symmetry using 3D stereophotogrammetry.
Materials-methods: The study was conducted with 3D facial images of 30 individuals (age range 13–25 years). The rest position was considered as the reference image and the social smile image was aligned on this image using the best-fit alignment method. The spatial differences between the same points established on both images using 3D analyses were determined for right and left points in X, Y and Z planes.
Results: The highest difference related to spatial distance in right and left points was −0.56 mm (95% CI, −1.19, 0.06 mm) between

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right and left comissura (Com) points. The difference was statistically not significant and the Bland Altman upper and lower limits were −3.85 mm and 2.71 mm, respectively. The highest difference for the transversal plane was found in Com points similarly to the spatial distance (Mean: 0.50 mm, 95% CI, −2.62, 1.02 mm). The differences between the changes in the left and right points in the Y and Z plane were statistically insignificant ($p > 0.05$).

Conclusions: The social smile was observed to show asymmetry at various amounts in the different directions. Asymmetry increases in some cases, specifically for the corners of the mouth and such increases can be considered clinically important.

FC113

A Cantilever System for Orthodontic Management of Maxillary Impacted Canines

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Introduction: Maxillary canines fail to erupt in about 2% of the population. The 85% of impacted maxillary canines are displaced palatally. Surgical exposure and orthodontic treatment are often challenging and time-consuming. Achieving a good aesthetic result that respects also periodontal health requires some special considerations.

Case description: The cases of two patients with impaction of maxillary canine are presented. The canines were surgically exposed removing the soft tissue with a tissue trimmer ceramic bur. Open traction was performed by mean of a specially designed stainless steel cantilever spring. The time required to complete the orthodontic extrusion of the canines was of two and three months, respectively. An optimal torque control allowed to obtain a good aesthetic result with healthy periodontal tissues. Total treatment time was of 21 and 24 months, respectively.

Discussion: The use of a tissue trimmer ceramic bur instead of raising a palatal flap simplified the surgical procedure, and improved patient's comfort. The use of a cantilever with stainless steel 0.7 mm wire, exerting an adequate extrusive force, facilitated the extrusion procedure, with an overall significantly reduction of treatment time. At the end of treatment, the maxillary canines showed an optimal torque.

Conclusion/Clinical significance: The management of surgical exposure, orthodontic traction and torque control in these two cases allowed to achieve an optimal aesthetic and functional result, with a reduced treatment time.

FC114

Class II Early Treatment Involving Maxillary Serial Extraction

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Introduction: Serial extraction (SE) is an interceptive orthodontic procedure usually initiated in the early mixed dentition. The rationale for this treatment is to anticipate and minimize the development of a fully matured malocclusion in the permanent dentition, and it is accomplished by the extraction of certain deciduous and permanent teeth in an orderly sequence and predetermined pattern to guide the erupting permanent teeth into a more favourable position.

Case description: Two cases presenting skeletal Class II malocclusion, high angle pattern and crowding in the upper arch are presented. The treatment plan involved the use of a transpalatal bar to control the vertical dimension, rapid maxillary expansion, and SE in the upper arch. Only one of the two cases required a finishing with a full fixed appliance.

Discussion: The extraction of the upper premolars and the transpalatal bar were effective in controlling the vertical dimension, which is an important point in a treatment of a Class II malocclusion. The presence of crowding in the upper arch and a skeletal class II malocclusion made SE the best-suiting technique for these cases. This allowed solving the malocclusion in an early stage, having the permanent canines erupting in an ideal position, avoiding an excessive protrusion of the incisors and preserving periodontal health. In addition, facial aesthetics were improved.

Conclusion/Clinical significance: Serial extraction in the maxillary arch was an effective interceptive treatment in Class II malocclusions. The vertical control allowed to improve facial aesthetics, contradicting the common thought that extraction are detrimental for patient's profile.

FC115

Longitudinal Effects of Rapid Maxillary Expansion on Masticatory Muscles Activity

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Aim or Purpose: To investigate the modifications induced by rapid maxillary expansion (RME) on the electromyographic (EMG) activities of the anterior temporal and superficial masseter muscles.

Materials-methods: Twenty-one patients (mean age 9.8 years) having unilateral posterior cross-bite were randomly selected according to the inclusion criteria. There was no control group in this study because of the short observation period, as each patient acted as a control of his/herself.

Two surface EMG recordings were taken: T0 (before RME) and at T1 (3 month after the end of expansion). To verify the neuromuscular equilibrium, the EMG activities of both right and left masseter and anterior temporal muscles were recorded during a test of maximum voluntary clench (MVC). To standardize the EMG potentials, a specific protocol that allow to have measurements expressed for each patient as a percentage of the mean potential recorded during a MVC, was adopted. EMG indexes were compared by paired Student's t-test.

Results: All indices were within normal ranges in both occasions, showing a good symmetry between the masticatory muscles of

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right and left side. No statistically significant differences were found between the recordings at T0 and T1 ($p > 0.05$).
Conclusions: This study showed no variations in standardized muscular activity after RME: in patients with a normal muscular activity, a good muscular adaptation was observed after RME. Therefore beside a skeletal and dental outcome, a functional result was also achieved.

Free Communication Session 30 | 08.09.2016, 14:30–15:30 | Pavilion 15 – level 0 – Hall 0.D

Theme: Materials

FC116
A New Method for Inactivation of Dentinal Matrix Metalloproteinases
Homayoon Alaghehmand[1], Behnaz Esmaeili[1], Mohammad Hossein Soltani[2], Elham Mansouri[1], Ali Bijani[3]
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Aim or Purpose: Hybrid layer degradation is mainly attributed to matrix metalloproteinases (MMP) activity. In this study, we compare inhibitory effect of nano zinc oxide (NZO) with chlorhexidine (0.12%) on distraction of collagen scaffolding of the hybrid layer by immunohistochemistry (IHC) and microleakage and microshear bond strength (MSBS) tests.
Materials-methods: Sixty extracted molars teeth were selected for microleakage test. Class 5 cavities with dimensions of $2 \times 2 \times 2$ mm was performed for each tooth on the buccal surface 1 mm above CEJ. Forty molar teeth into four main groups were selected for MSBS test. A: control B: NZO C: chlorhexidine D: NZO + chlorhexidine. In each group, half of the samples underwent thermocycling, with no thermocycling in the other half.
Results: In microleakage test, there was no significant difference for groups pretreated with nano zinc oxide mixed with single bond2 (C), pretreated with chlorhexidine (0.12%) applied before bonding (B) and not pretreated with these agents (A) whether in 24 h or 1-week. In IHC test, there was a significant difference ($p < 0.05$) between all groups except in group B and C. The mean MSBS of the groups didn't show significant differences between the groups with and without thermocycling.
Conclusions: The inhibitory effect of chlorhexidine and NZO on MMPs activity is different. Microleakage amount were different in cavities pretreated with NZO contained bonding or chlorhexidine 24 h and 1-week later. Pretreatment with NZO and chlorhexidine separately and simultaneously had no effect on the MSBS of a fifth-generation adhesive.

FC117
A Finite Element Study to Find Optimum Thickness, Material, and Geometry for Dental Restorations
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Purpose: The aim of this study was to investigate the effects of geometry, thickness, and material on damage mechanics of porcelain fused to metal restorations using numerical method.
Materials-methods: Extended finite element method (XFEM) was employed to assess the critical loads to mark either the onset of radial cracks at the porcelain undersurface or plastic deformation at the metal top surface, as the two damage modes in dental prostheses. The models contained a brittle outerlayer (porcelain)/metal (Pd/Co/Au alloys)-core/dentin-substrate trilayer system which were indented by a tungsten-carbide hemisphere. In this study, cylinder and tapered cylinder shapes were created as two different geometries, which the tapered cylinder model was close to the real crown. XFEM not only has the ability to calculate crack initiation load, but also can solve crack propagation problems. The whole thickness of both metal and porcelain was presumed to be 1.5 mm.
Results: It was taken from the finite element analyses that harder and stiffer metal core is more resistant to radial crack nucleation. Additionally, it can be concluded that metal with thinner layers are more susceptible to radial cracking. In all models, tapered cylinder geometry has higher critical loads to approach both damage modes.
Conclusions: The optimum porcelain layer thickness is offered to be 0.5 mm. Dental crown-like structure geometry is an effective parameter. Moreover, metal layer should not be very thin in order to avoid radial cracking. Finally, metal stiffness is better to be high to postpone nucleation of radial cracks.

FC118
Effect of Triclosan Antimicrobial Addition on Selected Properties of WAGIC
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[1]Department of General Dentistry, Medical University of Lodz, Lodz, Poland, [2]University Laboratory of Material Research, Medical University of Lodz, Lodz, Poland, [3]Academic Laboratory of Movement and Human Physical Performance "Dynamo Lab", Medical University of Lodz, Lodz, Poland

Aim and purpose: Failure of dental restorations is commonly associated with residual infected dentine, while the material is unable to arrest carious process. Using dental materials containing antimicrobials might overcome this problem, without jeopardizing their physicomechanical characteristics. Purpose of this study was to evaluate hardness and diametral tensile strength of water activated glass ionomer cement (WAGIC) enriched with increasing mass concentration of triclosan (TRC) antimicrobial.
Materials and methods: TRC was added to the powder of WAGIC in weight concentrations of 0.5%, 1.0%, 1.5%, 2.0% served as

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experimental groups and 0% as a control group, respectively. After the completion of setting reaction, Vickers Hardness (HV0.3/15) and diametral tensile strength (DTS) were recorded after 1 and 24 h storage in distilled water. Shapiro-Wilk Test of normality, parametric (F-test or t-test) or non-parametric (Kruskal–Wallis test or Mann-Whitney test) tests were used for the purpose of the statistical analysis ($p = 0.05$); equality of variance was tested with Levene's test.

Results: Samples hardness was significantly higher after 24 h than after 1 h storage in distilled water. In both cases addition of 0.5% of TRC caused significant decrease of hardness. DTS values were significantly higher after 24 h with addition of 0.5%, but generally it was slightly decreased in comparison to the control group.

Conclusions: Except addition of 0.5% TRC into WAGIC, there was no negative influence of antimicrobial addition on HV0.3/15 and DTS, so TRC does not deteriorate physicomechanical properties of WAGIC.

FC119

Comprasion of Bond Strength of Bonding Systems Used with GIC

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Aim or Purpose: Glass ionomer cements (GICs) have been used for many years as restorative material, as luting cements or as temporary fillings. The aim of that study was to compare the bond strength of three bonding agents applied between composite and two different types of high viscosity GIC.

Materials-methods: In this study, Equia and Equia forte were used as high-viscosity GIC. Equia and Equia forte were bonded to the composite with self-etch and total-etch adhesives. Six group were prepared as Group A: Equia forte + Clearfil SE Bond + Clearfil Posterior. Group B: Equia forte + OptiBond FL+ Clearfil Posterior. Group C: Equia forte + Optibond All-in-One + Clearfil Posterior. Group D: Equia + Clearfil SE Bond + Clearfil Posterior. Group E: Equia + Optibond FL + Clearfil Posterior. Group F: Equia + Optibond All-in-One + Clearfil Posterior.

We prepared sticks from six groups. The specimens were attached to microtensile apparatus and tensile bond strength and nature of fractures of each specimen were determined.

We used one way analysis of varience with post hoc Tukey's tests.

Results: In case of comparing material used; Equia forte groups were statistically significant higher than the groups of Equia, in case of comparing bonding systems; statistically no differences was observed among Equia forte groups, but in Equia groups, Group F, was significantly observed higher than Group D and E.

Conclusions: It's concluded that Equia forte material used together with bonding agents may be more suitable for clinical use than Equia material.

Free Communication Session 31 | 08.09.2016, 14:30–15:30 | Pavilion 15 – level 0 – Hall 0.E

Theme: Aesthetics

FC120

Evaluation of Color Optimization of Different Laminate Veneer Materials Utilizing Digital Color Scanning Technology

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Aim: A wide variety of dental ceramic materials are presently available, though with very different characteristics in terms of the composition, optic properties and manufacturing processes involved. This study evaluated the color duplication of porcelain laminate veneers manufactured from four different ceramic brands representing two ceramic types[pressed and sintered],accuracy of Vitaeasyshade in determining the amount of optimization efforts needed were also evaluated.

Methods: Teeth with ten different shades were preoperatively digitally selected with vitaeasyshade, then standardized preparation were done. For each tooth four laminate veneers from different materials 20represent sintered type (10 duceram&10 vitaduralpha) and20represent pressed type (10empress esthetic&10vision low) were fabricated with the same digitally selected shade and temporary cemented to the teeth with translucent temporary cement. The color matching of different laminate veneer were determined using the restoration verification mode of VitaEasyshade device.

Results: Results were tabulated and illustrated graphically and statistical presentation and analysis was conducted using mean, standard deviation, unpaired student t-test, chi-square, fisher's exact and ANOVA test by SPSSV12. Qualified (good, fair, adjust) and quantified (delta E) color matching results showed that there was significant difference of the color matching between sintered and pressed ceramic types ($p < 0.001$). Results obtained from the predictive ROC curve showed that VitaEasyshade was highly accurate (ROC AUC = 0.998), sensitive (100%) and specific (96.6%) for color matching quality discrimination in relation to the delta E quantity parameter. The delta E difference of<=2.7 was used as a discriminative range between the accepted and non accepted color matching qualities.

Conclusions: Sintered ceramic laminates recorded higher color matching acceptance (65%) than the pressed laminates (5%). By analyzing the color parameters of all laminate veneers results showed that the most influential color parameter which affects color matching is value followed by chroma while hue had least influence.

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FC121

The Direct Composite Resin Restoration on Fiberglass Post: Case Report

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Introduction: Restoration of anterior segment of dental arch, especially single-tooth restoration, poses a challenge for dentists, mainly because of aesthetics. Nowadays, the market offers a variety of restorative materials for more durable and aesthetic fillings for direct and indirect restorations.
Case description: The work presents a clinical case of a 37 year old patient, who had previously undergone endodontic treatment and subsequently had a composite tooth restoration without proper crown reconstruction. More recently the patient wanted to improve the aesthetics of tooth 21. In attempt to produce quick result and to preserve as much hard tissue as possible, direct adhesive restoration was planned. Because the initial root-canal treatment had been proceeded with eugenol-based material, endodontic treatment was revised. Internal bleaching of tooth crown was applied. After color acceptance, in order to perform adhesive techniques, a 14 day's delay preceded direct composite resin restoration and fiberglass post application. Tooth shape was determined on a wax-up and restoration was carried out with a silicone index.
Discussion: Such fillings can be treated as final restorations or can be used in conservative treatments as framework for full ceramic reconstruction. Fibreglass post restorations produce durable and aesthetic effects and could be a substitute for metal cast posts in anterior segment of dental arch.
Conclusion/Clinical significance: Adhesive dentistry allows to restore missing tooth structure based on the minimal intervention principle, the most saving teeth restoring method.

FC123

Esthetic Improvement of the Enamel Disturbances with Resin Infiltration

Hande Sar Sancakli, Taner Yücel
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Introduction: Color change and surface disturbances usually compromise the esthetic appearance of the anterior teeth within the smile line. Contemporary minimally invasive treatment choices represent aesthetic improvements by preserving the sound enamel tissue.
Resin infiltration of the enamel lesions stands for blocking the enamel imperfections and masking the color by micro-abrasion of the superficial enamel surface.
Case description: The current presentation illustrates two cases with enamel surface disturbance and color alteration. One of the cases is sample of a moderate developmental enamel hypoplasia with a brownish coloration on the maxillary left incisal of a 21-year-old female complying of the esthetic appearance while the other case constitutes enamel surface disturbance on the right upper canine of the 36-year-old patient.
Discussion: A double HCl etching was performed to remove the coloured superficial layer of the lesion prior to resin infiltrant (ICON Infiltrant, DMG;Germany) application of the enamel hypoplasia whereas resin infiltrating the surface disturbance was enhanced with top-sealing of a nano-hybride enamel composite (3M Filtek Ultimate; 3M ESPE, Germany) layer for a smooth finish.
Clinical Significace: The final aesthetic outcome of the both cases revealed satisfactory results with a non-invasive therapy. Resin infiltration can represent an alternative choice for masking the mild to moderate enamel colorations with a limited color-masking and sealing the surface disturbances due to the developmental stages effectively to block the lesion. However various similar case samples would enhance the clinal outcome.

Free Communication Session 32 | 08.09.2016, 14:30–15:30 | Pavilion 15 – level 0 – Hall 0.F

Theme: Prosthodontics

FC125

Effects of Corrective Porcelain Firing on the Bond Strength of Metal-Ceramic Crowns after Immersion in Saliva

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Aim or Purpose: Chipping of the porcelain in metal ceramic restoration is a common finding in implant restoration which needed to be repaired. The main concern of repairing procedure is porcelain breakage following corrective firing. So we aimed to determine the effect of corrective porcelain firing on the bond strength of metal to ceramic after immersing in saliva.
Materials-methods: In this laboratory study, 70 base metal samples (Meganium CS) in size of 25 × 3 × 0.5 mm was prepared and covered by mm2 × 3 × 8 vita Zahnfabrik porcelain. Samples divided in 7 groups as follows: control group without immersing, 3 groups of glazed porcelain which immersed 1 month in saliva and 1 h in ethyl alcohol, 1 month in saliva, 1 week in saliva respectively. Three other groups were the same but their glaze were removed. After corrective firing at 890c, bond strength was measured with Instron machine.
Results: The parametric test One-Way ANOVA was used to compare the average strength in different groups. The lowest bond strength was in group 1 month immersion in saliva (16/19) and the highest bond strength was in group 1 month immersion in saliva and an hour immersion in alcohol (19/27). Statistical analysis was not significant about differences existing between averages of various groups (p = 0/197).
Conclusions: Corrective firing in the crowns which made of Meganium CS alloy and Vita Zahnfabrik porcelain can be done with no concern of porcelain debonding.

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FC126

Association between Probable Bruxism and Stress

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Purpose: The aim of the study was to evaluate the relationship between probable bruxism and stress determined by PSS- scale and salivary cortisol level.

Materials-methods: Forty eight volunteers (34 women and 14 men) participated in this study. They were divided into two groups – bruxers and nonbruxers. Probable bruxism diagnosis was based on a questionnaire, interview and clinical examination according to Paesani et al. (1). The perceived stress was measured using the Perceived Stress Scale (PSS-10) questionnaire. Unstimulated whole saliva was collected for 2 days, twice a day- after awaking and before falling asleep. Levels of salivary cortisol were determined by ultrasensitive electrochemiluminescence immunoassay test. For statistical analysis only patients collecting saliva between 7.30 and 9.30 a.m. and after 10 p.m. were included. Nonparametric statistical methods were applied. The study was approved by the Ethics Committee of the Medical University in Warsaw.

Results: Probable bruxers showed higher levels of morning salivary cortisol levels then nonbruxers ($p < 0.023$), which were 0.83 ± 0.28 μg/dl and 0.55 ± 0.19 μg/dl, respectively. Additionally, significantly greater decrease in cortisol concentration (morning vs. evening) in probable bruxers (−0.52) comparing to nonbruxers (−0.25) was observed ($p < 0.046$). Bruxers showed also insignificantly higher levels of perceived stress (PSS-10).

Conclusions: These findings suggest that bruxism activity is related to stress expressed by higher levels of morning salivary cortisol.

(1) Paesani D. A. et al: Correlation between self-reported and clinically based diagnoses of bruxism in temporomandibular disorders patients. Journal of Oral Rehabilitation 2013 40; 803–809.

FC127

Reinforcement of the Autopolymerizing Acrylic Resins with Zirconia (ZrO2) Nanoparticles

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[1]*Department of Prosthodontics, Faculty of Dentistry, Gazi University, Ankara, Turkey,* [2]*Department of Prosthodontics, Faculty of Dentistry, Mersin University, Mersin, Turkey*

Aim or Purpose: The aim of this study was to evaluate and compare the addition of zirconia nanoparticles (cubic and tetragonal) to autopolymerizing acrylic resins on the transverse strength, surface roughness and color stability.

Materials-methods: Two autopolymerizing acrylic resins were used in this study. 216 specimens were prepared. They were divided into three groups (72 specimens to each) according to the test type, each group was subdivided into six subgroups (control, cubic and tetragonal zirconia nanoparticle) each subgroup consist of 12 specimens, the experimental groups included mixture of 1% zirconia nanoparticles by weight. The specimens were stored in distilled water at 370°C for 50 h before being tested. Then the test of transverse strength, surface roughness and color stability were carried out on the specimens. Micro-structural examination of two specimens for each group was carried out using scanning electron microscopy. The data were statistically analyzed with the Kruskal–Wallis test and paired comparisons were performed by means of the Mann–Whitney test ($p < 0.001$).

Results: The addition of 1% tetragonal and cubic forms of zirconia nanoparticles resulted in significant decrease in transvers strength of two autopolymerizing acrylic resins ($p < 0.001$). No significant difference was detected in each of surface roughness and color stability ($p = 0.057$, $p = 0.603$ respectively).

Conclusions: The reinforcement of acrylic resins with different form zirconia nanoparticles decreased its transverse strength significantly and with no adverse effect on the surface roughness and color stability.

Free Communication Session 33 | 08.09.2016, 16:00–17:00 | Pavilion 15 – level 0 – Hall 0.C

Theme 1: Orthodontics

FC128

Observation of *Entamoeba gingivalis* and *Trichomonas tenax* in Functional Orthodontic Patients

Ozlem Akinci Sozer[1], Ozlem Aycan Kaya[2], Fundagul Bilgic[1], Eyup Burak Kucuk[1], Hatice Akinci Cansunar[3]

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Aim or Purpose: *Entamoeba gingivalis* (*E. gingivalis*) and *Trichomonas tenax* (*T. tenax*) can cause gingivitis and scale. In this study, the prevalence of *E. gingivalis* and *T. tenax* were investigated among patients who were undergoing functional orthodontic treatment with activator.

Materials-methods: Thirty four Class II patients using activator appliance were included in this study. Clinical measurements, including plaque index, probing pocket depth, and bleeding on probing, were obtained before treatment and 3 months later. Furthermore supragingival plaque and calculi samples were obtained for the detection of *E. gingivalis* and *T. tenax*. The samples were diluted in Physiological Saline and the second samples taken from the same individuals were evaluated staining with Trichrome and Giemsa.

Results: At the beginning of orthodontic treatment oral protozoa were detected in 14 (41.18%) of 34 scraping samples before activator treatment. *T. tenax* was detected alone in 9 (26.48%) of samples, whereas *E. gingivalis* had not been detected in any patient alone. *E. gingivalis* and *T. tenax* were identified together 5 (14.7%) of samples.

After 3 months appliances placed, oral protozoa were detected in 5 (14.7%) of 34 scraping samples. *T. tenax* was detected alone in

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3 (8.8%) of samples, whereas *E. gingivalis* had not been detected in any patient alone. *E. gingivalis* and *T. tenax* were identified together 2 (5.88%) of samples.
Conclusions: The reason of the reduction in the presence of interference can be considered as a result from oral hygiene education was given to patients.

Theme 2: Aesthetics

FC129
Immediate Management of Crown Fracture by Reattachment
Mohammad Naser[1], Khurshiduz Zaman[2]
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Aim or Purpose: To evaluate the management outcome of traumatic crown fracture by reattachment and to assess of patients' satisfaction on reattachment method of restoration.
Materials-methods: A total sample of 40 crown or crown-root fractured permanent anterior teeth of 31 patients was randomly selected for management by reattachment as and when reported with broken fragments in Combined Military Hospital, Dhaka during the period 2008–2009 and followed up for three years.
Reattachment of crown fracture only was done by using acid etch technique followed by application of dentin bonding agent and composites. An internal groove preparation was done whenever possible. For crown-root fractures, after endodontic treatment the root canal space used for reinforcement of crown by inserting screw post. Patients'/parents' satisfaction was recorded in terms of appearance, color, shape, and size using the scoring system of Kupietsky and Waggoner.
Results: Immediately after reattachment, 27 teeth had no noticeable difference with the adjacent teeth, 12 had slight shade mismatch; and 1 had obvious shade mismatch while two patients with 3 reattached teeth were dropped out. Statistically, paired t-test shows significant improvement ($p < 0.05$) in color after 1 month and remained stable afterwards with patients'/parents' very high satisfaction. After 5 years follow up 5 crown reattachments failed out of 24 and all crown-root fractures remained in function except one.
Conclusions: Reattachment in anterior teeth fracture may be a valid option for restoration in relation to aesthetics and appearance. Patients are highly satisfied with the outcome of reattachment.

FC130
Improvement of Appearance of Teeth in High Aesthetic Zone by CAD/CAM Zergon and E-Max Crowns and Veneers
Saad Yasin Nori
University of Baghdad, Iraq

Introduction: The upper anterior teeth are often mal aligned tilted have diastema or had old discolored composite fillings and this is a complain from many young and old female patients. Cad/cam technology can help in producing high quality crowns and veneers for improving the look of these teeth.
Case description: 1st female patient complained crowded and malaligned upper central and lateral incisors no ortho the teethwere prepared and 4 crowns were designed and built from e-max ivoclar material with the aid of cad/cam technology and were cemented and the look and alignment was improved.
The 2nd female patient was having big diastema and the central incisors were prepared and a bridge of 2 centrals was made from zirgon with aid of cad/cam technology closing the diastema and improving the look.
The 3rd female patient was having old composite fillings with secondary caries and discolored fillings 6veneers were designed by cad/cam technology and the teeth faces were covered and the look was improved.
Discussion: CAD/CAM technology of designing and manufacturing crowns and veneers help alot in correcting and the alignment and look of upper incisors and canines in the high aesthetic zone in female patients because the design of the teeth and the trimming of zirconium blocks is perfectly done with aid of computre program.
Conclusion/Clinical significance: The poor looking incisors and canines in the high aesthetic zone of female patients could be corrected by using crowns and veneers with high manufacturing standards of shape and color with aid of cad/cam technology thus improving the clinical outcome of the traetment.

Theme 3: Orthodontics

FC131
Assessing Adolescent Skeletal Maturity at a Glimpse in Dental Practice
Rana Modassir Shamsher Khan
Islam Dental College, Sialkot, Punjab, Pakistan

Aim: The aim of study was to assess adolescent skeletal maturity "at a glimpse on periapical radiograph" by investigating the correlation between mandibular canine calcification with skeletal maturity indicators.
Materials-methods: This research was designed as a cross-sectional descriptive study. The samples were derived from periapical and hand-wrist radiographs of 486 subjects (213 males and 273 females). The age range of the children was 9–16 years. The study was conducted at Islam Dental College Sialkot and duration of study was 10 months. The tooth development of the mandibular canine was assessed according to the Demirjian's system and skeletal maturity stages were determined by using the method the Fishman's system.
Results: Statistically significant correlations were found between dental calcification and skeletal maturity stages. The canine stage F for both sexes (75% for female subjects, 67.4% for male subjects) coincided with the MP3 stage and indicates the onset of period of accelerating growth. The stage G for male subjects (72.7%) was related to the S stage, and was indicative of rapid growth velocity.
Conclusions: There is strong correlation between canine calcification and skeletal maturity thus the stages of dental calcification might be used as a first-level diagnostic tool in dental practice to estimate the timing of the pubertal growth spurt. Growth spurt has a considerable influence on diagnosis, treatment goals, treatment planning, and the eventual outcome of orthodontic treatment.

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Free Communication Session 34 | 08.09.2016, 16:00–17:00 | Pavilion 15 – level 0 – Hall 0.D

Theme: Oral Health and Systemic Health

FC133

Sexual Practices, Demographics, Oral Hygiene and HPV Infection

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Aim or Purpose: Recent increases in rates of oropharyngeal carcinoma have been attributed to infection with specific human papillomavirus (HPV) genotypes. This study aimed to determine the prevalence of oral HPV carriage in patients attending two general dental clinics in Sydney, and explore correlations with sexual behaviour, demographics and oral health.

Materials-methods: Following Ethics Committee approval, participants aged 18 years or older completed questionnaires and provided 10 ml saline oral rinses. Oral Hygiene Index (OHI) was recorded. Samples were tested for beta human globin gene (BHG) and HPV genotypes by PCR.

Results: Mean age of the 300 participants was 48 years (range 19–87), of whom 132 (44%) were male, and 20 (7%) had an OHI >= 2. BHG was detected in all samples and HPV genotypes in 4 (1.3%) participants, all male. HPV was detected in 3 (4.9%) of the 61 men reporting oral sex practices (all exclusively with female partners) and 1 (0.75%) of the 132 men who did not. HPV was detected in 3 (1%) and 1 (0.3%) of those with OHI grades 1 and 3 respectively. HPV66 and HPV58 were detected in one sample each. A further sample had both types 18 and 52, and one sample had untypable HPV.

Conclusions: HPV DNA was found in 4 (3%) of 132 male general dental patients and not in any female participants. The data suggest a possible association with oral sex practices and OHI. Further studies with a larger sample size would be required to investigate further possible correlations.

FC134

The Functional Diagnostic of Dental and Postural Systems in Dentistry

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Aim or Purpose: To study the physiological role of the dental system as postural sensor and to investigate the influence the functional statement of the dental system on postural balance.

Materials-methods: Were examined 251 patients 129 male and 122 female in age from 20 to 60. Stabilometry and miography were performed accordance to the recommendation of the international postural society.

Results: On the first step of the study was the results of stubilometry were undergone factor analysis by Varimax raw method. There were found most informative parameters stubilometry. It is absolute parameters. They can be use in dentistry. According to the results of the factor analysis dental system as postural sensor has 2–3% from general information to postural balance. Dental system can have positive and negative influence on the postural balance. It depends of the functional statement of dental system. So by this effect we can judge about functional statement of dental system.

Conclusions: Dental system is one of the postural sensor. It can have negative and positive affects on postural balance. Stabilometry is one of the informative method of functional diagnostic in dentistry.

FC135

Dental Caries in Kosovo Adults Aged 35–44 Years

Blerim Kamberi[1], Kujtim Shala[2], Ali Gashi[3], Agim Begzati[4], Jeta Kelmendi[5], Nora Berisha[5], Linda Dula[2]

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Aim or Purpose: The purpose of this study was to assess the prevalence of dental caries in Kosovo adults aged 35 to 44 years and to relate this to sex and residence.

Materials-methods: A cross-sectional study was conducted on 1717 adult patients aged 35–44 years living at Kosovo between 2010 and 2011. The criteria used for clinical evaluation and data collection regarding oral health status were slightly modified from those described by WHO. The dental caries status was recorded using DMFT index. Chi and Exact Fisher test, One-Way ANOVA tests were the methods of statistical evaluation used.

Results: According to residence (urban and rural) and sex we found significant difference ($p < 0.000$). According to sex and caries distribution, 62.9% of patients with caries were female and 37.1% were male. In the examined population the caries prevalence was 77.90% and mean of DMFT for the whole population was 11. 6, whereby the D (decayed) component had the highest proportion 3.18, and F (filled) component the lowest 2.47. On average the M (missing) teeth was 5.95. Comparing the mean values of the DMFT index and its components according to the patients' residence, we found that only the F component had significant difference for $p < 0.000$ while DMFT, D and the M component had no significant difference ($p = 0.352$, $p = 0.118$ and $p = 0.262$).

Conclusions: The results revealed high levels of dental caries in the aged 35–44 years, and the need for dental treatment among the adult population in Kosovo.

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Free Communication Session 35 | 08.09.2016, 16:00–17:00 | Pavilion 15 – level 0 – Hall 0.E

Theme: Materials

FC136

Microleakage of Different Adhesives in Conventionally or Laser Prepared Cavities

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Aim or Purpose: The aim of this study was to assess the adhesive systems/dentin interfaces on Er:YAG laser and bur prepared cavities by in-vitro study of microleakage.
Materials-methods: The specimens were prepared on 40 permanent human premolars without caries and restorations by Er:YAG laser (enamel 400mj/20 Hz, dentin 200mj/20 Hz) and diamond bur in a high-speed hand piece for microleakage test. They were randomly assigned to 8 groups: Group1: Bur preparation (bp)+Clearfil SE Bond; Group2: Er:YAG laser preparation (lp)+Clearfil SE Bond; Group3: (bp)+Single Bond Universal; Group4: (lp)+Single Bond Universal; Group5: (bp)+OptiBond All-in-One; Group6: (lp)+OptiBond All-in-One; Group7: (bp)+Acid Etch+Adper Single Bond 2; Group8: (lp)+Acid Etch+Adper Single Bond 2. After thermocycling for 1000 cycles and immersion in a 0.5% basic fuchsin solution for 24 h, the teeth were sectioned bucco-lingually to evaluate the dye penetration. Data were analyzed by Mann Whitney U Test, Kruskal Wallis Test and Dunn's Post Hoc Test.
Results: No significance had been determined between microleakage levels in Er:YAG laser prepared cavities and bur prepared cavities ($p > 0.05$). Adper Single Bond 2 have shown the utmost microleakage levels on cervical surfaces of cavities. Self-etch adhesives were found to be more successful on adhesion and microleakage. The difference between microleakage levels on cervical surfaces of all groups was statistically significant ($p < 0.001$). OptiBond All-in-One self-etch adhesive has shown the least microleakage levels on cervical surfaces.
Conclusions: Er:YAG laser cavity preparation could be a promising alternative to conventional bur preparation; however, further investigations are required for optimal bonding protocols on laser treated surfaces.

FC137

Microleakage of Composites Following Different Durations of Acid Etching

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Aim or Purpose: To investigate the effect of phosphoric acid etching of dentin and enamel surfaces for 5, 10 or 15 s on the microleakage of conventionally restored class V cavities prepared by bur or Er:YAG laser.
Materials-methods: Sixty extracted premolars were used in this study. The samples were randomly assigned to 12 groups. Class V cavities were prepared by either diamond bur or Er:YAG laser on the lingual and buccal surfaces of each sample with occlusal margin in the enamel and cervical margin in the dentin. Group1:Bur preparation (bp)+5s acid etch (ae)+OptiBond FL (OFL), Group2: bp+10s ae+OFL, Group3:bp+15s ae+OFL, Group4:Er:YAG laser preparation (lp)+5s ae+OFL, Group5:lp+10s ae+OFL, Group6: lp+15s ae+OFL, Group7:bp+5s ae+Adper Single Bond-2 (ASB), Group8:bp+10s ae+ASB, Group9:bp+15s ae+ASB, Group10:lp+5s ae+ASB, Group11:lp+10s ae+ASB, Group12:lp+15s ae+ASB. All cavities were restored using Filtek Z250 composite resin. After thermocycling for 1000 cycles and immersion in a 0.5% basic fuchsin solution for 24 h, the teeth were sectioned bucco-lingually to evaluate the dye penetration. The data were statistically analyzed by Kruskal Wallis test ($p < 0.05$).
Results: The analysis showed a significant difference ($p < 0.05$) between occlusal and cervical margin microleakage of Groups 1,4,7,8,9,10,11 and 12; while the higher microleakage was related to the cervical margin of restorations. In occlusal and cervical margins, the least microleakage showed in Group8. Differences between the groups of 5s acid-etching (Groups 1,4,7,10); 10s acid etching (Groups 2,5,8,10) and 15s acid etching (Groups 3,6,9,12) were statistically insignificant ($p > 0.05$).
Conclusions: Duration of acid etching of the cavities prepared by either bur or Er:YAG laser didn't influence the marginal sealing of composite restorations.

FC138

Responses of L929 Mouse Fibroblasts to Contemporary Bulk Fill Composites

Ayse Canan Tutku Çelik, Hayriye Esra Ülker, Mustafa Ülker
Restorative Dentistry, Selcuk University, Faculty of Dentistry, Konya, Turkey

Aim or Purpose: The purpose of this study was to evaluate the cytotoxic reaction of L929 mouse fibroblast cells after exposure to contemporary bulk fill composites.
Materials-methods: Four bulk fill composites were tested: Tetric EvoCeram Bulk Fill (Ivoclar Vivadent), SonicFillTM (Kerr), everX Posterior (GC) and FiltekTM Bulk Fill (3M ESPE). Extracts of the set materials were prepared in Dulbecco's Modified Eagle's culture medium following the recommendations of ISO 10993. These original extracts (1:1) were then serially diluted (1:2, 1:4, 1:8, 1:16, 1:32) prior to testing. Cell survival as a measure of cytotoxicity was determined photometrically using MTT after L929 cells were exposed to the extracts for 24 h. Data were statistically analyzed by one-way ANOVA and the Tamhane's T2 tests.
Results: The results of the cytotoxicity studies with L929 cells revealed that cell survival with the original extracts of FiltekTM Bulk Fill, SonicFillTM, everX Posterior and Tetric EvoCeram Bulk Fill was 64.81%, 68.89%, 90.94%, and 94.64%, respectively. Extracts of everX Posterior and Tetric EvoCeram Bulk Fill did not significantly reduce the cell survival compared with the untreated control

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($p > 0.05$). Original extracts and also first three dilutions (1:2, 1:4, 1:8) of FiltekTM Bulk Fill and SonicFillTM significantly reduced the cell survival compared with the untreated control ($p < 0.05$).
Conclusions: Biologically active resin monomers or additives released from FiltekTM Bulk Fill and SonicFillTM showed cytotoxic effects on L929 cells.

FC139
Cuspal Deflection of Endodontically-Treated Teeth Restored with Different Restorative Resins
Cansu Atalay[1], Aynur Horuztepe[1], Emre Nagaş[2], Ayşe Rüya Yazıcı[1], Atilla Ertan[3], Gül Özgünaltay[1]
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Aim: The aim of this study was to evaluate the effects of four different types of composite resins on the cuspal deflection of endodontically-treated teeth.
Materials-methods: Seventy-two sound human maxillary premolar teeth were randomly divided into 6 groups (n = 12). The distance between cusp tips were measured before and after cavity preparations with a digital micrometer. Teeth in first group tested as unprepared negative control (Group I). Teeth in the remaining five groups were prepared with MOD cavities and endodontically-treated. The teeth in one of the five groups (positive control-Group II) were unrestored. Rest of prepared cavities were restored as follows; Group III: Bulkfill resin composite/Filtek Bulk Fill; Group IV: Bulkfill flowable resin composite+nanoceramic composite/SureFil SDR Flow+Ceram X Mono; GroupV: Fiber-reinforced composite+posterior resin composite/GCeverX posterior+G-aenial posterior; GroupVI: conventional nanohybrid resin composite/Tetric N-Ceram. Each restorative material was used with its' respective adhesive system. The restored teeth were stored in distilled water for 24 h at 37°C and then thermocycled (5–55°C, ×1000). Cuspal deflection was measured 24 h after restorations and after thermocycling. Data were statistically analyzed with Friedman and Kruskal Wallis tests ($p < 0.05$).
Results: At 24 h measurements, no significant differences in cuspal deflection were found between groups ($p > 0.05$). After thermocycling, a significant increase in cuspal deflection values of group V (fiber-reinforced+posterior composite) compared with Group I (negative control-unprepared teeth) was obtained ($p < 0.05$). There were no statistically significant differences between the rest of groups tested ($p > 0.05$).
Conclusions: The use of fiber-reinforced+posterior composite in endodontically-treated teeth caused an increase in cuspal deflection.

Free Communication Session 64 | 08.09.2016, 16:00 – 17:00 | Pavilion 15 – level 0 – Hall 0.F

Theme 1: Materials

FC213
Cytotoxicity and Oxidative Stress Evaluation of Bulk-Fill and Conventional Flowable Composites
Neslihan Celik[1], Merve Iscan Yapar[1], Ali Taghizadehghalehjoughi[2]
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Purpose: Dental restorative materials are in contact with oral tissues. The release of components from materials into surrounding tissue may cause an adverse tissue reaction. The aim of this study was evaluate cytotoxicity of different flowable composites and this materials effect on Total Antioxidant Capacity (TAC) and Total Oxidant Status (TOS) level in human gingival fibroblast cell culture.
Methods: Gingival fibroblast cells obtained from healthy persons were used for evaluation of cytotoxicity and oxidative stress parameters. Six flowable composites used were: two bulk-fill flowable composite (SureFil SDR, X-tra base), a self-adhering flowable composite (Vertise Flow), a highly filled flowable composites (GrandioSO Flow), two conventional flowable composite (Filtek Ultimate, Clearfil Majesty). Specimens in 3 mm diameter, 2 mm height were prepared from each composite (n = 6) and were transferred to 24 well plates. Six wells were left empty for use as the control group. After 24 h incubation period, cytotoxicity was determined by using the MTT assay. Oxidative alterations were assessed using TAC and TOS assays. Data were analyzed using the ANOVA and LSD post hoc test ($p < 0.05$).
Results: Cytotoxicity of six materials was significantly different from control group ($p < 0.05$). Vertise was the most cytotoxic material. The cytotoxicity of Filtek Ultimate and X-trabase were less than the others. TAC levels of Vertise was significantly different from X-trabase and GrandioSO. TOS levels increased in SureFil SDR and Vertise groups but it was not statistically significant difference.
Conclusion: All of the materials used in this study showed cytotoxic effect in human gingival fibroblast cell culture. Antioxidant property prevented to increasing of oxidant level.

FC215
Investigation of Shear Bond Strength of Restorative Materials to Dentin with Different Roughening Methods
Merve Işcan Yapar, Yusuf Ziya Bayındır
Departmant of Restorative Dentistry, Faculty of Dentistry Ataturk Universıty, Erzurum, Turkey

Aim: The aim of this study, was to investigation the effect of different surface treatments on the bond strength of two different restorative materials to dentin.

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Materials-methods: 172 molars were selected and the occlusal enamel of these molars was removed and embedded in acrylic resin blocks with the occlusal surfaces facing up. The samples randomly were divided into two groups according to material (Group K: Composite resin, Group C: Glass ionomer cement) and then diveded into eight subgroups according to surface conditioning (Group K1,C1: No surface conditioning, Group K2,C2: Phosphoric acid, polyacrilyic acid, Group K3,C3: Air abrasion, Group K4, C4: Air abrasion+acid, Group K5,C5: 1W Laser, Group K6,C6: 1W Laser+acid, Group K7,C7: 2W Laser, Group K8,C8: 2W Laser+acid). Universal adhesive was applied to dentin samples surface for composite groups, restorative materials built up (2mmX3 mm) and shear bond strength test was performed. Images of different surface treatments applied to the dentin surface were evaluated SEM. Data were analyzed using one-way ANAVO and post-hoc LSD tests (α=0.05).
Results: For resin composite and glass ionomer cement, the highest mean shear bond strength was shown in acid group and bond strength of acid groups were significantly higher than laser and air abrasion groups ($p < 0.05$). Bond strength values of composite resin were signifcantly higher than glass ionomer cement with the same surface treatment apllied in all groups ($p < 0.05$).
Conclusion: Acid etching is more effective method than air abrasion and laser etching for bond strength of resin composite and glass ionomer cements.

Theme 2: Oral Surgery

FC223
Effect of Laser on Healing of Fractured Mandible (Experimental Study)
Hanaa M Elshenawy[1], Mohamed A Khalel[2], Mohamed A Omar[2], Ahmed S Ahmed[3]
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Aim or Purpose: To evaluate the effect of Low Level Laser bio-stimulation radiographically and histologically on mandibular fracture healing in animal model.
Materials-methods: Eighteen healthy adult mongrel dogs, aging from one and half to two years with average weight of 15 to 18 kg were included in this study. Induced unilateral vertical mandibular fracture was performed between the fourth premolar and the first molar. The animals were divided into two groups of 9 dogs each such that: Group 1 (Control group): was left to heal without interference. Group 2 (laser group): was exposed to laser. Each group was subdivided according to euthanization periods into 3 groups, three for each (10 days, 30 days and 60 days). Immediately after surgical procedure, the animals received laser treatment on the operated side with 970 nm 1 W in a continuous mode for total exposure time of 10 min for five successive days. The healing course was monitored using radiographic evaluation, Photodensitometric processing, histological and histo-morphometrical analysis.
Results: After 30 and 60 days laser group showed statistically significant higher mean values of bone density than control group ($p = 0.002$) ($p = 0.006$) respectively. There is significant increase ($p <= 0.05$) in osteoblast and osteoclast cell count during different periods of observation in both groups. The histomorphometric results revealed that the mean bone trabecular size & bone trabecular area were higher & statistically significant ($p < 0.05$) in laser group compared to control group.
Conclusions: Low intensity laser accelerate bone healing in mandibular fracture in animal models.

Poster Sessions 21–39

Poster Session 21 | 08.09.2016, 10:00–11:00 | Poster display 1

Theme: Oral Health and Systemic Health

P095
Antiepileptic Medicines and Their Effect on the Oral Health
Maria Mielnik Blaszczak[1], Agnieszka Skawinska[1], Jerzy Blaszczak[2], Malgorzata Sikorska Jaroszynska[1], Artur Michalowski[1], Piotr Stachurski[3]
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Aim or Purpose: Epilepsy is one of the most common neurological diseases. One of the main methods of treatment is the administration of antiepileptic medicines. Patients taking antiepileptic drugs often suffer from different side effects. The aim of the study was to present the influence of antiepileptic drug therapy on the oral health of children affected with epilepsy.
Materials-methods: Clinical and questionnaire studies were carried out in 120 children and youth of both genders aged from 6 to 18 from the Lublin region. The oral health status was defined by indices: intensity of tooth decay (DMFt), Simplified Oral Hygiene Index according to Green and Vermillion (OHI-S), periodontal treatment needs index (CPITN). The analysis of developmental disturbances and pathological changes in mucosal membrane was also rated.
Results: In the group of patients taking antiepileptic drugs, the OHI-S index was significantly higher (2.54) in compared to those who had not taken (1.55). The value of CPITN was 1.71, unlike those who had not taken medicines (0.95). DMFt index reached value 6.78 and was much higher than in the control group (4.63).
Conclusions:
1 Children with epilepsy receiving anti-epileptic drugs have far worse oral health.
2 There should be implemented all activities in pro-health education, prevention and treatment in this group of children and youth.

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P096

Caries in Type 1 Diabetics on Continuous Subcutaneous Insulin Infusion

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Aim or Purpose: To establish a relationship between the prevalence of dental caries in type 1 diabetic patients treated with continuous subcutaneous insulin infusion and that of non-diabetic patients.

Materials-methods: An observational clinical study of analytical and cross-sectional nature was conducted. The sample consisted of 30 adults with type 1 diabetes mellitus treated with continuous subcutaneous insulin infusion and 30 non-diabetic adults, similar in age and gender. Oral clinical evaluation was carried out and a case report form adapted to the objectives of the investigation was completed, which included information about their general health, history of diabetes mellitus (if applicable) and issues related to oral health in general, including dental health and hygiene. Data analysis was performed and the significance level was set at 5%.

Results: Diabetic patients showed similar levels on the caries and plaque index to healthy patients. The average glycated haemoglobin test group was 7.83 ± 1.14 with 83% of moderately controlled patients. There were no statistically significant differences between the two groups as regards oral hygiene habits and frequency of visits to the dentist.

Conclusions: Type 1 diabetes mellitus doesn't have a statistically significant association with changes in some oral health parameters, namely an increase in the prevalence of caries.

P097

Periodontal Diseaseas as a Risk Factor for Stroke-Preliminary Data

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Aim or Purpose: We analyzed the periodontal status of post-stroke patients to assess a possible link between and severe periodontitis acc to genetic and serum biochemistry study's result.

Materials-methods: The study involved a cohort of 120 patients who had suffered a hemorrhagic or non-hemmorrhacic stroke as diagnosed in the Clinic Of Vascular Diseases at UMP. As controls,100 sex and aged matched individualas were recruited. Within 72 h of suffering a stroke each patient was examined by caliberated staff from Perio. Clinic of UMP. The periodontal state of all the past-stroke participants was assessed according to the WHO Oral Health Data Chart and the following Indices:API, BOP, CAL, PD and radiographs. The PCR test for periopathogens was applied to material taken from pockets>6 mm. Blood analysis and TAS were done at University Hospital Laboratory, APOE blood examination technic were provided in Institute of Human Genetics. Inter-group comparisions were made by the paried-samples t-test and over time comparisons by repeated measurments ANOVA ($p < 0.05$).

Results: We found a significant difference in the BOP and API values between the two group analyzed: the post-stroke and healthy controls. Our preliminary data suggest the periodontal disease may be a factor predisposing to stroke.

Conclusions: Gingival bleeding is the first sign of a periodontal disease. Therefore, every general practitioner has an opportunity and responsibility to help in stroke prenentrion by asking one simple question: Do you have bleeding from your gingivae?

P098

The Association of Oral Parafunctions with TMD Symptoms Among Adolescents

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Aim or Purpose: The present study aimed to determine the prevalence of oral parafunctions, signs and symptoms of TMD among children and determine whether harmful oral habits are associated with the signs and symptoms of TMD.

Materials-methods: The study was performed as a part of an early detection of risk factors for civilizational diseases program in 96 children aged 14–15. Each participant filled out a questionnaire regarding their oral habits and symptoms of TMD also underwent a full TMD examination. Statistical analysis involved the Pearson chi-squere test and Fisher exact test.

Results: Most participants (92.71%) reported at least one and (46.88%) 2–3 signs and symptoms of TMD. Teeth impressions on tongue and cheeks, increased muscle tension (57.29%) and a reduced jaw mobility (53.13%) were the most frequent reported signs and symptoms. Resting head on hand (73.68%) was the most common habit among the study group. Gum chewing ($p = 0.012$) and infantile type of swallowing ($p = 0.021$) were statistically significant associated ($p < 0.05$) with muscle symptoms.

Conclusions:

1 The relationship between infantile type of swallowing, gum chewing and muscle symptoms suggests that more attention should

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be paid not only to parafunctions but also to dysfunctions among adolescents.

2 There is a requirement to introduce an educational program in schools in order to present the destructive consequences of parafunctions on the stomatognathic system health and the possibility of prophylaxis or treatment.

P099

Health Behaviour of Pregnant Women and Oral Health Preservation – Survey Research

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Aim: To evaluate knowledge and proper behavior about oral hygiene and eating habits of pregnant women. To estimate health behavior and knowledge of dental caries prophylaxis of pregnant women with adjusted quantity of past pregnancy.

Materials-methods: 100 pregnant women (18–45 years) were tested by the survey research. They were inhabitants of Tri-City and surroundings. The research was done in three groups. Group-I were primiparas (31 women), Group-II were women, who were second time pregnant (40 women). Group-III were multigravidas (29 women). The survey research consisted of 28 questions.

Results: Analysis of the data showed that pregnant women, who had constant dental care were 87% (Group-I), 85% (Group-II), 79% (Group-III). The proper frequency of teeth brushing had 97% (Group-I), 95% (Group-II), 94% (Group-III) of pregnant women. The prevalence of vomiting during last pregnancy reported 48% women from Group I, III and 27.5% from Group II. The proper oral hygiene after vomiting had 21% (Group-III), 19% (Group-I), 17.5% (Group-II) women. Knowledge about sterility of infant's oral cavity had 64.5% (Group-I), 52% (Group-III), 32.5% (Group-II) women. Few pregnant women knew about factors, which could predispose to dental caries in Group-III 48%, Group-II 46%, Group-I 42%. Very few surveyed women knew about necessity of controlling children during teeth brushing until 10-years-old 30% (Group-II, III) and 26% (Group-I).

Conclusions: Our observations suggested, a majority of pregnant women had good hygienic and nutrition habits. Nevertheless, women had not proper knowledge about children caries prophylaxis. These conclusions were independent from number of pregnancy. Oral health education of pregnant women and mothers is very important, because their knowledge is varied and still unsatisfying.

Poster Session 22 | 08.09.2016, 10:00–11:00 | Poster display 2

Theme 1: Digital Dentistry

P100

The Concept of Computer Assisted Implantology: The Accuracy Outcomes

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Introduction: Implantology has made a huge progress in recent years, not only through the development of implants (design, surface finish, connections…) but even because of CAD/DAM.

Case description: Assisted by CT scan imaging, the entire bone structure can be rebuilt virtually on computer to help plan the implant surgery, software such as Facilitate -Simplant -CEREC is used to accurately calculate the best position of dental implant in 3D before the operation:

1 – three dimensional acquisition type CT scan
2 – optical impression = virtual three dimensional model
3 – prosthetic planning using CEREC software
4 – superposition data from the CT scan and CEREC system
5 – implant planning through software Galiloes Galaxis.

Discussion: CEREC system coupling to CT scan helps to determine the implant site but also the choice of type of implant, the design and positioning in 3D.

The prosthetic project is modeled virtually (digital wax up) and the surgical guide is designed by (CAD).

This new implant approach ensures speed, accuracy with many limitations: lack of access to post sites, the surgical guide depends on the type of tooth loss (dental, mucous, bone) with its risk of fracture.

Apical deviation of the position of the implant between the virtual planning and actually obtained implant position ranging between 0.6 mm and 1.2 mm.

Conclusion/Clinical significance: The Concepts have evolved and today CAI seems to be emerging as a sub discipline through the many contributions and interest it conveys: it could well sign the evolution of a new era.

P101

Digital Systems of Cast Evaluation

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Aim or Purpose: The purpose of this study is to identify the accuracy of different types of digital cast evaluation in comparison with the classical cast evaluation.

Materials-methods: We used classical model evaluation in comparison with the oral digital scan and digital model scan, by statistical data of the obtained measurements for each type of evaluation.

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Results: Statistical data showed slight differences between oral and model measurements, in comparison to the classical cast measurement.
Conclusions: Digital impression is more accurate, fast and offer reduced manufacturing time for the finite prosthesis.

P102

Retrospective Clinical Comparison of Endocrowns and Crowns for Restoration of Devitalized Teeth

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Aim: To make a retrospective analyze of the clinical outcome of restorations of endodontically treated teeth with crowns and endocrowns.
Materials-methods: 120 teeth were restored on 94 patients on posterior teeth. The patients has been separated in two groups: Group A – 50 teeth have been restored with a post and core and a fullceramic crown. Group B – other 70 teeth have been restored with endocrowns. All the teeth have been scanned with an intraoral scanner and the restorations have been milled, using a milling unit.
The patients were examined each 6 months in a period of 5 years. The following parameters were examined: debonding, survival of the restoration – fracture, discoloration, survival of the tooth-fracture, probing depth, PBI, plaque-index, X-ray.
Results: Both groups showed excellent survival rate. The restorations from group A had 1% debonded, 5% fractured and showed slightly differences of the probing depth and PBI index. The patients from group B –2% of the endocrowns were debonded, 3% were fractured. The average probing depth and PBI didn't changed significantly, during the observation period.
Conclusions: There were no significant differences between the two groups. Both types of restoration can be used with a predictable clinical success.

P103

The Tooth Enamel Surface Reproduction in CBCT Scan Segmentation

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Aim or Purpose: The basis of the study was the tracing reliability of tooth enamel surface through visual segmentation of images acquired from a CBCT scan.
Materials-methods: An individually fabricated phantom consisting of 4 specimen of materials characterised by different, measerable density and human molar tooth submerged in water.
The CBCT scans were prepared using CBCT PaxReve3D (Vatech). The spacial model segmentation has been done using EZ3DPlus software and used for comparative analysis.
The segmentation method being used was based on separation of standard samples by tresholding of greyscale spectrum. The span of spectrum compared to premeasured structure density allowed for calibration.
Dimensions of specimens representations obtained from the CBCT were compared to dimensions of actual specimens.
Results: The mean deviation from diameter dimension was 0.27 mm and mean deviation from length measurements of specimen oscilated around 1.27 mm.
The visibility range for specimens ranged from 588 to 3626 shades of grey for different specimens.
Conclusions: The mean diameter reproduction error ranged from 0.03% to 14%.
The natural tooth enamel segmentation in CBCT image allows for reproduction of clinical crown Surface with mean diameter reproduction error of 4.42% with standard deviation of 4.485%.

Theme 2: Oral Health and Systemic Health

P271

Occupational Risk of Blood-Borne Infections – Knowledge among Dental Students

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The dentist's work carries risk of contact with a number of dangerous infectious pathogens. These include among others: herpes simplex virus, staphylococcus, streptococcus, cytomegalovirus, hepatitis B, hepatitis C and HIV. Infections in a dental practice can spread by direct contact with blood, secretions of oral cavity and respiratory tract, as well as indirect contact – through contaminated instruments and contaminated surfaces in a surgery.
The aim of this study was to assess the level of the awareness of fifth year dental students of risk and prophylaxis to blood-borne infections at their job.
Materials and methods: Research was conducted in years 2011, 2012, 2013 and 2016 and involved 325 fifth year dental students from Medical University. An authorial survey, created especially for this study, was used. The questions concerned probable ways of infection, both direct and indirect protection of the doctor and patient, the treatment after exposure, ability to recognize symptoms of AIDS in the oral cavity and respondents' attitude to potentially infected patients.
Results: Research shows an insufficient knowledge of prevention infection blood-borne pathogens and treatment after exposure among prospective dentists.
Conclusions: In relation to this the increasing students education in this field throughout the undergraduate training is needed. Not only the strictly medical knowledge of blood-borne infections but most of all practical proceedings should be taken into account.

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Poster Session 23 | 08.09.2016, 10:00–11:00 | Poster display 3

Theme: Periodontics

P104

Cyclosporine and Phenytoin Effects on Matrix-Metalloproteinase Expression in Gingival Hyperplasia

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Aim or Purpose: Since the cellular mechanisms behind that has remained unknown especially in pediatrics, the aim of this study was to investigate the effect of CSA and PHT on the bio gene marker expression and compare it among adults and pediatrics.
Materials-methods: Gingival fibroblasts which had been harvested from adults and pediatrics with normal gingiva were incubated with CSA and PHT, and then cultured for 48 h. MMP (1, 2), TIMP and mRNA level in culture were determined by reverse transcription polymerase chain reaction (RT-PCR), amount of TGFB and EGF were assessed by enzyme-linked immunosorbent assay (ELISA). The alpha error level was set at 0.05 for statistical significance.
Results: CSA and PHT stimulated the TGFB and CATB productions and inhibited expression of MMP1 by fibroblasts. CSA suppressed TIMP in pediatrics but PHT stimulated its expression.
Conclusions: The results suggest that CSA and PHT have different effects on bio gene marker expression in adults and pediatrics or drug-induced gingival overgrowth is being affected by different cellular pathways in pediatrics in contrast to adults.

P105

Periodontitis is Associated with Diabetic Status in Thai Adults

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Aim or Purpose: To investigate the associations of periodontitis with pre-diabetes and diabetes.
Materials-methods: This cross-sectional study included 2,776 subjects, aged 32–66, who worked at the Electricity Generating Authority of Thailand. The study was approved by the local ethics committee. According to the American Diabetes Association diagnostic criteria, subjects were divided into three groups: normal blood glucose, pre-diabetes, and diabetes. Using the CDC/AAP case definition, the severity of periodontitis was classified as no/mild, moderate, and severe periodontitis. Periodontal parameters, including mean clinical attachment level (CAL), mean probing depth (PD), and % sites with PD >=5 mm or CAL >=4 mm were calculated for each individual. Multinomial logistic regression analysis was used to examine the associations between periodontitis severity or periodontal parameters and diabetic status, adjusting for age, gender, education, family history of diabetes, body mass index, dyslipidemia, and hypertension.
Results: There were 454 (16.4%) and 209 (7.5%) participants diagnosed with pre-diabetes and diabetes, respectively. After adjusting for confounders, severe periodontitis was significantly associated with pre-diabetes and diabetes with odds ratios of 1.5 (95% CI: 1.0–2.1, $p = 0.032$) and 2.2 (95% CI: 1.3–3.9, $p = 0.006$), respectively. Mean PD, mean CAL, and % sites with PD >=5 mm or CAL >=4 mm were significantly associated with diabetes ($p < 0.001$), but not with pre-diabetes ($p > 0.05$).
Conclusions: Severe periodontitis was associated with both pre-diabetes and diabetes, independent of known traditional risk factors.

P106

Treatment of Multıple Gıngıval Recessıons wıth Tıtanıum Platelet Rich Fibrin

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Introduction: In the presence of gingival recessions, aesthetic problems, root sensitivity and caries can occur. This case report presents treatment of a patient who has multiple gingival recessions on the facial aspect of upper incisors by titanium prepared platelet rich fibrin. The fibrin of T-PRF is more tightly woven and thicker than classic platelet-rich fibrin. T-PRF have a firmer network structure, and longer resorption time in the tissue than PRF.
Case description: Thirty four and thirty-seven years old male patients having Miller class I and II gingival recessions on the facial aspect of upper incisors. Horizontal incisions extending to each side of the teeth to be treated included sulcular incisions at sites of recessions and submarginal oblique incisions at interdental sites in order to facilitate the planned coronal repositioning of the flap over the exposed root surfaces. The envelope flap was raised with a split-full-split approach in the coronal- apical direction. A double layer membrane was formed from T-PRF and was stabilized on the exposed root surfaces with sutures. Then the flap were coronally positioned to cover the T-PRF membrane completely. At the end of the third month, recession depth values decreased from 0.5 mm to 3 mm.
Discussion: T-PRF membrane is safe and effective for the treatment of Miller I and II gingival recession defects, without the significant morbidity or potential clinical difficulties associated with donor-site surgery.
Conclusion/Clinical significance: The root coverage procedure, involving T-PRF membrane advanced flap approach is a safe and predictable procedure for Miller class I–II multiple recession defects.

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P107

"In vitro" Assessment of the Influence of Physicochemical Properties of Water and Toothpaste Upon Solubility of Food Components (Fats and Carbohydrates)

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Summary: The aim of the experiment carried out by the authors was to validate or reject the theses assumed after observation of populations using oligomineral water for hygienic and consumption purposes, being the subject matter of our study:

1 The assessment of water pH effect upon solubility of toothpastes
2 The assessment of water pH effect upon solubility of fats and carbohydrates
3 The assessment of water pH effect upon solubility of fats and carbohydrates combined with toothpastes.

Since there are no publications regarding in vitro examinations of the influence of water upon the processes of toothpastes, carbohydrates and fats dissolution, the authors undertook to carry out such an experiment in an innovative way. The work methodology was our own design. It employed the analysis of processes occurring in the oral cavity while consuming food and while performing oral cavity hygiene activities. The results of the experiment are presented in tables and photographic documentation.

The experiment allowed for ascertaining as follows:

1 The higher the pH value, the better the solubility of toothpastes.
2 Alkaline environment enhances fat and carbohydrates dissolution, thus triggers preliminary digestion.
3 The presence of detergents in carbohydrates and fat environment accelerates their dissolution process in every environment; in real terms, it is beneficial for acidic environment.

P108

Clinical Evaluation of Coronally Advanced Flap on Root Coverage for the Treatment of Single Gingival Recessions with Thick Gingival Biotype

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Introduction: Recent evidence indicates coronally advanced flap (CAF) as an effective periodontal plastic surgical procedure for the treatment of Miller Class I/II recession defects. Gingival biotype has been reported as an important factor that could influence the clinical outcomes of root coverage procedures. The aim of this clinical study was to evaluate the clinical results of covering of the denuded root surface in patients with thick gingival biotype by the use of (CAF).

Case description: The present study was conducted on 14 systemically healthy patients (7 women and 7 men), with Miller Class I single recession defects. The parameters recession depth (RD), recession width (RW), probing depth (PD), height of keratinized tissue (HKT), percentage of root coverage, gingival thickness (GT) were recorded at baseline. CAF protocol was performed. All parameters, except for GT, were remeasured at 6 months. Descriptive statistics for the studied variables were presented as mean, standard deviation, minimum and maximum values. Wilcoxon test used to compare periods (0–6th month).

Discussion: The mean percentage of root coverage was $82 \pm 23\%$. CAF procedure resulted in statistically significant decrease in RD and RW and increase in HKT at 6 months.

Conclusion/Clinical significance: The 6-month results of this study demonstrated that CAF procedure provide benefits for the patients in terms of RH reduction, HKT gain, mean defect coverage for the treatment of Miller Class I single recessions with thick gingival biotype.

Poster Session 24 | 08.09.2016, 10:00–11:00 | Poster display 4

Theme: Implantology

P109

Effect of Abutment Angulation and Material in Anterior Maxilla

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Aim or Purpose: Angled zirconium abutments are often used for dental implants placed in the anterior maxilla due to the residual ridge position and esthetic considerations. The purpose of this study was to assess the stress and strain distribution in peri-implant bone in the anterior maxilla using finite element analysis (FEA).

Materials-methods: Three-dimensional finite element models were designed using ANSYS software for four abutments: (i) an implant with a straight titanium abutment, (ii) straight zirconium abutment (iii) angled titanium abutment and (iv) an angled zirconium abutment in the anterior maxilla. Regular neck implant (4.5×12 mm ITI Straumann) was used. The maxillary bone was modeled as type 3 and the thickness of cortical layer was considered to be 0.5 mm. Oblique loads of 178N were applied to the cingulum area of all models.

Results: The results showed that maximum stresses concentrated at the implant-abutment connection in the cervical one-third of crestal bone and mainly in the labial surface. Abutment material had no significant effect on distribution of stress and strain. Angled abutments transferred lower levels of stress and strain to bone compared to straight abutments. Level of stress in angled abutments was 28% lower than straight abutments. The amount of strain in both angled and straight abutments was within the acceptable range.

Conclusions: Within the limitation of this study, it was concluded that using an angled abutment might decrease the strain in the

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bone when restoring implants in the anterior maxilla compared to the use of straight abutments.

P110

Examatous Dermatitis as an Allergic Reaction after Dental Implant Placement

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Introduction: Dental materials may provoke allergic reactions that affect either skin or mucosal tissues. In this case report, a rare complication of generalized examatous dermatitis resulted from type 4 titanium alloy dental implant was presented.
Case description: A titanium dental implant was inserted under local anesthesia in the mandibular left first molar region of a twenty-five years old male patient. After postoperative 1 month, patient attended to our clinic with a complaint of acute examatous patches on his face and extensor and flexor regions of his arms. Skin patch test was performed to identify the allergic antigen, however, there was no success identifying the causative agent. It was considered that dental implant might be the causative agent. Dental implant was removed under local anesthesia. The symptoms were dramatically resolved after 1 week of the removal operation.
Discussion: Titanium alloys are considered to be biocompatible materials. However, the allergic reaction may be caused by other metallic compounds which are present in the titanium alloy.
Conclusion: Dental implants may be the origin of the allergic generalized examatous dermatitis. Even it is rare, clinicians should be alert for this condition.

P111

Implant Bone Regeneration by Antibacterial Bone Derivative

Satoshi Noda
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Periodontitis, apical inflammation after tooth extraction, then keep and absorbs bone and implant treatment more difficult.
Techniques minimize bone resorption after tooth by tooth extraction socket into the artificial bone and autogenous bone and socket preservation have been made.
It becomes possible to minimize bone augmentation implant implanted at socket preservation by.
To say other than implants denture, bridge, more effective treatments. However, but it is difficult to put as much as possible for artificial bone and autogenous bone and suture.
Treatment can easily, without any need to collagen and membrane so no bones become possible without suture for artificial bone and autogenous bone to mix antibacterial bone derivatives (Nodasatosin), by simply covering become easily infected in resin and reduces the operating time, turn the method was developed.

P112

Comparison of the Osseointegration of Implants with Two Kinds of Surfaces in Smokers and Non-Smokers

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Aim or Purpose: The aim of the current study is to make comparison between the osseointegration of implants with two kinds of surfaces in smokers and non-smokers.
Materials-methods: Four groups of patients with 25 patients in each group were observed. They all were treated with implants for at least 2 years and were at age between 25 and 65 years. Group 1 were with implants with mtx (microtexured) surface and smokers. Group 2-with the same implants and non-smokers. Group 3-with implants with trabecular metal and smokers, and group 4 – with the same implants, but non-smokers. Of every patient before placing the final crown was made CT-scan, were measured the pocket depth around the crowns, the papilla bleeding index and the plaque index, also and the stability-the ISQ values. The same was done at the first and second year recall period.
Results: The implants showed 100% survival rate for the 2 years recall period. All indexes showed normal values, as the results between the patients from the four groups were with close rates and the ISQ values were over 70 for both groups.
The healing process for the smokers was average slower, the tissues were more insufficient, but in the bone ossteintegration and regeneration we didn't find significant differences.
Conclusions: The treatment with the two different implant surfaces in smokers showed good average success rate, with no significant differences on nonsmokers.

P113

The Implant Surface Area: A Finite Stress Analysis

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Aim or Purpose: To study the effectiveness of implant dimensional parameters by using three-dimensional finite element technique.
Materials-methods: Titanium implants with a diameter of 3.75 mm and random lengths of 8, 10 and 12 mm, and with a length of 10 mm and random diameters of 4, 5 and 6 mm, respectively were analyzed. The bone – implant interface was modeled by a block bone implants shaped as a double layers: cortical, exterior, with a thickness of 1.4 mm and cancellous, interior. Bone environment was homogeneous and isotropic. Applying constraints and loads were based on data provided by Merick-Stern and resulted from the 3 D decomposition of a masticatory force amounting to 115.2 N applied at an angle of 75° to the occlusal plane. Analysis was performed using ABAQUS software, version 6.5.

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Results: For 3.75 mm diameter and 8 mm length, the residual stresses were almost 3 times more than for the same diameter and 12 mm length. The residual stresses caused by loading an implant with 4 mm diameter and 10 mm length were smaller by about 13.6% as compared to 3.75 mm diameter and same length. Growth at 5 and 6 mm diameter led to an overall stress reduction about equal to 60%.
Conclusions: Short implants cause stress concentration on the neck region while large diameter transfers pressure more evenly in the bony wall interface. Influence of length on the equivalent stress is increasingly reduced as surface area of the implant increases due to circumferential expansion.

Poster Session 25 | 08.09.2016, 11:30–12:30 | Poster display 1

Theme: Others

P114
Radiographic Image of Tonsilloliths on Panoramic Radiographs in Polish Patients
Ingrid Rozylo Kalinowska, Katarzyna Denkiewicz, T. Katarzyna Rozylo
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Aim or Purpose: Calcifications found in the crypts of palatal tonsils, called tonsilloliths, are considered an incidental finding on dental panoramic radiographs. Dentists and radiologists should be aware of their radiological appearances in order to avoid overdiagnosis of sialolithiasis and unnecessary imaging diagnostics. The objective of the research was to examine the prevalence and characteristics of tonsillar calcifications visible in dental panoramic radiographs in a sample of Polish population.
Materials-methods: One thousand consecutive digital dental panoramic radiographs taken by means of Planmeca Prostyle X-ray machine in 577 females and 423 males aged from 5 to 88 years comprised the material of the study. There was assessed presence of tonsilloliths, their characteristics (single or multiple) as well as localization according to 6 regions (1–3 shadows cast on the mandibular ramus above, at and below the level of soft palate, 4 – below mandible, 5 – below and posterior to mandibular angle, 6 – posterior to mandibular ramus).
Results: Tonsilloliths were detected in over 24% of the panoramics. Prevalence in females and males was comparable. The findings were more prevalent in the age groups 30–39, 50–59 years (37.5%) and 40–49 years (35%). They were far less frequent in patients below 30 years of age. Tonsillar calcifications were found in 511 regions in 242 patients and in 116 cases they were single. Almost 30% of the calcifications were detected in the region 2 and 25% in the region 3.
Conclusions: Shadows of tonsilloliths are a frequent incidental finding on panoramic radiographs.

P115
An Investigation on Trait Anxiety as a Predictor of Dental Anxiety
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Aim or Purpose: This investigation was designed to examine the relationship between dental and general anxiety. Also the socio-demographic variables were considered in the study.
Materials-methods: The sample consisted of 138 adult patients (65 women and 73 men) aged 39.3 ± 14 years. The Polish version of Corah's Dental Anxiety Scale (DAS) and State-Trait Anxiety Inventory (STAI) were used.
Results: All correlations were statistically significant ($p < 0.05$). Dental anxiety is significantly correlated to the state (0.9016) and trait anxiety (0.8643). Strong correlation was found between dental anxiety and investigated factors: age, sex, education and the date of the last dental appointment.
Conclusions: Our study indicates that dental anxiety is connected to the general tendency to be apprehensive and to manifest anxiety. It also confirms that dental anxiety is associated to socio-demographic factors, although they are not the only important parameter in this relation. Trait anxiety may be a useful predictor of patients' predisposition to dental anxiety.

P116
Effect of Pro-Argin™ Technology on Oral Health-Related Quality of Life and Dentine Hypersensitivity (DHS) vs. Negative Control over 24 Weeks
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Purpose: This double-blinded, randomized, parallel-group, multicentric study evaluated the impact of Pro-Argin™ technology on oral health-related quality of life compared to negative control without desensitizing ingredients in subjects with established dentine hypersensitivity (DHS) over 24 weeks.
Material-methods: In three involved study centers in France, Switzerland and Germany patients with DHS were recruited. Subjects having at least 2 teeth (no molars) with air blast dentine hypersensitivity score 2 or 3 (Schiff Cold Air sensitivity Scale) were randomly assigned to either the control or test group and treated with single application of respective in-office paste

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followed by at-home toothpaste use for 24 weeks (twice daily) (control products without desensitizing ingredients and test products containing 8% arginine). DHS assessment and oral hard and soft tissues examination were conducted at baseline, after 2, 4, 8, and 24 weeks of brushing. The primary study parameter was defined as change in oral health-related quality of life measured by validated Oral Health Impact Profile (OHIP)-49 questionnaire between baseline and 24 weeks between both groups.

Results: A total of 273 subjects completed the study. The OHIP-49 mean after 24 weeks (adjusted for baseline) in the test group was statistically significant lower than in the control group (p-value 0.005).

Conclusions: The results of this double-blind clinical study shows that the in-office paste and toothpaste based on Pro-Argin™ technology containing 8% arginine provide significant improvements in quality of life in subjects suffering from dentine hypersensitivity compared to control products. This study was supported by Colgate-Palmolive Europe, Therwil, Switzerland.

P117

Computer Capillaroscopy Assisted Assessment of Stress Level in Children Undergoing Dental Treatment under Conscious Sedation

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Aim or Purpose: To improve quality of dental treatment in children by combination of conscious sedation and local anesthesia.

Materials-methods: The research involved 298 children. 256 of them were treated under MCS and 42 without MCS. The groups 0–3 and 3–6 year olds. Therapeutic and surgical treatment features were analyzed separately. MCS was conducted by means of intramuscular injection of midazolam. BIS, arterial blood pressure, heart rate, respiratory rate, and SpO2 were monitored at 4 stages while the following microcirculation parameters were recorded by CC No 4: density of capillary net, the size of arterial, venous and transitional microcirculation links (ML), linear and volume blood flow velocity, perfusion balance.

Results: Statistically significant differences were obtained regarding the dynamics of parameters while comparing the group receiving midazolam with the reference group.

At comparison of therapeutic and surgical groups (without MCS) statistically significant differences were noted for the following parameters: therapeutic group – reduction of the capillary venous link and linear velocity, increase in perfusion balance; reference group – increase of the capillary venous link and linear velocity, reduction of perfusion balance.

Conclusions: Children undergoing dental treatment without MCS are affected by stress. The degree of stress in surgical patients was noted to be significantly higher. The absence of physiological parameters changes in children treated without MSC is not a proof of the absence of stress. The dose of 0.15 mg per kg is optimal for the comfortable level of MSC. The obtained data is true for both age categories.

P118

Emotional Intelligence, Generalized Self-Efficacy and Professional Success of Dental Personnel

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The present work belongs to the area of research on the psychological aspects of human achievement. The main problem of the present study was to determine the relationship between emotional intelligence and the sense of general self-efficacy as related to the success achieved by a dentist, who in his work also acts as a leader.

The aim of this study is to answer the following question: what is the significance of emotional intelligence and generalized self-efficacy for dental success (KBET/166/B/2012 Bioethics Commission).

Materials-methods: The study included 103 dentists working in health care institutions. The study was based on the Emotional Intelligence Questionnaire, The General Self-Efficacy Scale and, constructed for the purpose of this study, The Dentists' Professional Success Scale.

Results: The results analyzed within the framework of a multivariate regression showed that an increase in emotional intelligence and generalized self-efficacy resulted in an increase in the level of professional success reported by the surveyed medical staff. Both predictors allowed us to actually predict the level of the dependent variable, although it is worth mentioning that emotional intelligence is a slightly stronger predictor (beta = 0.477, $p < 0.01$) than self-efficacy (beta = 0.255, $p < 0.01$). The hypothesis was confirmed: the higher the level of emotional intelligence and self-efficacy, the higher the level of career success.

Conclusions: The results can provide an argument in favor of a wider range of postgraduate trainings offered to physicians by introducing educational programs designed to help doctors develop their emotional intelligence and general self-efficacy.

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Poster Session 26 | 08.09.2016, 11:30–12:30 | Poster display 2

Theme: Materials

P119

Effect of Bleaching Systems on Composite Bond Strength to Dentin

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Aim or Purpose: Studies have shown that by-products of hydrogen peroxide (HP) degradation released during dental bleaching influence the polymerization of adhesive systems and composite resins, causing a reduction in the shear bond strength to enamel and dentin.

This in vitro study evaluated the effect of four in-office HP bleaching gels on the shear bond strength of a hybrid composite to dentin.

Materials-methods: Forty extracted molars were mounted and sectioned to obtain flat dentin and then randomly allocated to 5 groups (n = 8): group 1: bleached with 35% carbamide peroxide (approx. 12.2% HP), group 2: bleached with 32% HP (LED activation), group 3: bleached with 40% HP, group 4: bleached with 46% HP (diode laser activation) and group 5: control (no bleach). Composite resin cylinders fabricated for the shear bond strength testing were built up after 7 days of sample storage in Hank's solution (100% humidity, 37°C). Restored samples were stored for another 24 h. Shear bond strength was determined with a universal testing machine (PCE-200, Great Britain) at a crosshead speed of 1 mm/min until fracture.

Results: Group 1: 4.52 ± 1.36 MPa, group 2: 3.18 ± 1.45 MPa, group 3: 3.70 ± 0.56 MPa, group 4: 4.00 ± 1.15 MPa and group 5: 4.60 ± 0.62 MPa. ANOVA and the Tukey post hoc test showed no statistical significance between groups ($p > 0.05$).

Conclusions: Dentin bleaching with different HP bleaching gels did not adversely affect the shear bond strength of composite to dentin.

P120

Water Sorption and Solubility of Bulk-Fill Composites Polymerized with a Third Generation LED LCU

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Aim or Purpose: The purpose of this study was to compare the water sorption and solubility degrees of high viscosity bulk-fill composites applied by curing with a current light source.

Materials-methods: Three different high-viscosity bulk-fill composite resins X-tra fil, Tetric N-Ceram Bulk Fill, SonicFill and a microhybrid composite resin as a control group Filtek Z250 were used in this study. Disk shaped specimens 8 mm in diameter and 4 mm thick were prepared from composite resins and then the specimens were cured by three different modes of a third generation LED light curing unit (LED). The levels of water sorption and solubility were measured according to ISO 4049:2009 spesifications after immersion in distilled water for thirty days. Data were analyzed using two-way ANOVA and post hoc Tukey's test ($p < 0.05$).

Results: Among the all tested composite groups, Filtek Z250 group had the highest sorption values followed by Tetric N-Ceram, SonicFill and X-tra fil. Of the different curing modes tested, VALO LCU in extra power mode resulted in the highest sorption values. The highest solubility values were measured for SonicFill, while no statistically significant differences were found among other groups.

Conclusions: The polymerization with high power modes of 3. LED LCU increased the water sorption values of all tested composites. Also traditional composite group exhibited more water sorption values than bulk-fill composites. The reduction in polymerization time significantly increased the solubility of SonicFill composite resin group.

P121

Shrinkage Stress of Dental Composites

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Aim: Polymerization shrinkage and shrinkage stress of crosslinking composite can lead to micro-leakage and clinical complications. Lately introduced materials with modified polymer matrix and low-shrinkage were supposed to limit shrinkage stress and allow for polymerization in thick layers amounting up to 4 mm. The purpose was to compare shrinkage stress generated by modified or conventional materials in different methods of cavity restoration.

Materials-Method: Calibrated orifices in acrylic plates were filled with dental composite and polymerized for 30 s per side with LED curing light. Thirty composites were tested, for each material five samples were fabricated. The amount of stress generated by different composites (universal and flowable with modified or conventional polymer matrix) with two methods of cavity restoration (bulk fill method, stratification technique) was evaluated in Transmission Polariscope FL200/Gunt and NIS Elements/Nikon program. The photoelastic study was based on the analysis of dimension and arrangement of fringes. Shrinkage stress induced by restoration shrinkage were calculated on the basis of elasticity theory.

Results: The tested composites generated during polymerization differentiated shrinkage stress (4–20 MPa). Low-shrinkage materials generated low stress, while higher shrinkage stress was observed when bulk fill technique was applied.

Conclusions: Materials with modified polymer matrix generated the lowest stress, but some of conventional materials produced relatively low shrinkage stress. The stratification technique allowed

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for significant reduction of shrinkage stress, even when low-shrinkage materials were applied.

P122

The Mechanical Properties of Dentine for 3-D Finite Element Modeling

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Aim or Purpose: The purpose of the study was to evaluate the degree of anisotropy and determine the elastic properties of an equivalent homogenous material model of human dentine, as well as to compare isotropic and anisotropic dentine FE-models.
Materials-methods: Luciano and Barbero's analytical and numerical dentine homogenization was performed; Young's modulus (E), Poisson's ratios (v) and shear modulus (G) were calculated. The E-modulus of the dentine bulk was 28.0GPa, Poisson's ratio (v) 0.3; the tubules density was based on the literature data. 3-D finite element models of orthotropic and isotropic (E = 18GPa, v = 0.3) dentine were created, loaded and compared. Ansys®14.5 and CodeAster®11.2 software was applied.
Results: Dentine anisotropy ranged from 6.9% to 35.2%, depending on the location. E-modulus and G-modulus were as follows: E1 22.0–26.0GPa, E2/E3 15.7–23.0GPa; G12/G13 6.96–9.35GPa and G23 6.08–8.09GPa.
The displacement values were higher for the isotropic than the orthotropic model, reaching up to 16% by shear load, 37% by compression and 23% in the case of shear with bending. Strain values were higher in the isotropic model, up to 35% for the shear load, 31% for compression and 35% in the case of shear with bending. The decrease in volumetric fraction and diameter of tubules induces an increase of the shear modulus (G) and Young's modulus (E) values. Anisotropy of the dentine applied during FEM analysis decreases the displacements and strains values.
Conclusions: The numerical and analytical homogenization of dentine shows similar results. Oversimplification of the dentine mechanical properties may affect the results of an FEM analysis.
Supported by National Science Centre grant N518283740.

P123

An Innovative Dental Implant Filled with Functional Structure

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Aim or Purpose: The aim of this work is to present a newly designed construction of a dental implant partially filled with functional structure, which resembles bone tissue architecture. Such a structure of an implant enables its growth into the bone tissue and decreases strains around the implant, which cause micro-cracks of the bone tissue surrounding the implant.
Materials-methods: To design the implant we conducted quantitative analysis using Ansys software. The results were compared with literature results for teeth. In both cases a simplified model of the jaw had been designed with compact and spongy bone tissue.
Results: Implant with functional structure disperses strains throughout the implant to the surrounding bone tissue without strain concentration. Also strains around the implant partially filled with the functional structure are small and similar to those existing in teeth.
Conclusions: Widely available dental implants are solid and therefore cause micro-cracks as a result of not moving the load to the surrounding bone. Such strains are concentrated in the upper part of the implant. As a result of too big strains, micro-cracks that may appear become bigger causing implant destabilization. Consequently, there is a bigger hole in the jaw that has to be filled with an implant again. To avoid this, a dental implant partially filled with functional structure may be used.

Poster Session 27 | 08.09.2016, 11:30–12:30 | Poster display 3

Theme 1: Prosthodontics

P124

Functional and Esthetic Rehabilitation of a Young Patient with Amelogenesis Imperfecta

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Introduction: The common problems associated with amelogenesis imperfecta are sensitivity, loss of vertical height, poor esthetics and functionality. This disorder has also an adverse impact on oral health and may cause physiologic problems to young patients. Recent materials and improved techniques have enabled a more conservative esthetic and functional rehabilitation of patients with such oral disease.
Case description: A 17 year old patient was referred to the Clinic of Prosthodontics (Faculty of Dental Medicine, Timişoara) with chief complaint of sensitivity, esthetic and functional inadequacy of teeth. A thorough clinical examination and analysis were carried out to assess the esthetic and functional problems of the patient. After performing the periodontal, surgical and endodontic treatment, the prosthetic therapeutic decision was for full mouth rehabilitation with zirconia fixed dental prosthesis. The first step in a complex case such as this is to create a blueprint for the final restorations in the form of a diagnostic wax-up. Provisional restoration with the new VDO was inserted for a 6 weeks period, then the final zirconia restoration was fabricated and cemented.
Discussion: The treatment plan of a patient with severe esthetic and functional problems due to amelogenesis imperfecta was developed by identifying achievable clinical goals that included establishing the correct VDO, dentofacial harmony, keeping in mind smile design principles.

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Conclusion/Clinical significance: This case report reflects the importance of using a strategic planning in addition to a multidisciplinary approach in managing the treatment of a young patient with amelogenesis imperfecta.

P125

An Esthetic and Multidisciplinary Treatment Approach of Dentoalveolar Defect Patient

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Introduction: Dentoalveolar trauma because of traffic accident or other reasons is prevalent especially in young and children. Solving this dental problem permanently needs multidisciplinary approach especially when the bone and teeth are absent.
Case description: In this case report, 14 years old girl had a traffic accident and as a result had maxilo-mandibular defect. The jaws fixation is made with mini plate and after the healing period of surgery, dental implant treatment was applied to the patient. (Three implant for upper jaw and four implant for lower jaw). Implant supported fixed dental prostheses (FP-3) are made after implant osseointegration and thus esthetic, function and fonation are ensured at the end of the multidisciplinary treatment. Clinical and radiographic control was made during 2 years.
Discussion: Although there are removable prosthetic options, nowadays, implant supported fixed dental prostheses are accepted as successful treatment option and increase retentiveness of restoration at dentoalveolar defect patient.
Conclusion: As the height crown length is inevitable in these patients FP-3 type prostheses are suitable for restoring both soft tissue and tooth structure and implant supported fixed partial dentures (FP-3) are accepted as successful treatment procedures.

Theme 2: Materials

P126

Effect of Laser Bleaching on Staining Susceptibilty of Teeth

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Aim or Purpose: The aim of this study was to evaluate the effect of laser bleaching on staining susceptibility of teeth.
Materials-methods: 72 extracted human incisors were used for the study. The teeth were randomly divided into two groups; Office bleached with diode laser (940 nm, Epic, Biolase, USA) using 35% hydrogen peroxide (Laserwhite20, Biolase) and unbleached (control). After storage of teeth in artificial saliva for 21 days, the baseline color values (L*, a*, b*) were measured with a spectrophotometer according to the CIELab color scale. Each group was then randomly divided into four subgroups (n = 9) The specimens in each group were immersed in one of the three staining solutions (tea, coffee, cola zero) or distilled water as control for 15 min 3 times a day. After 7, 14 and 30 days of immersion, color measurements were repeated. Color change values were calculated (ΔE*ab) and the data were subjected to repeated measures ANOVA. Multiple comparisons were done by Bonferroni test ($p < 0.05$).
Results: ΔE values of laser-bleached and tea, coffee and water immersed groups were not significantly different from unbleached group ($p > 0.05$). Significant differences between unbleached and laser-bleached group was only observed in cola zero solutions at day 14 ($p < 0.05$). Regardless of bleaching and immersion periods, water did not change the color of teeth. Regardless of bleaching, immersion in cola zero solution showed significant differences from tea and coffee at day 30 ($p < 0.05$).
Conclusions: The most severe discoloration was apparent with cola zero. Immersion in cola zero seemed to affect laser bleached teeth more than unbleached teeth.

Theme 3: Aesthetics

P127

Management of Subgingivally Fractured Lateral Incisor in a Single Appointment

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Introduction: Subgingival crown fracture of an endodontically treated tooth remains a demanding clinical task. Depending of the clinical conditions the treatment plan can differ.
Case description: In this case report, the authors describe the protocol of multidisciplinary management of subgingival crown-root fracture of an endodontically treated left maxillary lateral incisor due to the poor quality of a previous reconstruction in 35-year-old male patient. After removal of the fractured crown and administration of local anaesthetic, full thickness buccal and palatal flap surgery was performed in order to expose the cavity margins. A rubber dam was applied. Root canal re-treatment was carried out with rotary instruments and a warm vertical compaction of guttapercha (ProTaper F4 (Densplay), System B+ Obtura, 2 Seal (VDW)). The glass-fibre post was cemented and direct crown reconstruction with composite resin was performed (GC Fibre Post 1.6, Essentia MD and LD, GC Europe) at the same appointment. The rubber dam was removed and the flaps positioned and sutured. The patient was scheduled for orthodontic extrusion.
Discussion: The treatment of a subgingivally fractured anterior tooth requires consideration of periodontal, endodontic, restorative and occlusal factors. Gaining a sufficient ferrule is crucial, and can be obtained using surgical or orthodontic treatment.
Conclusion/Clinical significance: The presented multidisciplinary approach to a tooth with crown fracture is a conservative and economical technique that provides the ability to restore a subgingival tooth fracture in a single appointment. This phase must be followed by surgical or orthodontic treatment in order to achieve a ferrule sufficient for definitive restoration.

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P128

Resin Infiltration Effect on Color Change in White Spot Lesions

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Aim or Purpose: The aim of this in vitro study was an assessment of the influence of resin infiltration on color parameters of proximal enamel caries surfaces.
Materials-methods: The study was performed with extracted human teeth (premolars and molars), with a visible proximal white spot lesion without cavitation. After cleaning with prophypaste and after rinsing with tap water, one defined spot of each lesion was carefully measured with laser fluorescence pen (DIAGNOdent pen). Afterwards each of white spot lesion was checked with spectrophotometer (SpectroShade). Resin infiltrant (Icon) was applied on every white spot lesion and the infiltrated surface was then reassessed with spectrophotometer to determine L*, a*, b*, C* and h* color parameters and color differences (ΔE*).
Results: After infiltration it was observed that all specimens underwent a change of analyzed parameters of color. The significant increase in spectrophotometer readings after infiltration was only for b* (yellow positive) and C* (intensity) parameters suggesting a higher saturation in color of treated lesions.
Conclusions: It can be concluded that resin-infiltrated white spot lesions change spectrophotometer measurements of surfaces under in vitro conditions. The color stability of this technique should be followed up through in vivo studies.

Poster Session 28 | 08.09.2016, 11:30–12:30 | Poster display 4

Theme: Caries

P129

Icon Aplication to Initial Proximal Caries: A 1-Year Clinical Follow-Up

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Aim: Resin infiltration is a new minimal invasive treatment to arrest the progression of initial caries lesions. The aim of this randomized controlled prospective clinical trial was to evaluate the efficiency of resin infiltration application to initial proximal caries lesions.
Materials-methods: 40 patients with 2 or more noncavitated interproximal caries lesions were included this study. In 40 young adults, 40 pairs of proximal lesions with radiological extension into the inner half of enamel or the outer third of dentin were randomly allocated to two treatment groups. Standardized geometrically aligned bitewing radiographs were obtained with individual biting holders that made from silicone impression material. In the test group, lesions were infiltrated by Icon. A placebo treatment was performed in the control group. All participants received instructions for diet, flossing, and fluoridation. The lesion progression after 1 year was assessed by digital-subtraction radiography. Wilcoxon test was used for statistical analysis.
Results: In the test group, lesion progression was not observed (0/40) but in the control group, lesion progresion ratio was % 15 (6/40). This difference between groups was sitatistically significant.
Conclusion: Treatment with resin infiltration technique of initial proximal caries lesions was effective for reducing lesion progression.

P130

Non-Invasive Techniques vs. Conventional Treatment for Treating Carious Lesions in Primary Teeth

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Aim: To study the results of treating carious lesions in primary teeth using different methods.
Methods: A pilot study was conducted in Volgograd Pediatric Dental Clinic No 2. Parents' informed consents were obtained. In seventy-two 2 to 5-year-old children with dental fear occlusion surfaces of 148 primary molars diagnosed with ICDAS-II score 3–5 were treated by an experienced dentist using three methods. The conventional invasive method (drilling and filling) was used in 62 molars (G1), the non-invasive method (sealing cavitated caries lesions with glass ionomer cement without excavation of carious dentin) was used in 57 molar and the application of ozone gas to the surface and sealing cavitated caries lesions was used in 29 molars (G3). Immediately after the treatment of each tooth a 5-point visual analog scale (VAS) was used to reveal parent's evaluation of the treatment (0 – no discomfort for a child during treatment, 5 – significant discomfort). A chi-squared test was used to compare G1, G2 and G3 results.
Results: Using the VAS, 13 of 62 (20.9%) cases in G1, 50 of 57 (87.7%) cases in G2 and 25 of 29 (86.2%) cases in G3 were rated as no discomfort up to mild discomfort. Significant, unacceptable discomfort was recorded for 49 of 62 (79.0%) cases in G1 and 7 of 57 (12.2%) in G2 and 4 of 29 (13.7%) cases (Chi square, $p < 0.05$).
Conclusion: The results of a 6-month follow-up study the parents recognized that the non-invasive techniques more comfortable for the children as compared with the invasive technique.

P131

Seal Instead of Drill: 24-Month Follow-Up of a Post-Orthodontic Patient

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Introduction: Orthodontic patients are frequently under a high cariogenic bacteria load in their saliva and in dental plaque around fixed appliances and have limitations for interproximal plaque removal which may proceed demineralization or further

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cavitation. Resin infiltration technique is a non-invasive and effective treatment option to arrest the progression of non-cavitated caries lesions as an alternative to drilling and further destroying proximal contact leading to consecutive postoperative problems.
Case description: 15-year-old male patient with non-cavitated approximal caries lesions on upper left and right premolars were diagnosed by visual and radiographic evaluations (E2 caries for 14 distal, E1 caries for 15 mesial, D1 caries for 24 distal, E2 caries for 25 mesial) and further with laser fluoresence technique (DIAGNOdent, KavoDental, Germany).
Discussion: The lesions were infiltrated with resin infiltrant (Icon, DMG, Germany) and patient was asked to use interdental brushes beside the routine oral care. Bitewing radiographs and DIAGNOdent scores were evaluated at 6,12,18 and 24-month follow-ups. At the end of 24-month recall, no caries progression was observed for the infiltrated lesions.
Conclusion/Clinical significance: Approximal caries lesions diagnosed at initial phase without cavitation may be preserved without further progression when sealed with resin infiltrant. RI is a promising and adventegous non-invasive approach for early proximal carious lesions of young patients as an alternative non-invasive treatment choice. Further clinical and in vitro studies are required to enhance the clinical effectiveness of the novel preventive approach.

Poster Session 29 | 08.09.2016, 13:00–14:00 | Poster display 1

Theme: Prevention and Periodontal Diseases

P132
Mouthwashes Efficacy: Herbal and Allopathic, On Oral Health Among Children
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Aim: Evaluate effectiveness of herbal, chlorhexidine and sodium chlorite based mouthrinses on plaque and gingival staus of 12–14 years old schoolchildren.
Purpose: Assess efficacy of herbal, chlorhexidine and sodium chlorite mouthrinses on plaque status.
Assess efficacy of herbal, chlorhexidine and sodium chlorite mouthrinses on gingival status.
Materials-methods: Total of 105 subjects were divided into 3 groups of 35 each and randomly allotted a mouthrinse based on Latin Square Design. The subjects in the age-group of 12–14 years were randomly selected from a school in Jaipur. The mouthrinse were used for 21 days and washout of 28 days. The plaque and gingival indices were examined at baseline, 14 and 21 days.
Results: Differences between plaque and gingival scores across the mouthrinses through the examination days was small. There was some difference in the pace of effectiveness; Chlorhexidine acts quicker than herbal initially, though all mouthrinses have the same efficacy by the 21st day.
Significant differences in plaque reduction were noted between males and females across the mouthrinses on 21st day.
Statistically significant difference on Day 14 among vegetarians. Among mixed diet, the difference emerged on Day 21.
Conclusions: Equieffectiveness of the herbal mouthrinse antiplaque agent suggest natural products are effective to maintain oral health without side effects.
The study establishes efficacy of herbal mouthrinses as effective as allopathic mouthrinses. It can be used as an adjunct to routine oral hygiene practices. It is however early days to completely negate the value of Chlorhexidine and replace them with herbal alternatives.

P133
A Novel Molecular Method for Isothermal Identification of Periodontal Pathogens
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Aim or Purpose: Utilization of an innovative technique (LAMP) for amplification of nucleic acids for quick identification of periodontopathic bacteria.
Materials-methods: Our tested group, consisted of 4 males and 10 females ranging in age from 25 to 55, exhibiting signs and symptoms of chronic and aggressive form of periodontitis; Expected study size will include approximately 50 subjects. Performed studies were approved by the Poznan University of Medical Sciences Ethics Committee for Human Research. Presence of the *P. gingivalis*, *T. forsythia*, *F. nucleatum* and *A. actinomycetemcomitans* will be tested by the LAMP technique. Two different DNA extraction protocols were tested, to determine the method for yielding the fastest and most precise results. (Novabeads bacterial DNA kit and DNA Isolation Fast Preparation System – DIFAST). Confirmation of bacterial genome will be obtained by the conventional PCR assays.
Results: Thus far we have tested for and obtained positive results for *P. gingivalis* by utilization of both DNA extraction protocols. Further tests are being conducted to test for additional periodontopathogens.
Conclusions: High specificity, sensitivity and rapidity of the LAMP assay could aid dental clinicians in very fast detection and diagnosis of periodontal pathogens.

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P134

The Analysis of Using Electronic Cigarettes Among Polish Dental Students

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Aim or Purpose: The analysis of using electronic cigarettes among Polish dental students.
Materials-methods: In the survey there took part 581 people (161 men; 420 women) at the age between 20 and 30. All the respondents were dental students from Polish medical universities. The interviewees were asked about the main reasons for using e-cigarettes.
Results: The survey showed that 17.21% of subjects were smokers, among whom 39% smoked traditional cigarettes only; 10% used only electronic cigarettes and 51% smoked both kinds. Most of the electronic cigarettes users (63.93%) smoked for a shorter period than 6 months.
The primary purpose of using e-cigarettes was a trend (45.90%), while 35.29% of both cigarette smokers (traditional and electronic) reached for an electronic cigarette as help with quitting.
Conclusions: The main reason for reaching for electronic cigarettes was increasing trend. The majority of the e-cigarette smokers were using them for less than half a year. More than one-third smokers reached for electronic cigarettes with the hope that it would help them to quit smoking.

P135

Periodontal Status in Children with Unilateral Cleft Lip and Palate

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Aim or Purpose: To evaluate differences in periodontal parameters and oral hygiene between affected and control sides in children with unilateral cleft.
Materials-methods: 15 patients, aged 10 to 18 years, with unilateral cleft lip and palate. Pocket depth (PD), clinical attachment level (CAL), gingival recession (REC), vestibule depth (VD), keratinized gingiva (KG), presence of plaque (PCR) and bleeding (BoP) for eight maxillary anterior teeth were performed to compare cleft and control sides. Gingival biotype and fraena were also evaluated.
Results: Significant differences for PD (but not for CAL) were found only on some surfaces of lateral incisors and canines. Keratinized gingiva was significantly narrower at lateral incisors, canines and first premolars on cleft side (mean values were: 2.8 and 5.4 mm for lateral incisors, 2.7 and 3.9 mm for canines, 3.1 and 4.7 mm for first premolars respectively for affected and control side) and coexisted with significantly shallower vestibule at central and lateral incisors (mean values were: 7.0 and 9.2 mm for central incisors, 8.6 and 11.6 mm for lateral incisors, respectively for affected and control side). Due to tissues malformations it was difficult to assess biotype and labial fraena. High scores were recorded for PCR and BoP both on cleft and control side.
Conclusions: Malformations of hard and soft tissues caused by cleft and previous surgical procedures negatively affect periodontal parameters on the cleft side. It is justified to introduce periodontal assessment into comprehensive approach in children with clefts to control development of periodontal disease.

P136

Influence of Diet on Oral Health in Women

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Aim or Purpose: Diet is a factor that modifies the course of many systemic diseases. It has been reported that our nutrition affects also the health of the oral cavity – initiation and course of dental caries, loss of tooth enamel caused by erosion and periodontium diseases. The aim of the thesis was to present the possible impact of selected food products on values of API, BoP, DMF.
Materials-methods: The examined population included 50 women aged 19–21. During each dental exam, the following dental indices were assessed: API, BoP, CPI, DMF. The frequency of product consumption and food preferences were assessed based on research questionnaires filled out by research participants.
Results: The average value of the API in a group of women is 76.27%, BoP 23.44% and DMF 9.73. 4% of the examined population was characterized by CPI0, 32% CPI1 and 64% CPI2.
Results of T-test for independent samples showed that people who consumed two times a week or more vegetable fats are characterized by a statistically lower value of the API index relative to the average index value (significance level $p = 0.03$). Women who consumed two times a week or more eggs had smaller value of BoP in relation to the average value of this index (level of significance $p = 0.02$).
Conclusions: After analyzing the impact of nutrients on the oral cavity, it can be assumed that the chemical composition and texture of the food intake can affect oral health.

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Poster Session 30 | 08.09.2016, 13:00–14:00 | Poster display 2

Theme: Oral Surgery

P137

A Silver Carp Skin Derived Collagen in the Bone Defect Treatment – A Histological Study in a Rat Model

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Aim or Purpose: In recent years there has been an increase interest in elaborating novel therapeutic strategies such the use of the marine collagen products. Biochemical properties of fish products are different from those of mammalian collagen. Fish collagen is unique in its high solubility in dilute acid, moreover extracts produced in low temperature contain number of proteins, and the collagen with preserved triple helix structure.
The aim of the study was to study the influence of new marine product Collgel® obtained with unique method from a Silver Carp (Hypophthalmichthys molitrix) in the bone defect healing.
Materials-methods: Eighteen adult Wistar rats were used the study. The biomaterial was implanted to previously created cranial bone defects. One bone defect with a diameter of 5 mm was created per animal. The defects were filled with tested material combined with other commercially available materials. Samples were processed for histological evaluation and Micro-CT study was performed.
Results: Histological analysis showed new bone formation in all groups after 8 weeks. The bone formation was significantly increased in treated bone lesions compared to untreated bone tissue. However no significant difference was noted between the healing of the defects filled with xenogenic bovine derived bone alone and bovine derived bone combiened with a marine delivered collagen. Finding from the histological examination was confirmed in Micro-CT study.
Conclusions: The study has shown that the presence of new marine product in a bone defects filled with xenogenic bovine derived bone does not substantially improve the defect regeneration.

P138

Diode Laser Excision of an Infected Root Within the Buccal Mucosa

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Introduction: Patient female gender, 62 years old, attended the FMDUP clinic presenting an extraoral fistulae.
Case description: Clinical examination revealed suppuration on dermal surface without any lesion on the oral cavity. Panoramic Xray revealed a radiopaque strange body between the upper and the lower jaw. By making bimanual palpation of the cheek it was impossible to identify the precise location of the strange body. The intraoral X ray revealed an image compatible with a root and the patient, when asked, reported a complicated tooth extration of the 16, 4 months before. It was decided to ask a CT scan to better identify the tridimensional location of the strange body, to prescribe an antibiotic and program the surgical excision with a diode Laser (Power: 2W; 400 μm activated fiber).
Discussion: Soft tissue surgery in the oral cavity, due to the abundant supply, it produces a lot of bleeding, complicating the visualization of the surgical field. The diode Laser (810 and 980 nm) have high affinity to the hemoglobin, allowing operate in a dry field with optimum visualization when compared with the conventional scalpel. To better find the strange body, we used a salivary gland probe. The post operative period was good and the suture removed after 1 week, and the fistula closed in this period.
Conclusion/Clinical significance: The diode Laser device made easier the surgical act because it's possible to operate in a dry field, very important when we want to find a strange body inside of the soft tissue.

P139

Maxillary Sinusitis – Diagnostics, Treatment and Prevention

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Aim or Purpose: Increasing of efficiency of the Maxillary sinusitis-developmentpreventionand treatment.
Materials-methods: 74-patients diagnostics and treatment were conducted in Bishkek. Depending on type of the Maxillary sinuses bottom trauma there were formed following groups.

1 Damage of Maxillary sinus bottom- bone relief without sinus mucosa breach.
2 Perforation of sinus mucosa without sign of the inflammation.
3 Perforation of sinus mucosawith foreign bodies (particles of teeth roots, filling materials, implants) in sinus cavitywithout sign of the inflammation.
4 Perforation of sinus mucosaon presence of chronic polipous Maxillary sinusitis.
5 Perforation of sinus mucosaon presence of chronic exudative sinus inflammation.

Results: On 1, 2, 3 variants Mucous-periosteal flap was formed on alveolar or palatial ridge. The tunnel on mucosa, on other site was form. Osteoplastic material put in alveolar socket with subsequent plastic. On4 variantsMucous-periosteal flap was formed on alveolar or palatial ridge. The tunnel on mucosa, on opposite forms. Than osteoplastic material imbrued with antibiotic put in alveolar socket with subsequent plastic. Bone defect hole'sedges widens,

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the polyps deleted together with pathologically changed mucous shell. Subsequent plasticwas performed with put of deepithelized flap insertion on perforation socket. On 5 variants. Sinus cavity rinsed with disinfecting solution. Hole covered with temporarily plastic obturator plate, for1 day. The Perforation holes Plastic closure performed after the inflammatory process calming. Radical operation on Maxillary sinus performed simultaneously.
Conclusions: Clinical and X-ray manifestation of the Maxillary sinus perforations have a different forms and accordingly diagnostics and treatment to this pathology must take into account preceding etiological and pathogenesis factors.

P140
Clinical Assessment of Drainage in Third Molar Surgery
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Aim or Purpose: Surgical removal of lower wisdom tooth is one of the most frequently performed and technically difficult procedures in oral surgery. Surgical extraction is always associated with risk of complications.
The aim of the study was to determine efficancy of penrose drain for drenage of bloody content from operation site after surgical extraction of the lower wisdom tooth and determine incidence of complications/pain, swelling, trismus, alveolitis, secondary infections of the soft tissues, inflammation of sumbandibular lymph nodes.
Materials-methods: A prospective study was performed in Department of Oral Surgery, Jagiellonian University, Cracow in the years 2015–2016. The study concerned 50 partially retained lower wisdom teeth qualified for surgical extraction by orthodontic reasons. Generally healthy patients 18–45 years of age were qualified. The decisive factor for inclusion to the study was the need of corticotomy and time of procedure over 30 min.
Patients were divided into two groups:

Study group (25 patients) who had penrose drain placed in operation site for 24 h after surgery
The control (25 patients) who underwent surgery without placement of penrose drain

Results: Swelling and pain were less pronounced in the study group. There was no difference between the groups of incidence trismus, alveolar inflammation, secondary infection of surrounding soft tissue and inflammation of surrounding lymph nodes.
Conclusions: It is expedient to use the penrose drain after surgical extraction of the lower wisdom tooth, which lasts longer than 30 min and requires extensive corticotomy.

P141
Odontogenic Abnormalities – Case Reports
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Introduction: Human dentition may be affected by variations in size, form, number and degree of development of teeth as well as by many forms of odontogenic pathologies. These deviations may be determined genetically, can be the result of environmental factors or combination of both and require different approach depending on type, location and symptoms. In any of those pathologies the newest imaging techniques including CBCT are indispensable.
Case description: Few cases of fused molars are evaluated showing different treatment plan regarding symptoms, radiological image, surgical indications and contraindications. Case of odontoma found on standard orthopantomogram image, visible only as possible distortion or increased density of bone structure is shown.
Discussion: Fused or double teeth cause many clinical problems regarding it's size and location. Every case should be treated individually and treatment plan guidelines are needed for best clinical result. Some odontogenic abnormalities are difficult to estimate on routine clinical examination and x-rays. Usage of CBCT enabled reliable diagnosis and treatment.
Conclusion/Clinical significance: Presence of any kind of image disturbance seen on standard orthopantomogram has to be further revealed using different types of modern imaging techniques. Not every odontogenic structure or tooth abnormality require surgical intervention but every case need accurate diagnosis and regular check-ups.

Poster Session 31 | 08.09.2016, 13:00–14:00 | Poster display 3

Theme: Orthodontics

P142
Dental Crowding Frequency in Different Types of Malocclusion
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Aim or Purpose: The aim of the study is to carry out analysis of dental crowding frequency in different type of malocclusion.
Materials-methods: We studied orthodontic status of 434 children (246 (56.68%) girls and 188 (43.32%) boys) in Poltava during 6 years in periods from temporary to permanent dentition. The first group consisted of schoolchildren, who were examined during the period of temporary occlusion. The second group was the same children results in 6 years, that is in the period of permanent dentition. Mean age of the first group is 8.3 ± 0.06 and of the second group is 14.34 ± 0.06 years.
Results: It was determined that during 6 years, the rate of malocclusion complicated by dental crowding increased in 2 times ($P\chi^2 < 0.05$):temporary dentition 33.54%, permanent dentition −68.67%.

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During examination in the period of temporary occlusion it was found that dental crowding accompanied malocclusion of Class I (according to Angel) in 61.76%, of Class II in 63.79%, of Class III in 50.00%. Frequency of dental crowding in deep overbite is 54.41%, in open bite is 58.82%, in cross bite is 50.00%.
It was determined that during the period of permanent occlusion dental crowding complicated Class I (according to Angle) malocclusion in 76.87%, Class II in 65.91%, Class III in 70.00%. Frequency of dental crowding in deep, open and cross bites is 66.18%, 70.59% and 77.78% respectively.
Conclusions: Thereby, according to the results of the comparative analysis there isn't statistically significant difference in factors of dental crowding presence in different types of malocclusion ($P\chi^2 > 0.05$).

P143
Oral Status CLP Patients after One-Stage and Two-Stage Primary Operation
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Aim or Purpose: Evaluation of the oral status in two different groups of orthodontic cleft lip and palate (CLP) patients: I group – after one-stage primary surgery repair (at the age of 0.8 years) and II group – after two-stage repair (lip – at the age of 0.8: palate – 2.1).
Materials-methods: 14 CLP adults in each group. Both groups were similar in age, sex, living area, ceft's type, brushing, fluoridation, diet, frequency of dental examination and orthodontic treatment. Oral hygiene status was evaluated by use of API index 9 (Lange), mod. GSBI index and OHI index (Green and Vermillion). Dental caries was assessed using DMFT and DMFS indices.
Results: Oral hygiene was generally poor in both groups. The II-group had worse.
Results: API – 68% ± 15%, mod. GSBI – 22% ± 13%, OHI – 0.81 ± 0.28 whereas in the I-group: API – 62% ± 17%, mod. GSBI – 13% ± 11%, OHI – 0.52 ± 0.29. In the first group the mean DMFT was 11.29 ± 6.32 and DMFS – 18.4 ± 0.15, in the second: DMFT – 13.79 ± 6.98 and DMFS – 24.9 ± 0.15. Caries frequency was respectively in two groups 71% and 93%. The significant difference was shown in assessed indices between groups ($p < 0.05$).
Conclusions: This study has shown high prevalence of caries and poor oral hygiene in orthodontic CLP patients. Moreover, the worse hygiene and higher dental caries was assessed in patients after 2-stage primary repair.

P144
Digital Orthodontic Treatment with Clear Aligners: 3D Printing of Model Replicas via Fused Deposition Modeling
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Adult orthodontic patients prefer the treatment of tooth-colored esthetic brackets or removable appliances, such as clear aligners. A 28 year-old female patient concerned with anterior teeth malalignment. Class II subdivision malocclusion with 4 mm overbite and 3 mm overjet was noted. Her upper dental midline was deviated 2 mm from facial midline. The upper left lateral incisor was palatally lock-in. The treatment goal included crowding relief, midline correction, and maintenance of stable posterior occlusion. A 3D scanner was used to convert plaster study casts into STL files for virtual models. Digital orthodontics with programmed tooth movement on virtual 3D models was conducted using 3Shape Ortho Analyzer software. Replicas of virtual dental models were produced by a 3D printer of fused deposition modeling (FDM) using polylactic acid (PLA). Then, the model replicas were used for fabrication of vacuum-molded clear aligners. Two sets of new impression were taken to refine the programmed tooth movement after the treatment progressed into 3 months and 7.5 months, respectively. The treatment was completed with 9 aligners for the upper arch and 7 aligners for the lower arch. The virtual models superimposition delineated the labial movement (2.1 mm) of the lock-in upper left lateral incisor. Orthodontic treatment with aligners had many benefits, such as the possibility of including the lock-in tooth into the whole force system at the beginning of treatment. We will share insights about what are the cons and pros of using FDM 3D printer and PLA model for fabrication of clear aligner.

Poster Session 32 | 08.09.2016, 13:00–14:00 | Poster display 4Theme: Endodontics

P145
Micro-CT Evaluation of the Shaping Ability of Three NiTi Rotary Systems
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Aim or Purpose: To compare the shaping ability of M-wire NiTi alloy files (ProTaper Next, Vortex Blue) with conventional NiTi files (ProTaper Universal) in curved canals using micro-CT.
Materials-methods: Thirty canals with 20–45° of curvature from extracted human maxillary and mandibular molars were randomly allocated to three groups according to the file system used: ProTaper Universal, ProTaper Next, and Vortex Blue ($n = 3 \times 10$). Root canal instrumentation was conducted up to #F3, #X3, and #30.06 respectively and irrigated with 2%, 40°C NaOCl. Micro-

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CT (SkyScan 1174) scan was performed before and after shaping procedure. Root canal volume change and amount of canal transportation at the level of 1, 3, and 5 mm from root apex were measured using software (CTAn). Data was statistically analyzed by Kruskal-Wallis and Mann-Whitney U test.
Results: There was no statistically significant difference among three groups in canal volume change and the amount of transportation at 1, 5 mm level ($p > 0.05$). At 3 mm level, ProTaper Next showed significantly less transportation than ProTaper Universal ($p < 0.05$). Mean amount of transportation was less than 0.3 mm in all three groups.
Conclusions: ProTaper Next showed superior centering ability to ProTaper Universal at 3 mm level. However, all three file systems provided similar and clinically acceptable shaping ability in curved root canals.

P146
The Percentage of Gutta-Percha in Canals Filled Using Different Methods
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Aim or Purpose: The root canal filling should contain mainly gutta-percha with a little sealer. The aim of this study was to evaluate the percentage of gutta-percha and sealer in a filled canal area following warm and cold gutta-percha techniques.
Materials-methods: Sixty-four roots of extracted human teeth were divided into four groups (n = 16). The root canals were prepared with ProTaper Universal® files and filled with either the cold lateral condensation technique (CLC group) the greater taper single cone (ProTaper® gutta-percha cones-SC group), the continuous wave technique (CWT group), the ProTaper® thermo-plasticized obturator (PT group). The roots were then sectioned horizontally 2.5, 6.5 and 8.5 mm from the tooth apical foramen. The samples were metallographically prepared and photomicrographs were taken. The surface areas of the sealer and gutta-percha were calculated with Nis Elements® software. The results were subject to statistical analysis using Statistica software (Kruskal–Wallis test, $p < 0.05$).
Results: The percentage of gutta-percha (PGFA) was lower in the apical third of the canal for group CLC, SC and CWT than for group PT. In the middle and the coronal third of the canal, the PGFA was higher after using thermal methods (groups CWT and PT) than for cold gutta-percha techniques (groups CLC and SC). The percentage of gutta-percha in the filled canal area was comparable for the CLC and SC techniques.
Conclusions: Thermal methods of root canal obturation allow higher percentages of gutta-percha to be obtained in the filled canal area than by using cold gutta-percha techniques.

P147
Antifungal Properties of Some Calcium Silicate-Based Cements
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Aim or Purpose: The aim of this study was to investigate fungicidal activity against Candida albicans of some calcium silicate-based cements.
Materials-methods: The cements were prepared in accordance with the manufacturer's instructions, packed into sterile catheters in sections, and soaked for 3 h in sterile water. They were next transferred to 48-well polystyrene plates and incubated at 37°C with 106 cells/ml of C. albicans. Samples were immersed in PBS for 24 h or 48 h and plated on Sabouraud's medium. The number of colonies of C. albicans was determined after 48 h. In parallel, the pH of the solution was measured after 3 h, 24 h, and 48 h of incubation.
Results: Fungicidal activity in decreasing strength was as follows: MTA Plus, ProRoot MTA, Biodentine, and MTA +. MTA Plus produced the highest pH of the incubation solution.
Conclusions: All cements demonstrated fungicidal activity.

P148
Endodontic Practice of General Dental Practitioners and Specialists in Malaysia
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Aim or Purpose: The aim of this study was to compare the endodontic practice performed by general dental practitioners (GDPs) and specialists in Malaysia.
Materials-methods: In this cross-sectional study, self-administered questionnaires were distributed according to the sample size calculation of 566 GDPs, 22 restorative specialists and 16 endodontists. Questionnaire consisted of questions on endodontic practice and endodontic referral reasons. It was pretested and validated before distribution.
Results: Response rate was 73.8% (N = 446), consisting of 73.8% GDPs (n = 418) and 73.7% of specialists (n = 28), respondents from GDPs and specialists were female (72%, n = 301; 75%, n = 21), 66% of GDPs worked in government sector (n = 274), while half of the specialists worked in academic institution (n = 14, 50%). Significant difference in endodontic practice could be observed between specialists and GDPs in the use of operating microscope [specialist, n = 15 (53.6%); GDPs, n = 5 (1.2%),

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$p < 0.001$], electronic apex locator [specialist, n = 28 (100%); GDPs, n = 228 (54.5%), $p < 0.001$], rubber dam isolation [specialists, n = 28, (100%); GDPs, n = 84 (20.1%), $p < 0.001$], rotary files [specialists, n = 26 (92.9%); GDPs, n = 98 (23.4%), $p < 0.001$] and sodium hypochlorite as irrigant [specialist, n = 28 (100%); GDPs, n = 243 (58.1%), $p < 0.001$]. The primary reason GDPs referred endodontic case was to get second opinion (n = 184, 44%), followed by calcified/blocked canals (n = 116, 27.8%) and treatment of tooth with unusual anatomy (n = 114, 27.3%).

Conclusions: This study indicated that specialists use instruments and equipment following quality guidelines for endodontic treatment, while GDPs do not always conform. Standard of practice for endodontics should be improved by increasing the educational awareness level.

P149

Effect of Ultrasonic Activation on Sealer Penetration: An In-Vitro Study

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Aim or Purpose: To investigate the effect of ultrasonic activation on the penetration of epoxy resin–based sealer into the dentinal tubules.

Materials-methods: Forty extracted single-rooted lower first premolars were randomly allocated into two groups. All teeth were sectioned coronally to 15 mm root length. Canals were prepared using ProTaper Universal (Dentsply Maillefer, Ballaigues, Switzerland) rotary files to finishing file F4 using sodium hypochlorite as the irrigant. Prior to sealer placement (AH Plus, Dentsply Maillefer), canals were soaked in EDTA for 2 min. In Group 1, a size 20 K-file was used to place the sealer into the canal in a counter-clockwise rotation. In Group 2, sealer was activated using a size 25 ultrasonic file tip (Endochuck, Dentamerica, USA) 4 mm short of the working length. Each tooth was sectioned horizontally at 2 mm, 4 mm and 6 mm from the apex. The slices were observed under a high resolution stereomicroscope and percentage of cross-sectional area (μm^2) of sealant penetration into dentinal tubules were calculated.

Results: Mean percentage of sealer penetration into the dentinal tubules using ultrasonic activation at 2 mm, 4 mm and 6 mm from the apex were 26.85, 29 and 30.05 respectively. These percentages were significantly more than the control group ($p = 0.001$). There was no significant difference in the present of voids for both groups.

Conclusions: Sealer placement using ultrasonic activation at 4 mm from the apex resulted in better sealer penetration within the dentinal tubules.

Poster Session 33 | 08.09.2016, 14:30–15:30 | Poster display 1

Theme: Special Care Dentistry

P150

Survey of Handicapped Patients Who Consulted the Pediatric Dental Clinic of Tsurumi University Dental Hospital Second Report: Association of the Responses to Preliminary Questionnaire with the Behavior of Patients

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Aim or Purpose: In our pediatric dental clinic, a preliminary questionnaire is administered to the guardians of outpatients before the start of their treatment to realize a smooth dental treatment.
In this study, we examined whether a preliminary questionnaire can provide objective information for predicting the behavior of handicapped children and adults during dental treatment.

Methods: The subjects of this study were 248 handicapped children and adults.

Results: The rank correlation between the treatment and the responses to the preliminary questionnaire depending on the type of disability revealed that the treatment for patients with affective disorder strongly correlates ($p < 0.01$) with the responses to the questions such as "How did your child behave during a previous treatment by a doctor or a dentist?", "How do you think your child will behave during treatment this time?", and "How do you evaluate the current condition of your child?". In addition, the treatment for patients with Down syndrome correlates ($p < 0.05$) with the responses to the questions such as "How did your child behave during a previous treatment by a doctor or a dentist?" and "How do you evaluate the current condition of the child?".

Conclusions: The responses to the preliminary questionnaire were found effective in predicting the behavior of patients with affective disorder and Down syndrome. By understanding the anxiety and fear of dental treatment beforehand in children and adults with affective disorder and Down syndrome, the most effective action can be selected, leading to behavioral modification and smooth treatment.

P151

Periodontal Condition and Periodontal Teatment Needs in Patients with Selected Mental Disorders

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Psycho-physical, behavioral, pharmacological, as well as social conditions are the main factors for increasing the risk of periodontal diseases in individuals receiving mental health care. The aim of the study was to determine the periodontal condition and treatment needs in adults treated for mental health problems (MHP) in the Specialist Mental Health Service Institution.

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Material-methods: The study involved 212 middle age patients, 86 women and 126 men, qualified to 4 categories of mental disorder diagnoses (ICD-10): behavioral disorders due to misuse of mind-altering substances or alcohol (F10.2), schizophrenia (F20–25), affective disorders (F30–36), neuroses and somatoform disorders (F40–47). Questionnaire on oral health was applied and a complete periodontal exam, including plaque/calculus, gingival bleeding, pocketing, attachment loss was performed by a single calibrated examiner. Standardized CPI/TN periodontal index of treatment needs has been used. Gender-matched 52 healthy individuals composed control group.
Results: The prevalence of periodontal diseases amounted to about 100%. The most frequent problems observed were gingiitis and mild periodontal pockets and hard deposits – 47.44% and 35.90% of cases, respectively. The percentage of patients with deep periodontal pockets ranged between 9.68% and 17.39%. Over 80% of the subjects required calculus removal and thorough oral hygiene instructions (TN2). Statistically significant differences ($p < 0.001$, Chi^2 test) concerned patients undergoing hospital treatment due to schizophrenic disorders and alcohol misuse.
Conclusions: Patients with MHP had higher prevalence of sites presenting poor oral hygiene and attachment loss. Based on results obtained, there is an association between periodontal disease and mental health condition.

P152

The Variety of Rare Diseases Among Orthodontic Patients

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Aim or Purpose: The report of the ISPOR define "rare disease" with a prevalence threshold in the range of 40 to 50 cases/100,000. Each syndromes are rare but the total number of patients affected is large – e.g., 27–36 million people in the EU (Richter T. et all., Rare Disease Terminology and Definitions—A Systematic Global Review: Report of the ISPOR Rare Disease Special Interest Group, Value in Health, 2015, Vol., Issue 6, p. 906–914.).
The aim of study was to identify craniofacial malformations caused by rare diseases among patients treated in Dentofacial Anomalies Clinic in Wroclaw in years 2009 to 2014 under the program of "Orthodontic Care for Children with Congenital Craniofacial Deformities".
Materials-methods: The group of 1816 patients treated in the clinic between 12t January 2009 and 31st December 2014 was taken into account. Based on the international classification of diseases, 214 patients suffering from rare diseases were selected. The types of diseases occurring in the group and the course of treatment were analyzed including: type of orthodontic appliances, the frequency of follow-up visits, the patient's age at initiation of treatment.
Results: In a selected study group, 71 different genetically based diseases associated with malformations of craniofacial region were observed. The average frequency of follow-up visits in the clinic was different in different years and ranged from 3.0 to 3.7 per year.
Conclusions: The large variety of the rare diseases among patients treated in Dentofacial Anomalies Clinic was observed. Those variety requires an individualized treatment approach.

P153

Oral Health Status of Special Olympics Athletes in Poland

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Aim or Purpose: The aim of this study was to evaluate the oral health status of intellectually disabled athletes in Poland.
Materials-methods: Special Olympics is an organisation introduced to provide the intellectually disabled, with an opportunity to participate in sports competition. During the games special care sportsmen compete, cooperate, build their self esteem, improve their physical fitness, and enhance their social skills. To provide better access to health care for the intellectually diseabled, a Healthy Athletes program was introduced, as an addition to the sports events. One of the programs is Special Smiles during which the sportsmen get to have a dental check-up, an individual advice considering their oral health, and a training in hygiene.
In this study data collected during the Special Olympics Games held in Poland in the years 2007–2015 was used. The examination was conducted according to the international well accepted Special Smiles criteriasurvey created by CDC (Atlanta, USA) especially for the program. The checkup included various oral health problems such as caries, gingivitis or tooth loss.
Results: Results show that the access to dental care for intellectually disabled people is limited, and there is a room for improvement in both availability and training of dentists tending to special care patients.
Conclusions: It is crucial to gather information about the oral health of intellectually disabled, and improve the access to health care as well as provide better training in the Special Care Dentistry for the doctors.

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Poster Session 34 | 08.09.2016, 14:30–15:30 | Poster display 2

Theme: Caries Prevention

P154

The Impact of Selected Prophylactic Measures on Oral Cavity Condition and Dental Care Habits in the Selected Age Group

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The aim was to evaluate the impact of simple prophylactic methods on increasing the motivation for oral care among 13–15-year-olds.

Material and methods: The survey covered 98 lower-secondary school students. A preliminary survey was carried out, after which the respondents were divided into 4 groups. During a single visit, different prophylactic measures were applied to each of three groups, the fourth was control group. After 4 and 12 months, oral cavity condition and the frequency of tooth brushing among the surveyed were reassessed. Data was subject to statistical analysys using Pearson's test.

Results: In the survey, after 4 months the number of teeth with caries increased in all groups, but in the control group it was statistically significantly higher in comparison to other groups which had undergone prophylactic measures. Furthermore, after 4 months in the groups covered with prophylactic measures, a statistically significant decrease in the number of individuals with CPITN > 0 was achieved. In the survey carried out after 12 months no statistically significant differences were recorded in the value of the caries rate and CPITN among the surveyed groups. Both after 4 and 12 months the declared frequency of teeth brushing increased in particular in the group which had undergone an individual oral cavity care training.

Conclusions:

1 Implementing simple prophylactic measures can improve oral cavity condition among lower-secondary school students.

2 Prophylactic measures should be regularly repeated.

3 Individual training in oral cavity care supervised by a dentist is particularly effective in motivating adolescents.

P155

Dental Caries Prevalence and Children`s Access to Dental Care

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Introduction: To assess dental caries prevalence, need for dental treatment and children's access to dental care in the Republic of Moldova.

Case description: The sample included two groups of 4,673 children, randomly selected, aged 1–18, who were clinically examined within the cross-sectional study conducted between 2014 and 2015: 2315 (49.54%) children from the countryside (L1) and 2358 (50.46%) from urban areas (L0). There were estimated the indices of dental caries prevalence (IP), caries experience and restoration index (RI). The written consent of children's parents was taken for the study. SPSS vs.16.0 was used for descriptive and inferential analysis, using both parametric and non-parametric tests ($p < 0.05$).

Discussion: Significant differences were observed between the extent of caries impairment in subjects from the countryside compared to children from urban areas; dental caries being present in $79.40 \pm 0.84\%$ children from the countryside compared to $56.49 \pm 1.02\%$ children ($t = 17.32$; $p < 0.001$) from urban areas. The mean values of DMFT index in L1 and L0 groups constituted 3.9 ± 0.07 and 1.62 ± 0.04 ($t = 13.14$; $p < 0.001$), respectively. The mean RI value of temporary teeth in children from rural areas was only $7.97 \pm 1.02\%$, while in permanent teeth it was $13.6 \pm 2.42\%$, unlike RI index values of deciduous teeth $39.3 \pm 2.12\%$ and $84.64 \pm 14.22\%$ in permanent teeth in children from urban areas ($p < 0.001$).

Conclusion/Clinical significance: The high level of dental caries morbidity, low RI value and a large number of extracted teeth due to caries complications in children from the countryside show an increased prevalence of need in dental treatment and insufficient dental care provided to this population.

P156

Efficacy of Pit-and-Fissure Sealing for ECC Prevention

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The aim of the present study was to estimate the efficacy of the fissure sealing of early carious lesions in children up to 3 years old.

Materials and methods: 83 children up to 3 years with ECC were included in this investigation. Their parents signed the consent to take part in the study. All children were randomly divided in two groups: 40 children in group 1 and 43 children in group 2. It was recommended to apply Ca/P gel daily during 1 month with 1 month break for the children of both groups. In group 1 the fissures of first and second primary molars with noncavitated lesions were covered with glass ionomer cement (GIC). Statistical analysis was performed using the STATISTICA software (version 7.0). Ethical approval was obtained from the Ethic Committee at the University.

Results: There were 48 molars with discolourated fissures in group 1 and 25 molars in group 2.

The mean term of sealant retention was 13.6 (5.60) months. In 3 years the sealant was kept in 11 molars ($25.0 \pm 12.50\%$), the stabilization of the process was in 27 teeth ($54.2 \pm 14.38\%$). Caries progression with cavitation was diagnosed in 10 molars ($20.8 \pm 15.34\%$).

In group 2 in 3 years the stabilization of the carious process was in 4 teeth ($16.0 \pm 14.66\%$). Caries progression with cavitation was diagnosed in 21 molars ($84.0 \pm 14.66\%$).

Dental caries reduction in molars with sealing of discolourated fissures was 75.2% ($p < 0.001$), OR = 19.95 (95% CI 5.47–71.48).

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Conclusion: GIC sealing of the fissures with early noncavitated lesions has a high caries preventive effect.

P157

Oral Health Assessment Among a Sample of Children and Adolescents

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Aim or Purpose: Determine the DMFT and dmft indexes and characterize the oral health behaviors among a sample of Portuguese children and adolescents.

Materials-methods: A cross-sectional observational study was designed with a sample of 1575 children and adolescents aged 6 to 18 years. From the total sample, 52.6% presented deciduous teeth and 47.4% permanent teeth. Data collection was performed in 12 public schools of the district of Viseu, Portugal, by the application of a questionnaire on oral health behaviors and socio-demographic aspects. An intraoral observation was performed to determine the DMFT and dmft indexes.

Results: The prevalence of dental caries among children with deciduous teeth was 41.1% and among children and adolescents with permanent teeth was 51.4%. In this study we obtained a DMFT index of 1.80 ± 2.47 with a decayed component of 1.26 ± 1.94, and a dmft index of 2.46 ± 3.23, with a decayed component of 2.01 ± 2.88. Of the total sample, 79.2% revealed toothbrushing twice-a-day. Regarding dental appointments, 60.9% visited the dentist in the last 12 months. Also, 48.6% of the participants reported sugary food intake between meals 2 to 3 times per week. We found a statistically significant association between the prevalence of dental caries and the number of daily toothbrushes ($p = 0.03$), in which children and adolescents who toothbrushed with higher irregularity had more dental caries.

Conclusions: The DMFT index obtained falls within the moderate level recommended by the World Health Organization. It is crucial to improve strategies for oral health promotion in order to prevent the development of oral diseases.

P005

Distribution of Desquamative Gingival Lesions in Systemic Dermatoses

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Aim or Purpose: Systemic dermatoses (SD) may present with extraoral and/or oral lesions (OL), including desquamative gingival lesions (DGL). Thus, dental professionals need to be familiar with SD and their signs/symptoms. The aim of the present study are to evaluate the distribution of OL and DGLs in SD and determine the potential relationship between OL and oral local exacerbating factors.

Materials-methods: Sixty Lichen Planus (LP) and Pemphigus Vulgaris (PV) patients were included. Distribution and type of oral/gingival lesions, subjective symptoms arising from these lesions and clinical periodontal parameters were recorded and possible relationships of OL with local factors were statistically analyzed.

Results: DGL and OL were present (60%) while isolated DGL was present in 15% of the cases. In %58 of the cases both erosive/ulcerative (E/U) and reticular/hyperkeratotic (R/H) lesions (mixed) were present. 30% of cases presented with R/H (white), 12% presented E/U lesions (red). In DGL cases higher probing depths (PD), gingival inflammation (GI) and bleeding (B) scores were noticed. When compared to white lesions, cases with red and mixed lesions revealed higher pain sensation, lesion scores and plaque accumulation. Mixed lesions were with higher burning sensation and GI. Presence of dental prosthesis had no effect on lesions. Higher PD, GI and B scores were observed with the presence of dental fillings.

Conclusions: Based on the high frequency of oral and more specifically gingival involvement and the potential impact on both general and oral health, SD and oral signs/symptoms deserve a particular professional interest.

Poster Session 35 | 08.09.2016, 14:30–15:30 | Poster display 3

Theme 1: 1.1 Oral Health and Systemic Health

Theme 2: Endodontics

P158

Root Canal Morphology of Mandibular Premolars in Tunisian Population Using CBCT

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Aim: Traditional radiography is limited in its ability to give reliable information on the number and morphology of root canals. The application of cone-beam computed tomography (CBCT) provides a non-invasive three-dimensional confirmatory diagnosis as a complement to conventional radiography. The aim of this study was to evaluate the root and canal morphology of mandibular premolars in Tunisian population using CBCT scanning.

Materials-methods: The sample included 64 CBCT images comprising 98 mandibular first premolars and 98 s premolars. The number of roots and canal configuration according to Vertucci's classification were recorded.

Results: The results showed that 100% of mandibular first premolars had one root; 86% had type I canal configuration, 3% had type III, 9% had type V and 2% had type VI. All mandibular second premolars had one root; 93% had type I canal configuration,

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2% had type II, 1% had type III, 2% had type V and 2% had type VI.
Conclusions: The prevalence of multiple canals in mandibular first premolars was mainly of Type V, and mandibular second premolars had a low rate of canal variation in Tunisian population. CBCT scanning can be used in the management of mandibular premolars with complex canal morphology.

P159

Perforating Internal Root Resorption: Long-Term Treatment Outcome

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Introduction: The etiology of internal root resorption has not been completely clarified. It is known that it follows the damage of odontoblasts and predentin. The treatment of large resorptive defects poses a clinical challenge.
Case description: A 26-year-old patient complained of a discoloration of the tooth 21 which was asymptomatic. The medical interview revealed a history of enamel-dentin fracture 5 years earlier. On the basis of the clinical and radiological examination, a perforating (type C) internal root resorption was diagnosed. After chemomechanical preparation with 2% NaOCl and ultrasonic activation, the pulp space was temporarily filled with calcium hydroxide paste for 7 days. At the next appointment the apical part of the canal was filled with a single cone technique and the remaining part with warm gutta-percha. A control x-ray confirmed homogenous obturation with slight extrusion of the sealer at the perforation site. At 6, 8 and 10 years recall the tooth remained asymptomatic.
Discussion: Internal root resorption is an indication for root canal therapy. Difficulties may be encountered during root canal debridement and obturation due to alteration of the shape of pulp space and presence of resorptive lacunae. The treatment outcome in case of type C resorption depends also on the perforation size and the material used for its repair. In case of large perforations hydraulic calcium silicate cements are recommended.
Conclusion/Clinical significance: In the presented case of perforating internal root resorption the use of warm gutta-percha proved to be sufficient to provide long-term clinical success.

P160

Endodontic Management of Two Mandibular Teeth with Localized Hypercementosis

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Introduction: Hypercementosis is characterised by abnormal thickening of cementum. Although most cases are idiopathic, several local and systemic factors are linked to this condition. Systemic disorders associated with hypercementosis include acromegaly, paget, arthritis, rheumatic fever and thyroid goiter.
Case description: A 57 years old female patient referred to our faculty clinic, with a history of pain. Medical history of patient revealed acromegaly but treatment process had been completed 4 years ago. Initial periapical radiograph revealed the presence of chronic apical periodontitis and hypercementosis in the apical third of left mandibular molar and premolar roots.
The canal length was determined with periapical radiography. The teeth were instrumented using hand and NiTi rotary files. Calcium hydroxide was placed into the root canals. After 2 weeks, root fillings were completed with using lateral condensation of gutta–percha and root canal sealer. Active posts were applied to mandibular molar in three canals and metal ceramic crown was prepared. Mandibular premolar was restored with resin composite.
Discussion: Determination of working length accurately during endodontic treatment is essential and it affects prognosis (Ricucci et al., 1998). To establish accurate working length in roots with hypercementosis is quite complicated (Pappen et al., 2011). Nevertheless, the impact of hypercementosis on endodontic prognosis is still unclear.
Conclusion/Clinical significance: After 18 month follow-up period, no clinical or radiographic signs of pathology were observed. Although it is difficult to determine the apical limit of roots with hypercementosis, the conventional endodontic therapy of these teeth can be performed successfully.

P161

3D-Imaging in the Preoperative Assessment of a Difficult Endodontic Case

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Introduction: Challenging endodontic cases, in which the visualization of the morphology of the endodontic system and the establishing of a successful diagnosis is required, can nowadays benefit from an individualized, accurate treatment planning with a predictable outcome due to the enhancements provided by the cone beam computing tomography (CBCT).
Case description: A 34 year old female was referred to our clinic for the retreatment of 26. The general practitioner treated just two root canals: MB1 and DB. On the x-ray we could visualize a 26 with poor root canal filling, without being able to diagnose the reason of the missed canals and a possible root resorption on 27.
Discussion: Unlike the conventional x-Ray, only the coronal and axial plans of the CBCT showed the palatal root perforation, the relation between this and the real palatal canal, as well as the existence, location and direction of the MB2. The two mesiobuccal root canals had different apical foramina (Weine class III). The perforation was sealed with MTA and we were able to negociate the palatal and the MB2 using a dental operative microscope.
The CBCT also revealed an extended mesio-buccal root resorption of 27.
Conclusion/Clinical significance: CBCT is mandatory in difficult endodontic cases when periapical radiograph is inconclusive, for establishing the right diagnosis and treatment plan. We could

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visualize the angulation between the pulpal floor chamber and the direction of the root canal, the real morphology of the endodontic system, the perforation of the palatal root and the root resorption.

P162

Comparison of the Cytotoxicity of ProRoot MTA and MTA Plus Using a MTT Assay Study

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Aim or Purpose: The purpose of this in vitro study is to evaluate and compare the cytotoxicity of two commercially available root-ending materials, MTA Plus, and ProRoot MTA, at different storage times after mixing on human periodontal fibroblast using a MTT assay method.
Materials-methods: Varied concentrations (3, 6, 12, 25, 50 mg/ml) of the fresh and set root-ending materials (ProRoot MTA and MTA Plus) were placed adjacent flasks of human periodontal fibroblast in DMEM medium within 96-well plates. Cellular viability was evaluate using a MTT assay after 24, 48, and 72 h of initial mixing. The results were analyzed with 1-way ANOVA.
Results: The results showed that there was no significant difference between the cytotoxicity of the MTA Plus and the ProRoot MTA ($p > 0.05$), neither for the fresh, nor the set samples. However, when the cytotoxicity of either of MTA Plus or ProRoot MTA was monitored at different mixing time, the lowest cytotoxicity was observed for the mixing time of 48 h. It should be noted that, in the case of fresh samples, no noticeable cytotoxicity difference was observed at different mixing times.
Conclusions: The current in vitro study showed almost similar biocompatibility for ProRoot MTA and MTA Plus.

Poster Session 36 | 08.09.2016, 14:30–15:30 | Poster display 4

Theme: Pedodontics

P163

Dentin Dysplasia Type I: A Case Report and Review of the Literature

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Introduction: Dentin dysplasia is an autosomal-dominant abnormality,which characterized by abnormal dentin structure. According to clinical and radiographic appearance dentin dysplasia is classified into two main classes. In type I despite the teeth have normal crowns they have defects in dentin formation and pulp obliteration. The treatment of dentin dysplasia may not always be successful so it is difficult for all clinicians to treat these patients.
Case description: We report on a case of dentin dysplasia type I in a 9-year-old boy with complaining of dental trauma. The Radiographic analysis showed radicular fracture of maxillary left central and lateral illustrating obliterated pulp chambers and malformed roots in permanent dentition. The crowns of his teeth had normal morphology. He had another traumatized fighting last year and root fracture of maxillary left Lateral that neglected by family.
Discussion: DD is usually an autosomal dominant condition but in this patient,there was no familial history of the disease. Teeth with radiographic or histologic features of DD occur in a number of disorders such as calcinosis, Ehlers-Danlos syndrome and the brachioskeletogenital syndrome. Some association has also been reported between dentine dysplasia and osseous changes in addition to sclerotic bone formation but our patient had no signs of other pathologic conditions. Extraction has been suggested as a treatment alternative for teeth with pulp necrosis and peri-apical abscess. Follow-up and routine conservative treatment is another choice of treatment plan in DD.
Conclusion: The early diagnosis and management of patients affected by DD is an important matter. The diagnostic features of this rare disturbance will remain incompletely defined until additional cases have been described.

P164

Dental Caries and Vitamin D3 in Children with Somatotropin Deficiency

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Aim: The aim of the study was to assess the relationship between the incidence of dental caries and the concentration of vitamin D3 in the serum of patients with growth hormone deficiency (GHD) who come from urban and rural areas and to determine the relationship between dairy products consumed and the concentration of vitamin D3.
Material and methods: The study population consisted of 127 children, 58 from rural and 69 from urban areas, treated with human recombinant growth hormone due to GHD. The majority of the children were supplemented with vitamin D3. With the consent of the legal guardians they were surveyed using a questionnaire. The incidence of dental caries (DMFT number) and the concentration of vitamin D3 as well as the relationship between these values were determined.
Results: The average concentration of vitamin D3 was 28.78 ng/ml in children from rural areas and 26.73 ng/ml from urban areas. It was found that with increasing concentrations of vitamin D3 the DMFT number decreases among children in rural areas, and this relationship is statistically significant. The study found no relationship between the levels of vitamin D3 in the body and consumption of dairy products.
Conclusions: It seems advisable to increase the dose of vitamin D3 in children with GHD aimed at increasing serum concentrations of vitamin D3, which can contribute significantly to improvement of the oral health of the population. A higher level of concentration of vitamin D3 in children from rural areas may indicate a longer exposure to UVB radiation.

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P165

Exfoliation of Non-Resorbed Primary Incisors in a 4-Year Old Child

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Introduction: Early exfoliation of non-resorbed tooth can be a symptom of severe general disease, even a fatal one.
Case description: A 4-year old boy presented increased mobility of the lower incisors with missing 81 that exfoliated non resorbed 6 months earlier. Intra-oral examination revealed that mobility of 71 was more pronounced than the lateral incisors (it exfoliated non-resorbed within next 3 months), while the remaining teeth were of normal mobility. Additionally, the teeth 51 and 61 had pinkish crowns with horizontal gingival recessions. The boy was caries-free and didn't experience any dental trauma in the past. His oral mucosa was sound, but he presented poor oral hygiene. The pantomogram showed a horizontal reduction of the maxillary alveolar bone height. The patient was mouthbreathing due to recurrent infections of upper respiratory tract with adenoid hypertrophy. The skin of the hands and feet was normal. There was a case of inherited skeletal disorder in the patient's family. The patient was consulted by the paediatric haematologist, orthopedist, periodontologist and laryngologist (tonsillectomy). The laboratory tests showed proper blood cell count and no signs of calcium-phosphate metabolism disorders. The boy has been under dental observation for 5 years without any further abnormal exfoliations.
Discussion: Careful medical and dental diagnostics is required to exclude possible reasons of the teeth loss like: quantitative or qualitative neutrophil defects, metabolic or connective tissue disorders, neoplasia and hypophosphatasia.
Conclusion/Clinical significance: This was a case of idiopathic early teeth exfoliation which self-limited. Nevertheless, thorough diagnostics, tonsillectomy and hygiene improvement were fundamental.

P166

Restoration of Severely Traumatized Permanent Incisors with Endocrowns in Children

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Introduction: The restoration of severeley traumatized permanent incisors is a constant problem in dentistry especially in children. The choice of restorative material and restoration techniques are important to maintain the esthetics as well as stability against fracture and durability since it should be a long-life restoration. When the remaining dental tissues do not provide sufficient retantion for direct restorations, the treatment may be carried out in several ways.
Case description: Maxillary permanent central incisors with extensive coronal destructions due to trauma were restored with endocrowns after endodontic treatments. After preparation of the teeth, impressions were sent to laboratory to design endocrown from composite hybrid blocks with the CAD/CAM system. Final restorations were cemented to prepared teeth using self-adhesive resin cement. Patients were followed up for 6 months and no aesthetic and functional degradations in any of the restorations were observed.
Discussion: Recently, the evolution of technology especially dental CAD/CAM systems have enhanced the options to produce restorations with high biocompatibility and optimal mechanical properties. The aim of this study is to present clinical case reports of endocrown restorations in two children aged of 9 and 11.
Conclusion/Clinical significance: It could be concluded that endocrowns have become a promising new alternative treatment in the esthetic and functional recovery of endodontically treated severeley damaged permanent incisors in children.

P167

Peripheral Giant Cell Granuloma: A Case Report

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Introduction: The peripheral giant cell granuloma (PGCG) is an uncommon, reactive lesion occurring on the gingiva and alveolar ridge. Very few cases have been reported occurring in children. In this case of PGCG in a child apparently related to poor oral hygen will be presented.
Case description: A 9-year-old male patient was referred to the Department of Pediatric Dentistry, Gazi University with the complaint of a mobile teeth. The patient did not report any pain. No relevant medical data were reported according to the anamnesis. Intraoral clinical examination showed a reddish-purple tissue growth at the upper left gingival ridge in the premolar-molar region. Radiological examination didn't reveal bony resorption around the root. A biopsy and histopathological examination were performed. The mass was excised and the mobile teeth associated with the lesion were extracted. The diagnosis was PGCG, according to both the clinical and histopathological patterns. The patient was followed up for 12 months.
Discussion: PGCG is usually found in adults and females. A very few cases have been described in a population of children. The aetiology of PGCG is unknown. Although it has been impossible to find the etiologic factors causing this case, poor oral hygiene, low social economic status and other factors can be considered.
Conclusion/Clinical significance: The present case also revealed that such lesions that can also contain the periodontium should be diagnosed and treated carefully. In addition, they should be followed from the point of view of risk of recurrence.

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Poster Session 37 | 08.09.2016, 16:00–17:00 | Poster display 1

Theme: Epidemiology

P168

Tooth Loss in the Population of South-Eastern Poland

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Aim or Purpose: The aim of the study was to analyze the relationship between selected socio-demographic factors and tooth loss in patients using removable dentures.

Materials-methods: The study included 321 individuals; all of them were residents of the Lublin province (south-eastern Poland). The authors looked at the influence of the socio-demographic factors such as gender, age and education on the severity of tooth loss. To analyze the structure of tooth loss the classification by Galasińska-Lansbergerowa and Eichner was used. The results were analyzed statistically.

Results: Edentulous gaps and lateral edentulism in the maxilla were significantly more frequent in women, while mixed tooth loss was more frequent in men, while the percentages of men and women with maxillary edentulism were similar. There were no statistically significant gender-specific differences concerning mandibular edentulism. The number of individuals who reported total tooth loss in both the maxilla and the mandible increased with age, the differences being statistically significant. Individuals with primary education only were significantly more likely to report maxillary edentulism, while a high percentage of those with secondary or higher education reported edentulous gaps in the maxilla. There was no statistically significant relationship between education and the type of tooth loss in the mandible.

Conclusions: There is a strong relationship between age and education level on the one hand, and the severity of tooth loss on the other. However, gender exerts no significant influence on tooth loss, which was confirmed using two classifications of edentulism.

P169

Prevalence of Premature Loss of Deciduous Teeth in Preschool Children from Łódź

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Aim or Purpose: The purpose of the study was to assess a pattern of premature loss of deciduous teeth in preschool children from Łódź, and evaluate possible after-effects of their loss.

Materials-methods: The patients selected for this retrospective study were selected by analyzing dental records of children, aged from 0 to 5 years old, treated at the Department of Oral Surgery of Medical University in Lodz. The children were divided into 6 age groups – children under 1 year, 2-, 3-, 4-, 5- and 6-years old. The studied group was analyzed according to sex, age, number of extracted teeth, and causes of extraction.

Results: Majority of primary teeth was extracted due to dental caries. In total group of 656 patients, in 798 procedures, under local or general anesthesia, 2057 primary teeth were extracted. Maxillary teeth were more often subjected to extraction than the mandibular (1563 to 494). There was no difference between boys and girls in the extracted type of tooth but there were significant differences among the different ages. The patients most frequently affected were 3 years old (181 patients, in average 3.22 extracted teeth per child) but the highest average number of extracted teeth per child was in 5-year old children group.

Conclusions: This study has concluded that despite the improvements in pediatric dentistry over the last decades, caries and the subsequent pulpal pathologies remain the most common reason for extraction of primary teeth.

P170

Caries Identification in Permanent Dentition of Schoolchildren

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Aim or Purpose: To determine the presence of caries in permanent dentition of schoolchildren.

Materials-methods: Prospective and descriptive study, approved by the Divisional Council of the Autonomous Metropolitan University, Campus Xochimilco. 74 elementary schoolchildren participated (57% girls, 43% boys), whose parents signed a consent form. Sample: convenience, non-probabilistic. The diagnosis of caries per tooth in permanent dentition was performed with appropriate lighting, dental mirror and metal CPI probe (WHO) by two calibrated examiners, with an inter and intra-examiner reliability level of 96%. Central trend standards, dispersion and t Student test ($p < 0.05$) were calculated; with sex and DMFT variables. Data was analyzed with the SPSS pack (21st version).

Results: The average age of the participants was 12.09 ± 4.32 years. The girls′ average DMFT was 0.62 ± 1.081, and the boys′, 0.69 ± 1.176, with no significant difference ($p > 0.05$). For both cases, decay was the highest component (girls: 0.26 ± 0.544, boys: 0.44 ± 0.982). The caries′ prevalence for girls was of 33%, and for boys, 34%.

Conclusions: Information shows that the DMFT decreased in this sample, based on the National Caries Survey of 2001, performed in Mexico, with a DMFT average of 2.82 for Mexico City. This may be because the population of this proyect belongs to one of the areas with better social and economic indicators of Mexico City. The presence of decay shows the need for opportune rehabilitation of these teeth, and for stronger preventive actions which keep dental integrity.

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P171

BMI and Dental Caries in 5 and 7 Years Old Children

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Aim or Purpose: The aim of the study was to evaluate correlation between d, m, f, dmf index and BMI in 5 and 7 years old children from north-east Poland.
Materials-methods: Altogether 216 children from Podlaskie region were examined: 99 – 5 years old and 117 – 7 years old. According to WHO criteria dental caries were assessed using dmft index.
Results: Children with normal weight had statistically more teeth than overweight and obese children ($p = 0.005$). In the whole group of children there was negative correlation between BMI and decay teeth d ($r = -0.177$, $p = 0.009$), dmft ($r = -0.180$, $p = 0.008$). In 5 years old children there was a negative correlation between BMI and decay teeth d ($r = -0.221$, $p = 0.028$), dmf ($r = -0.256$, $p = 0.010$). In 7 years old children there was a negative correlation between BMI and decay teeth d ($r = -0.185$, $p = 0.047$), m (=−0.200, $p = 0.032$), dmf ($r = -0.192$, $p = 0.038$). In children from urban areas there was a negative correlation between BMI and decay teeth d ($r = -0.178$, $p = 0.042$). In children from rural areas there was a negative correlation between BMI and dmft ($r = -0.250$, $p = 0.034$). In children with normal weight there was negative correlation between BMI and dmf ($r = -0.179$, $p = 0.021$) and between BMI and the number of teeth ($r = -0.482$, $p = 0.050$) in group of obese children.
Conclusions: Although there are common parameters playing an important role in both the obesity and dental caries in our study we did not observed more dental caries in obese children.

P172

Dental Anomalies Associated with the Agenesis of Second Premolar in Children and Adolescents in the Western Black Sea: A Case Control Study

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Aim or Purpose: The aim of this study was to investigate the frequency of hypodontia, supemumerary teeth, taurodontism in the first permanent molar and microdontia in children with agenesis of the second premolar (SPM), and to compare the results with the data from the general population in previous studies and normal case control (including patients without SPM agenesis).
Materials-methods: A total of 15,371 Panoramic and occlusal radiographs were used to assess the presence of dental anomalies and 796 children and adolescents with hypodontia, between 9 and 15 years of age, were included in the study. However, it was observed SPM agenesis in 522 patients. Radiographs were used to assess the presence of the following dental anomalies: (i) tooth agenesis excluding third molars; (ii) third molar agenesis; (iii) supernumerary teeth; (iv) taurodontism of permanent teeth; and (v) microdontia of maxillary lateral incisors.
Results: The prevalence of SPM agenesis was found to be 3.4%, (522/15,371) with no statistical sex difference ($p = 0.210$). The prevalence of agenesis of other permanent teeth excluding the third molar 8.0% 42/522 ($p < 0.05$), third molar agenesis 46.2% (31/67 ($p < 0.001$), maxillary lateral agenesis 7.6% (40/522)) ($p < 0.001$), taurodontism 3.06% (16/522) ($p < 0.05$) and microdontia of maxillary lateral incisors 2.49% (13/522) ($p < 0.05$) were significantly greater in our sample.
Conclusions: This might indicate a common genetic mechanism controlling these phenomena (excluding supernumerary teeth), influenced by several factors interacting at different levels.

Poster Session 38 | 08.09.2016, 16:00–17:00 | Poster display 2

Theme: Prosthodontics

P173

Effect of Surface Treatment on Retention of Zirconia Crowns

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Aim or Purpose: This study aims to evaluate zirconia crown retention using 3 different cements and 3 different surface treatments. An optical and SEM examination was carried out to the morphological effect of different ceramic surface treatments.
Materials-methods: Extracted human premolars were collected and prepared for zirconia crowns (approximately 10-degree taper, approximately 4-mm axial length) and were divided into 4 groups (n = 30). Computer-aided designing and computer-aided manufacturing zirconia copings were fabricated. Four surface treatments were applied to the intaglio surface of the copings. The control group was received no treatment, the second group was airborne-particle abraded with 50 μm Al2O3, the third group was treated with 30 μm silica-modified Al2O3 and the fourth group was by aluminum nitride (AlN) powder. Crowns were cemented using Dual-polymerizing RelyX Unicem resin cement, Dual-polymerizing RelyX Ultimate resin cement with methacryloyloxydecyl dihydrogen phosphate (MDP) (Scotchbond™ Universal Adhesive) resins and GIC cement. They were stored for 24 h at 37°C before being thermally aged for 5,000 (5°C–55°C) cycles. Retention was measured on a universal testing machine under pull-off test, with a crosshead speed of 0.5 mm/min.
Results: Mean retention values ranged from 2.9 to 6.7 MPa. Surface treatment increased crown retention, but the difference was not statistically significant ($p > 0.05$), except for the alumina coated group. Analysis also revealed that the GIC cement produced significantly lower crown retention ($p < 0.05$) than the other cements if alumina coating surface treatment was used.
Conclusions: Zirconia crown retention seems to be dependent on the interaction between cement type and surface treatment.

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P174

Prosthetic Implant Rehabilitation for Single Tooth Restoration in the Aesthetic Zone

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Aim or Purpose: Single tooth replacement with a dental implant has become the elective treatment option. The type of abutment should provide adequate emergence profile for support of periimplantary soft tissue and optimal mucogingival esthetics. However data about long-term appearance of anterior single tooth implants are scarce. The aim of study is to present the different prosthetic abutments in the implant supported restorations, comparing subjective and objective aesthetic outcomes.
Materials-methods: The study included 12 people with anterior single missing tooth, who received implant prosthetic treatment. Patients were divided into three samples: I study sample – 4 patients treated with ceramic restorations on Zirconia abutments. II study sample – 4 patients treated with ceramic restorations on customized all-ceramic abutments and III control sample – 4 patients treated with metal-ceramic crowns on metal, standard abutments. The following parameters consisted of PES, WES, radiographic bone level and success parameters were evaluated.
Results: Differences in the shape and volume of artificial crowns in all samples have not noticed, but the color and translucency of the highest aesthetic results showed the sample I and II. The WES was higher than the corresponding PES. The patients were satisfied with prosthetic outcome.
Conclusions: Single tooth implants seem to be an achievable treatment option for functional rehabilitation of tooth loss in the anterior zone. The chosen material and the type of abutment for manufacturing the implant restoration do not ensure aesthetic results, if all parameters are not taken into account.

P175

Effect of Femtosecond Laser vs. Alumina/Silica Surface Conditioning Methods on Zirconia Framework-Veneering Ceramic Bonding, Surface Chemistry and Crystallographic Changes

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Aim or Purpose: This study evaluated the effects of different surface conditioning methods on zirconia framework-veneering ceramic bonding, surface chemistry and crystallographic changes.
Materials-methods: Zirconia specimens (Zirconzahn) (N = 91; $2 \times 10 \times 10$ mm^3) were randomly divided into 5 groups (n = 18 per group) according to surface conditioning methods as follows: Group SB: Air-borne particle abrasion with 50 μm Al_2O_3; Group R: Tribochemical silica coating; Group FL: Femtosecond laser application; Group Si25: Nanofilm deposition using argon/oxygen plasma (8:1 in flux) on the zirconia surface at 25 min and Group Si49:Nanofilm was deposited with same procedure as in Si25 at 49 min. Veneering ceramic ($3 \times 4 \times 5$ mm^3) was fabricated and fired on the conditioned zirconia specimens. The interface of framework-veneer assemblies was subjected to shear force in a Universal Testing Machine (1 mm/min). Additional 3 specimens from each group were analyzed with profilometer, SEM and XRD. The data were analyzed statistically using a One-Way ANOVA and Tukey's test for multiple comparisons test (α=0.05). After debonding, the specimens were examined microscopically at ×40 and SEM-EDX to classify the failure modes.
Results: The highest mean bond strength values (MPa) were obtained in Group Si49 (32 ± 3.3) followed by Group Si25 (28.4 ± 5.6) being not significant from one another ($p > 0.05$). Groups SB (14.5 ± 4.7) and R (16.1 ± 5.3) did not show significant difference ($p > 0.05$), being significantly less than that of Group FL (21.8 ± 5.6) ($p < 0.05$). Failure types were predominantly mixed type of failures in all groups.
Conclusions: Silica-based nano-coating was more effective than those of air-abrasion or femtosecond laser application to improve zirconia framework-veneer ceramic adhesion.

P176

Current Computerized Axiography Techniques

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Aim or Purpose: The aim os this study is to evaluate the role of computerized axiography in early detection of TMJ dysfunctions compared to the classical methods of diagnosis.
Materials-methods: Clinical and para clinical evaluation along with classical vs. modern techniques of diagnosis were used to determine TMJ disorders.
Results: The article discusses the advantages of computerized axiography over the mechanical device and points out the limitations of the axiographic method.
Conclusions: The most important advantage of the computerized system is having the enlarged diagram of tracings and by that detecting small changes such as initial disk displacements which can be diagnosed more readily than with the mechanical device.

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P177

Proportional Ratios between Widths, Heights and Areas of Maxillary Frontal Teeth

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For achieving an optimal esthetic result from a dental treatment, is also important that the teeth proportions to be correctly diagnosed and designed before an irreversible restorative dental procedure to be done.

Purpose: The aim of that research is the analysis of the harmonic unity and proportional ratios between widths, heights and areas of maxillary frontal teeth in the natural dentition. Knowing those proportions we can create a frame of the smile in a natural harmony with the face.

Material and methods: In a pilot study on photographs of 148 teeth segments covering 74 persons made in standardized conditions.

The following calculations have been made:

1 It is calculated a coefficient of deformation and the real size of the teeth is determined.
2 Calculated are the areas of the rectangles teeth are inscribed in.
3 The ratios between maxillary frontal teeth are determined:

- Widths: central/lateral and canine/lateral
- Heights: central/lateral and canine/lateral
- Areas: central/lateral and canine/lateral

Results: Three types of dominance are found in the natural dentition: low, medium and high. Their characteristics and average parameters are determined, separately for women and men.

Conclusion: The most common dominance both in men and women is found to be the medium dominance with the following definition:

The most common dominance is medium (normal). Proportional ratio of maxillary upper frontal teeth relate as:

- In women: width/height of central incisor – 95.34%; Widths: 1.52:1:0.83; Heights: 1.14:1:1.01; Areas: 1.74:1:0.83
- In men: width/height of central incisor – 91.49%; Widths: 1.54:1:0.85; Heights: 1.16:1:1.05; Areas: 1.79:1:0.91

Poster Session 39 | 08.09.2016, 16:00–17:00 | Poster display 3

Theme: Materials

P178

Dental Polishing in Composite Restorations – What is More Efficent?

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Aim or Purpose: The aim of this study was to compare five finishing/polishing systems of two different resin composites on surface roughness.

Materials-methods: A total of thirty-five nanofill and nanohybrid resin disks were made. They were divided randomly into groups (n = 5). The first group was not polished (control group). In the other five groups, polishing was performed with different instruments: in A, diamond burs were used; in B, carbide burs; in C, abrasive rubbers; in D, polishing pastes; and in E, polishing disks with aluminum oxide. Readings were conducted with a surface roughness tester. The disks were placed in an aqueous medium at a temperature of 37°C for 48 h. Afterwards, they were subjected to the same type of polishing. New readings of roughness were made. The readings' results were analyzed using the Kruskal–Wallis test and the Fisher's LSD method ($\alpha = 5\%$).

Results: Polishing teeth is important for reducing the surface roughness of composite resins. We found that the most effective polishing system were the aluminum oxide disks, followed by the polishing paste, the rubber abrasive system, the tungsten carbide bur, and finally the extra-fine and fine diamond burs. Repolishing is effective and necessary to reduce surface roughness.

Conclusions: Polishing is fundamental for reducing surface roughness. Only applying one polishing method could not be enough. Re-polishing is very important and should be introduce in every clinical use of composites.

P179

Analysis of Monomer Elution from Flowable Bulk-Fill Composites using HPLC

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Aim or Purpose: The aim of this study was to evaluate the elution of BisGMA, UDMA, TEGDMA, HEMA and HMBP monomers from bulk-fill flowable composites stored in different media using high performance liquid chromatography.

Materials-methods: Three bulk-fill (SDR®, X-tra base and BEAUTIFIL-Bulk Flowable) resin-composites were tested. Cylindrical samples (Ø 5 mm, 4 mm high) were immersed in 100%ethanol, 75%ethanol and distilled water. The concentration of the monomers was measured using the HLPC method (Agilent Technologies 1200 Series) after 1 and 24 h, as well as after 3, 7, 14, 21 and 31 days.

Results: Monomers detected in distilled water were UDMA, TEGDMA and HEMA. No eluted monomers were detected from X-tra base in media used. All monomers showed a variable extent of elution into 100% and 75%ethanol. The monomers concentration in the eluate was in the following order: 100% ethanol>75% ethanol>distilled water. Some eluted monomers were not described in the composites Material Safety Data Sheets.

Conclusions: The elution of monomer was strongly affected by the hydrophobicity of the solvent and the final network characteristics of the resin-matrix. In an aqueous environment, the bulk-fill composites exhibit a high chemical stability compared to other extraction media.

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P180

The Effect of Tooth Tissues Preparation on Surface Energy

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Aim or Purpose: The aim of this study was to examine the changes in surface energy of tooth hard tissues after the standard procedure of preparation, before placing the restorative material in prepared cavity.

Materials-methods: Examined tooth tissues were dentin and enamel. Fragments of these tissues were obtained from bovine teeth (age: 2 years). Teeth were fragmented with use of dental drill and prepared with use of two component filled dental adhesive system. Surface energy of prepared samples was examined by means of inverse gas chromatography (SRI 8610C gas chromatograph with FID detector). Some polar and nonpolar compounds were applied as test solutes interacting with examined tissues. Dentin and enamel were additionally characterized by means of Raman spectroscopy, gas porosimetry and SEM microscopy.

Results: Characterization of tooth hard tissues after every step of surface preparation allowed for observation some significant changes in their structure, morphology and other properties. These changes are strictly correlated with values of surface energy, which can explain the difference in bonding strength to other solids.

Conclusions: Preparation of dentin and enamel before restoring the cavity results in surface energy changes of examined tissues.

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P181

Mechanical Properties of Four Machinable Materials

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Aim or Purpose: The purpose of the study was to compare flexural strength, flexural modulus and Vickers hardness of IPS e.max®CAD (IvoclarVivadent), IPS Empress® CAD (IvoclarVivadent), Vitablocs®MarkII (Vita) and Vita Enamic®(Vita).

Materials-methods: A 3-point bending (ISO 6872) test was applied (MTS Synergie 100) to determine the flexural strength and flexural modulus of each material. 10 specimens 15.0 ± 0.15 mm long, 4.0 ± 0.15 mm wide and 1.5 ± 0.15 mm thick of each material were cut from the factory blocks using diamond instruments and water. The same specimens were used during Vickers hardness test (HV0.1) (Shimadsu HMV-2); two measurements for each sample. The data were analysed using ANOVA and t-test ($p < 0.05$).

Results: The values for flexural strength were: IPS e.max®CAD 383.6 ± 46.4 MPa; IPS Empress® 133.1 ± 16.4 MPa(a); Vitablocs®MarkII 134.8 ± 12.1 MPa (a, b); Vita Enamic 127.9 ± 5.7 MPa (a, b). The values for flexural modulus were: IPS e.max®CAD 84.1 ± 2.3GPa; IPS Empress® 47.9 ± 2.1GPa; Vitablocs®MarkII 53.3 ± 3.9 GPa; Vita Enamic 29.1 ± 0.6GPa. The Vickers hardness were as follows: IPS e.max®CAD 644.2 ± 38.8 MPa (a); IPS Empress® 593.2 ± 34.7 MPa; Vitablocs®MarkII 659.6 ± 69.2 MPa (a); Vita Enamic 255.2 ± 51.4 MPa. Materials with the same letter in parentheses were not significantly different.

Conclusions: IPS e.max revealed significantly higher flexural strength than other tested materials. There was no significant differences in flexural strength between IPS Empress, Vitablocs MarkII and Vita Enamic. The tested materials showed significant deference in flexural modulus; the lowest Vita Enamic. IPS E.max and Vitablocs MarkII (not significantly different from each other) were significantly harder than Empress and Enamic. Enamic showed significantly lower hardness then other materials.

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