FC165
The Evaluation of Microhardness, Polymerization Shrinkage and the Heat Released During Polymerization of a Posterior Composite Polymerized with Different Techniques and Different Light Devices
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Aim and purpose: The aim of this study was to evaluate the effect of three light curing units on the polymerization shrinkage, microhardness and temperature rise of the bulk fill restorative composite.

Materials and method: In our study, a conventional halogen lamp (QTH, Blue Luxx) and two light-emitting diodes (HS-LED 1500 and VALO-LED) light units, presented eight different light applications, were used. 4 mm thin and only light-curing posterior composite (X-tra Fil-Voco) samples were fabricated. Video display method, Vickers surface method and the non-contact temperature measuring methods were used. Data were analyzed by two-way ANOVA and Tukey tests.

Results: Although the highest polymerization shrinkage was found in the standard mode of the 3rd Generation LED unit, the lowest polymerization shrinkage was found in the soft-start mode of the 2nd Generation LED unit. The highest values of surface hardness were found in the soft-start mode of the 2nd Generation LED unit. The lowest values of surface hardness were found in the extra mode of the 3rd Generation LED unit. The ratio between lower and upper surface hardness values were found higher than 80% only for the polymerization performed by the standard and soft-start mode of the 2nd Generation LED unit. Temperature rise was the lowest for the pulse-delay mode of the 2nd generations of LED unit. The temperature rise was the highest for the extra mode of the 3rd Generation LED unit. There were statistically significant differences between those mentioned groups.

Summary and conclusions: Numerous in-vitro studies are needed to suggest an ideal composite resin and light device.
Materials and method: Eighty disc-shaped specimens (6 × 2 mm) were made with Filtek Silorane. Twenty specimens were immediately repaired with Filtek Silorane (positive control; n = 10) or Filtek Z250 (negative control; n = 10). In both control groups any surface treatment or adhesive system were used. The other 60 specimens were stored for 7 days in water (37°C) and randomly assigned by 6 experimental groups (n = 10) according to the possible combination between surface treatment (sandblasted – 50 μm Al2O3; diamond bur) and repairing material (Silorane System Adhesive/Filtek Silorane; Adper Scotchbond Multi-Purpose/Filtek Z250; Scotchbond Universal Adhesive/Filtek Z250). After repairing procedure all specimens were stored in water (37°C) for 72 h and tested in shear (Instron, 0.5 mm/min, 1 kN). Failure mode was classified as: cohesive, cohesive or mixed type. Data were submitted to Kruskal–Wallis and Mann–Whitney non-parametric statistical tests (alpha = 0.05).

Results: SBS was influenced by the repairing material (p < 0.05), but there were no significant differences (p > 0.05) between surface treatments. Only 3 experimental groups (Al2O3/Silorane Adhesive/Filtek Silorane; Al2O3/Scotchbond Universal/Filtek Z250; Al2O3/Scotchbond Universal/Filtek Z250) yielded similar SBS mean values to positive control (p > 0.05). Control groups repaired with Filtek Silorane or Filtek Z250, showed 100% of cohesive and adhesive failure, respectively, and no differences were found (p = 0.733) between failure mode observed in the 6 experimental group.

Summary and conclusions: It is possible to achieve high bond strength between methacrylate-based and silorane-based composites, using Scotchbond Universal Adhesive.

FC169
Analysis of Micronucleus Frequency in Buccal Mucosal Epithelial Cells of Dry Cleaning Workers
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Aim and purpose: The aim of this study was to evaluate the exposure effect and duration of exposure effect of perchloroethylene in the increase of micronucleus frequencies in buccal mucosal epithelial cells of dry cleaning workers in Yogyakarta, Indonesia.

Materials and method: This cross sectional study involved 12 subjects and 12 controls. The subjects were male dry cleaning workers who were exposed to perchloroethylene, while controls were healthy male students who were not exposed to perchloroethylene. Buccal mucosal epithelial cells were taken using cytobrush and smeared on object glass containing droplets of NaCl 0.09% solution and then fixed in methanol-acetate. The specimens were stained using modified Feulgen-Rosenbeek method. Micronucleus frequencies were scored per 1000 cells under light microscope. The data then analyzed by independent t test and Pearson correlation test on p < 0.05 significances.

Results: The results showed that there was significant difference in micronucleus frequencies between group of dry cleaning workers and the control group however duration of exposure time did not correlate with the increase of micronucleus frequencies in the group of dry cleaning workers.

Summary and conclusions: This study concluded that exposure of perchloroethylene indicates increase of micronucleus frequencies in buccal mucosal epithelial cells of dry cleaning workers in Yogyakarta, Indonesia. Duration of exposure time of perchloroethylene did not correlate with the increase of micronucleus frequencies in buccal mucosal epithelial cells of dry cleaning workers in Yogyakarta, Indonesia.

FC170
Cytogenetic and Histopathological Analysis in Oral Potentially Malignant Lesions and Oral Squamous Cell Carcinoma
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Aim and purpose: Tobacco related oral potentially malignant disorders (OPMDs) and Oral Squamous Cell Carcinoma (OSCC) arises through an accumulation of genetic alterations, including...
chromosomal alterations, DNA changes and/or epigenetic alterations due to the toxins present in betel quid and tobacco. This study was undertaken to assess the cytogenetic alterations in the peripheral blood of histopathologically confirmed cases of tobacco related OPMDs and OSCC to identify the structural chromosome aberrations (STA) known to initiate tumour progression and to co-relate the degree of chromosomal aberrations with histological and clinical stages of the disease.

Materials and method: The frequency of STAs was analyzed in 60 histopathologically confirmed OPMDs (30 leucoplasia 30 osmf) and oral squamous cell carcinoma (OSCC) patients. 2 ml of fresh heparinized venous blood was collected from the patients and equally matched control subjects for Leukocyte culture & frequency of cytogenetic damage was analyzed from modified Giemsa stained sections.

Results: STAs showed a significant p value between the Controls, OPMDs & OSCC cases through ANOVA. STAs showed a significant p value in the patients when compared with the controls and also showed an increased chromosomal alteration in OPMDs and further increased in OSCC thus correlating well with the histological and clinical stages of the disease.

Summary and conclusions: The elevated STAs in the study group could be attributed to the fact they belong to high risk population for oral cancer. A predictor STAs identified in the present study may be used in future for early diagnosis and subsequent disease management of the tobacco related oral cancer patients.
during the study period. The data was analyzed using statistical package for social sciences, version 20 and categorical variables were analysed using chi-square test at 5% level of significance.

**Results:** Out of 743 study participants, 628 (84.5%) were males and 115 (15%) were females. The prevalence tobacco users was found to be 82.9% (616). Majority of participants (56%) fall in age group of 25–44 years with tobacco habit. Out of 616, 547 (86.8%) are aware of ill effects caused by tobacco usage and 297 (48.2%) showed their willingness to quit tobacco habit. None of the study participants are aware of nicotine replacement therapy available in market.

**Summary and conclusions:** Given the high prevalence among spinning mill workers, our results highlight the importance of focusing attention on tobacco cessation training. Most of the respondents had favourable attitude towards quitting tobacco usage and social concern was the main predictor of quitting tobacco usage.

**FC178**

**Quality of Life in Relation to Orthodontic Problems among Adolescent Children in India – A Cross-Sectional Study**

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**Aim and purpose:** To evaluate the prevalence of orthodontic problems and quality of life in relation to orthodontic treatment among adolescent children in the city of Chennai, India.

To analyze: the difference in the need for orthodontic treatment among children in the public and private schools; the need for orthodontic treatment among the various socioeconomic groups; the relationship between Quality of Life and the need for orthodontic treatment.

**Materials and method:** This is a Cross-sectional study which was conducted in 3 months. 200 children participated in the study, both male and female under the age group of 13–14 years. 100 were from the private and 100 from the public school. Two sets of questionnaires were used, one filled by the children and the other by the researchers, according to the WHO oral health assessment. Statistical analysis was done using SPSS 17.0 software.

**Results:** Private school children had more orthodontic problems than public school children. The need for Orthodontic Treatment was highest in children under the rich category. Quality of Life was better among children in private schools than in public schools. Children who did not have a good quality of life had little or no need for orthodontics when compared to children who had a good quality of life.

**Summary and conclusions:** Children from the private school who were from the rich socio-economic group had more orthodontic problems and need for orthodontic treatment. A low quality of life and socio-economic status does not have a significant impact on the prevalence and need for orthodontic treatment.

**FC179**

**Knowledge, Attitude and Practices of Medical Practitioner of a Third World Country Towards Oro-Dental Health**

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**Aim and purpose:** Study conducted to find out the Knowledge, Attitude and Practices of Medical Practitioner/General Physicians of a third world country towards oral dental problems and dentistry. Physicians could play a pivotal role in oral public health. They must have basic dental knowledge so they can easily manage different oral and dental conditions and if this condition can be identified at early stage so this may not lead to sever problem.

**Materials and method:** Cross sectional survey was conducted on 100 randomly selected medical Practitioners of Karachi using a questionnaire. Only doctors who have M.B.B.S degree and were registered medical practitioners by Pakistan Medical and Dental council and practicing in Karachi were selected. Questions were designed to find out the knowledge of medical practitioners about oral health, awareness of oral problem and their attitude towards dentistry.

**Results:** 15% of the medical practitioners check the oral cavity including teeth always, 93% are aware that oral health has relationship with general health but only 4% advise to visit a dentist for regular oral and dental check-up once in 6 months and 63% never advise for scaling in case of poor oral hygiene. 77% of the medical practitioner ignore those patients comes with the signs of Chronic Gingivitis. Usually medical practitioners try to resolve the complaint by themselves.

**Summary and conclusions:** Knowledge, Attitude and Practices of Medical Practitioner/General Physicians of a third world country towards dentistry is NOT good and active measure should be taken change the attitude and to improve the knowledge.

**FC180**

**Treatment of Water: De-Fluoridation**

Rushit Patel, Karan Patel, Harsh Patel

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**Aim and purpose:** Global prevalence of fluorosis is 3.2% defluoridation is scientific process of removing excess naturally occurring fluoride from drinking water to improve quality of water by adjusting the optimum level in drinking water and to reduce prevalence and severity of dental fluorosis and it makes drinking water safe for human consumption.

**Materials and method:** Reduction of fluoride concentration to less than 1 mg/l which is suitable for health in drinking water it depends upon materials and method used now days organic or inorganic substances are available:

1. Adsorption and ion exchange method
2. Precipitation method
3. Membrane separation method
4. Indian technology: Nalgonda technique, calcined magnesite technique, prasanti technology and other materials tried in India
(fish bone charcoal, drumstick plant, clay minerals, tricalcium phosphate).

**Results:** Result depends upon material and method used very good result obtained by 4 methods NALGONDA TECHNIQUE is most efficient among them, in which with very low pH 2 more than 85% fluoride ion adsorbed which decreases with higher pH. Rate of fluorosis is also reduced after using defluoridation technique in higher scale providing beneficial effect.

**Summary and conclusions:** Fluoride in drinking water causes beneficial or detrimental effect depending upon its concentration and ingested amount. High fluoride content causes ultrastructural malformations, inhibit germination thus prevention is the only solution because cure is impossible the first and foremost preventative measure is drinking fluoride safe water this can be accomplished by defluoridation of fluoride contaminated drinking water defluoridation should be taken up where there is no alternate source of safe drinking water.

**Free Communication Session 44 – Room 218 | 2015-09-24 | 9:30-10:30**

**Theme:** Preventive Dentistry – Periodontology

**FC173**

**Role of Low Intensity Pulsed Ultrasound in Orthodontic Tooth Movement**

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**Aim and purpose:** To study the effect of Low Intensity Pulsed Ultrasound on the rate of orthodontic tooth movement.

**Materials and method:** Ten adult male patients undergoing canine retraction bodily in first premolar extraction cases were selected. Continuous orthodontic force of 180 g was applied using closed coil springs. The study design utilized a split mouth model by randomly allocating one side as test and the other as control. The test side received low intensity pulsed ultrasound (LIPUS) daily for 20 min. Movements were measured using a digital caliper that can read up to 0.01 mm; one investigator performed all the measurements. Appropriate statistical methods were used.

**Results:** The results indicated a statistically significant increase in the tooth movement rate in the LIPUS group than the control group.

**Summary and conclusions:** Daily application of LIPUS for 20 min to orthodontically treated teeth increased the rate of orthodontic movement.

**FC174**

**Evaluation of Anemia of Chronic Diseases after Periodontal Therapy in Chronic Generalized Periodontitis Patients**

Ebenezer Mani

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**Aim and purpose:** To study the effect of non-surgical periodontal therapy that improve the hemoglobin and erythrocyte levels in chronic generalized periodontitis patients and to find out whether chronic periodontitis could lead to anemia.

**Materials and method:** After informed consent, 100 male patients with chronic generalized periodontitis participated in the study. Clinical parameters such as Plaque index, gingival index, probing depth and clinical attachment level were recorded using William’s periodontal probe on full mouth basis. The clinical parameters were re-evaluated at three months after non-surgical therapy. Serum ferritin level was evaluated before non-surgical periodontal therapy. Hematological parameters such as Red blood cell count, hemoglobin concentration, erythrocyte sedimentation rate and peripheral smear were evaluated before and after non-surgical periodontal therapy.

**Results:** Clinical parameters such as Plaque index, Gingival index, Probing depth and Clinical attachment level showed positive correlation with erythrocyte sedimentation rate and negative correlation with Red blood cell count and Hemoglobin concentration. p values from the statistical tests presented were found to be statistically highly significant at p < 0.001.

**Summary and conclusions:** From this study we conclude that there is a significant improvement on erythrocyte count and hemoglobin concentration and decrease in erythrocyte sedimentation rate after non-surgical therapy in chronic generalized periodontitis patients.

**FC175**

**Slow Release Local Drug Administration in Periodontal Diseases**

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**Aim and purpose:** This paper aims to discuss and compare the various slow drug devices (SDD) loaded with chemotherapeutic agents in different forms that have been formulated and evaluated for periodontal therapy and its contemporary scenario in India.

**Materials and method:** Extensive review on SDD since the time of Goodson’s first local delivery device of cellulose acetate fibre containing tetracycline to present scenario that includes delivery of nanosized devices has been done. Studies were identified using MEDLINE and other sources by entering the key words i.e. slow drug device, local drug delivery, controlled drug delivery, periodontal disease.

**Results:** The results show that SDD maintains a therapeutic concentration for longer duration at the site of action and low concentration in serum. SDD alone can improve clinical parameters but SDD when used as an adjunct to SRP revealed superior clini-
Association Between Periodontitis and Diabetes Mellitus in UAE Population

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Aim and purpose: Periodontitis and diabetes mellitus share a common pathogenesis, which involves an enhanced inflammatory response. The principal aim of this study was to investigate the association between periodontitis and diabetes mellitus in the United Arab Emirates (UAE) population.

Materials and method: A nested case-control study was performed. The study included 110 patients with periodontitis (cases) and 220 patients without periodontitis (controls). The information on potential diabetes mellitus, gender, age, patient’s oral hygiene and smoking has been collected for all subjects from dental records.

To assess the periodontitis risk, logistic regression analysis was used.

Results: The patients with diabetes mellitus had an almost 52 times higher risk of developing periodontitis compared to the subjects without diabetes mellitus (OR = 51.99, 95% CI 15.65–172.74). The risk of developing periodontitis in patients with diabetes mellitus did not change considerably after adjustment by gender (OR = 50.86, 95% CI 15.30–169.13) and smoking (OR = 50.70, 95% CI 15.22–168.94). However, the risk changed from 51.99 (95% CI 15.65–172.74) to 28.60 (95% CI 8.39–97.55) after inclusion of age as a categorical variable (>3 years and ≤38 years), and to 36.71 (95% CI 10.36–130.05) after inclusion of oral hygiene.

The stratification of diabetes mellitus by age showed that the risk was higher in patients over 38 years of age.

Summary and conclusion: This study demonstrated an increased risk of developing periodontitis in UAE patients with diabetes mellitus compared to subjects without this disease. An important finding of the current study shows that the association between periodontitis and diabetes mellitus is modified by age.
microscope. Clinically marginal discrepancy was evaluated. Data was analysed using Independent t test and chi square test (p = 0.05) at 90% power.

**Results:** There was no statistically significant difference between the mean width of retracted sulcus and crown fit. In both phases, mean gingival recession in the cord group was significantly greater than Expasyl paste group (p < 0.05). The gingival index score was significantly higher in the cord group in comparison to the paste group.

**Summary and conclusions:** Within the limitations of the study, gingival retraction with Expasyl paste method caused less injury to gingival tissues than plain retraction cord, while both provide equal gingival retraction. Also, this system requires reduced time for application, is easier to place and provide excellent hemorrhage control. Hence, the newly developed injection type retraction material as a gingival agent is clinically feasible.

**Aim and purpose:** To study the influence of C.A.B.Le in preclinical teeth arrangement skills of undergraduate second year students and also to determine the optimal magnitude of critical appraisal based learning.

**Materials and method:** Undergraduate volunteers were randomly allocated into four groups with students in group A (n = 25, control) asked to complete a tooth arrangement exercise on standardised articulated rims. The students of the other three groups were given a lecture demonstration on the critical appraisal exercises. Also, this system requires reduced time for application, is easier to place and provide excellent hemorrhage control. Hence, the newly developed injection type retraction material as a gingival agent is clinically feasible.

**Results:** The mean cumulative scores obtained by group C, D were significantly lower when compared to the mean cumulative scores of group A (p = 0.001) and group B (p < 0.001).

**Summary and conclusions:** Critical appraisal based learning appear to significantly improve the preclinical teeth arrangement skill of undergraduate dental students. Critical appraisal exercise repeated over 4 times appears to deliver the optimal level of training required for teeth arrangement exercises.

**Aim and purpose:** To compare the clinical performance of CAD-CAM fabricated and heat cured methacrylate provisional fixed partial denture.

**Materials and method:** In this prospective trial, 10 partially edentulous patients with bilaterally missing teeth requiring fixed partial dentures were provided with long term provisional restorations, one of which was fabricated with heat cured methacrylate resin and the other using the CADCAM technique. The restoration were evaluated at baseline, 1 month and 3 months using the modified CDA criteria and plaque index of the abutment teeth.

**Results:** Cumulative survival rates (Kaplan–Meier analysis) after 3 months were 96.7% for CADCAM fabricated and 83.3% for heat cured methacrylate provisional fixed partial dentures (p > 0.05). There were significant differences in marginal adaptation between the two groups at 3 months and differences in anatomical form, color match, surface smoothness favoring the CADCAM group.

**Summary and conclusions:** The high survival rates of CADCAM fabricated provisional restorations and it’s superior properties of marginal adaptations, color match and anatomic form would make these type of estimation preferable for long term interim therapy.
the turbufill denture (282.22 ± 68.34) required less time than the conventional denture (413.22 ± 83.67) (p < 0.05).

**Summary and conclusions:** It can be concluded that turbufill denture can be considered as a superior alternative to conventional denture and can be included in the standard dental curriculum.

**FC186**

The Evaluation of Temperature and Stress Distribution on Two Different Post Systems Using Three-Dimensional Finite Element Method

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**Aim and purpose:** The oral cavity is subjected to thermal irritation from hot and cold foods and beverages. Thermal changes in the oral cavity produce expansions and contractions in tooth structures and restorative materials. The aim of this study was to investigate the effect of temperature and stress distribution on two different post systems using three dimensional (3D) finite element method.

**Materials and method:** A 3D finite element model was created to represent a labio-lingual cross-sectional view of an endodontically treated maxillary right central incisor tooth with its supporting structures. Stainless steel and glass fiber post systems with different physical and thermal properties were modelled in the tooth restored with composite core and ceramic crown. A 100 N static vertical occlusal load was applied at the center of incisal surface of the tooth. 0°C and 65°C thermal load was applied on the model for 5 s. Temperature and thermal stresses were determined on the labio-lingual section of the model on 6 different points.

**Results:** Stress distribution and thermal stress values were then calculated by using 3D finite element analysis. Stainless steel post system produced more temperature and thermal stresses on the restorative materials, tooth structures and posts than glass fiber reinforced composite posts.

**Summary and conclusions:** Thermal changes generated stresses in the restorative materials, tooth and supporting structures.

**FC187**

Surface Treatment of Implant Abutment and Temporarily-Cemented Metal Cope

Waleed Elshahawy, Mahmoud Shakal, Sherif Elsharkawy
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**Aim and purpose:** The advantage of potential retrievability of cement-retained implant restorations using provisional cement has raised question about its capability to retain restoration for a long period of time in between periodic check-up. Therefore, the aim was to evaluate the effect of various surface treatments of implant abutment and metal cope fitting surface on their bond strength to provisional resin cement.

**Materials and method:** Sixty implant analogs and standard titanium abutments were embedded in autopolymerizing acrylic resin blocks. Metal copings with a loop on the occlusal surface were fabricated using Ni-Cr alloy. Specimens were surface treated (n = 20) with 50 μm Al₂O₃ air-borne particle abrasion, 50 μm Al₂O₃ air-borne particle abrasion plus alloy primer, and Cojet silicoating. Thermocycling plus mechanical loading were done for half of specimens. The copings were luted using provisional resin cement. Samples were tested for tensile bond strength using a universal testing machine at a crosshead speed of 0.5 mm/min. Statistical analysis was performed using one way ANOVA (p ≤ 0.05) and T-test.

**Results:** Cojet silicoating recorded significant highest mean values (5.190 MPa) followed by air-borne particle abrasion (3.698 MPa), and then alloy primer on air abraded surface (1.998 MPa). Subjecting the samples to thermocycling plus mechanical loading corresponding to 6 month of clinical use has led to significant loss of retentive values.

**Summary and conclusions:** Cojet system has produced the highest bonding values among the other tested groups even after thermocycling plus mechanical loading.

**FC188**

Evaluation of Degree of Satisfaction among Denture Wearers

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**Aim and purpose:** The purpose of this study was to assess satisfaction, as well as the frequency and type of prosthetic complications in denture wearing patients.

**Materials and method:** In this study, a total of 130 patients restored with removable prosthesis were included. A specific questionnaire for patients related to the use of denture and post-insertion satisfaction was given. For each patient, relevant history was recorded and examination of oral tissues and existing dentures (where present) were performed. The level of satisfaction of patients wearing prosthesis was evaluated in terms of retention, stability, aesthetics, function and comfort.

**Results:** Majority of the patients gave a positive feedback specially the patients on long term usage of the dentures with no complaints as such. Patients who had recently started wearing dentures had just about a few complaints with the change in speech and with the retention of the lower dentures while chewing but on a later assessment gave a positive review.

**Summary and conclusions:** Patients are mostly satisfied with their dentures, which are judged as satisfactory by the dentist. There is a difference between the retention of the upper and lower dentures, however, in a level of satisfaction with their dentures in chewing.
Free Communication Session 47 – Room 217 | 2015-09-24 | 11:00-12:00

**Theme 1: Dental Treatment & Restorative Dentistry – Prosthetics**

**FC189**

**Evaluation of Retention in Two Different Modalities of Implant Retained Mandibular Overdentures**

Amr Mohamed Badr

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**Aim and purpose:** This study was conducted to evaluate the retention improvement of telescopic denture with o-ring attachment versus the OT cap attachment.

**Materials and method:** An acrylic model of edentulous mandible with two implants inserted in the cuspids region. A spacer with tin foil was placed on the primary coping before secondary copings were constructed and embedded in the denture fitting surface. A circumferential groove at the middle of each primary coping was accentuated. The retention was measured at the time of initial insertion and after 90, 270, 540, 1080, 1620, 2160 cycles from insertion and removal respectively using the Universal Testing Machine. Changing the design using a ball and socket attachment (OT-cap) then retention was measured at the same different cycles.

**Results:** The results showed that Telescopic denture with O-ring recorded the mean retentive force of 23.76 N at baseline and the lowest force was 11.873 N after 2160 cycles. While using the OT cap attachment; the mean retentive force was 45.3 N at baseline and the lowest retention force was 15.4 N after 2160 cycles.

**Summary and conclusions:** It was concluded that, there was a significant difference at baseline between the two groups; although after 2160 cycles, loss of approximately 70% of retention was recorded in OT-cap attachment to 50% loss in o-ring design.

**FC190**

**Effect of Different Commercially Available Denture Cleansing Agents on the Color Stability of Heat-Cure Denture Base Material**

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**Aim and purpose:** The aim of the present study is to evaluate the effect of 4 commercially available denture cleansers on the color stability of heat cure acrylic resin at different time intervals.

**Materials and method:** Total of 45 heat cure acrylic resin specimens, measuring 10 × 10 × 2 mm were fabricated and randomly divided into 5 groups: Group A (Polident); Group B (Efferdent); Group C (Clinsondent); Group D (Fittydent) and Group E (distilled water as Control) comprising of 9 samples each. After recording the baseline values the specimens were then immersed in their respective cleansing solutions for 8 h, rinsed thoroughly and immersed in distilled water for 16 h at room temperature. This procedure was repeated every day and the color change was evaluated after 90, 180 and 365 days interval using a colorimeter in a standard “Commission International de l’Eclairage” color system.

**Results:** All the groups exhibited slight color change (ΔE) which are within an acceptable range as described by National Bureau of Standards (NBS Units). Also, the color change (ΔE) was slightly higher for immersion period of 180 days compared to that of 365 days for all the tested groups.

**Summary and conclusions:** These results suggest that the color stability of denture base resin material depends upon the type of denture cleanser used and the immersion period.

**Theme 2: General Dentistry and Oral Health**

**FC191**

**Dental Students’ Perceptions on Practice Management and Career aspirations**

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**Aim and purpose:** The inclusion of “management” competencies in medical curricula is widely propagated. There is some evidence in the literature that undergraduate dental students do not regard management skills as important as clinical skills.

To investigate student perceptions regarding Dental Practice Management (DPM) as a subject in the undergraduate dental curriculum and to relate these perceptions to their future career aspirations.

**Materials and method:** A cross-sectional survey was conducted through a structured questionnaire amongst third, fourth year dental students & interns (n = 160) at the University College of Dentistry.

**Results:** The majority (92%, n = 147) agreed that DPM should be a subject in an undergraduate curriculum, but there was no correlation with their career aspirations. Leadership and management skills (77.6%), people skills (64.6%) and communication and listening skills (46.4%) as well as personal style (42.2%) were seen as the most important non-clinical skills. Students indicated their career aspirations as follows: private practice owners (58.3%, n = 93), working overseas (25.1%, n = 40), public sector (5.4%, n = 9) and other career options (11.2%, n = 18). Most students (73%, n = 117) indicated they would specialise if they were afforded the opportunity.

**Summary and conclusions:** In light of higher number of trainees entering private practise, management and leadership skills will be vital to the successful long-term career and hence academic institutions and government should address these issues as a priority in their undergraduate curricula. Colleges can invite Management teachers with good academic credentials and success rate for a 6-month duration during Third year. Interns also can submit a mandatory project during 1-year rotatory internship.
Structures of Anterior Teeth

Relationship of Orthodontic Treatment with the Periodontal Tissues to Trauma, related to orthodontic forces. It is extremely important to conduct a multidisciplinary approach involving both branches of dentistry, (orthodontics and periodontics).

**PURPOSE:** To determine the impact of orthodontic treatment and the dental malpositions in the periodontal tissues (protection) of anterior teeth in patients who completed the Orthodontic treatment at the Graduate’s Orthodontics clinic of Universidad Iberoamericana, UNIBE (2012–2013).

**Materials and method:** Records of patients of the Graduate’s Orthodontic Clinic of Universidad Iberoamericana, (UNIBE), were reviewed. The sample was composed of all the patients who completed the treatment between the years 2012–2013.

**Results:** 60% of the patients had gingival enlargement during and after orthodontic treatment, most of them were females; the most relevant of the studied variables were: dental malpositions, hygiene and givoposition.

**Summary and Conclusions:** The orthodontic appliances and treatment alone do not trigger alterations in the periodontal tissues (protection), there’s evidence that tooh malposition and its influence on the oral hygiene of the patient, together with the orthodontic forces out of the normal parameters may develop these alterations.

A Comparative Study of Candidal Parameters in the Oral Cavity of Type 2 Diabetes Mellitus Patients and Non-Diabetic Controls

**Aim and purpose:** The aim of the present study was to assess the prevalence, species variability and factors influencing the oral candidal carriage in diabetic mellitus patients and non-diabetic healthy individuals.

**Materials and method:** A Cross-sectional study of 50 type II diabetic patients and 50 non-diabetic subjects included in the study. The study examined the candidal carriage, species, salivary flow rate and buffering capacity.

**Results:** 66% of the subjects in the Diabetic group had candidal prevalence and only 18% of the controls had candidal carriage, which is found to be highly statistically significant. Candida albicans was the most common candidal species isolated followed by Candida tropicalis. The frequency and density of Candida colonization and the development of oral candidiasis in diabetes mellitus patients seem more the result of a combination of host and fungal risk factors (e.g. degree of glycemic control, presence of dentures, smoking habits, age), rather than any other single factor. As in the individuals without Diabetics, tobacco smoking and wearing of denture favour the carriage of Candida.

**Summary and conclusions:** The increasing prevalence of oral Candida infections and the emergence of antifungal resistance to the newer azoles have in addition renewed the vigor and impetus of Candida research. The present study has focused on the relationship between oral candidal and Diabetes Mellitus. The study has also examined the species and has quantified the organisms and has identified oral disease factors, systemic disease factors that promote fungal growth.

The Relationship Between Diabetes Mellitus, Periodontal Health Status and Dental Caries

**Aim and purpose:** To study the relationship between diabetes mellitus, periodontal health status and dental caries.

**Materials and method:** A case-control study involving 42 type II diabetic patients and 42 non-diabetic patients was conducted at Polyclinic, Kulliyyah of Dentistry, International Islamic University Malaysia. Their decay, missing, filling, total scores (DMFT) and full mouth periodontal parameters were recorded. Patients’ sociodemographic background was obtained and diabetic profile was assessed.

**Results:** The percentage of diabetic patients that were diagnosed with periodontitis was 88.1% compared to 59.5% in the control group and it was statistically significant (p < 0.05). In comparing periodontitis in both groups, the bleeding on probing (BOP) and pocket depth (PD) showed no significant difference (p > 0.05) while the clinical attachment loss (CAL) showed significant difference (p < 0.05). The mean values for decay, missing and filled teeth in the diabetic group were 2.24 (±1.94), 8.52 (±6.13) and 3.76 (±2.79) respectively, while in the control group were 1.83 (±1.92), 4.79 (±3.8) and 2.79 (±2.76) respectively. Among all three mean values, missing teeth was the only one that showed significant difference (p < 0.05). However, the total DMFT score between the two groups showed statistically significant results (p < 0.05). Among the diabetic patients, there was no significant difference between those with high random blood glucose level
and those with normal level in terms of the periodontal parameters and DMFT.

**Summary and conclusions:** Diabetes mellitus negatively affects oral health as reflected by the higher DMFT scores in diabetic patients. There was also a greater prevalence and severity of periodontitis in diabetic subjects than in nondiabetics.

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**FC195**

Estimation of Interleukin-1β in Relation to Periodontal Disease

Meenu Taneja Bhasin

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**Aim and purpose:** The aim of this study is to quantify the IL-1β levels of gingival tissue in Chronic & Aggressive Periodontitis patients and to correlate its levels with the clinical parameters.

**Materials and method:** A total of 154 sites were selected & gingival tissue samples were obtained from 13 patients with Chronic Periodontitis (25 healthy & 34 diseased sites samples), 13 patients with Aggressive Periodontitis (40 disease & 28 healthy sites); 13 Periodontally healthy individuals (27 healthy tissue) was harvested for study. Clinical parameters like Plaque index, Gingival index, Gingival Bleeding index, Probing pocket depth & Clinical attachment level were recorded for the selected sites. The assessment of IL-1β was done using ELISA.

**Results:** IL-1β was observed in 100% of the diseased sites of Chronic and Aggressive Periodontitis cases. The IL-1β concentration of diseased sites of Chronic as well as Aggressive Periodontitis was significantly higher than the healthy tissues of Periodontitis as well as of periodontally healthy individuals. The plaque & the gingival index of the diseased sites as well as healthy sites of Chronic Periodontitis significantly correlated with IL-1β concentration and a highly significant correlation was observed between Plaque index in Periodontally healthy subjects & IL-1β levels (p < 0.001). A highly significant correlation was observed between IL-1β levels & Gingival bleeding index for both the diseased & healthy sites of subjects with Chronic & Aggressive Periodontitis.

**Summary and conclusions:** The results of the study indicate a more specific role for IL-1β in the pathogenesis of periodontal disease, suggesting IL-1β may have diagnostic utility, as well as dependable aid in monitoring periodontal disease activity.

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**FC196**

Periogen Oral Rinse Study to Determine the Effect of Periodontal Disease

Toanfoeng(bill) Tham

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**Aim and purpose:** The cause of periodontal disease is bacterial film known as plaque. Bleeding upon probing (BUP) is usually the first sign of periodontal disease. The purpose of the study is to determine the effect of Periogen oral rinse on plaque index (PI), probing depth (PD), BUP and calculus after 90 days of daily Periogen use.

**Materials and method:** A total of 53 systemically healthy subjects enrolled and randomly assigned in this double blinded and placebo-controlled clinical trial. At baseline, and at 90th day, PI, BUP, PD and photographs were taken and recorded. Participants were instructed to rinse with the assigned oral rinse twice daily using Waterpik ultra WP100 oral irrigator. BANA (Benzoyl-DL-Arginine NaphthyAMide) chair side periodontal test were performed to detect presence of oral bacteria in plaque.

**Results:** PI, BUP and PD in Periogen oral rinse group had more significant improvement as compared to placebo group after 90 day used of the product. However, visible calculi were not much significant difference between groups especially true for subjects who have Calculi Bridge for many years. Overall improvement in PI, BUP, PPD were seen in Periogen group as compared to placebo group.

**Summary and conclusions:** After using for 90 days, plaque index, bleeding upon probing, and periodontal pocket depth were reduced more in Periogen oral rinse group compared to the placebo. However, no significant difference was found between groups. In conclusion, Periogen oral rinse is significantly better in reducing periodontal disease as compared to just using waterpik oral irrigator alone.

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**Free Communication Session 49 – Room 215 | 2015-09-24 | 12:30-13:30**

**Theme:** Dental Treatment & Restorative Dentistry – Prosthetics

**FC201**

New Era in Treatment of Badly Broken down Endodontically Treated Teeth “Materials and Techniques”

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1Fixed Prosthodontic Department, October 6 University, Giza, Egypt, 2Fixed Prosthodontic Department, Cairo University, Giza, Egypt, 3Fixed Prosthodontic Department, MUST University, Giza, Egypt

**Aim and purpose:** Evaluation of the fracture resistance of three different post materials: polyethylene post (Ribbond) post, fiber composite posts (Everstick) post and (Rely-X) post at two different post lengths.

**Materials and method:** Thirty extracted mandibular bi-cuspid teeth were collected. Each sample had their crown sectioned 2 mm coronal to the C.E.J then were endodontically treated. After obturation, roots of the samples were coated with pink wax 2 mm in diameter saving space for periodontal substitution then, acrylic resin block was constructed for each sample. Periodontal substitution was done inside the space left by wax. A ferrule was prepared for each sample using a milling machine. After that; the samples were divided into three main groups according to the type of post placed (group A: Rely-X (control), group B: Everstick post, group C: Ribbond post). Each main group was subdivided into 2 subgroups according to post length at 6 mm and at 8 mm. Each sample received static axial load from a universal testing machine and data were collected and statistically
analyzed to evaluate the fracture resistance and the modes of failure were visually inspected.

**Results:** Rely-X post showed the highest mean fracture resistance value followed by Everstick post and Ribbond post showed the lowest value. Regarding the mode of failure, Rely-X post showed the worst mode of failure.

**Summary and conclusions:** Newly introduced posts Everstick and Ribbond have a favorable prognosis in the fracture mode. Post lengths did not influence the fracture resistance of endodontically treated teeth.

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**FC202**

**Effects of Hot Chemical Etching and MDP Monomer on Resin Cementation of Zirconia Ceramics**

Canan Akay¹, Merve Tanış Çakırbay², Murat Şen³

¹Department of Prosthodontics, Osmangazi University, Meşelik, Eskisehir, Turkey, ²Private Specialist, Ankara, Turkey, ³Department of Chemistry, Polymer Chemistry Division, Hacettepe University, Beytepe, Ankara, Turkey

**Aim and purpose:** The purpose of this in vitro study was to evaluate efficiency of hot chemical etching method on shear bond strength between zirconia and two resin cements; a conventional resin cement Variolink II and a MDP containing resin cement Panavia SA.

**Materials and method:** Sixty zirconia specimens (13 mm x 7.5 mm x 2.5 mm) (ICE Zirkon, Zirkonzahn, Bruneck, Italy) were prepared and divided into three groups. Surface treatments were performed as following; Group I: Sandblasting, Group II: Hot chemical etching for 10 min, Group III: Hot chemical etching for 30 min. Sixty Composite cylinders (Tetric Ceram, Ivoclar Vivadent, Schaan, Liechtenstein) in 3 mm diameter and height were prepared. After application of surface treatments composite cylinders were cemented to zirconia surfaces with conventional resin cement Variolink II (Ivoclar, Vivadent AG, Schaan Liechtenstein) or MDP containing resin cement Panavia SA (Kuraray, Osaka, Japan). After cementation shear bond strength test was performed at a crosshead speed of 1 mm/min in a universal test machine (Lloyd-LRX; Lloyd Instruments, Fareham, UK). Statistical analyses were performed by One-Way Anova and post hoc Tukey test. p value <0.05 was considered statistically significant.

**Results:** Zirconia specimens which were sandblasted and cemented with Variolink II showed minimum shear bond strength values. Highest shear bond strength values were observed when zirconia specimens were hot chemical etched for 10 min and cemented with Panavia SA cement.

**Summary and conclusions:** Use of hot chemical etching method seems a promising surface treatment method for resin cementation of zirconia ceramics. MDP monomer containing resin cement improves resin bonding with sandblasting.

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**FC203**

**Effect of the Metal Surface Treatments on the Shear Bond Strength Between Light-Cured Micro-Hybrid Composite and Cr-Co Metal Alloy**

Dilara Seyma Alpkilic, Zeynep Özbek, Sabire Deger

Department of Fixed Prosthodontics, Faculty of Dentistry, Istanbul University, Istanbul, Turkey

**Aim and purpose:** Light-cured resin veneers have been introduced as an alternative veneering material to porcelain. However, relatively low bond strength of the material to metal framework, various metal surface treatment methods have been introduced to improve the bond strength. The aim of our study is to compare the effects of the metal surface treatments on the shear bond strength and conclude to the ideal metal surface treatment option.

**Materials and method:** In this study, 50 alloy discs (Co-Cr) were prepared with retention beads. Specimens were divided into 5 groups; sandblasted, sandblasted and metal primer II (GC Co., Tokyo, Japan), sandblasted and Metal photo primer (Shofu, Kyoto, Japan), Rocotec tribochemical silica coating system (3M ESPE, Seefeld, Germany). Then Gradia opaque and Gradia indirect laboratory composites (GC Co., Tokyo, Japan) were applied. All the specimens were subjected to thermal cycles after the opaque and laboratory composite application. Shear bond strength was tested in a universal testing machine and fractured specimens were examined with SEM.

**Results:** The mean average of the groups were calculated and they ranged from 5.11 ± 1.85 to 21.45 ± 3.01. The group with only retention beads were having the lowest shear bond strength and followed by sandblasting, sandblasting and using metal primer II, Rocote and eventually sandblasting. Using metal photo primer with the highest shear bond strength. Relationships among the groups were analyzed statistically.

**Summary and conclusions:** It is shown that when the proper technique is applied, light-cured laboratory composites may be an alternative veneering material to porcelain with their improved bond strength, acceptable esthetics, abrasion similar to natural tooth tissues, fast and simple laboratory procedures.

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**FC204**

**Clinical Evaluation of Occlusal Overlays and Complete Coverage Crowns with Modified USPHS Criteria**

Deniz Yılmaz, Seda Duruálp, Lale Karaağaçlıoğlu, Semih Berksun

Department of Prosthodontics, Ankara University, Ankara, Turkey

**Aim and purpose:** Bonded, occlusal overlays constitute a conservative alternative to traditional complete coverage crowns. Information regarding selection of the appropriate restoration design, and its influence on the periodontal health, marginal discoloration, secondary caries, fracture strength and retention which may affect the longevity of the restoration, is missing.

**Materials and method:** Ten patients were included and two different restoration designs (5 complete coverage crowns, 5 modified occlusal overlays) was used. Restorations were fabricated by milling 3M Lava ultimate blocs with CAD/CAM system. 10
restorations were evaluated according to modified USPHS criteria in 1, 3 and 6 months periods.  

**Results:** 1 month after the cementation of the restorations, no significant differences were observed between the two restoration types. After 3 months, periodontal problems began to occur in the complete coverage crowns. After 6 months, the complete coverage crowns showed marginal discoloration. No dissemination, fracture and secondary caries were occurred in two types of the restorations. **Summary and conclusions:** The clinical performances of the occlusal overlays were more satisfactory than the complete coverage crowns.

**Free Communication Session 50 – Room 216 | 2015-09-24 | 12:30-13:30**

**Theme: Dental Treatment & Restorative Dentistry – Pedodontics**

**FC197**

**Prevalence of Selected Microorganisms in the Pulp Space of Human Deciduous Teeth with Irreversible Pulpitis**

Lakshmi Pallavi Kabekkodu  
*Consultant Pedodontist, Mangalore, India*

**Aim and purpose:** The aim of this study was to identify the presence of selected microorganisms from pulp space of human deciduous teeth with irreversible pulpitis.  

**Materials and method:** 40 children, 3 to 8 years old were involved in the study. The samples were collected from infected pulp spaces using sterile paper points were analyzed for selected pathogens (*Enterococcus faecalis, Escherichia coli, Streptococcus mutans, Staphylococcus aureus, anaerobes and Candida albicans*).  

**Results:** *S. mutans* in 100% of samples, *E. faecalis* in 35%, *E. coli* in 15%, *Staph. aureus* in 5%, anaerobes in 20% and *C. albicans* in 15% samples were detected.  

**Summary and conclusions:** Human deciduous teeth with initial stages of irreversible pulpitis have a considerable amount of microorganisms said to be resistant for routine treatment and also the predominance of facultative anaerobes over strict anaerobes. The presence of these microorganisms alerts us to choose more appropriate clinical techniques and endodontic materials.

**FC199**

**Treatment of Young Permanent Teeth Pulpitis with Formocresol Pulpotomy-SSC**

Gajanan Kulkarni  
*University of Toronto, Faculty of Dentistry, Toronto, Canada*

**Aim and purpose:** BACKGROUND: Newly erupted first permanent molars are the teeth most likely to become carious. Children with large carious lesions approaching the pulp often present with pulpitis. Conventional endodontic treatment is not possible due to immaturity of the root apices. Studies presenting inexpensive, reliable, interim and long-term treatment options are lacking.  

PURPOSE: The purpose of this cohort study was to assess the long-term outcomes of permanent teeth in 12 young children (6–8 years old) presenting with large carious lesions and treated with formocresol pulpotomies (FCP) and stainless steel crowns (SSC).  

**Materials and method:** Symptomatic first permanent molars with carious exposures were treated with full-strength formocresol for 4 min placed over amputated pulp stumps at the level of root canal orifices. After achieving haemostasis, the pulp chamber was filled a mix of zinc oxide-eugenol-formocresol paste. All teeth were restored with pre-crimped, permanent molar stainless steel crowns cemented with a glass ionomer cement. Clinical exams were performed every 6 months and radiographic exams were performed every 6–12 months, depending upon the initial presentation and post-treatment signs and symptoms.  

**Results:** The median follow up period was 5 years with a range of 3–7 years. All teeth treated with FCP and SSC remained clinically
and radiographically asymptomatic. Pre-treatment periapical radiolucencies when present resolved completely. Root development in all cases proceeded normally to completion.

**Summary and conclusions:** Formocresol pulpotomy with SSC is a viable, inexpensive, interim and possibly long-term treatment option for immature permanent teeth in children, with large carious lesions and pulpitis.

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**FC200**

“Comparative Evaluation of Commonly Available Storage Media on PDL Cell Survival – An In Vitro Study”

Sridhar Muktineni

*Sibar Institute of Dental Sciences, Andhra Pradesh, India*

**Aim and purpose:** Two of the most critical factors affecting the prognosis of an avulsed tooth after replantation are extra oral dry time and the storage medium in which the tooth was placed before treatment could be rendered. The ability of a storage medium to support cell viability can be an important factor in the prognosis, thus the aim of this study was to evaluate the efficacy of commonly available storage media.

**Materials and method:** 60 freshly extracted human teeth were randomly divided into 4 groups of 15 each, Group I: Electral solution; Group II: Ringer’s lactate; Group III: Oral Rehydration Salt Liquid; Group IV: Coconut water. Samples in each group were further divided into 3 sub-groups depending on the time duration they were placed in the storage medium i.e. 1, 4 and 8 h. Further these samples were subjected to Collagenase assay, the cells were stained with trypan blue and viable periodontal ligament cells were counted under light microscope.

**Results:** Statistical analysis showed that Group II demonstrated significantly more viable PDL cells in than Group IV & I, least viable PDL cells are seen with Group III samples.

**Summary and conclusions:** Ringer’s lactate maintained highest PDL cell viability followed by Coconut water, Electral solution and ORS-L at various time intervals. More studies with large samples are required to prove the efficacy of Ringers lactate as viable storage media.

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**FC205**

“Efficacy of Pre-Procedural Boric Acid Mouth Rinse in Reducing Viable Bacteria in Dental Aerosols Produced During Ultrasonic Scaling – A Pilot Study”

Swet Nisha1, Avinash Bs1, Sheela Kumar Gujjari1, Madhuri Kulkarni1

1J.S.S Dental College & Hospital, Karnataka, India

**Aim and purpose:** To compare the efficacy 0.75% Boric Acid solution and 0.12% Chlorhexidine as pre-procedural Mouth rinse in reducing viable bacterial aerosol contamination generated by ultrasonic scalers

**Materials and method:** 10 subjects fulfilling inclusion criteria was selected from the outpatients presenting to the Department of Periodontology, J.S.S Dental College and Hospital, Mysore. Ethical clearance was obtained from Institutional Ethical Committee Review Board. Treatment Group A subjects received 0.12% Chlorhexidine as pre-procedural rinse (10 ml) for 1 min and group B received 0.75% Boric Acid as preprocedural rinse (10 ml) for 1 min. Each subject served his or her own control. Following the collection of samples, 120 aerosols blood agar plates were incubated aerobically 24 h. The number of colony-forming units (CFUs) on each blood agar plate were counted in the microbiological department – J.S.S Medical College & Hospital, Mysore. The results were subjected to statistical analysis – mean and standard deviation and ANOVA test.

**Results:** Boric acid had the potential to act as potent antimicrobial activity required for reduction in aerosols contamination when compared to Control samples were no rinse were given to the subjects. Chlorhexidine mouthrinse was proven to be more effective in reducing the number of CFUs on agar plates compared with Boric acid when used as a preprocedural mouthrinse.

**Summary and conclusions:** The role of simple and inexpensive methods like preprocedural rinsing using Boric Acid solution in reducing aerosols bacterial contamination can be considered as a method of infection control in Dental Practice.

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**FC206**

Role of Green Tea Intake in Non-Surgical Management of Chronic Periodontitis: A Randomized Clinical Trial

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1Private practice, Department of Periodontology, 2Melaka Manipal Medical College, Faculty of Dentistry, Manipal, Manipal University, India

**Aim and purpose:** Periodontitis is an inflammatory disease where an increase in reactive oxygen species production or depletion of natural antioxidants causes potential tissue injury. Antioxidant therapy is therefore emerging as an effective therapeutic option for periodontal diseases. Green tea made from the leaves of Camellia sinensis is a source of powerful antioxidants with tremendous effects on the gingival and periodontal tissues. This is the first study that aims to evaluate and compare the beneficial effects of green tea intake on the total antioxidant capacity of gingival crevicular fluid (GCF) and plasma and its role as an adjunct to non-surgical periodontal therapy for the management of chronic periodontitis.

**Materials and method:** 120 subjects with mild to moderate chronic periodontitis were divided equally into two groups. After scaling and root planing for all subjects, green tea supplements to one group and placebo to the other were provided. The clinical parameters like Gingival index, Plaque index, clinical probing depth, clinical attachment loss, percentage of sites with bleeding on probing along with total antioxidant capacity of GCF and plasma were recorded at baseline, 1 and 3 months.

**Results:** There was a significant improvement in all clinical parameters along with 8 times more antioxidant capacity in GCF in case group as compared to control group.
Summary and conclusions: Green tea intake should be included as a part of non-surgical periodontal therapy for superior and rapid resolution of disease process. Green tea increases the total antioxidants capacity of GCF and plasma along with potent anti-inflammatory, astringent and anti-plaque effects.

FC207
Estrogen Receptor α and Androgen Receptor Expression in Aggressive Periodontitis Stimulated by Vitamin D and or Dexamethasone
Dahlia Herawati1, Sri Kadarish Soejono2, Wayan Tunas Artama3
1Department of Periodontology, Faculty of Dentistry, Gadjah Mada University, Yogyakarta, Indonesia, 2Department of Physiology, Faculty of Medicine, Gadjah Mada University, Yogyakarta, Indonesia, 3Faculty of Veterenary, Gadjah Mada University, Yogyakarta, Indonesia

Aim and purpose: Estrogens regulate bone homeostasis and secreted by gonads and extragonades. Action estrogen in bone are mediated by Estrogen Receptor α (ERα), particularly on effects of regulation of bone turn over and maintain bone mass. Androgens regulate osteoclastogenesis through androgen receptor (AR) stimulation. Vitamin D play a role in regulating calcium homeostasis, regulate osteoclastogenesis through androgen receptor (AR) stimulation of bone turn over and maintain bone mass. Androgens regulate osteoclastogenesis through androgen receptor (AR) stimulation.

Materials and method: Treatment patients with AP conducted initial phase therapy in form of scaling root planning preparation for subsequent surgical procedure. Fragments alveolar bone from AP patients were cultured in modified F-12 medium supplemented with FBS 20%, penicillin streptomycin 5%, and fungizone 2%. The osteoblast cells which grown in the culture were divided into 4 groups. Group 1: non-treated culture, group 2: treated with vitamin D 10–6 mol/l, group 3: treated with dexamethasone 10–7 mol/l, and group 4: treated with combination of vitamin D and dexamethasone. Alveolar bone samples non-periodontitis (NP) subjects were taken using rongour, from alveolar region impacted third molar teeth. After 7 days the treatment were stopped, immunocytochemistry technique.

Results: The combination vitamin D and dexamethasone successfully stimulated by increasing expression of ERα-NP (RR: 1.1; CI: 0.609–1.986; p: 0.75); AR-AP than AR-NP (RR: 1.625; CI: 1.869–3.038; p: 0.128).

Summary and conclusions: The stimulation using combination vitamin D and dexamethasone increases expression of ERα and AR, in osteoblast culture aggressive periodontitis.

FC208
Micromolar Sodium Fluoride Mediates Anti-Osteoclastogenesis in Porphyromonas Gingivalis-Induced Alveolar Bone Loss
Ujjal Bhawal1, Kazumune Arikawa1, Nobushiro Hamada2, Koichi Hiratsuka1, Ikuo Nasu1, Hiroihsa Arakawa2
1Nihon University School of Dentistry Matsudo, Japan, 2Kanagawa Dental University, Japan

Aim and purpose: Osteoclasts are bone-specific multinucleated cells generated by the differentiation of monocyte/macrophage lineage precursors. Regulation of osteoclast differentiation is considered an effective therapeutic approach to the treatment of bony diseases. Periodontitis is an inflammatory disease characterized by extensive bone resorption. In this study, we investigated the effects of sodium fluoride (NaF) on osteoclastogenesis induced by Porphyromonas gingivalis, an important colonizer of the oral cavity that has been implicated in periodontitis.

Materials and method: The number of colony forming units (CFU)/ml was determined for antibacterial effect of NaF on P. gingivalis. Micro-CT, TRAP staining and Immunohistochemistry was performed for the inhibitory effect of NaF on P. gingivalis-induced alveolar bone absorption. The inhibitory effect of NaF on IL-1β-induced inflammation was measured by ELISA. Effect of NaF on the suppression of osteoclast differentiation and the expression of NFATc1 protein was also examined using Western blotting.

Results: NaF strongly inhibited the P. gingivalis-induced alveolar bone loss. That effect was accompanied by decreased levels of Cathepsin K, IL-1β, MMP9 and TRAP, which were up-regulated during P. gingivalis-induced osteoclastogenesis. Consistent with the in vivo anti-osteoclastogenic effect, NaF inhibited osteoclast formation caused by the differentiation factor RANKL (receptor activator of nuclear factor kappa B ligand) and macrophage colony-stimulating factor (M-CSF). The RANKL-stimulated induction of the transcription factor NFATc1 was also abrogated by NaF.

Summary and conclusions: Taken together, our data demonstrate that the in vivo effect of NaF on the inhibition of P. gingivalis-induced osteoclastogenesis strengthens the potential usefulness of NaF for treating periodontal diseases.

Free Communication Session 52 – Room 218 | 2015-09-24 | 12:30-13:30
Theme 1: Preventive Dentistry – Periodontology

FC209
Clinical Efficacy of Aloe Vera Chip as an Adjunct to Non-Surgical Therapy in the Treatment of Chronic Periodontitis
Surekha Rathod
Vism Dental College Hingna Dig Doh Hills, Nagpur, Maharashtra, India

Aim and purpose: AIM: To evaluate the efficacy of aloe Vera as an adjunct to scaling and root planning (SRP) in patients with chronic periodontitis.

Materials and method: The study included 20 subjects each with at least two periodontal pockets with PPD (probing pocket depths) ≥5–6 mm. The subjects were randomly divided into two groups.
Scaling and root planning was performed for both the groups. Group I received turmeric chip and Group II received an aloe Vera chip. The clinical parameters including plaque index, gingival index, probing pocket depths and relative attachment levels were recorded at baseline, 21 and 90 days.

**Results:** Both group showed improvement in site specific & full month plaque scores. Improvement in plaque score was significantly greater in the aloe group compared to turmeric group at 3 months. The GI (gingival index) in both group showed no difference at baseline & at 21 days, but there was a significant decrease in the GI score in the Aloe group compared to turmeric group at 3 months. PPD (probing pocket depth) & CAL (clinical attachment level) also showed no difference in both group at baseline & at 21 days & showed significant PPD reduction & CAL at 3 months

**Summary and conclusions:** Local drug delivery of aloe Vera chip into the periodontal pocket stimulated a significant increase in pocket depth reduction and clinical attachment level gain compared to turmeric chip as an adjunct to scaling and root planning in chronic periodontitis patients

**Theme 2: Preventive Dentistry – Public Health**

**FC210**

*Delayed Presentation of Patients with Head and Neck Cancer at a Tertiary Care Hospital in Karachi*

Zohra Saleem¹, Falak Nadeem¹, Syed Akbar Abbas²

¹Dow University of Health Sciences, Karachi, Pakistan, ²Patel Hospital, Karachi, Pakistan

**Aim and purpose:** To assess the factors responsible for delayed presentation of head and neck cancer patients at a tertiary care center in Karachi.

**Materials and method:** It is a cross sectional, observational study conducted at Patel Hospital Karachi through a validated questionnaire. A convenient sample of 145 patients with biopsy proven head and neck cancer was obtained. Tumors were staged according to AJCC classification (2010). Patients were categorized into early stage (I & II) and late stage (III & IV). Data was entered and analyzed on SPSS 19. Qualitative data was summarized by percentages. Chi squared tests were used to access the results.

**Results:** 55% of patients presented with stage IV. The very first symptom noticed by majority of the patients (41.4%) was non-healing ulcer or sore. Majority of the patients (35.2%) noticed the first symptom within 6 months before seeking a health care professional. 80% of patients had significant history of betel nut chewing habit. Majority of the patients reported that they would have presented earlier if they had been aware of the symptoms. 85% of the patients thought that late presentation to the specialist could be avoided by spreading awareness regarding cancer through media.

**Summary and conclusions:** The results depict that majority of the patients present at late stage to the specialist due to lack of awareness regarding signs & symptoms of head and neck cancers.
estimated by running the side of an explorer along the tooth surfaces examined. The debris and calculus index scores were combined to obtain the simplified oral hygiene index (OHI-S). The data were analyzed by using the software SPSS, version 11.5.

Results: Subjects had an increased risk of poor oral hygiene by 57% for each 1-kg/m² increase in the body mass index, which means that a higher body mass index could be a potential risk factor for poor oral hygiene among the adults aged 30 to 75 years. However, logistic regression proved that the subset of obese, poorly educated people were 4 times more likely to develop poor oral hygiene.

Summary and conclusions: Obesity was associated with oral hygiene and education level in the investigated group. Evaluation of the BMI could be used in oral hygiene risk assessment.

Free Communication Session 53 – Room 215 | 2015-09-24 | 14:00-15:00

Theme: Dental Treatment & Restorative Dentistry – Pedodontics

FC213 Evaluation of Honey as a Pulpotomy Agent – An In Vivo Study Avula Jogendra Sai Sankar
Department of Pedodontics, Sibar Institute of Dental Sciences, Guntur, Andhra Pradesh, India

Aim and purpose: The currently used primary tooth pulpotomy procedures accentuate the inadequacy that there is not yet a single medicament or technique that is biocompatible and can be used consistently. Thus an In Vivo study was conducted to evaluate the clinical, radiological and histological success of honey as pulpotomy agent.

Materials and method: A total of 100 mandibular primary molars were selected from fifty healthy children aged between 3–8 years following the inclusion and exclusion criteria’s for standard pulpotomy procedure. The teeth were divided into two equal groups: In Group A, Honey was used as pulpal medicament and in Group B, Formocresol as control. Further all the pulpotomised teeth were restored with stainless steel crowns and post-operative evaluation was done at 1, 3, 6, 9 and 12 months interval and teeth extracted for orthodontic reasons beyond the study period were evaluated histologically.

Results: Clinically, both the groups showed 100% success during the follow-up periods. Even though 100% radiographic success was recorded for Group A and B after 1 month interval, the values dipped to 86.9% and 77.2% after 12 months period. Decalcified sections of radicular portion of the pulp chamber exhibited fibro-cellular connective tissue stroma with plump fibroblasts and collagen fibers. Adjacent to these fibro-cellular connective tissue stroma there is evidence of calcified structure.

Summary and conclusions: Though honey showed promising results, long term follow-up are recommended to investigate the effect of honey as viable alternative to formocresol.

FC214 Investigation of Shear Bond Strength of Flowable Composite Applied to Femtosecond Laser Etched Primary Tooth Dentin Surface Hakan Sahin¹, Ilkay Zencirli¹, Hamdi Sümru Kılıç²
¹Department of Paediatric Dentistry, Abant Izzet Baysal University, Bolu, Turkey, ²Department of Physics, Selçuk University, Konya, Turkey

Aim and purpose: The general aim of this study femtosecond laser exposure at different angles, to investigate the bond strength caused by the restorative material – dentin interface. Different angles of the dentin surface in the study is anticipated to increase the bond strength with the femtosecond laser exposure.

Materials and method: This study was carried out on a total of 48 noncarious and restoration primary teeth dentin surface less. The study took place from 4 groups

Group I: Laser application with 45° angle, Group II: Laser application with 60° angle, Group III: Laser application with 90° angle + Dentin Bonding (Clearfil® SE Bond) + Flowable Composite (Filtek Z350 XT flowable resin), Group IV: No Laser.

Laser parameters: 90 fs, repetition frequency of 1 kHz and 810 nm 750 mW each throw me in the neck. Prior to testing of samples using scanning electron microscope, and 3-dimensional surface topography (with profilometer) will be compared with changes in the surface images were obtained. Examples, Instron Universal Test Machine will be subjected to shear testing. With SPSS 20.0 for windows, all experimental group data obtained were performed with one-way ANOVA test and Tukey HSD test to assess whether there is a relationship between bond strength and the angle of the laser application.

Results: Statistical analysis has emerged in significant differences between the control group and the roughened group with laser. Maximum bond strength groups are shown in Group III.

Summary and conclusions: This study will carry the distinction of being the first to demonstrate the applicability of the femtosecond laser in deciduous teeth restorations.

FC215 Evaluation of Skeletal Effects of Mandibular Lingual Arch Space Maintainer Volkan Giffeci, Cem Muhammed Dogan
Department of Paediatric Dentistry

Aim and purpose: A lower lingual arch is usually recommended as a holding device to maintain arch length and to prevent mesial migration of the mandibular first molars. Despite its widespread use, comparatively little is known about the effect of a lower lingual holding arch on preserving lower arch dimensions, tooth position and the efficiency of the device on mandibular growing.

The aim of this study is to evaluate the skeletal and dental effects of a lower lingual holding arch in arch dimension, positions of mandibular molars and incisors.

Materials and method: Thirty-four children who needed space maintainers (18 males and 16 females) were included to the present study. The patients were divided to two groups according to
their lack of second deciduous molars on one or both sides. In the first group 16 children (8 males/8 females, average age 8.8 ± 0.9 years) were treated with lingual arch appliance with one side and 18 children (8 females/10 males, average age 8 ± 0.7 years) with both sides in the second group. Lateral cephalograms, dental pantomograms, and study casts of the patients, were taken at the beginning and at the end of the study period. Average treatment time was 20.4 ± 4 months.

**Results:** Statistically significant differences were found between groups in the means of arch dimension and the position of mandibular molars. Lingual arch with one side was found better than both side.

**Summary and conclusions:** A lingual holding arch seems to be an effective tool in maintaining arch length and usual mandibular growing.

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**FC216**

**Non-Invasive Management of Hopeless Tooth (Periodontics-Endodontic Approach): A Case Report**

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**Aim and purpose:** Severe periodontal problems will increase the possibility of tooth loss. New perspective of non-invasive management could be applied in our practice. Minimizing trauma, reducing patient’s anxiety and also predictable result are gained with this approach. This therapy is aimed to give a new perspective and an alternative non-invasive ways of treating a hopeless tooth.

**Materials and method:** CASE: Fifty-five years old male, complaining of recession on his lower anterior mandible. The mobility of the incisor tooth was significantly buccal-lingual aspects. The clinical attachment loss is about 5–6 mm. From the radiograph, the height of the alveolar bone is on the apical. He is refusing of any tooth extraction. Case Management: We do team work treatment, periodontics as well as endodontic. The oral hygiene procedure, occlusal adjustment and also temporary splint are performed. Patient also had a root canal treatment additionally. After the evaluation, pocket debridement and sulcus conditioning are executed using Nd-YAG LASER.

**Results:** There is significant enhancement of density in both of trabecular and cortical bone. The tooth mobility is decreased. Even though the aesthetic outcome is not achieved, the patient is satisfied with his treatment result.

**Summary and conclusions:** Comprehensive treatment plans are needed to achieve a satisfied long-term result. Even though the treatment of hopeless tooth is still a challenge, non-invasive therapy could be appropriate for this case. Adequate oral hygiene procedure and periodic recall are required to maintain the result.

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**FC218**

**Mast Cell Stabilizers as Host Modulating Agents in the Treatment of Periodontal Disease**

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1Faculty of Dentistry, SEGi University, Selangor, Malaysia, 2Faculty of Pharmacy, SEGi University, Selangor, Malaysia, 3Faculty of Medicine, SEGi University, Selangor, Malaysia

**Aim and purpose:** Scientific studies have conclusively proven initiating role of mast cells in the inflammatory cascade of periodontal disease. The aim of this study was to evaluate mast cell stabilizers as host modulating drug in the treatment of periodontal disease using polymeric biodegradable chip containing sodium cromoglicate.

**Materials and method:** Ten patients with periodontal pockets of 4–6 mm were treated with scaling and root planning alone (control) and with scaling root planning plus mast cell stabilizer (case).
Chitosan powder was mixed with acetic acid to make a biodegradable chip which served as a vehicle to carry the active ingredient (2% sodium cromoglycate). The dimensions of the chip were prepared using a stainless steel mould. Stability testing of sodium cromoglycate chip was done prior to clinical studies. Plaque index, probing pocket depths and clinical attachment levels were measured in all the patients. Patients were followed up for a period of 3 months.

Results: Plaque index, and probing pocket depths reduced at both case and control sites. Gain in clinical attachment level was also recorded at both sites. Sites which were treated with mast cell stabilizers showed better improvement compared to the control sites, however the improvement was not statistically significant.

Summary and conclusions: Blocking of mast cells at one site may open alternate pathways (neutrophil response) of inflammation which will continue or initiate the inflammatory cascade in periodontal disease. Studies with larger sample size and more long term follow-up will provide clearer understanding of the benefits of using mast cell stabilizers in periodontal disease.

Effectiveness of Gingival Retraction Methods: A Systematic Review

Sadia Tabassum, Farhan Raza Khan
Aga Khan University Hospital, Karachi, Pakistan

Aim and purpose: The aim of this systematic review was to assess the effectiveness of different gingival retraction methods in terms of the amount of gingival retraction achieved and changes observed in various clinical parameters e.g. Gingival Index (GI), Plaque Index (PI), Probing depth (PD) and Clinical attachment level (CAL).

Materials and method: Data sources included three major databases i.e. PubMed, CINAHL plus (Ebsco), COCHRANE along with hand search. Search was made using the key terms in different permutations of gingival retraction* AND displacement method* OR technique* OR agents OR material* OR medicament*. The initial search results yielded 142 articles which were narrowed down to final 10 articles after a strict eligibility of including clinical trials or experimental studies on gingival retraction methods with the amount of tooth structure gained and assessment of clinical parameters as the outcomes conducted on human permanent teeth only.

Results: The total number of teeth assessed in all the studies was 400. Gingival retraction was measured in 6/10 studies whereas the clinical parameters were assessed in 5/10 studies. The results were highly heterogeneous with regards to the outcome variables.

Summary and conclusions: No method seemed to be significantly superior to the other in terms of gingival retraction achieved. Clinical parameters such as Plaque Index (PI), Probing Depth (PD), Clinical Attachment Level (CAL), Bleeding on Probing (BOP) etc. were not significantly affected with gingival retraction. Except for GI (Gingival Index), this was significantly altered in some studies.

Marginal Bone Level Evaluation of Implant Supported Kennedy Class I Partial Overdenture Using Telescopic Crowns Versus Acetal Resin Clasps Direct Retainers

Ahmed Abdelwahed Shaban1, Ahmed Ibrahim Mahrour2
1Prosthodontic Department, Faculty of Dentistry, Future University, Cairo, Egypt. 2Prosthodontic Department-Elfarabi University, Cairo, Egypt

Aim and purpose: This study was conducted to evaluate and compare marginal bone level for abutments of implant supported Kennedy class I partial overdenture using Telescopic Crowns versus acetal resin clasps direct retainers after 18 month of clinical use.

Materials and method: Ten male partially edentulous patients (Kennedy class I) with the premolars are the last standing abutments were selected and all patients were rehabilitated with metalic partial denture supported by two osseointegrated implants one on each side of the lower arch positioned in the area of second molar and were randomly divided into two equal groups according to type of abutments retainers, Group I: Patients were rehabilitated with Tooth Implant Supported partial overdenture with two telescopic crowns, Group II: Patients were rehabilitated with Tooth Implant Supported partial overdenture with two Acetal Resin clasps direct retainer on each side. Evaluation by measuring marginal bone level for main abutments was made at the time of insertion, after 6 month, after 12 month and last after 18 month using Cone Beam C.T. radiographic evaluation.

Results: Partial overdentures retained by telescopic crowns showed significant increase in marginal bone loss as compared with Acetal resin clasps retainers.

Summary and conclusions: Using tooth implant partial overdentures retained by Acetal resin clasps shows better effect on supporting structure as compared by partial dentures with telescopic crowns retainers.

Impact of Indigenous Tooth Cleaning and Regular Tooth Brushing on Caries Experience in Adults

Srinivas Pachava, Sunil Kumar Bonu, Chaitanya Pendyala
Sivar Institute of Dental Sciences, Guntur, Andhra Pradesh, India

Aim and purpose: To evaluate the dental caries experience in adults with Indigenous tooth cleaning habit and regular tooth brushing practice.

Materials and method: A community based cross-sectional study was conducted in a field practice area of a South Indian State, Andhra Pradesh. Adults with 35 years of age and above were included. By cluster sampling technique a desired sample size of 200 was achieved using single population proportion formula with an assumption of 95% confidence level, 8% degree of precision,
proportion of dental caries, 70% and design effect of two. Pretested and structured questionnaires that included socio-demographic characteristics, dietary habit, health care seeking behaviour towards oral health problems and oral hygiene practices were used for data collection. Type–III clinical examination was carried out on subjects by a single examiner to identify the presence of dental caries using DMF index. Data were analysed using SPSS version 20. Bivariate and multivariate analyses were employed.

**Results:** It was observed that adults with indigenous practices are having less caries experience, \( p = 0.01 \). 55% of the subjects were affected with carries. Subjects who reported to have regular oral rinsing habit experienced less caries.

**Summary and conclusions:** Information obtained from this study can be kept as baseline data for planning and developing cost-effective caries preventive strategies.

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**FC222**

**Oral Health Needs of Prisoners in Lanarkshire of Scotland**

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\(^3\)Dental Health Services Research Unit, University of Dundee, Dundee, UK

**Aim and purpose:** To conduct an oral health needs assessment of prisoners in Lanarkshire as part of the Scottish Oral Health Improvement Prison Programme.

**Materials and method:** This study was carried out in Shotts prison, an adult male prison in Lanarkshire. Ethical approval was obtained from The National Research Ethics Service and the Scottish Prison Service Ethics Committee. Questionnaires were used to assess the general health, oral health and behaviour of a convenience sample of prisoners. Oral examination was offered to each participant.

**Results:** A total of 110 prisoners were recruited, with mean age being 36.2 years and mean number of years in prison being 4.4 years. Most participants (77%) were smokers, with mean number of cigarettes consumed being 17 per day. Only 4% of participants had no obvious decay experience, with mean \( D_{3,1} \) being 15.75 and Care Index as 31%. Other findings reflected a pattern of irregular dental attendance associated with pain and drug use. Their poor oral health had impact on the quality of life, with 11% stating that they were very often handicapped by oral health issues resulting in life being less satisfying, compared to only 1% of UK adults.

**Summary and conclusions:** Oral health conditions of prisoners in Lanarkshire were poorer than the adults living in the general population. Health improvement programmes should be tailored to their specific oral health needs.

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**FC223**

**Innovative Models of Oral Health Care – Framework for Action**

Deborah Cole\(^1\), Paula Bacchia\(^1\), Colin Riley\(^2\)

\(^1\)Dental Health Services Victoria, Melbourne, Australia,

\(^2\)Oral Health Agencies – Western, Dental Health Services Victoria, Melbourne, Australia

**Aim and purpose:** The question to be addressed is how a large public oral health organization servicing an eligible population of more than two million people can develop and implement new and different approaches to the patient journey to ensure that the right care is provided in the right place at the right time by the right professionals.

**Materials and method:** Underpinned by a set of principles, including accessibility and innovative use of technologies, the service has developed a Framework to guide the development of innovative models of care. The Framework reflects the organization’s approach that oral health can be promoted across the community in settings where people live, work and play including child care and kindergartens. It also reflects the approach that many health and education professionals, including antenatal midwives, nurses and aged care workers, are well positioned to promote oral health in their daily roles.

**Results:** A comprehensive framework for a public dental model of care has been developed and implementation is well underway. The model will be presented and, in particular, the community approaches will be showcased, demonstrating that oral health promotion can be integrated into the work of many non-dental disciplines.

**Summary and conclusions:** The presentation will discuss and demonstrate that oral health promotion can be integrated into many settings and the roles of many non-dental disciplines.
**Summary and conclusions:** Infection control practices of the three groups of dentists were different. More over the infection control practices of dentists working in different work places was also different.

Free Communication Session 56 – Room 218 | 2015-09-24 | 14:00-15:00

Theme: Preventive Dentistry – Public Health

FC225
Knowledge, Attitude and Use of Toombak among School Personnel in Khartoum State, Sudan. A Cross-Sectional Descriptive Study

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**Aim and purpose:** To describe the extent of the use of Toombak (smokeless tobacco) among school personnel, their knowledge and attitudes towards Toombak control; and the existence and effectiveness of tobacco control policies in the schools.

**Materials and method:** A descriptive cross sectional study was carried out during 2013–2014 among school personnel in Khartoum state, Sudan. A total of 239 of schools’ personnel were recruited as census from the 28 selected secondary schools Multistage stratified cluster sampling were employed the schools. Prior to commence the study, ethical clearance was sought from authorities.

**Results:** 9.6% were Toombak users, its use is exclusively among those who are above 40 years and males. The use of Toombak didn’t affect the knowledge and attitude of the users. 42.2% showed good knowledge about the health hazards of Toombak use; it is affected by age, gender and availability of the school policies and preventive activities. 72.2% showed positive attitude towards Toombak use, school policies, Toombak prevention and it is directly associated with good knowledge, age and gender. 76.3% responded positively about the availability of school policies but the enforcement 72% responded negatively. Lack of training on tobacco control (88.1%) and lack of inclusion of tobacco control in the curriculum (67.9%). and 62.6% had no access to any material for tobacco control.

**Summary and conclusions:** The obvious lack of knowledge and training of school personnel on tobacco control programs hinders their contribution. The vital role of school personnel is not fully appreciated and ignored in the program of tobacco control in Khartoum state, Sudan.

FC226
Cross Sectional Study of Tobacco Related Habits, Addictions and its Effects on Oral Health in Tribal Population and Comparison with Non-Tribal Control Population

Nandu Murari Meshram
Society for Oral Cancer and Health, Bramhapuri, India

**Aim and purpose:**
1. To find the prevalence of tobacco addiction and tobacco consumption in tribal villages.
2. To find out incidence and prevalence of oral pre cancer and oral cancer in the tribal population.
3. Long term objectives being health education, de-addiction and prevention of oral cancer by detecting pre cancer at early stage.

**Materials and method:** Tribal villages were identified in the Gadchiroli district where tribal population according to 2011 census was nearly 100%. A door to door cross sectional data was obtained from these villages by conducting camps and door to door surveys. Parameters related to demography, tobacco use, ill effects of tobacco were determined and compared to non-tribal rural population from adjoining district.

**Results:** 450 tribal individuals were screened out of which 349 were habituated to smokeless tobacco. 124 patients were suffering from oral pre cancer. 534 individuals from non-tribal rural population were screened out of which 211 were habituated to tobacco with 116 individuals suffering from oral pre cancer. 1 patient diagnosed with advanced oral squamous cell carcinoma. High prevalence of tobacco use especially chewing form, Kharra was observed in primary school going tribal children starting at the age of 4 years. Health education and advice was given for de-addiction to 560 individuals.

**Summary and conclusions:** Tobacco habits related oral diseases are more prevalent in tribal population as compared to non-tribal rural population which warrants strong tobacco control measures.

FC227
Comparison Between the Caries Status of Hearing and Visually Impaired Individuals in Karachi, Pakistan

Hamza Syed Muhammad, Momina Anis Motiwala, Mariyum Fakhruddin, Saima Akram Butt, Faizan Syed Muhammad
Pak Dental Community, Karachi, Pakistan

**Aim and purpose:** To compare the dental health status in relation to Dietary and Tooth brushing habits of the hearing and visually impaired individuals aged 6–20 year in Karachi, Pakistan as dental health is an integral part of general body health and this group is deprived of basic health care needs.

**Materials and method:** A cross-sectional comparative study was conducted among 400 visually and hearing impaired individuals (200 each), aged 6–20 years in 3 institutes located in different socio-economic areas of Karachi, Pakistan namely Pakistan Association of the Blind (National), Jahkanig Sidiqi Academy for the Deaf and Ida Rieu School and College for Deaf and Blind.

The study comprised of two parts: firstly a predesigned questionnaire for demographics, dietary & tooth brushing habits and sec-
ondly an oral examination for assessment of caries status using DMFT index in permanent teeth and dft index in primary teeth. The questionnaire was completed using sign language in case of hearing impaired individuals whereas for visually impaired individuals the questionnaire was filled using verbal communication.

**Results:** 80% of the deaf individuals and 66% of the blind individuals had never visited a dentist before.

The dmft score for the deaf was 53% whereas the blind accounted for 67% hence showing the limitations that the blind have in maintaining a good oral hygiene.

Individual’s ability to brush, consumption of sugary foods in diet, use of oral hygiene aids, tobacco consumption and the periodontal status were also recorded.

**Summary and conclusions:** The prevalence of dental caries in visually impaired individuals is greater than that in the deaf individuals.

**Aim and purpose:** The purpose of this in vitro study was to evaluate the effect of various gutta-percha solvents on the microhardness of human root canal dentin.

**Materials and method:** Thirty decoronated human maxillary incisor teeth were sectioned longitudinally to get 60 specimens that were embedded in acrylic resin and polished with silicon carbide abrasive papers. The specimens were divided into 4 test groups (n = 15) as follows: Group I: Orange oil; Group II: Eucalyptol; Group III: Chloroform and Group IV: Distilled water (control).

After treatment with test solutions for 5 min, the specimens were rinsed with distilled water, dried and subjected to the Vicker’s microhardness test at 300 μm from the midroot level of the canal lumen. Vicker’s microhardness values for each specimen were recorded before and after treatment, and the decrease in microhardness was calculated as a percentage and statistically compared.

**Results:** All test solutions reduced dentin microhardness while chloroform showed the lowest microhardness values when compared with distilled water after 5 min of treatment (p < 0.05). However, no differences were observed between orange oil and distilled water groups (p > 0.05).

**Summary and conclusions:** Within the limitations of this study, it was concluded that orange oil did not adversely affect dentin microhardness in comparison with chloroform.

**Free Communication Session 57 – Room 215 | 2015-09-24 | 15:30-16:30**

**Theme:** Dental Treatment & Restorative Dentistry – Endodontics

**FC228**

**SEAL Cambodia – Placing Fissure Protection in a Community Setting Successfully**

Callum Durward, Bathsheba Turton

*University of Puthisastra, Phnom Penh, Cambodia*

**Aim and purpose:** The aim of this study was to test the protocol used in the SEAL Cambodia project which aims to seal the first permanent molars of 60,000 children over 3 years.

**Materials and method:** 149 children were selected for a randomised controlled trial (Intervention = 106, Control = 43). Children were included if they had four non-cavitated first permanent molars, were in grade I or II, and their school was designated by the Ministry of Education to be treated during the week of the study. Two different protocols were tested including the use of both Fuji IX and Fuji VII materials in a split mouth design.

**Results:** For those sealants placed using Fuji VII, there was a significant difference (p < 0.05; χ²) in the number of sealants that were sound and the number of sealants that were partially lost after one month between the control (63.9%, 23.9%) and the intervention (76.5%, 16.0%). When Fuji VII and Fuji IX were compared within the intervention group, there was no significant difference at 1-week but there was a significant (p = 0.005; χ²) difference in the proportion of sound sealants at one month (Fuji VII = 76.5%, Fuji IX = 64.2%).

**Summary and conclusions:** The new protocol with Fuji VII material renders better retention than the old protocol and is now current practice throughout the SEAL Cambodia project.

**FC229**

**Root Canal Dentin Microhardness after Treatment with Various Gutta-Percha Solvents**

Mehmet Burak Guneser, Ayse Nur Dincer, Dilara Arslan

*Department of Endodontics, Bosphorus Vakif University, Istanbul, Turkey*

**Aim and purpose:** The purpose of this in vitro study was to evaluate the effect of various gutta-percha solvents on the microhardness of human root canal dentin.

**Materials and method:** Thirty decoronated human maxillary incisor teeth were sectioned longitudinally to get 60 specimens that were embedded in acrylic resin and polished with silicon carbide abrasive papers. The specimens were divided into 4 test groups (n = 15) as follows: Group I: Orange oil; Group II: Eucalyptol; Group III: Chloroform and Group IV: Distilled water (control).

After treatment with test solutions for 5 min, the specimens were rinsed with distilled water, dried and subjected to the Vicker’s microhardness test at 300 μm from the midroot level of the canal lumen. Vicker’s microhardness values for each specimen were recorded before and after treatment, and the decrease in microhardness was calculated as a percentage and statistically compared.

**Results:** All test solutions reduced dentin microhardness while chloroform showed the lowest microhardness values when compared with distilled water after 5 min of treatment (p < 0.05). However, no differences were observed between orange oil and distilled water groups (p > 0.05).

**Summary and conclusions:** Within the limitations of this study, it was concluded that orange oil did not adversely affect dentin microhardness in comparison with chloroform.
showed that the average discrepancy between these methods is not large enough to be considered as significant.

Summary and conclusions: It appears that the extra oral radiographic method can be used in root length determination in subjects where intraoral radiography is not possible.

**FC231**

**The Reconstruction of Root Canal Using Biological Dentin Post**

Seda Falakaloglu, Özkan Adigüzel, Gökhan Özdemir

Dicle University, Faculty of Dentistry, Endodontics, Diyarbakir, Turkey

**Aim and purpose:** Biological posts may be a good alternative instead of conventional post systems. The aim of this study was to evaluate the effects of clinical procedures used for biological dentin post on root canal.

**Materials and method:** A 55-year-old male patient was referred to the Department of Endodontics, Dicle University, Diyarbakir, Turkey with a complaint of extensive caries in the right mandibular premolar tooth. After clinical and radiographic examinations, a rubber dam was placed in isolation of the operative area. The access cavity was opened and the length of the root canal was determined by apex locator. For irrigation by % 2.5 NaOCl and % 17 EDTA was applied. Endodontic obturation was done using gutta-percha and root canal sealer (Sealapex, Kerr, Canada). A freshly extracted tooth was then sectioned bucco-lingually along the long axis using a diamond disk. Post space was created by fiber post drill. Suitable fiber post size and length was measured with digital caliper. The biological dentin post was modified with this measurement. Following satisfactory adaptation of the biological post clinically and radiographically, the post was cemented into the root canal using self-adhesive dual cure resin cement (Panavia F, Kuraray, Japan). The core of tooth structure was built with composite resin (Filtek Bulk Fill Posterior, 3M ESPE, USA) – adhesive dual cure resin cement (Panavia F, Kuraray, Japan). A porcelain crown was adapted on tooth.

**Results:** For the sixth month no any clinical and radiographic changes. Thermal changes were important on stress distributions and generated stresses in post and core applications.

**Summary and conclusions:** The thermal stresses which occur in the endodontically treated tooth are dependent on temperature changes. Thermal changes were important on stress distributions and generated stresses in post and core applications.

**Free Communication Session 58 – Room 216 | 2015-09-24 | 15:30-16:30**

**Theme 1: Dental Treatment & Restorative Dentistry – Endodontics**

**FC233**

**To Compare the Knowledge Regarding Endodontic Materials and Techniques among Dentists Employed at Dental Institutions and Private Practices in Karachi**

Anum Aijaz, Farhan Raza Khan

Agha Khan University Hospital, Karachi, Pakistan

**Aim and purpose:** With establishment of number of dental teaching institutions in Karachi, a substantial amount of dental care is presently provided in these dental institutions as opposed to private clinics. Since, there is a difference in the two settings; it was imperative to compare the pattern of endodontic services provided by the clinicians employed in these settings.

**Materials and method:** A cross sectional study was planned and data was collected from the academic institutions and the selected dental practices. The teaching group comprised of 71 dentists while non-teaching group had 97 subjects. A structured, self-administered questionnaire comprising 11 questions was used. Chi square test was applied to assess, if their knowledge and decision making is different between the groups. The level of significance was kept at 0.05.

**Results:** The response rate among academic group was 94.67% while in the non-academic group it was 44.1%. Nearly 28% teaching dentists reported performing retrograde endodontics for failed anterior root canals compared to only 4% non-teaching dentists. There were statistically significant differences between the two groups of dentists for selection of endodontic sealer, method of gaining retention on root treated teeth and crown lengthening decisions (p < 0.001).

**Summary and conclusions:** The material and technique selection in endodontics was significantly different between the two groups of dentists.
Cutting Efficiency of Different Cross Sectional Design ProTaper Rotary Instruments
Mohamed Kataia, Engy Kataia
1Endodontic Department, Minia University, Minia, Egypt, 2Endodontic Department, National Research Center, Cairo, Egypt

Aim and purpose: The purpose of this study is to assess the effect of different cross sectional designs along with variable metallurgical modifications on the cutting efficiency of rotary nickel titanium on root canal dentine.

Materials and method: A total of forty mesiobuccal root canals in mesial roots of mandibular first permanent molars with a curvature ranging between 25° to 35° were selected for this study. Canals were randomly distributed into two groups, 20 canals were prepared with ProTaper GOLD rotary system, and the other 20 prepared with the ProTaper NEXT system. Teeth were marked and weighed before and after instrumentation with delta weight (Δ wt = wt pre − wt post) recorded and listed in tables for statistical analysis.

Results: Samples instrumented with ProTaper GOLD showed increased weight loss (Δ wt) with no significant difference with the ProTaper NEXT.

Summary and conclusions: Cross section modification for the ProTaper NEXT didn’t improve the cutting efficiency as was expected; in addition metallurgical treatments of the ProTaper GOLD showed good cutting efficiency.

Theme 2: Dental Treatment & Restorative Dentistry – Esthetics

New Approach to Managing the Enamel White Lesion
Omar Marouane, Nabila Douki
Restorative Dentistry Department University Hospital Sabloul Sousse, Tunisia

Aim and purpose: Early-stage caries (white spots), fluorosis, traumatic hypomineralization and molar incisor hypomineralization (MIH) present clinical symptoms involving enamel white lesions. Recently, resin infiltration technique was introduced to mask these enamel white lesions. However, several studies have shown partial improvement of esthetic appearance of such lesions and an unpredictable result for each etiology. The aim of this work is to propose a topographic classification of the enamel white lesions, a new pre-treatment protocol before resin infiltration and finally an alternative to the Icon infiltrant (DMG).

Materials and method: Meticulous visual examination, the intensity of the white lesions and transillumination has served as reference to develop this topographic classification. For each class, a specific pre-treatment is proposed before resin infiltration. Fifty teeth had been managed using this new approach. The new infiltrant has been also used for all teeth. Finally, comparison of the hue, saturation and value, between sound enamel and the treated white lesions were performed using an image analysis software.

Results: Image analysis, confirm that the new approach is highly acceptable, with visual and transillumination improvement.

Summary and conclusions: Based on the results, we can conclude that this classification allows us to choose the best non-invasive treatment with a predictable result. The new infiltrant offers a non-expensive alternative to Icon with same esthetic results.

Enhancing Complete Denture Esthetics with Characterized Anterior Teeth
Srinivasan Nedunthru Narasimhan, Ebenezer Goldwin Solomon
Department of Prosthodontics and Implantology Thai Moogambigai Dental College and Hospital Dr M.G.R Educational & Research Institute University Maduravoyal Chennai Tamil Nadu India

Aim and purpose: To personalize esthetics in complete denture using commercially available characterized anterior teeth and custom fabricated characterized anterior teeth.

Materials and method: A survey of commercially available maxillary and mandibular anterior teeth was done to find out the chronological morphological features which occur in natural teeth. It was seen that none of them exhibited the commonly occurring changes with age in the anterior teeth. Therefore a search was made to find out the various types of characterized artificial maxillary and mandibular anterior teeth so that recommendations can be made to the manufacturer to provide such teeth for routine use in complete dentures. Class V silver amalgam filling and class V inlay were incorporated in maxillary premolar teeth to customize characterization. It was found to give a natural look to the patients denture smile.

Results: The incorporation of anatomical characters in anterior teeth gives a natural look to the artificial denture. They simulate the various chronological features seen in natural dentition. A complete denture incorporating these features would be gratifying to the patient.

Summary and conclusions: Fabrication of upper dentures using characterized anterior teeth restores the patient closer to his original appearance, enhancing his confidence and outlook in life. Dentist should motivate importance of characterized dentures. The imperfections incorporated should also be appropriate and it should “Copy nature”. Overdoing should be avoided. It is recommended that characterized anterior teeth is made available commercially as a routine.
Aim and purpose: To review cases of surgically managed maxillary tumours seen in General hospital, Lagos for a period of 10 years.

Materials and method: Review of cases seen at the General hospital, Lagos in a period of 10 years. Data was obtained from the patients’ case notes. The biodata, investigations done, diagnosis and treatment were recorded.

Results: A total of 16 patients were treated with maxillary tumours. There were 9 males and 7 females. Ages range from 6–72 years with the mean age of 44.3 years. There are 10 benign tumours and 6 malignant tumours in the study. The commonest tumour is squamous cell carcinoma of the maxillary antrum representing 25% of maxillary tumours seen in this study.

Summary and conclusions: Maxillary tumours represent a common group of neoplasm in the oral cavity. It poses a diagnostic and therapeutic difficulty to clinician due to late presentation and proximity to vital structures like the eyes and base of the skull. Maxillectomy with preservation of floor of the orbit is a safe procedure even for malignant lesions not involving the orbit.

Aim and purpose: The purpose of this study was to examine the bone callus healing of mandibular symphseal distraction osteogenesis (MSDO) with a tooth-borne and bone-borne hybrid distractor.

Materials and method: In this study, ultrasonography (US) was used in the evaluation of bone callus formation in the mandibular parasymphseal region in 5 patients undergoing tooth-borne and bone-borne hybrid distraction osteogenesis. For each patient, US was performed immediately after active expansion, at 1 and 2 months of the expansion period, at the removal of the expander 3 months later, and at 2 months after expander removal.

Results: The results indicated that US might be a useful and accurate method to assess bone fill in parasymphseal region in patients undergoing MSDO.

Summary and conclusions: Further studies are necessary to clarify the US scores in a larger patient group undergoing MSDO.
Aim and purpose: BRONJ has been reported in patients undergoing treatment with bisphosphonates for osteoporosis, and because of over 10-year half-life of bisphosphonates, there is a need for further studies for rehabilitation after healing from ONJ of this extensive population. Implant management have been suggested for the rehabilitation of defect from ONJ, a serious complication associated with bisphosphonate (BP) use; however, no rehabilitation method has been reached. This study investigated the possible associations between bone quality and the management with implant from bisphosphonates-related osteonecrosis of the jaw (BRONJ).

Materials and method: This is a case-control study of 10 patients with BRONJ (age, 73.6 ± 11.2 years) on patients who had implant surgery for restoration of regenerated bone followed by BRONJ management at Ewha Womans University from 2013 to 2015 and 10 age- and gender-matched controls who had been exposed to BPs for >24 months but had no evidence of BRONJ after dentoalveolar surgery. Computer guided implant surgery was performed on the regenerated bone after healing from ONJ.

Results: The results suggest that Computer guided accurate planning surgery might be possible to perform the implant installation on regenerated and limited bone after healing from BRONJ. Among BRONJ patients who was performed implant installation with Guided surgery showed a significant increase over time.

Summary and conclusions: There is insufficient evidence for the success prediction for BRONJ of guided surgery; additional research is necessary. Quality and quantity of available bone should be confirmed by computer software program.

Aim and purpose: To measure and identify the difference in mentality of students with respect to oral hygiene from high school to being 3rd year dental students.

Materials and method: Through convenience sampling, 347 third year BDS students were selected from the various institutions in Karachi, Pakistan as the main focus of the study. A questionnaire consisting past and present comparison was made for each student in order to determine the change in habits and perception of the students with respect to their own oral health and was handed out to students present in class at that moment. Descriptive statistics, various statistical tools to measure central tendency along with SPSS 16.0 were used to analyze the data.

Results: Out of the total 347, 55.6% used to brush twice daily and still continue to do so whereas 35.1% increase is seen in those who started going for regular scaling procedures every once a year. 8.9% of the students have started utilizing dental aids to improve their oral hygiene. The students developed awareness and a concept with respect to gingival bleeding; halitosis and the effects of different types of foods at increase of 93.1%, 76.9% and 47.0% respectively. All in all, a total rise by 33.1% have improved their oral hygiene. The students developed awareness and a concept with respect to gingival bleeding; halitosis and the effects of different types of foods at increase of 93.1%, 76.9% and 47.0% respectively. All in all, a total rise by 33.1% have started going for regular scaling procedures every once a year. 8.9% of the students have started utilizing dental aids to improve their oral hygiene. The students developed awareness and a concept with respect to gingival bleeding; halitosis and the effects of different types of foods at increase of 93.1%, 76.9% and 47.0% respectively. All in all, a total rise by 33.1% have started visiting the dentist for regular check-ups compared to the 10.7% who already used to go on a regular basis.

Summary and conclusions: There is a significant difference in oral health awareness in 3rd year dental school students as compared to when they had not yet enrolled into dental school.
Theme 2: General Dentistry and Oral Health

FC243
Oral Manifestations and Salivary Changes in Renal Patients Undergoing Hemodialysis
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Aim and purpose: The aim of this study was to examine the dental condition, oral manifestations and biochemical changes (urea, creatinine and phosphate) in saliva and plasma of chronic renal patient undergoing hemodialysis. To compare the salivary flow rate, and pH between chronic renal failure patients and normal subjects.

Materials and method: A total of 20 patients undergoing hemodialysis therapy and 20 healthy volunteers were taken into study and examined for uremic oral manifestations, dental caries (DMFT), periodontal status (CPI), salivary pH and flow. Salivary urea, creatinine and phosphate were compared with plasma urea, creatinine and phosphate.

Results: There was a statistically significant difference between cases and controls in relation to urea, creatinine, salivary pH and flow rate. There was a positive correlation between salivary urea and plasma urea (0.058), salivary creatinine and plasma creatinine (0.079) and salivary phosphate and plasma phosphate (0.028) all showing statistically significant difference in the renal patients group. Oral manifestations among renal patients were dry mouth, inflamed gingiva, altered taste and pain in oral mucosa. With relation to dental caries there was no significant difference between cases and controls.

Summary and conclusions: Measurement of the whole saliva can be used as a simple means of following the progress of patients on hemodialysis.

FC244
Oral Hygiene Status and Dental Treatment Practices among Orphaned Children
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Aim and purpose: To assess the oral hygiene status, dental treatment practices and awareness on oral health among children living in orphanages in Chennai.

Materials and method: A cross sectional study was conducted. By stratified sampling technique 604 children of age 8–16 were selected for the study from 6 orphanage homes. A validated questionnaire was used to collect information pertaining to the objectives. Oral Hygiene Index (OHI) was used to assess the oral hygiene status of children. Inter observer variability for recording OHI was taken care by pre survey training of the scorers and the calculated value for correlation coefficient was r = 0.986 for OHI.

Results: The oral hygiene status of this study population was just fair with a mean OHI score of 1.81 (95% CI 1.74, 1.88). No statistical significant difference was found in OHI score in relation to age and gender (p > 0.05). Of the 604 children questioned 220 (36.4%) had experienced dental problems, but more than half 116 (52.7%) did not seek treatment, attributing it to reasons like parents not showing interest, no pain, no money, fear of treatment. It was observed that only 34.5% of children were aware that sugar/sweets can cause caries. While 45.9% knew that caries was associated with teeth, only 1.8% were aware of gum problems. Children’s knowledge on prevention was also poor with just 24.5% and 18.5% telling that regular brushing and avoiding sugar foods respectively can prevent dental problems.

Summary and conclusions: Orphaned children could be at high risk of dental problems due to their poor knowledge and difficulties in health seeking behavior.

POSTER SESSIONS 33-48
Poster Session 33 – Room Cubicle 1 | 2015-09-24 | 10:00-11:00

Theme: Dental Treatment & Restorative Dentistry – Materials

P160
Bi-axial Flexure Strength of Various Resin Composites as a Direct Hybrid Restorative
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Aim and purpose: Recently, various types of hybrid restorative composites such as packable, bulk-fill and flowable ones are available for direct filling-use. The objective of this study was to examine their flexure strength by the bi-axial flexure test (ISO 6872, 1995; Ban et al., 1992). The aim of this study was to examine their flexure strength by the bi-axial flexure test (ISO 6872, 1995; Ban et al., 1992).

Materials and method: Eight composites tested in this study were as follows: Solare (GC), MI GRACEFIL (GC), Beautifil II (Shofu), ZNano (Danville) as packable, Beautifil Bulk (Shofu) as bulk-fill, and MI Fil (GC), Beautifil Flow F00 (Shofu), ZNano Flow (Danville) as flowable.

Each composite was placed into a plastic mold (ø10 mm × H1.0 mm) on a glass plate and light-cured for 60 s through another glass plate. After the storage in 37°C water for 24 h, the specimens were subjected to the bi-axial flexure test at a CHS of 0.5 mm/m (n = 7). The obtained data were statistically analyzed by the Tukey’s HSD test (p = 0.05).

Results: Of all the composites, flowable showed indications for the increased flexure strengths, and in particular MI Fil exhibited the highest strength (p < 0.05). These findings of this study demonstrated that the bi-axial flexure strength of hybrid restorative com-
Microshear Bond Strength of a Multi-Step and a Self-Adhesive Resin Cement on Enamel and Dentin
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Aim and purpose: This study evaluated the enamel and dentin shear bond strength of resin inlays bonded with a multi-step and a one-step self-adhesive resin cement using three different surface treatment methods.

Materials and method: Enamel and dentin discs were prepared from the labial surfaces of bovine incisors. Composite “inlays” were fabricated indirectly and cemented with either the one-step self-adhesive resin cement (Cement U) or the multi-step conventional resin cement (Cement P). The surfaces of the dentin and enamel discs were treated with either one of three surface treatment methods prior to cementation of the “inlay”: (1) as per manufacturer’s instructions (2) pre-treatment with a self-etching primer, and (3) pre-treatment with phosphoric acid. The resin cements were cured with a halogen-light curing unit and stored for 24 h at 37°C. The bonded “inlays” were then subjected to microshear bond strength test at a crosshead speed of 1 mm/min. The data were analyzed statistically using ANOVA and Tukey’s posthoc test.

Results: Cement P showed that the surface treatment method has no significant effect on the shear bond strength to enamel and dentin. For Cement U, enamel bond strength was significantly lower when the cement was used as per manufacturer’s instructions (no surface pre-treatment). Pre-treating the dentin surface with phosphoric acid yielded significantly lower bond strengths for both enamel and dentin. For Cement U, enamel bond strength was significantly lower when the cement was used as per manufacturer’s instructions (no surface pre-treatment). Pre-treating the dentin surface with phosphoric acid yielded significantly lower bond strengths for both enamel and dentin regardless of type of surface treatment.

Summary and conclusions: The multi-step resin cement showed higher bond strengths on both enamel and dentin regardless of surface treatment. The self-adhesive resin cement yielded lower bond strengths on both enamel and dentin and was affected by type of surface treatment.

MF-MA Increases Flexural Strength of Denture Repaired with Non-MMA Resin
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Aim and purpose: To investigate the effect of methyl formate-methyl methacrylate (MF-MA) solutions on the flexural strength of acrylic denture resin repaired with autopolymerized a non-methyl methacrylate (MMA) based resin.

Materials and method: 150 heat-polymerized acrylic resin specimens (Meliodent) were prepared according to ISO20795-1 (2013) and randomly divided into 15 groups: Group I–VII and VIII–XIV repaired with MMA based (Unifast TRAD) and non-MMA based (Ufi Gel Hard) resins, respectively. Specimens were cut in the middle and bevelled 45°. Group I and VIII were no treated, Group II and IX were treated with MMA (liquid part of Unifast TRAD) for 180 s. Group III and X, IV and XI, V and XII, VI and XIII, VII and XIV were treated with MF-MA solutions for 15, 30, 60, 120 and 180 s, respectively. Group XV is the non-repaired acrylic specimens. A three-point loading test was performed using a universal testing machine. One-way ANOVA and post hoc Tukey’s analysis at p < 0.05 were used for statistical comparison.

Results: The flexural strength of groups treated with MF-MA and MMA (II–VII, IX–XIV) were significantly higher than that of non-treated group (I and VIII), but lower than that of non-repaired group (XV) (p < 0.05). There is no significant flexural strength between the flexural strength of the repaired groups treated with MF-MA and MMA (p > 0.05).

Summary and conclusions: Surface treatment with MF-MA 15 s is enough to significantly increasing the flexural strength of repaired acrylic denture resin compared to that of the groups treated with MMA 180 s.

Micro-Computed Tomography Analysis of Grafted Bone with Xenograft and Allograft
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Aim and purpose: To investigate the bone forming characteristics in mouse calvarium at 1 and 3 month after bone grafting using 2 types of bone graft, deproteinized bovine bone and freeze-dried human bone, compared with natural bone healing.

Materials and method: Eighteen mice were divided into three groups (n = 6/group) according to the type of bone graft: group 1 (control) - an empty defect, group 2 – treated with deproteinized bovine xenograft (Bio-Oss®) and group 3 – treated with freeze-dried bone allograft (DFDBA). Bone graft was grafted into two calvarium defects of 3 mm which were created on parietal bone of each animal. At 1 and 3 month, mice were sacrificed and bone volume was evaluated using micro-CT.
Results: Bio-Oss\textsuperscript{®} resulted in significantly greater bone volume than DFDBA and control respectively at both 1 and 3 month.
Summary and conclusions: To be used as a matrix for enhancing bone regeneration, xenograft (Bio-Oss\textsuperscript{®}) was recommended over allograft (DFDBA).

P164
The Effect of Irradiation Distance on the Vickers Hardness of the Bulk-Fill Resin Composites
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Aim and purpose: The purpose of this study is to assess the micro hardness of three high viscosity bulk-fill resin based composite materials that are irradiated from three different distances.
Materials and method: Three bulk-fill composite materials (SonicFill, Kerr; Filtek BulkFill, 3MESPE; Tetric N-Ceram Bulk Fill, Ivoclar Vivadent) were tested in this study. Three groups were prepared according to bulk-fill resin-based composites and divided into three subgroups according to irradiation distance (n = 10).

Cylindrical specimens (10 \times 4 mm) were made from each composite material by using teflon moulds and light cured for 20 s. on standard mode (1100 mW/cm\textsuperscript{2}, Demi Ultra, Kerr) from different irradiation distances (0, 2, and 4 mm). Afterwards, specimens were stored in dry and dark conditions at room temperature for 24 h before testing.

A micro vickers hardness tester (Shimadzu, Tokyo) was used to measure the Vickers Hardness (HV). The test load was fixed at 200 g applied for 15 s and three sequential measurements were taken for each surface. Data were analyzed by Mann–Whitney-U and Kruskall–Wallis tests.

Results: There were statistically significant differences between the hardness values from bottom of all tested materials (p < 0.001), whereas no significant differences found for top HV except for the Sonic Fill that revealed highest microhardness values. When we used 4 mm as irradiation distance, Sonic Fill also elicited the highest HV values. In addition, bottom/top microhardness ratio >0.8 was exhibited by all materials.

Summary and conclusions: For all irradiation distances (up to 4 mm), a 4 mm bulk placement is recommended for all tested materials.

P165
Evaluation of Fracture Resistance of Endodontically Treated Teeth Restored with Full Ceramic Crowns Over Two Fiber Post Systems
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Aim and purpose: The aim of this study was to evaluate the fracture resistance of endodontically treated teeth restored with two different types of fiber posts.
Materials and method: In this study two different types of fiber posts (Flexi Flange and Rely X) with different designs were used to evaluate the fracture resistance of the restored teeth.
Twenty endodontically treated upper central incisors were restored with the two types of fiber posts retaining all ceramic crowns which were constructed over composite core build-up material “Core X Flow”. Fracture resistance testing was performed after applying cyclic loading.

Data were collected and analyzed with One-ways analysis of variance ANOVA test of significance comparing variables affecting fracture mean values. p values ≤0.05 are considered to be statistically significant in the test.

Results: The results of fracture resistance showed significant difference between both types of posts. Flexi Flange post sample was fractured under load value (324.77N), while Rely X post recorded (243.18N) at p ≤ 0.05

Summary and conclusions: From this study, we found out that Flexi Flange fiber post showed higher fracture resistance than Rely X fiber post as it transmits less stresses within the teeth roots.

P166
The Effect of pH on the Yoghurt to the Transverse Strength of Heat-Cured Acrylic Resin
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Aim and purpose: Acrylic resin is widely applied as a denture base. However, acrylic resin has disadvantages such as its liquid absorbing ability and micro porosity. Nowadays, the amount of consumption of dairy products in Indonesia are increased, this including yoghurt. The absorption of yoghurt can caused an effect on the mechanical properties. One of the mechanical properties is transverse strength. The objective of this study was to determine the effect of ph on the yoghurt to the transverse strength of heat cured acrylic resin.

Materials and method: This study was an experimental laboratory research. The study used 20 specimens, consisting of 5 heat cured acrylic resin specimens that were soaked in yoghurt with each ph level of 4, 4.5, 5, and distilled water as a control. The soaking processes are done for 3 days. Transverse strength of heat cured acrylic resin measured using a universal testing machine.

Results: Statistical tests using One-way Anova showed a p-value = 0.739 (p > 0.05). These results indicate that there is no significant effect of ph yoghurt to the transverse strength of heat cured acrylic resin.

Summary and conclusions: In this study there was no significant effect of pH yoghurt to the transverse strength of heat cured acrylic resin.
P167
Influence of Surface Sealant on the Color Stability of a Composite Resin Immersed in Different Mouth Rinses
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Aim and purpose: The aim of this study was to evaluate the influence of surface sealant on the color stability of a composite resin immersed in different mouth rinses.

Materials and method: Forty two disc-shaped specimens (10 × 2 mm) were prepared by using a teflon mould from a nanohybrid composite (Herculite XRV Ultra). Specimens were divided in 2 groups (with or without surface sealant) (BisCover LV, BisCO) and afterwards divided in 3 subgroups (n = 7) according to the immersion solution. The specimens were then incubated in distilled water at 37°C for 24 h. The baseline color values (L*, a*, b*) of each specimen were measured with a digital spectrophotometer (VitaEasy-ShadeCompact, Vita). The specimens were stored in 20 mL of each mouth rinse (Klorhex; 0.2% CHX, Gengigel; Hyaluronic acid, Oderol; CHX+Zn) for 12 h, which was reported as the equivalent of 2 min/day for 1 year. Test solutions were shaken every 3 h to provide homogeneity. After immersion, the color values of all specimens were re-measured, and the color change value (ΔE) was calculated. Color change (ΔE) data were submitted to a mixed analysis of variance using a Kruskal-Wallis test (p < 0.05 for the different immersion mouth rinses) and Mann–Whitney test (p > 0.05 for the differences between groups).

Results: There were statistically significant differences (p < 0.05) in ΔE values between mouth rinses. Klorhex elicited the most significant color change, followed by Gengigel and Oderol. There was no statistically significant difference (p > 0.05) between specimens sealed or not.

Summary and conclusions: Therefore, surface sealant was inefficient on the protection against color change and Klorhex promoted the higher darkening of the specimens.

P168
Effect of Thermal and Mechanical Loading Cycling (TMC) on Microleakage of Photo Cured Composite Resin with Different Light Sources Units
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Aim and purpose: AIM: The aim of this study was to evaluate the effect of three different curing units and artificial aging [thermo-cycling (TC) and mechanic loading (ML)] on microleakage of class V composite restorations.

Materials and method: Class V cavities were prepared on the buccal surfaces (3 × 2 × 2 mm) of 60 extracted premolar teeth. The teeth were randomly divided into three groups of 20 each according to light curing unit. Demi Ultra LED Ultracapacitor Curing Light System (Kerr), Valo Cordless broadband LED curing light (Ultradent), Optima BA International (UK) were used to polymerize composite resin (Herculite XRV Ultra) and adhesive systems (Optibond Solo Plus, Kerr) within a dentaf orm (KDF-01 Phantom Unit system for students, Turkey) attached to a dental chair.

Teeth following the adhesive procedure, the specimens were subdivided according to aging conditions into two groups [(24 h in water), (1000 TC and 53,000 ML)]. Teeth surfaces were sealed with nail polish except for 1 mm around restoration margins and immersed in 0.5% basic fuchsin dye. Teeth were then sectioned buccolingually and dye penetration was examined under a stereomicroscope (Nikon SMZ1000 with ×30 magnification). Data were statistically-analyzed by Mann–Whitney-U and Kruskall–Wallis test.

Results: According to aging condition there was found statistically significant differences between groups (p < 0.01). TMC groups were showed higher microleakage values than 24 h in water storage groups. There were no significant differences between three different light sources unit types.

Summary and conclusions: It was concluded that TMC, that may increase the microleakage of Class V cavities and the type of light source is independent.

P169
Effect of Adding Essential Oil Mint Leaves “Mentha piperita L.” On Self-Cure Acrylic Resin to the Transverse Strength
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Aim and purpose: Acrylic resin or polymethyl methacrylate (PMMA) is one of biomaterial that has been used extensively in dentistry include temporary crown, physiological tray, and denture base plate. Self-cure acrylic resin doesn’t need thermal energy when polymerizing. However, monomer utilizing in acrylic resin has an unpleasant aroma that disturb dentist and dental laboratory. Then, freshness aroma from mint leaves “Mentha piperita L.” without affecting the transverse strength of acrylic resin is needed. This study was designed to evaluate the effect of adding extract essential oil mint leaves in transverse strength of self-cure acrylic resin.

Materials and method: Fifteen sample of each acrylic resin 64 × 10 × 3.3 mm dimensions were divided into three groups with five samples in each. One group as a control and others were submitted to adding extract volume 0.25 ml, 0.5 ml. Essential oil of mint leaves was obtained from water steam distillation. The transverse strength measured by three point bending test using Universal Testing Machine. The data were analyzed by means of one-way analysis of variance (ANOVA) and Post-Hoc LSD.

Results: The transverse strength of self-cure acrylic resin values showed statistically significant differences among experimental group which adding extract volume 0.25 ml and 0.5 ml (p < 0.05), however adding extract 0.25 ml did not greatly affect in comparison to the control group (p = 0.488).

Summary and conclusions: Addition of low volume (0.25 ml) essential oil mint leaves “Mentha piperita L.” did not affect significantly to the transverse strength of self-cure acrylic resin.
P170
Rootless Teeth: Dentin Dysplasia Type I
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Aim and purpose: Dentin dysplasia (DD) is a rare disturbance of
dentin formation characterized by normal enamel but atypical den-
tin formation with abnormal pulp morphology. This disorder is
a rare defect of dentin development with an autosomal dominant
pattern of inheritance that affects one in every 100,000 individuals
and manifests in both primary and permanent dentitions. The pur-
pose of this article is to present a case with a rare disorder, den-
tinal dysplasia type I, with an overview of its diagnosis and
management.

Materials and method: A 7 year and 9 month old girl referred to
Gulhane Military Medical Academy with a complaint of crowding
in her maxilla. The intraoral medical examination revealed no car-
ies or luxation. Oral hygiene was good. Panoramic radiographic
examination confirmed rootless 16, 26, 36 and 46 which seemed
normal in clinical examination. Patient’s father reported that the
girl had chemotherapy when she was 6 month old because of hep-
atoablastoma.

Results: The management of patients with dentinal dysplasia is dif-
cult for the dentists. Premature loss of teeth as a result of rudi-
mentary or absence of roots has presented dentists with many
problems in management of patients with DD I.

Summary and conclusions: The most effective treatment is to prac-
tice excellent oral hygiene to maintain the health of teeth. How-
ever, treatment strategies vary according to age of patient, severity
of problem, and the presenting complaint. However, even teeth with
no evidence of caries or periodontal diseases are lost at an
early age in this condition and it seems little can be done despite
all the advances in modern-day dentistry.

P171
Evaluation of Human Breast Milk Acidogenicity and Biofilm
Formation
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Aim and purpose: To determine the pH change of human breast
milk (HBM) in different storage conditions and to evaluate the
ability of HBM biofilm formation.

Materials and method: HBM collected from six mothers were
divided into 4 different stored conditions; (1) room temperature
within 30 min, (2) 4 °C for 48 h, (3) –200°C for 48 h, and (4)
–200°C for 2 weeks. Each storage condition was divided into two
subgroups, with and without 105 CFU/ml of S. mutans added.
Thus, the total eight groups were tested for pH change at 1 h
interval for 6 h. Then, pooled HBM stored at -200°C were utilized
for the determination of biofilm formation and its acidogenicity.
Formed biofilm of HBM with and without 105 CFU/ml of S.
mutans were stained with crystal violet and quantified by measur-
ing the absorbance at 595 nm. The biofilm acidogenicity was
assessed at 24 h incubation period. Multivariate analysis, Kruskal–
Wallis test, and Bonferroni test were performed for statistical anal-
yses.

Results: The pH of HBM stored at 4 °C for 48 h was lower than
others, but no significant difference of pH drop among tested
groups. HBM biofilm formation with and without 105 CFU/ml of
S. mutans were also not different. The pH of all HBM samples
did not drop under critical pH.

Summary and conclusions: Different storage conditions did not
affect to HBM acidogenicity significantly. HBM tends to be non-
cariogenic due to its low acidogenicity and limited biofilm forma-
tion.

P172
Oral Health Knowledge, Attitude and Practices among Primary
School Children in Lahore, Pakistan
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Aim and purpose: The aim of this study was to assess and com-
pare the knowledge, attitude, and practices of school children
towards oral health according to age and gender

Materials and method: It is a descriptive cross-sectional study,
approved by the ethical committee of our institution. The sample
size was 1041 students (371 males, 670 females) with an age range
of 6–12 years (mean age 10.49). The data was collected on a pre-
tested questionnaire which included 23 closed ended multiple-
choice questions on oral health knowledge, attitude and oral
hygiene practices.

Results: The result showed 18% females, 6% males and according
to age 7% of 6–9 years old, 16% of 10–12 years old had good
knowledge of oral health. Almost 59% of the children reported
that they don’t visit the dentist because of fear of pain. It was
observed that 50% of the children visited the dentist only when in
pain/problem. It was surprising that 40% of the children never vis-
ited the dentist. Almost all of the children brush their teeth but
most of them (46%) brush once daily and (41%) brush only in
the morning. Almost one-tenth of the children floss sometimes.
In short, 24% female, 13% males and according to age, 12% of 6–
9 years old, 23% of 10–12 years old had good oral hygiene prac-
tices.

Summary and conclusions: Results showed poor knowledge, atti-
dute and practices in majority of the children, Therefore, a com-
prehensive community-focused oral health care intervention is
needed, that includes oral health education in homes as well as in
schools.
P173
Performance of Experts and Non-Experts on Cavity Preparations Performed While Multi-Tasking
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Aim and purpose: The capability to perform multi-tasking is a key characteristic of expertise in health disciplines. As a result of increased automatization, experts have low attentional demands for completing procedural tasks. Consequently, they can complete more than one task concurrently without deterioration of the main task. However, research on this characteristic in the dental profession is limited. This study aimed to compare the performance of experts and non-experts on cavity preparations carried out while multi-tasking.

Materials and method: Participants were recruited based on levels of expertise (n = 14 in each group); fourth-year (novice) students, sixth-year (competent) students, and practitioners (expert). Each participant completed two separate cavity preparations on plastic teeth with the second done while multi-tasking. Differences in the time spent and grades obtained for the cavity preparations performed in both circumstances were analysed.

Results: The findings revealed that experts spent less time than non-experts in both cases (p < 0.05). The expert and novice groups both obtained higher grades when performing the cavity preparations while they were multi-tasking (p < 0.05). Interestingly, novices also completed the cavity preparations faster while multi-tasking (p < 0.05).

Summary and conclusions: In conclusion, performance on cavity preparations by experts and novices was not negatively affected by multi-tasking and actually appeared to be improved by it. The results implied that some aspects of cavity preparation procedures may place low attentional demand on both experts and novices. Further studies are needed to investigate the possible benefits of including multi-tasking exercises in the design of learning activities for beginners in operative dentistry courses, specifically in cavity preparation tasks.

P174
Cost of Dental Treatment in Cleft Palate Child
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Aim and purpose: This study aimed to calculate the cost of public dental treatments for cleft palate children through 19 years old.

Materials and method: Three datasets in fiscal year 2013 collected from community and central/general hospitals were dental service quantity, material disbursement and all dental personnel’s revenue as well as investments of standard services. The itemized full costs of multistage prosthetic and orthodontic treatments including promotive service composed of total direct cost, indirect cost, and dental lab fee was finally added on prostheses only.

Results: Overall cost was 78,709 Bath/person. The 3 highest costs were fixed appliance orthodontic treatment, child definitive obturator and adult definitive obturator with complete denture (21.3, 15.9 and 14.2% of all cost, respectively).

Summary and conclusions: Even the result is high amount but it costs approximately 4143 Bath/year. It also represent parent’s economic burden when their health welfare does not cover the treatments such as Civil Servant Medical Benefit Scheme.

P175
Effective Design of Custom-Made Mouthguard for Athletes Undergoing Orthodontic Treatment
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Aim and purpose: For athletes with orthodontic appliances, the suitable designed custom-made mouthguard is required because they are known to be at more risk of traumatic dental injuries and/or break of appliances. The purpose of this study was to compare the protective ability of mouthguards for the athletes undergoing orthodontic treatment.

Materials and method: Experimental three laminated types of mouthguards on a dental model simulating orthodontic brackets on the teeth were prepared with ethylene-vinyl acetate copolymer based mouthguard sheet material and a thermoforming machine as followed: (1) filling the silicone impression material for keeping the adequate appliance space when thermoforming (MG-ks), (2) the same as MG-ks but with embedding the space with silicone spacer after thermoforming (MG-sw) and (3) the same as MG-ks but with insertion of polyethylene terephthalate-glycol based hard material between mouthguard materials (MG-hs). The impact tests were performed by a free-falling object with a vertical rod. The strains of dental model of upper incisors with mouthguard were statistically compared among the mouthguards with ANOVA and Bonferroni’s multiple comparison by 5% of the significance level.

Results: The maximum principal strain of upper incisor of MG-ks (47.4 ± 29.5 με) was significantly different from MG-ks (227.4 ± 77.8 με) (p < 0.05), while MG-sw (129.0 ± 67.9 με) was not significantly different from both MG-ks and MG-hs.
Summary and conclusions: The results suggest that insertion of hard material between mouthguard sheet materials with keeping space around teeth and/or appliances was the most effective on protection ability for the athletes undergoing orthodontic treatment.

P176
Comparative Cephalometric Study among Different Ethnic Groups
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Aim and purpose: To identify cephalometric differences among adolescents Mexicans, Caucasians, African Americans and Asians, between 12 and 14 years old.

Materials and method: Lateral cephalograms of 976 Mexican, Caucasians, African Americans and Asians adolescents were selected. The cephalograms were measured to obtain maximum and minimum values, mean and ratio, between ethnic groups and gender, and then were statistically analyzed (Pearson linear correlation test with SPSS software v. 20 p < 0.05).

Results: Overall, angular cephalometric values were established. Once the comparison was made between ethnic groups and gender, the following results were found: The Asian male group showed higher horizontal growth pattern, mandibular retrusion in regard to SN and protrusion of lower incisor with respect to AP. Black women group showed higher bimaxillary protrusion and inclination of upper incisor with respect to FH. Caucasian women group showed relationship skeletal class I, horizontal growth pattern, and lower inclination of the upper and lower incisors, which means an open interincisal angle. Caucasian men group exhibited a skeletal class I, horizontal growth pattern, retrusion of lower incisor about AP and lower inclination of the lower incisor to the mandibular plane.

Summary and conclusions: The majority of evaluated cephalometric parameters were major in male Asian group (42.8%) and black women group (33.3%). Mexican and Caucasian women presented the lowest cephalometric parameters (42.8%).

P177
Efficacy of Transpalatal Arch as a Reinforcing Anchorage Unit During Space Closure- a 3-Dimensional Finite Element Study
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Aim and purpose: Ever since transpalatal arch was introduced in 1972, it was believed to provide orthodontic anchorage. The objective of this study was to investigate the effects of the transpalatal arch on periodontal stresses and displacements when subjected to orthodontic forces by making the use of the Finite Element Method of analysis.

Materials and method: Two 3D finite element models, one with TPA and one without TPA, both with maxillary lst molars, associated periodontal ligament and alveolar bone were constructed and both were subjected to orthodontic forces and the resultant stress patterns and displacements in both the models were determined.

Results: The Stress and displacement plots failed to resolve any significant difference in the area of highest stress and displacement in both the models in response to the Orthodontic forces.

Summary and conclusions: The presence of a TPA brings about no changes in the initial dental and periodontal stress distributions and displacements when used for the purpose of anchorage.

P178
Perception of Facial Aesthetics in Children Seeking Orthodontic Treatment
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Aim and purpose: Dento-facial region contributes significantly to overall facial appearance. Adults with significant malocclusion, have reported lower self-concept ratings than those without malocclusion. There have been various studies conducted on the perception of malocclusion and facial aesthetics in adults, but very few studies have dealt with facial aesthetics in children affecting their self-concept. Therefore, the purpose of this study was to investigate the perception of facial esthetics in children seeking orthodontic treatment.

Materials and method: 150 children, aged between 12–15 years, reporting to the Department of Orthodontics and Pedodontics, in a post graduate dental school, over a period of three months were selected after their malocclusion was quantified by the index for orthodontic treatment need, aesthetic component (IOTN-AC). Subjects were made to fill in a self-perception questionnaire independently in the presence of investigator Parental consent and the child’s consent was obtained. Age, gender and ethnicity were taken into account for accuracy of the result. A rigid set of inclusion and exclusion criteria were followed.

Results: Self-perception of the dento-facial region was a statistically significant (p < 0.05) predictor for self-concept analysis and played a vital role in a subject’s social relations and academic performance.

Summary and conclusions: The self-perceived level of the attractiveness toward the dento-facial region is more strongly related to self-concept than the objective severity of the malocclusion.

P179
Remineralization Effect of Low-Level Laser and Amorphous Sodium-Calcium Phosphosilicate Paste
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Autonomous University of the State of Mexico

Aim and purpose: To investigate the effects of hard material between mouthguard sheet materials with keeping space around teeth and/or appliances was the most effective on protection ability for the athletes undergoing orthodontic treatment.
Aim and purpose: To evaluate enamel remineralization of NovaMin (amorphous sodium-calcium-phosphosilicate paste) and low-level laser (LLL) for the treatment of white spots lesions after orthodontic therapy.

Materials and method: 20 extracted premolars, were divided into 4 groups (1 control and 3 experimental) submitted to next phases. Stage 1: Placement fixed orthodontic appliances; stage 2: Immersed in demineralization solution; and stage 3: Implementation of variables for group (A: Control, B: Nupro Sensodyne with NovaMin, C: LLL, and D: NovaMin and LLL). In each stage, elemental analysis (calcium, phosphorus and sodium) was performed with SEM, these data were tested for normality (Shapiro-Wilks) followed by analysis to find differences between mineral changes during study phases (Bonferroni test), and to determine differences between groups (Tukey test).

Results: Calcium and sodium decreased; phosphorus ions increased in all groups for stage 2. In stage 3, calcium, sodium and phosphorus increased in all experimental groups, being greater in group B. According Bonferroni analysis, calcium concentrations were statistically different between stage 1 and 2 (p = 0.025) and between 2 and 3 (p = 0.019); for phosphorous, between stage 1 and 3 (p = 0.013); whereas for sodium no significant differences were reported. When applying Tukey test, calcium showed significant differences between groups A and B (p = 0.004); phosphorus between A and B (p = 0.003) and between A and C (p = 0.052); there were no significant differences in sodium distribution.

Summary and conclusions: According to results, to apply remineralizing agents in white spot lesions, leading ions incorporation and providing an effective alternative for dental demineralization treatment; being more effective NovaMin than LLL therapy, even combining both treatments.

Poster Session 37 – Room Cubicle 1 | 2015-09-24 | 11:30-12:30

Theme 1: Dental Treatment & Restorative Dentistry – Materials

P180

Better Outcome in Pulpotomy on Primary Molar with Biodentin
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Aim and purpose: The primary objective of any pulpal therapy is to maintain the integrity and health of a tooth and its supporting tissue as well as to maintain arch length and space maintenance. The aim of this case is to probe and popularize the technique of vital pulpotomy in primary teeth with biodentin.

Materials and method: A 6 years old girl came to BSMMU with complaints of pain for 2 days on her right lower jaw. Clinical examination illustrated extensive deep caries in the mandibular right deciduous molar. The tooth was sensitive to cold no visible swelling and sinus tract was found. Radiological examination revealed that the tooth has no peri apical pathology. My diagnosis was, it was a case of acute reversible pulpititis due to caries. Treatment plan was pulpotomy on lower right 2nd primary molar.

After proper isolation cavity outline was established. Then necrotic and infected carious dentin was removed and biodentin was placed over the caries-affected dentin. Finally the tooth was restored with glassionomer base and composite filling.

Results: There was no sign and symptom both clinically and radio logically after 1 year of follow up. Patient was recalled after 3, 6, 9 and 12 months.

Summary and conclusions: Biodentin is a clinically practical material for vital pulp therapy in primary molars. It is very smart material due to its bioactivity, ease of manipulation, and relatively first setting comparison with other similar materials. Biodentin pulpotomy is a simple technique for reliable biocompatible vital pulp procedure.

P181

Morphological Characteristics of Novel Apatite-Ionomer Cement
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Aim and purpose: We have recently developed a novel “apatite-ionomer cement (AIC)” to improve the mechanical and chemical properties of restorative glass ionomer cement (GIC) by adding hydroxyapatite (HAp) and reported that AIC had improved mechanical and chemical properties compared with conventional GIC. The aim of this study was to evaluate the morphological characteristics of AIC and to investigate the mechanism of improvement for mechanical and chemical properties.

Materials and method: Three types of conventional glass ionomer cement (Fuji IX GP, Fuji IX GP Extra, Fuji III, GC, Japan) were used as the control (GIC group) and base material. To produce the AIC powder, each GIC powder was replaced with a powder composed of spherical HAp (Taihei Chemical Industrial, Osaka, Japan) particles, and AIC specimens were made by mixing the AIC powder and GIC liquid at recommended P/L by the manufacturer. Based on preliminary experiments, the most suitable HAp contents in each GIC powders were determined. GICs and AICs specimens were evaluated by SEM observation and EDS measurement.

Results: Innumerable nano-particles from the HApS were found to be dispersed within the matrix. Reaction layers were observed on the surfaces of the glass cores. From EDS analysis, fluorine, aluminium, silica, and strontium from the glass cores were detected inside the HAp in the AIC. Conversely, calcium and phosphorus from the HApS were detected in the AIC matrix.

Summary and conclusions: The addition of HAp into GIC led to strengthen the matrix and to promote the reaction between glass core and polyacrylic acid. HAp and matrix in AIC had matured together.
Behavior of Trace Elements in Novel Apatite-Ionomer Cement
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Aim and purpose: We have recently found that glass ionomer cement (GIC) was improved in mechanical strength and fluoride release by hydroxyapatite (HAp) addition in GIC. However, it has not been demonstrated the detailed mechanism of improvement yet. This study aimed to evaluate the role of matrix on behavior of several elements in HAp added GIC, named “apatite-ionomer cement (AIC).

Materials and method: Conventional glass ionomer cement for restoration (Fuji IX GP, GC, Japan) was used as the control and base cement. AICs were created by replacing 8–16 wt% of the Fuji IX powder with spherical-shaped HAp and then added with the Fuji IX liquid at powder/liquid ratio (P/L) of 3.0. Samples measuring 10 mm in diameter x 2 mm in thickness were prepared. Half the number of specimens were removed the matrix-rich layer by polishing using SiC papers. The samples were individually suspended into deionized water in sealed containers and were stored at 37°C for 24 h and 1 week. AIC and GIC specimens with/without matrix-rich layer were evaluated multi-elements (Al, Si, P, Ca and Sr) analysis by Inductively Coupled Plasma Atomic Emission Spectrometry (ICP-AES) Moreover, The fluoride ion concentration was measured using a fluoride electrode connected to an ion analyzer.

Results: The concentrations of fluoride and multi-element and fluoride ion release of the AIC specimens removed matrix-rich layer were significantly lower than those of the AIC specimens with matrix-rich layer.

Summary and conclusions: The matrix of AIC participate in excellent several ion release properties of AIC.

Effect of Jet Injection on Pain Perception in a Group of Pediatric Dental Patients
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Aim and purpose: To evaluate the pain perception among a group pediatric dental patients during different dental procedure after using Jet injection (INJEX).

Materials and method: The present study was conducted on 58 teeth in 39 children; 24 boys and 15 girls. Ethical committee approval was obtained. The children included in the study were requiring local anesthesia for various treatment procedures. Topical anesthetic gel was used, and then anesthesia was administered using the INJEX needleless device. Face pain rating scale (FRS) was used to assess the child’s pain perception during performing the different dental procedures.

Results: Statistical analysis revealed no statistically significant difference between pain scores with different treatment procedures. However, comparison between boys and girls revealed that boys showed statistically significantly higher pain score than girls during cavity preparation only.

Summary and conclusions: Local anesthesia using INJEX showed low pain perception during different dental procedures.

Failure of Tooth Eruption – A Report of Cases
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2Department of Periodontics, Manipal College of Dental Sciences, Manipal University, Manipal, India

Aim and purpose: Failure of eruption (FE) is a rare condition that involves impeded eruption of teeth despite the lack of an identified local or general causative factor. The following reports describe management of FE in children.
Materials and method: Case 1: An 11 year old boy reported with a chief complain of missing upper front tooth. His medical history was not contributory. Clinical examination revealed a full complement of teeth except for 11. Radiographic examination showed unerupted 11 in the bony socket. The case was managed by a combination of surgical exposure and removable orthodontic appliance.

Case 2: A 12 year old boy presented with a chief complain of missing lower back tooth. His medical history was not contributory. Clinical examination revealed missing 45 confirmed through radiographs. Tooth was surgically exposed and moved with the help of fixed orthodontic traction.

Results: Timely intervention in both the cases enabled eruption of teeth in the arch, preventing their ankylosis.

Summary and conclusions: FE is an eruption defect, manifesting as a complete failure of eruption or cessation of initial eruption with no obvious local or systemic causative factor. Lately a genetic component has been linked to it. Conventional methods of supporting eruption of embedded teeth are often futile in FE. Therefore accurate diagnosis combined with timely intervention is imperative to achieve normal occlusion. The above cases provide an insight into the effective treatment of FE.

P186
Single Visit Non-Vital Apical Root Closure-Report of Two Cases
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Aim and purpose: To seal with Mineral trioxide aggregate (MTA) and make a sizeable communication between the root canal system and the periradicular tissue and provide a barrier because of lack of apical constriction.

Materials and method: Here two case study were shown. Case-1: A 9 year old girl who had met with trauma about six years ago, before she visited department of Paediatric Dentistry, Update Dental College, Dhaka, Bangladesh for the treatment of mandibular right lateral incisor. Case-2: A 10 year old boy, visited same department for the treatment of mandibular right second premolar. Both of the cases were diagnosed as chronic irreversible pulpitis with open apex. After proper isolation access opening and biomechanical preparation was performed using a conventional technique, with 1 mm short of the radiographic apex and calcium hydroxide with iodoform (metapex) used as intra canal medicament. After 15 days MTA was placed in the canal till a barrier of 4 mm was achieved. Later obturation was done using lateral condensation technique.

Results: Size of the periapical lesion was almost decreased after 1 year of follow up. Follow-up was done after 1 month, 6 months and 1 year later.

Summary and conclusions: On the basis of anti-inflammatory, antimicrobial, biocompatibility, superior sealing property and ability to induce cementum like hard tissue MTA is a reliable agent. The rationale is to establish an apical stop that would enable the root canal to be filled immediately. There is increasing popularity with one visit apexification technique using MTA as osteoconductive apical barrier.

P187
Experimental Basis of Coloration Minimization in Use of Silver Diamine Fluoride
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Aim and purpose: To justify in vitro the effectiveness of coloration minimization in use of silver diamine fluoride (SDF).

Materials and method: The research was conducted on the extracted (due to physiological replacement) deciduous teeth having cavitory carious lesions at the level of mantle dentin. The teeth were brushed with paste without fluorine, washed and dried. Then in the group 1 there was done an application of 38% SDF solution ("One component Argenat", "VladMiVa") during 1 min, in the group 2 – additional application of iodine preparation. Then the teeth were sawed in sagittal direction and analyzed on the X-ray energy dispersive spectrometer “INCA 350” ("Oxford Instruments", Great Britain).

Results: The median value of silver content in the bottom of carious in the group 2 was 0.29 (0.04 – 4.48)%, which is 19.8 times lower than that in the group 1 (5.74 (2.33 – 18.91)%; U = 395; p < 0.001). At the same time in the group 2 there is lower silver content at the distance more than 500 μm from the bottom of carious cavity (0.13 (0.04 – 0.21)% in comparison with the group 1 (2.33 (1.46 – 3.19)%; U = 0; p < 0.001). Silver content in the walls of carious cavity in the groups 1 and 2 is not statistically distinguishable (U = 340; p = 0.97) and makes 8.92 (5.38 – 16.58)% and 9.17 (5.41 – 14.57)%.

Summary and conclusions: The offered method of coloration minimization in SDF usage leads to decrease of silver penetration towards pulp camber in preservation of the level of impregnation of the walls of carious cavity, which allows waiting lower reaction of the pulp and faster disappearance of coloration due to abrasive effect of food and hygiene items.

P188
Evaluation of Salivary Immunoglobulin A, and Iron Ion in Relation to Dental Caries among Children with Beta Thalassemia Major
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Aim and purpose: The present study was to assess the dental caries in relation to salivary immunoglobulin A, and iron concentration in saliva, among a group of boys and girls with beta thalassemia major in comparison with a control group.

Materials and method: The study involved 40 children (boys and girls) with beta thalassemia major, aged 8–9 years compared to 40 healthy children with the same age and gender. dmfs/ds and DMFS/DS indices were applied, unstimulated salivary samples were collected for estimation Secretory Immunoglobulin A and iron in saliva.

Results: Caries-experience was higher among beta thalassemia children compared to healthy children. dmfs/ds and DMFS/DS mean values were higher in study group compared to control group, the differences were statistically not significant (p > 0.05), except dmfs/ds for girls the difference was statistically significant (p < 0.05). Secretory Immunoglobulin A level was higher in control group compared to study group, the difference was statistically not significant (p > 0.05). Iron ion concentration was higher in study group compared to control group, the difference was statistically not significant (p > 0.05). There was negative with statistically significant correlation (p < 0.05) between secretory immunoglobulin A level and dmfs/ds in study group. The correlation between iron ion concentrations and dental caries was positive and statistically not significant (p > 0.05).

Summary and conclusions: Dental caries was higher in beta thalassemia major patients compared to normal children.

Multipotency of Mesenchymal Stromal Cells Isolated from Deciduous Teeth
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Aim and purpose: A laboratory study was conducted to compare the multipotency of mesenchymal stromal cells (MSC) isolated from human caries deciduous teeth (SHCD) and exfoliated deciduous teeth (SHED).

Materials and method: Approval was obtained from the Institutional Review Board of the University of Hong Kong. Children aged 5–12 were included in the study. Extracted teeth, which were either near exfoliation or with deep caries lesion, were collected from the study subjects. Consequently, the pulp tissue of each extracted tooth was digested with collagenase and stromal cells isolated were expanded in culture medium. Expanded cells obtained from caries deciduous teeth were grouped as SHCD; while those obtained from teeth near exfoliation were grouped as SHED. SHCD and SHED were then respectively characterized with defined mesenchymal stem cell markers as measured by flow cytometry and their capacity for multilineage mesenchymal differentiation were also identified using standard in-vitro tissue culture differentiating medium.

Results: Comparing with SHED, SHCD showed a lower CD90 expression level in cytometric analysis but the difference was not statistically significant. The expression level of CD105 and CD73 were similar for SHED and SHCD. All study samples were negative for phenotypes CD35, CD45, CD11b, CD19 and HLA-DR and were capable of in vitro differentiation into osteoblasts, adipocytes and chondroblasts as demonstrated by cell culture staining.

Summary and conclusions: The present study indicates that both SHED and SHCD have satisfied the minimal criteria for human MSC and SHCD could be a potential MSC source for application in regenerative medicine.

The Dentin Model Preparation for In Vitro Testing of Dentine Hypersensitivity
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Aim and purpose: In previous studies the dentine discs were prepared from surgically extracted third molars of human and few people studied the influence of different acids and etching time on the surface morphology and elements of the dentine discs. In the present study the dentine model obtained from root of bovine incisor was tested by SEM about orientation of dentinal tubules, surface morphology and element after etched by different acid at different etching time.

Materials and method: Roots of bovine incisors were sectioned to get dentin discs. A comparative analysis was made on the ability of different concentrations of citric acid solution (1%wt, 2%wt, 6%wt) and different concentration of Phosphoric acid (15%wt and 40%wt) at different times (1, 2, 5, 10 min) to remove the smear layer on the dentin surface.

Results: Opened dentinal tubules were perpendicular to observation flat in dentin model. High concentration of phosphoric acid made dentin model surface seriously dehydration and lost almost all of calcium and phosphate. 6%wt citric acid etching dentin 5 min was demonstrated as the best etching condition, which can totally remove smear layer and retain a small amount of calcium and phosphate on the surface.

Summary and conclusions: Controlling sample preparing, etching and screening process, a reliable in vitro model prepared from root of bovine incisors was acquired for research of dentin hypersensitivity.

Analysis of Patient Satisfaction on Non- Clinical Services in a Major Dental Institute Sri Lanka
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Aim and purpose: Sri Lankan health sector has excelled over the past few decades and has achieved many significant milestones with its free healthcare policy. Therefore, the health managers are engaged in a never-ending task of achieving high quality of care and patient satisfaction with a minimal cost.

Materials and method: This study evaluates the satisfaction of patients, during their interaction and treatment in the Dental Institute. The satisfaction is measured in the five dimensions of service quality; tangibles, reliability, assurance, responsiveness and empathy. To derive the objective of the research the proposed model consist of five dimensions that explain the patient’s satisfaction, which is the dependent variable. A self-administered questionnaire was used to collect data and a Likert’s scale was used to measure the level of satisfaction.

Results: Out of the selected patients, 92.4% had responded. It is evident from the survey that the majority of the patients are satisfied with the non-clinical services provided at the Dental Institute. However, there is a difference of satisfaction level in different dimensions of the service quality. Out of the five dimensions empathy was the best (1.33) and responsiveness was the worst (1.99).

Summary and conclusions: As patients satisfied with the service provision Dental Institute can be used as a benchmark for other institutes in the country. Though the patients are satisfied with the non-clinical services, there are areas to be improved. Healthcare managers can use these data to improve their institutions. Policy makers can find the expectations levels of the patients and address those.

P192
Characteristics and Content Study of Oral Health-related Applications on iOS Platform
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Aim and purpose: Smartphone technology plays a greater role in dental professional. A number of oral health-related applications (Apps) have been developed but very limited content studies. This research aims to explore and study characteristics and content of the Apps on iOS platform.

Materials and method: The descriptive cross-sectional study was conducted to explore in the App store from July to September 2014. Thirteen keywords (Dental, Tooth, Oral health, etc.) were used. The Apps were selected with the inclusion/exclusion criteria, and HONcode criteria was applied to assess the credibility. The content accuracy and completeness were scored with the evidence-based dentistry supports.

Results: 6109 Apps, developed between 2008 and 2013, were available. However, only 158 Apps (2.6%) were included. 51.9% were free-paid Apps, others applied with cost ranged from 0.99–9.99 US dollars (Mean = 0.78, SD = 1.1). Most sellers were healthcare-related agencies with the target audience as the general public. “Brush DJ” scored the highest among others according to HONcode criteria (20 full score, Mean = 6.95, SD = 3.58).

Regarding credibility, almost of the Apps need further development in an authoritative source, Apps’ objectives and references. “Dental expert” scored 25 out of 30, the highest in evidence-based content study (Mean = 6.83, SD = 5.74). Reviewing their information; tooth brushing time, fluoride concentration, etc., with up-to-date evidence-based knowledge is essential.

Summary and conclusions: The study showed that in order to improve oral health-related Apps, both reliability and content quality are essential. Developing a new oral health-related Apps with a comprehensive and accurate content is promising.

P193
Reasons and Satisfaction on Using Dentist and Non-Dentist Denture Services
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Faculty of Dentistry* in details of the other co-author; Thongchai Vachirarojpisan:

Aim and purpose: To investigate the reasons of using dentists and non-dentists (ND) denture services among denture wearers in Thailand, and to compare denture satisfactions on denture services between patients using dentist- and ND-provided dentures.

Materials and method: A cross sectional study on 688 and 165 patients using dentist-provided and ND-provided dentures respectively. All had been using dentures for not more than 2 years. Participants were recruited from four provinces in Thailand. Those using dentist-provided dentures were from hospitals or private practices, while those using ND-provided dentures were from community areas. Data were collected by one interviewer. Participants were asked for reasons of choosing type of denture services, and rated their denture satisfactions on 5-point Likert scale. Satisfaction questionnaire included 13 items categorized into 5 aspects: cost, obtaining information, accessibility, friendliness and quality of services. Mean total scores (possible maximum = 65) as well as mean scores on each of the five aspects between two groups were compared.

Results: The most common cause of choosing dentist-denture services was free of charge or low cost (40.4%), while that of choosing ND-denture services related to the fast procedure (32.7%). Mean total satisfaction scores of dentist group (58.67) was significantly higher than that of ND group (52.9). Dentist group also obtained significantly higher satisfaction scores for all five aspects, than ND group.

Summary and conclusions: Cost and procedure time were the important factors affecting patients’ decisions on choosing type of denture services. Patients using dentist-provided dentures were more satisfied than those using ND-provided dentures.
P194

Attitude of Factory Managers Towards Workplace Oral Health Promotion Program

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Aim and purpose: This study was to explore the attitude of managers from various factories in Kaengkhoi district, Saraburi, towards the implementation of oral health promotion program in workplace.

Materials and method: Sixteen managers and foremen from six factories were deep-interviewed by one interviewer using semi-structured questionnaire. Their answers were analyzed using content analysis method.

Results: Ten out of the sixteen managers and foremen had positive attitudes on promoting tooth brushing activities after lunch and dental care activities for their workers. Seven managers and foremen proposed that Thai government should launch a clear regulation on the provision of free annual dental examination, similar to that of medical examination. All managers and foremen did not consider that the time spent for dental care activities would significantly lessen workers’ working times and factories’ productivity.

Summary and conclusions: We concluded that managers and foremen have positive attitudes towards oral health promotion programs such as dental examination and tooth brushing after lunch if such activities do not lessen the factories’ productivity.

Poster Session 40 – Room Cubicle 4 | 2015-09-24 | 11:30-12:30

Theme 1: Preventive Dentistry – Orthodontics

P195

Cephalometric Comparison of Pharyngeal Airway and Structures in Growing Subjects

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Aim and purpose: To evaluate the effects of sex, skeletal age, and sagittal skeletal patterns on the upper pharyngeal airway width and area, and position and dimension of surrounding structures.

Materials and method: Pre-treatment lateral cephalometric radiographs of 418 growing orthodontic patients (183 males, 235 females) (6–20 years old; mean age, 13.95 ± 3.62 years; divided into 3 skeletal ages, pre-pubertal (CS 1,2), pubertal (CS 3,4), and post-pubertal (CS 5,6), Faculty of Dentistry, Chulalongkorn University were collected from 2007–2014. 12 angular, 13 linear, and 3 area cephalometric measurements were analyzed. The three-way ANOVA and Factor analysis were applied to compare sex, skeletal age, and sagittal skeletal pattern differences.

Results: Upper pharyngeal airway dimensions presented interaction between sex and skeletal ages, and skeletal ages and sagittal skeletal patterns. Dimensions and position of surrounding structures showed only interaction between sex and skeletal ages. PNS-UPW, U-MPW, McL and N-S-V showed no sexual dimorphism. NSHy and NSHy showed no skeletal age difference. V-FH, SPT, H-VT showed no sagittal skeletal pattern difference.

Summary and conclusions: Airway, tongue, and soft palate dimensions had tendency to be larger in male, post-pubertal, and skeletal Class III subjects. Moreover, they also had more antero-inferior position of hyoid and tongue, and less obtuse soft palate angulation. Although, there was inter-individual variation, while PNS-UPW, U-MPW and McL were good parameters without sexual dimorphism in measuring nasopharyngeal and oropharyngeal airway width. N-S-V and N-S-Hy were also good parameters without skeletal age difference in measuring tongue and hyoid positions.

Theme 2: Preventive Dentistry – Endodontology

P196

Control of Plaque and Gingivitis by a Herbal Toothpaste

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Aim and purpose: The aim of the present study was to compare an herbal toothpaste with two other chemically active toothpastes regarding plaque and gingivitis control.

Materials and method: 76 volunteers (27 females and 49 males, mean age 47.8 years, range 40–58 years) with slight to moderate chronic periodontitis used standardized manual toothbrushes for unmodified daily manual mechanical plaque control during 24 weeks of the supportive periodontal therapy. Group 1 used the herbal toothpaste, group 2 a triclosan/copolymer toothpaste and group 3 an amine/stannous fluoride toothpaste. OHI, API, SBI, BOP and PD were recorded at baseline as well as after 6, 12 and 24 weeks. Kruskal-Wallis-, Mann-Whitney- U-, Friedman- and Wilcoxon- tests were used for statistical analysis.

Results: Moderate changes occurred at API and OHI in all groups. The herbal based toothpaste was as good as the control toothpaste (p = 0.001–0.049). SBI was significantly improved in all groups starting after 12 weeks (p = 0.001–0.033). BOP was about unchanged in all groups and always significant lower in the herbal toothpaste (p = 0.001–0.036).

Summary and conclusions: During the study period of 24 weeks the herbal based toothpaste was as good as the control toothpastes. No side effects were seen. Within the limits of the present study one may say that the tested herbal toothpaste could be a suitable alternative to toothpastes with chemical ingredients.
Oral Health Promotion by Salivary Hemoglobin Tests

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Aim and purpose: Minato-ku Shiba Dental Association has been continuously held the events of saliva tests once a year since 2011. We compared two reagents approved by Japanese pharmaceutical law for measuring salivary levels of Hemoglobin (Hb).

Materials and method: We measured salivary levels of Hb by two reagents approved by Japanese pharmaceutical law. In addition, we detected P. gingivalis (P.g) and A. actinomycetemcomitans (A.a) from representative samples.

Results: Salivary levels of Hb from most of the subjects were less than reference value (2 μg/ml) and statistically significant difference was not observed between two reagents. Out of 12 subjects with high levels of salivary Hb, P.g was detected from 10 (41.6%) and A.a was detected from 2 (8.3%). For the 12 subjects with low levels of Hb, P.g was detected from 11 (45.8%) and A.a was detected from 1 (4.2%). P.g is known to be the risk factors of the periodontal disease and also known as the risk factor for the arthrorheumatism, cardiovascular disease and Alzheimer’s dementia. A.a has an infection for most of the adult subjects, it is necessary to prevent the gingivitis and subsequently to prevent the intravascular infiltration of P.g.

Summary and conclusions: For the improvement of the systemic health, measuring the salivary levels of Hb is useful and salivary levels of Hb should be the true end point.

In Vitro Antibacterial Activity of Mouthrinses

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Aim and purpose: Aim of this in vitro study was to assess the antibacterial activity of different mouthrines.

Materials and method: In this in vitro study six mouthrinses were tested for their antimicrobial activity against five oral pathogens namely, Streptococcus mutans, Enterococcus faecalis, Bacillus subtilis, Lactobacillus casei, Staphylococcus aureus by well Agar Diffusion Test. For the evaluation of antibacterial properties of materials the ditch plate method was used and 7 holes prepared by 5 mm diameter on each agar plate. Different 6 mouthrinses insert in this holes but one of them lived empty for control. Inhibition zones of against the test organism measured after 24 h. Kruskal Wallis and Mann Whitney U Test were used for evaluate of the findings by statistically.

Results: According to 24 h results all tested mouthrines have antimicrobial activity on tested 5 different organism type (p < 0.05). The most effective mouthrinse was Signal expert Protection according inhibition zones of against the test organism. This success is also different statistically except Bacillus subtilis and Lactobacillus casei (p < 0.05).

Summary and conclusions: Further research is needed for the substantivity of mouthrines and further in vivo/in vitro studies are needed using biofilm model to substantiate present findings.
The aim of this study is to present clinical case reports of endocrown type restorations in three children. Patients’ mandibular first permanent molars with extensive coronal destructions were treated with endocrowns. After preparation of the teeth, impressions were taken from patients’ mouth and were sent to the laboratory to design endocrown from composite 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 noticed. It could be concluded that endocrowns have become a promising new alternative treatment in the esthetic and functional recovery of endodontically treated severely damaged permanent molars also in children.

P202
Ultra structural and Microbiological Analysis of the Carious Dentin in Primary Molars Treated by Minimal Intervention
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Aim and purpose: This study was to analyze the ultra-structure and microbiology of dentin layers affected by caries lesions before and after restorations with Self-cure Riva SDI glass ionomer.

Materials and method: Samples of carious dentin from primary teeth removed before restoration placement (baseline-0 day) were compared with samples taken after 30 and 60 days. Dentin from 5 primary molars was analyzed by scanning electron microscopy (SEM) and dentin from 22 primary molars was examined microbiologically to compare bacteria (total viable counts of Aerobic/Anaerobic bacteria, “Streptococcus spp.”, “Lactobacillus spp.”, and “Actinomyces spp.”) before and after treatment (30 and 60 days). Wilcoxon-signed rank test was used to study the changes in the colony forming units (CFU). The significance level was set at p ≤ 0.05.

Results: Baseline-caries samples had enlarged dentinal tubules with bacterial invasion. SEM samples after treatment suggest a better tissue organization, with more compact collagen fiber arrangement and narrower dentinal tubules. The % change in dentinal tubules diameters, before and after restoration was 77.1%. There was a statistically significant decrease in mean CFU of bacterial counts of all species after restoration. For Aerobic bacteria, average bacterial reduction was 69.7% over 30 days and 98.1% over 60 days. For Anaerobic bacteria, average bacterial reduction was 83% over 30 days and 96% over 60 days.

Summary and conclusions: The minimal intervention approach using glass ionomer restoration in primary teeth is very effective to promote beneficial changes in the lesion environment and favorable conditions for healing.
Decoration of an Upper Central Tooth in a Growing Patient

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Purpose: Decoration is a surgical method for treating ankylosed incisors in children and adolescents. Before the prosthetic treatment for protecting wide and height of the alveolar bone, this method can be utilized. The purpose of this case is to present the preservation of the alveolar ridge for implant rehabilitation by utilizing decoration technique for replanted tooth which exhibited replacement resorption and ankylosis.

Methods-Materials: Thirteen year-old boy was referred to Karadeniz Technical University, Department of Pediatric Dentistry with avulsed right upper central incisor after 2 h of the dental traumatic injury. Immediately the avulsed tooth was reimplanted. The clinical and radiographic examination, revealed replacement resorption and ankylosis in avulsed right upper central incisor tooth which was reimplanted 3 years ago. This case report is presented a protecting the width and height of the alveolar bone with the 36 month follow-up of decoration technique and then apply implant to the same region of the alveolar bone and prosthetic treatment is performed at 18 year-old patient.

Results: Thirty six months follow-up period of decoration technique didn’t show any infection by managing the alveolar bone ridge wide-height and implant was successfully applied except any other of the surgical operation and esthetic bony ridge deformities and optimal prosthetic treatment interferences will be observed.

Conclusion: The treatment of replacement resorption and ankylosed young permanent incisor by decoration technique may manage the alveolar bone ridge width, height and continuity, and facilitate future rehabilitation with minimal, if any, ridge augmentation procedures for growing patients.

P204

Educating Mothers to Screen Caries in their Special-Health-Care-Needs Children

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Aim and purpose: To assess and implement the ability of mothers to screen caries in their special health care needs (SHCN) children after attending an educational training program.

Materials and method: A study involving 100 mothers of SHCN children aged 4–6 years old seeking treatment at the general anesthetia unit of Egyptian Society for Pediatric Dentistry and Children with Special Needs (ESPSN) was carried out. Mothers of SHCN children were trained in a 3 h training program by the researchers to detect caries in their children using visual and audio-visual aids. Mothers were trained to screen caries according to the WHO (1997) criteria for caries diagnosis. After the training program, all mothers performed caries screening on their own children. The findings were checked for validity by comparing mothers’ findings with researchers’ findings as the gold standard.

Results: The overall prevalence of caries in the sample was 90%. The sensitivity, specificity, positive predictive value and negative predictive value of mothers’ caries screening were 94.4%, 70.0%, 96.6% and 58.3% respectively.

Summary and conclusions: It was feasible to train mothers with basic skills to screen dental caries in their special health care needs children. This prospect might provide a substantial future venue, giving mothers of children with SHCN a chance to seek dental treatment early and thus avoid further complications and extensive treatment.

Poster session 42 – Room Cubicle 2 | 2015-09-24 | 13:00-14:00

Theme: Dental Treatment & Restorative Dentistry – Pedodontics

P205

Potential Use of Goat Milk as Storage Media to Preserve the Viability of Human Periodontal Ligament Cells: An In Vitro Study

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Aim and purpose: The purpose of present study was to evaluate the effectiveness of goat milk to serve as a storage media for the maintenance of periodontal ligament (PDL) cell viability of avulsed teeth and compare commonly used storage media.

Materials and method: PDL cells were obtained from the root surface of healthy premolars and cultured in Eagle's Maintenance Medium (EMM). Cultures were subjected to Hank's buffered salt solution (HBSS), UHT long self-life lactose free cow milk (SLCM), UHT long shelf-life lactose free cow milk, UHT long shelf-life whole cow milk (SWCM), UHT long shelf-life skim cow milk (SSCM), UHT long shelf-life soy milk (SSM), UHT long shelf-life goat milk (SGM), UHT long shelf follow on milk with probiotic (SFCM), 20% propolis, Egg-white, tap water as the negative control, and EMM as the positive control. This culture plates were incubated with experimental media at 20°C for 1, 3, 6, 12 and 24 h. PDL cell viability was assessed by MTT assay. Statistical analysis of the data was accomplished by using the Kolmogorov-Smirnov one sample test normality and Levene test for homoscedasticity. A dendrogram was constructed to show the arrangement of the sample groups produced by the hierarchical clustering.

Results: The results showed that goat milk was most effective storage medium than other groups. In conclusion, goat milk can be recommended as a suitable storage medium for avulsed teeth.
Summary and conclusions: In the limit of this study we can conclude that goat milk may be preferred as a storage medium at the event of dental avulsion for up to 24 h.

P206
Multidisciplinary Treatment of a Patient with Regional Odontodysplasia: A Case Report with 8-year Follow-up
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Objective: Odontodysplasia is a rare developmental anomaly involving both mesodermal and ectodermal dental components. The aim of this case report was present to the multidisciplinary management of a patient with regional odontodysplasia and results of long-term follow-up.

Case: A 4-year-old boy was referred to the Department of Pediatric Dentistry at the Ankara University. Faculty of Dentistry with a chief complaint of pain originating from teeth in the left quadrant of the maxilla. Clinical examination revealed an abscess formation on Tooth 62 and 63. Tooth 64 and 65 had severely damaged crowns and the patient had Class III molar relationship. Radiographic examination showed that present primary teeth in the left quadrant of the maxilla and unerupted germs of permanent teeth were all reduced in radiodensity and the thicknesses of enamel and dentin were thinner than normal. These abnormalities in patient’s teeth were matching with ‘ghost teeth’ appearance. The clinical and radiographical findings revealed a diagnosis of ‘regional odontodysplasia’. Extraction of the affected primary teeth was performed. The 8-year follow-up of orthodontic and prosthetic treatments had successfully restored both esthetics and function.

Conclusion: Multidisciplinary treatment and long-term follow-up can fulfill the functional and esthetic concerns of patients with regional odontodysplasia.

P207
Unusual Ectopic Eruption of a Permanent Central Incisor
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Ectopic eruption is a disturbance in which the tooth does not follow its usual course. A shortened arch length, posterior positioning of the maxilla, atypical eruption angle, trauma story and genetic factors are the most common etiologic factors for ectopic eruption.

A healthy 10-year-old boy was attended to the Paediatric Dentistry Department in Cukurova University with a complaint for the absence of the maxillary right central incisor. Intraoral and radiological examination revealed that the maxillary left central incisor was embedded in the labial sulcus under the mucosa in a horizontal position. After periodontal gingivectomy, orthodontic extrusion was initiated using a modified hawley appliance with an orthodontic button bonded to the buccal surface of the incisor. After 6 months, complete eruption of the central incisor was occurred. Ectopic eruption can cause functional and aesthetic problems. Multidisciplinary approach is a mandatory for solving problems related with ectopic eruption.

P208
Diagnosis and Treatment Plan of a Geminated Maxillary Incisor Using CBCT
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Aim: Supernumerary teeth may cause esthetic and functional problems in young children. The present study reports of a geminated maxillary incisor with a supernumerary tooth diagnosed by cone beam tomography (CBCT) and treated multidisciplinary.

Case: A 7 year-old-boy was referred to Pediatric Dentistry Department for his geminated right maxillary central incisor. After the clinical and radiographic examination, cone-beam computed tomography images were assessed and a midroot connection between two canals was localized. A multidisciplinary approach including surgical, endodontic and orthodontic treatment was planned for the patient. The gaminated tooth was separated and the supernumerary tooth was extracted. And then root canal treatment was performed. Orthodontic treatment was carried out to align upper right and left central incisors, lateral incisors and canines.

Summary and conclusions: Careful examination and cone-beam computed tomography may be an appropriate diagnostic tool for the diagnosis of gamination and a multidisciplinary treatment plan including surgical, endodontic and orthodontic treatment must be the key point for solving the clinical problems of a gaminated tooth.

P209
Experience of Community-Based Outreach Clinic, the Helsinki Model
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Aim and purpose: Aim of this study was to summarize the experience of community health center-based outreach clinic of undergraduate education in pediatric dentistry.

Materials and method: Pediatric dental procedures carried out by the 4th and 5th year students at outreach clinic were extracted
Results: Majority of pediatric dental procedures, carried out by dental students during their 4th and 5th year, were performed in the outreach clinic. Vast majority of the students reported that such clinic is a beneficial educational approach to gain clinical experience. Free text comments revealed that the most common reasons for liking the outreach were: treating pediatric patients in peaceful environment, having “real-world” cases, practicing four-handed dentistry with dental nurse, having less administrative work, and possessing more teacher-student interaction. One of the concerns of the students was frequent no-show to appointments of pediatric patients. The 5th year students in fall 2014, compared to their counterparts in previous years, were less motivated to participate in outreach teaching. This could be due to pediatric competency requirement change in 2013.

Summary and conclusions: Vast majority of the students reported that they benefited from outreach education and considered such alternative as supportive educational environment. However, outreach course planning should be in alignment with learning objectives in order to offer meaningful and motivating education.

Poster Session 43 – Room Cubicle 3 | 2015-09-24 | 13:00-14:00

Theme: Preventive Dentistry – Periodontology

P210
Gingival Crevicular Fluid IL-8 and LxA4 Levels of Smokers and Non-Smokers with Different Periodontal Status
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Aim and purpose: We aimed to evaluate the impact of smoking on gingival crevicular fluid (GCF) interleukin-8 (IL-8) and lipoxin a4 (LxA4) levels in patients with different periodontal status.

Materials and method: One hundred and twenty-two individuals were included in this study: 17 smokers with chronic periodontitis (SCP), 15 smokers with generalized aggressive periodontitis (SGAgP), 15 smokers with gingivitis (SG) and 15 smokers classified as healthy (SH); 15 non-smokers with chronic periodontitis (CP), 15 non-smokers with generalized aggressive periodontitis (GAgP), 15 non-smokers with gingivitis (G) and 15 non-smokers classified as healthy (H). Gingival index, plaque index, probing depth, clinical attachment level were recorded. GCF IL-8 and Lx A4 levels were analyzed by ELISA.

Results: The GCF IL-8 levels revealed a statistically significant intra group differences and a gradation of SAgP>SCP>SG>SH and AgP>CP>G>H (p < 0.05). GCF IL-8 levels were significantly higher in SGAgP than GAgP, and SCP than CP (p < 0.05). However, there was not a significant difference between SG and G, and SH and H (p > 0.05). Conversely, GCF Lx A4 levels were SAgP<SCP<SG and AgP<CP<G with a reverse gradation detected for IL-8 levels (p < 0.05). The levels were below the detection limits for SH and H. GCF Lx A4 levels were significantly lower in SGAgP than GAgP, and SCP than CP (p < 0.05); not significantly different between SG and G (p > 0.05).

Summary and conclusions: Based on the present data increased IL-8 and decreased Lx A4 GCF levels due to smoking might reflect the relative alteration of normal host immune and inflammatory responses.

P211
Influence of Tensile Frequency on RANKL/OPG Ratio in HPDL Cells
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Aim and purpose: The periodontal tissue is always exposed to mechanical loading during mastication. It has been shown that the homeostasis of periodontium is maintained by appropriate mechanical loading. The aims of this study was to examine the influence of time, frequency and magnitude of cyclic tensile strain on receptor activator of nuclear factor-kB ligand (RANKL)/osteoprotegerin (OPG) expression ratio, the key regulators of bone remodelling by human periodontal ligament (HPDL) cells.

Materials and method: HPDL cells were obtained from healthy teeth extracted for orthodontic reasons from three donors. The experimental protocol was approved by the Ethics Committee, Faculty of Dentistry, Chulalongkorn University. HPDL cells were subjected to different strain regimens; time (0, 2 and 4 h), frequency (0, 15, 60 and 90 rpm) and magnitude (0%, 10% and 20%) using a uni-axial stretch apparatus developed in our research unit. Each experimental design was performed by 3 lines of HPDL cells. The expressions of RANKL and OPG mRNA were examined by quantitative reverse transcription-polymerase chain reaction (qRT-PCR).

Results: Cyclic tensile strain clearly increased both RANKL and OPG expressions since 2 h. The ratio of RANKL/OPG was increased in a frequency-dependence manner. However no correlation between magnitude and RANKL/OPG ratio was observed.

Summary and conclusions: These results indicated that the cyclic tensile strain could influence RANKL/OPG expression ratio. The effect seems to depend on the frequency of strain rather than the magnitude, suggesting the importance of frequency of force over the magnitude of loading. This work was supported by the Research Chair Grant of the National Science and Technology Development Agency, Thailand.
P212
Influence of Polishing Fluid During Implant Cleaning on Surface Alterations
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Aim and purpose: This study aimed to evaluate surface roughness alterations of 2 implant surface structures after biofilm removing using an ultrasonic driven cleaning devise with different tips and with or without additional polishing fluid (PF).

Materials and method: Respectively 40 titanium specimen of 2 common surfaces (smooth SM, Sa = 0.2 ± 0.02 µm; grit-blasted GB, Sa = 0.86 ± 0.21 µm), were randomly selected into 8 groups and cultivated with Streptococcus mutans. Then ultrasonic cleaning was performed using 4 implant cleaning tips with or without PF within 1 min: ceramic (C), long (L) and short (S) carbon fibers or natural fibers (N). Average surface roughnesses Sa were assessed laser profilometrically at 5 areas of each specimen and compared with the results before treatment (B). Statistical analysis was carried out (one-way ANOVA, Bonferroni/Dunn correction, t-test, α = 0.05).

Results: The cleaning efficiency allowed the analysis. Sa of SM was not significantly altered by the treatment regardless of PF (without PF: C 0.18 ± 0.02 µm – L 0.21 ± 0.03 µm; with PF: N 0.25 ± 0.06 µm – L 0.31 ± 0.12 µm) (p > 0.05). Sa of GB with PF varied not significantly (C 0.95 ± 0.21 µm–S 1.05 ± 0.23 µm) compared to B (p > 0.05). Cleaning reduced Sa of GB significantly for C (0.65 ± 0.08 µm) and N 0.67 ± 0.04 µm without PF (p < 0.05). For all tips Sa of GB differed significantly comparing with and without PF (p < 0.01).

Summary and conclusions: Implant cleaning tips proved reduction, but no alteration without PF on both surfaces. PF increased Sa depending on the surface structure. C tips without PF showed more abrasion and smoothening, while all fiber tips with PF provided surface removal and roughening. The tested ultrasonic system can be recommended for implant cleaning regarding surface alterations.

P213
Comparison Study of Bone Regeneration of Bio-oss and Natrix in Dog’s Mandible
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Aim and purpose: Discovery of bone substitute that enhance bone formation or improve bone healing is needed for the treatment and surgery. The use of autogenous bone grafts requires a harvest-

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Summary and conclusions: On the basis of the results, salivary OPG, RANKL, and MMP-1 concentrations could be used as the potential parameters for the detection and severity of aggressive periodontitis.

Poster Session 44 – Room Cubicle 4 | 2015-09-24 | 13:00-14:00

Theme 1: Preventive Dentistry – Periodontology

P215
Periodontal Disease and Salivary Cytokines in Puerto Rican Adolescents
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Aim and purpose: The aim of this cross sectional study was to evaluate the prevalence of periodontal disease and its association to salivary cytokines and obesity in a group of Puerto Rican (PR) adolescents.

Materials and method: A convenience sample of 135 Puerto Rican (PR) adolescents ages 13–18 years from 3 PR public schools was recruited. The University of Puerto Rico’s IRB approved the study. A one visit dental evaluation was performed at the schools by a calibrated dentist. This evaluation included plaque index, bleeding on probing, probing pocket depth, and recession. Height, weight and waist circumference were measured. Five ml of saliva samples were taken for analysis of 10 cytokines: (Il-b, MMP-8, MMP-9, OPG, TRANCE, TNF alpha, leptin, adenopectin, CRP, IL-6, Periostin). Statistical analysis was performed using SPSS.

Results: Participants distribution were: obese (32%), overweight (16%), healthy weight (50%) and underweight (2%). Periodontal disease was defined as having 2 sites with pocket depth greater than 4 mm and the same time bleeding on probing greater than 20%. Prevalence of periodontal disease for the total sample was 25.93%; obese 11.9%; 3% overweight, 11% healthy weight. No statistical significant association was found for obesity and periodontal disease (p > 0.05). Multiple regression analysis controlling by gender and age and BMI found CRP (p = 0.025) and IL-1b (p = 0.07) associated to periodontal disease.

Summary and conclusions: Results showed one fourth of adolescents with early signs of periodontal disease. The study does not find a relation between weight and periodontal disease. Main related salivary cytokines were CRP and IL-1b.

P216
Oral Simvastatin in Reduction of Periodontal Attachment Loss: Observational Study
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Aim and purpose: To establish whether there is an association between doses of oral simvastatin and a reduction in periodontal attachment loss.

Materials and method: This study was approved by the Committee for Human Research of Faculty of Dentistry/Faculty of Pharmacy at Mahidol University. Forty patients, age range of 46–79 years, of whom 31 were female, who were taking oral simvastatin prescribed by a physician, were observed. Twenty-six patients were taking 5 or 10 mg/day, and 15 patients were taking 20 or 40 mg/day. They were in supportive periodontal treatment for 6–24 months. Medical history, medications and supplements, doses and durations of simvastatin, and lipid levels were reviewed. Simplified Oral Hygiene Index was measured. Clinical attachment loss was recorded and compared site by site with the record at last maintenance visit. The percentage of sites which changes ≥2 mm either reduction or increment were calculated. Two independent sample t-tests, Pearson correlation, and multiple linear regression were used. p-value <0.05 was considered significant.

Results: The average percentage of sites with clinical attachment loss reductions ≥2 mm in the group taking simvastatin doses 5 or 10 mg/day, and 20 or 40 mg/day were 11.18 ± 6.65 and 10.38 ± 6.91 respectively. These differences were neither found to be significantly different nor was there evidence of a dose-response effect. Oral hygiene was found to be related with the reduction.

Summary and conclusions: The doses of oral simvastatin is not associated with a reduction of periodontal attachment loss.

Theme 2: Preventive Dentistry – Public Health

P217
Intraoral Carcinogenicity of Arecoline and Tar in Tobacco: A Survey in Parau
Shiro Yamamoto
Department of Dental hygiene, Osaka Kyouiku University, Japan

Aim and purpose: Among carcinosmas, that of oral cavity, with which we are directly concerned in dentistry, is said to develop at a high incidence in countries with a high percentage of oral cavity cancers, particularly in Southeast Asian nations, at a global level. Recently, the author visited the Republic of Parau upon request of Parau Community College to deliver a lecture on dental hygiene, and conducted a survey on the intraoral effect and carcinogenicity of betel nut chewing, a traditional life habit in country, with the cooperation of the Belau National Hospital.

Materials and method: 1) Some questions for the students and the staffs of Palau Community College about the dental hygiene and betel nut chewing. 2) Investigation to dentists of Belau National Hospital.

Results: 1) Not less than 70% of the students practice betel nut chewing. 2) It has an addictive nature. 3) They chew betel nuts, lime and tobacco wrapped in a betel leaf. 4) While chewing, they have their oral cavity stained red and spit out saliva. Betel nut chewing produces an arousal effect on the brain and an intraoral alkalinity maintenance effects. While it has the effect of inhibiting dental caries, carcinogenic actions of arecoline in betel nuts and tar in tobacco are observed in the oral mucosa.

Summary and conclusions: It is concluded that, given the great difficulty of quitting betel nut chewing, it is necessary to 1) avoid, at least, chewing tobacco together with betel nuts, 2) have an intraoral check-up once a year, and 3) provide dental health education starting in elementary school.
P218
Attitude of Dental Students Towards People Living with HIV/AIDS
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Aim and purpose: Oral health in people living with HIV/AIDS (PLWHA) is an essential element in improving their quality of life. The purpose of this study was to determine the various factors that can affect the attitude of students in a dental college in India towards PLWHA.

Materials and method: A cross sectional survey was conducted among the consented undergraduate dental students, where they were asked to fill an anonymous questionnaire. Apart from the basic information, the questionnaire consisted of a visual analogue scale to evaluate the degree of fear of these students in treating PLWHA; questions to assess the attitude towards patients with HIV based on a five-point Likert scale; and also closed-ended questions to grade the students' knowledge about HIV infection. The data were then analyzed using Chi-square test, Student t test and ANOVA. A p-value of <0.05 was considered statistically significant.

Results: An increased proportion of students with positive attitude were seen in the clinical group than the pre-clinical group [p = 0.001]. The attitude scores were significantly higher in students with minimal fear in treating patients with HIV/AIDS [p = 0.000] and those with good knowledge on HIV/AIDS [p = 0.001].

Summary and conclusions: Hence within the limitations of this questionnaire study it can be assumed that the two independent factors that can affect the attitude of dental students towards PLWHA and influence their willingness to treat patients who are HIV positive are the level of knowledge on various aspects of HIV/AIDS and the degree of fear they have in treating HIV infected individuals.

P219
Bio-medical Waste Management Practices in Dental Offices
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Aim and purpose: Every system in nature progresses towards disintegration and it contributes to creating waste. A modern hospital is a complex multidisciplinary system which consumes thousands of items for delivery of medical care and is part of physical environment. All products consumed in hospitals have some unusable left over i.e. Hospital Waste, Infectious Waste and Medical Waste. Infectious waste being generated at Dental Offices & laboratories has gained massive importance of late, legislations & regulatory bodies viewing it as a serious threat to Healthcare workers.

Materials and method: An Observation study was done to understand the practices that are being followed in a University dental hospital. The best practices have been systematically noted. The poster depicts medical waste management in Dental Offices – precautions to be taken, Best Biomedical waste management practices, and regulation related to it.

Results: While we recognize that dental amalgam is a safe material for filling cavities, its waste should be handled properly, recovered and recycled just as we do with other waste products. Certified amalgam separators installation applies to all offices regardless of sewer disposal type (public system or septic), as Mercury is an important component in amalgams. Properly manage and dispose of all other dangerous waste streams generated by the dental office (e.g., x-ray wastes, or lead foils/aprons). Properly dispose of all scrap amalgam waste from traps, filters and separators with a licensed treatment, storage, disposal or recycling facility.

Summary and conclusions: Improper hospital waste management are due to: Improper handling; Unsafe actions: handling without personal protective equipment (PPE).

Poster session 45 – Room Cubicle 1 | 2015-09-24 | 14:30-15:30

Theme: Dental Treatment & Restorative Dentistry – Pedodontics

P220
Gene Expressions of Deciduous Dental Pulp Cells Cultured with Serum-Free Medium
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Aim and purpose: Dental pulp exfoliated from deciduous teeth has become a useful alternative for dental tissue engineering because of its higher proliferation rate. For clinical application, it is necessary to culture cells “in vitro” and to obtain sufficient numbers of cells as quickly as possible. Furthermore, it is necessary to confirm the changes in cells cultured “in vitro” in order to ensure that they have suitable characteristics. In this study, to investigate the changes in human deciduous dental pulp cells (HDPCs) cultured with serum-free media (STK2), we analyzed cell proliferation, cell morphology and gene expression changes.

Materials and method: HDPCs were extracted from the non-caries deciduous teeth for orthodontic reasons. hDPC cultures were established from cells growing out of the dental pulp tissue. Proliferation was evaluated using MTS Assay, and gene expression changes were investigated by microarray analysis.

Results: We found a high cell proliferation rate in cells that were cultured in STK2, and cells tended to remain in close contact with one another in cell morphology. In addition, 3248 genes were expressed at >2-fold higher levels in hDPC cultured with STK2 compared with medium containing fetal bovine serum for 3 days.

Summary and conclusions: Thus, culture of dental pulp cells with STK2 is ideal, as it allows more cells to be obtained in a shorter period, thus increasing the expression of genes related to cell growth and maintenance of the undifferentiated state.
P221
Pluripotency Markers from Dental Pulps of Permanent and Deciduous Teeth
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Aim and purpose: The aim of this study was to evaluate the pluripotency markers gene expression (OCT-4, NANOG, SOX-2, HNF-3B, LIN-28) of pulp cells isolated from permanent and deciduous teeth in selected Thai patients by real-time PCR.

Materials and method: Four cell lines were isolated from permanent dental pulps (patients aged 18–25 years) and four cell lines were isolated from deciduous dental pulps (patients aged 5–12 years). This study was approved by the Ethics Committee on Human rights Related to Human Experimentation of Faculty of Dentistry, Mahidol University. Total RNA from isolated pulp cells (P3–P5) was reverse-transcribed to cDNA and proceeded with real-time PCR. All PCRs were performed in triplicates. The relative quantification of gene expression was assessed by ΔΔCq method and statistical difference were determined by Mann-Whitney U test (p-value<0.05).

Results: Human dental pulps from permanent and deciduous teeth were found to have a similar level of gene expression for NANOG. The higher expression trend for OCT-4, SOX-2, LIN-28 showed in pulp cells from deciduous teeth, whereas for HNF-3B presented in pulp cells from permanent teeth. However, no statistical difference in gene expression was found.

Summary and conclusions: The comparable expression of pluripotency markers provides a basic information on proliferation and differentiation of dental pulp cells. Moreover, pulp cells from both permanent and deciduous teeth may be beneficial for the future of regenerative dentistry.

P222
Replantation of Avulsed Tooth: Challenges and Outcomes
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Introduction: Teeth may be avulsed as a result of trauma due to falls, road traffic accidents, interpersonal violence, sports and other injuries to the dentoalveolar complex. In case of avulsed permanent incisors, in children, the clinician has to decide to replant the tooth, keeping in mind the problems of pulpal infection and periodontal damage.

Case: We report a case of replantation of avulsed permanent incisor after extraoral time of more than 12 h and non-physiologic storage. The tooth attained stability and was maintained in the mouth. This is a desirable outcome in a child, as a temporary solution, even if root resorption occurs.

Conclusion: Replanted permanent teeth can maintain their integrity and remain functional. Treatment though, complex and time consuming can provide a positive outcome.

P223
Evaluation of Papacarie in Primary Teeth: An In Vivo and In Vitro Study
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Aim and purpose: The aim of this study was to evaluate the efficacy of chemo-mechanical method for caries removal in comparison with conventional rotary instruments technique when used in children and assessed the in vitro influence of surface preparation techniques on the microleakage of glass ionomer restorations.

Materials and method: Bilateral primary molars in 20 children age ranging from 5–8 years were selected and divided into group I (chemomechanical method with Papacarie gel) and group II (conventional method with a low-speed bur). Marginal leakage: Twenty extracted primary molars with occlusal caries involving dentine were selected and randomly divided into two groups (n = 10 each) according to caries removal and preparation methods. The teeth restored with a glass ionomer restorative material. The dye penetration was measured in micrometers using a light microscope.

Results: The results showed that the mean time taken in Papacarie group was significantly lower than conventional method. The need for local anaesthesia was reduced or eliminated and the children did not complain of any pain during the procedure. The results of microleakage evaluation revealed that the microleakage level was lowest in Papacarie group than the conventional group which was a statistically significant

Summary and conclusions: Based on clinical and microleakage evaluation it could be concluded that Papacarie could be an effective caries removal method in pediatric dentistry.

P224
Comprehensive Treatment Strategies for Chronic Periodontitis in Metabolic Syndrome Cases
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Aim and purpose: Metabolic syndrome (MS), a cluster of diabetes, dyslipidemia, hypertension and obesity is closely associated with Chronic Periodontitis (CP) and often complicates its management. The following report describes interdisciplinary management of severe CP in two patients with MS.

Materials and method: Case 1: A 55 year old female with MS since 8 years complained of bleeding while brushing and mobile teeth. She had relatively fair oral hygiene with Grade 2 bleeding...
on probing, generalized deep periodontal pockets of 7 mm and Grade 2 mobility in relation to 26. She was managed with combined medical and periodontal therapy including surgery.

Case 2: A 65-year-old female with a history of MS for 10 years complained of pain and pus discharge from lower front teeth since 10 days. She had poor oral hygiene with multiple periodontal abscesses, generalized Grade 2 bleeding on probing, papillary enlargements in maxillary and mandibular anterior region and generalized 6 mm periodontal pockets. As the patient was geriatric with fluctuating systemic profile only palliative periodontal therapy along with replacement of antihypertensive agent was done.

**Results:** Successful periodontal treatment in both the cases resulted in improvement of HbA1c levels and stable metabolic parameters during follow up for 1 year.

**Summary and conclusions:** This report highlights the importance of interdisciplinary management of patients with MS. CP is closely associated with MS and often deteriorates the latter. Therefore its prompt management may not only improve existing systemic conditions but may prevent development of more serious cardiac complications.

**Poster Session 46 – Room Cubicle 2 | 2015-09-24 | 14:30-15:30**

**Theme: Dental Treatment & Restorative Dentistry – Periodontics**

**P225**

**Comparative Study of Risk Factors of Periodontal Disease among Urban and Rural Population**

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**Aim and purpose:** To compare participants’ lifestyle related risk factors for periodontal disease between urban & rural population.

**Materials and method:** A cross-sectional study consisting of a structured questionnaire on health practice index, oral health related behavior & personal habits as well as socio-demographic variables was conducted on 800 subjects aged 20–50 years attending dental outreach centers of Manipal College of Dental Sciences in urban and rural areas of Udupi District. Clinical examination for periodontal status was done by using Community periodontal index, OHI-S index and gingival index. Statistical analysis was done by bivariate analysis using chi-square.

**Results:** There was a statistically significant difference between the urban and rural participants, when compared against their occupations, education, income, oral health care behaviors like dental visits, device of cleaning, frequency of cleaning and method of cleaning and personal habits like tobacco chewing, pan chewing (<0.001 respectively), number of hours of work/day (p < 0.02), physical exercise, mental stress levels and overall lifestyles (p < 0.001 respectively). It was also found that more number of the urban participants had better oral hygiene status (p < 0.001), gingival status (p < 0.001) and healthy periodontium (p = 0.002) than the rural counterparts in the present study.

**Summary and conclusions:** These findings suggest that rural participants had more lifestyle related risk factors for periodontitis as well as less healthy periodontium than the urban participants. Patient’s involvement in self-care by promoting healthy lifestyles is needed especially in rural areas where adequate treatment facilities are lacking.

**P226**

**Management of Multiple Recession with Coronally Advanced Flap: Case Report**

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Gingival recessions associated with cervical abrasions can result in an esthetic appearance and hypersensitivity. Numerous surgical procedures have been implicated for root coverage. Coronally advanced flap (CAF) as a periodontal plastic surgery aim to restore gingival esthetic and resolve hypersensitivity of teeth by root coverage. A case report is presented dealing with the treatment of Miller Class I multiple recession and cervical abrasion from lateral incisor to second premolar of maxillary left region on a 36-year-old male patient. Combination of CAF procedure with tetracycline solution as root conditioning were conducted to treat the defects. Five month after surgery showed favorable root coverage. The treatment helped to resolve hypersensitivity and achieved satisfaction of the patient’s esthetic.

**P227**

**Different Modalities in Management of Palato-Radicular Groove: Case Reports**

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Palato – radicular groove (PRG) is one of the rare developmental anomalies of maxillary incisor teeth, primarily maxillary lateral incisor. It usually begins in the central fossa, crosses the cingulum and extends to varying distance apically, possibly reaching the root apex. Its clinical relevance comes into picture once there is associated lack of epithelial closure which makes it an important niche for microbes. Pulp involvement could result due to the introduction of bacterial toxins through channels that existed between the root canal system and the groove. Here we report two cases of Mongolian male who presented with the PRG in the maxillary lateral incisors. In the first case, a 25-year-old male presented with deep periodontal pocket, but no evidence of pulpal involvement. This case was managed with scaling and root surface debridement followed with radiculoplasty. The second case, who was a 17 year old male presented with advanced bone loss and pulpal necrosis. Case was managed with root canal treatment followed by surgical periodontal therapy and the groove was sealed with GIC. Both the cases resulted in significant reduction in probing pocket depth and gain in clinical attachment level with decrease in mobility.
A multidisciplinary approach can be an effective mode of treatment in management of PRG and the choice depends upon the on the severity of the periodontal defect and type of groove (deep or shallow).

P228

Immunohistochemical Study of Periosteal-Derived Cell Sheet Cultured on Amnion
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Aim and purpose: The goal of our study is to succeed in periodontal tissue regeneration with a cultured cell sheet using the amnion as a matrix. The amnion has anti-inflammatory and infection-inhibitory actions, and has been shown to be appropriate as a cell culture matrix. In this study, we immunohistochemically investigated whether a cell sheet prepared by culturing periosteum-derived cells (PDCs) on the amnion has the ability to differentiate into osteogenic osteoblasts.

Materials and method: This study was approved by the Medical Ethics Committee of Kyoto Prefectural University of Medicine. The amnion was collected from the placenta during a caesarean section. For PDCs, primary culture of the periosteal tissue collected from mucoperiosteal flap during oral surgeries was passaged 3–4 times. Using bone differentiation-inducing medium, PDCs were cultured on the amnion for about 3 weeks and immunostained employing the fluorescent antibody method.

Results: PDCs proliferated on amnion, forming a layered structure, and showed the expressions of cell proliferation (Ki-67), mesenchymal cell (vimentin), and osteoblast (bone Gla protein) markers on immunostaining images. In addition, desmosomal protein (desmoplakin), tight junction protein (ZO-1), basement membrane protein (laminin 5), and basement membrane collagen (collagen VII) were expressed, forming a single cell sheet.

Summary and conclusions: PDCs form a single cell sheet on amnion. Some periosteal cells can differentiate into osteoblasts or osteocytes. Bone Gla protein of osteoblasts is also expressed on the cell sheet, suggesting that PDCs cultured on the amnion have an osteogenic ability, i.e., the cell sheet contains cells promoting periodontal tissue regeneration.

P229

Fibre-Reinforced Conservative Bridge with Natural Tooth Pontic: A Case Report
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Introduction: Tooth loss in anterior region for the patient is a deep traumatic experience. Using natural tooth as a pontic offers the benefit of being the right shape, size and colour. The key advantages of this technique are excellent esthetics and good periodontal health including high patient acceptance with reduced cost and psychological trauma.

Case description: A 45-year-old female presented to the department of Periodontology and Oral Implantology with chief complaints of discomfort on chewing food and looseness of tooth. On examination, 31 was grade 3 mobile. IOPAR revealed severe bone loss and ill-defined radiolucency in 31. On the basis of clinical and radiographic examination, the case was diagnosed as periapical abscess secondary to periodontal infection. The prognosis of 31 was hopeless. Therefore, the tooth was extracted, root amputed, remaining pulp extirpated and obturation completed at the chair-side. The same tooth was then replaced back and splinted with Ribbond fibre and composite resin to remain as a natural tooth pontic.

Conclusion: The splinted tooth acted as a very good ovate pontic providing good periodontal health and excellent esthetics. This technique is also reversible, thus allowing other restorative options to be done later if deemed necessary.

Poster Session 47 – Room Cubicle 3 | 2015-09-24 | 14:30-15:30

Theme: Dental Treatment & Restorative Dentistry – Periodontics

P230

Evaluation of Cytotoxic Effects of Different Mouthwashes on Human Gingival Fibroblast
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Aim and purpose: The aim of study is to evaluate comparative effects of Chlorhexidine digluconate (KHG), Listerine® (LN), Gentigil® (GG) and Benzoydine HCI (BHCl) in accordance with total antioxidant capacity (TAC), total oxidant status (TOS), and lactate dehydrogenase (LDH) concentrations on human gingival fibroblast (HGF) cell line.

Materials and method: In the study, TAC, TOS, and LDH concentrations were determined by analyses based on spectrophotometric absorbance for eight different concentration and (0%, 1, 2, 5, 10, 25, 50, 100), four different contented mouthwashes solutions (KHG, LN, BHCl, GG), and 1, 5, and 15 min of incubation periods.

Results: Analysis of LDH, the highest and significantly different cytotoxic effects were found for 50% and 100% concentrations of GG and 10% and above concentrations of LN (p < 0.01). Also, the lowest cytotoxic effects were found in the BHCl mouthwash. The result of TAC analysis, although LN was decreased significantly TAC (p < 0.05), other mouthwashes for all periods and concentrations weren’t changed significantly TAC (p > 0.05). Additionally, the results of TOS analysis, the significant decrease in TOS was found in GG for 10, 25, 50, and 100%
concentrations groups for all periods (p < 0.05). The lowest concentration of TOS was determined in the BHCI groups.

**Summary and conclusions:** The Conclusions of analysis indicated that there was the negative effects of these mouthwashes on HGF concentrations. Avoid long time usage of these solutions for daily oral hygiene. Additionally, more studies are needed to determine the effect mechanism of these solutions.

**P231**

_Benefices of Adjunctive Moxifloxacin in Aggregatibacter Actinomycetemcomitans and Porphyromonas gingivalis_

Carlos Martin Ardila, Isabel Cristina Guzmán

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**Aim and purpose:** To evaluate if the baseline occurrence of Aggregatibacter actinomycetemcomitans (A.a\(^+\)) and Porphyromonas gingivalis (P.g\(^+\)) influence the clinical parameters results of moxifloxacin (MOX) as and adjunct to one-stage full-mouth SRP at 6 months post-treatment in generalized aggressive periodontitis (GAgP).

**Materials and method:** This was a triple-blinded, randomized placebo-controlled clinical trial, with 6 months of follow-up. Forty subjects were randomly allocated to two treatment groups. The two treatment groups consisted of SRP combined with systemically administered MOX at the dosage of 400 mg once daily for 7 days or SRP/placebo once daily for 7 days. Subgingival plaque samples were analysed for cultivable bacteria. At each monitoring visit, visible plaque, bleeding on probing, probing depth (PD) and clinical attachment level (CAL) were measured at six sites per tooth. The Ethics Committee of the Universidad de Antioquia approved the study design. ANOVA was used to detect intra group differences.

**Results:** In the MOX group, it was observed a higher significant PD reduction and CAL gain in patients harboured A.a\(^+\) and P.g\(^+\) at baseline. Neither A.a nor P.g was present in sites with PD ≥6 mm in the MOX group. The interactions A.a\(^+\) x MOX and P.g\(^+\) x MOX were significantly associated with CAL gain at 6 months. Also, the interaction A.a\(^+\) x MOX was significantly associated with PD reduction.

**Summary and conclusions:** Adjunctive MOX leads to better clinical advantages in patients A.a\(^+\) and P.g\(^+\) at baseline. These results determine that A.a\(^+\) and P.g\(^+\) at baseline modified the effect of adjunctive MOX in GAgP.

**P232**

_Laser treatment for dentin hypersensitivity in vitro_

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**Aim and purpose:** Dentin hypersensitivity is a very common problem to feeling a pain due to dentin exposure when the enamel or cementum layer is removed. Unfortunately, there are no definitely effective solutions to treat it. The laser therapy has been studied for dentin hypersensitivity by using mostly CO\(_2\), Nd:YAG, and Er:YAG lasers, either a laser alone or a combination with fluorides. A new visible laser treatment with middle output power for dentin hypersensitivity is demonstrated in vitro. The green diode-pumped solid-state laser has a compactness, efficiency, and very short warm-up time.

**Materials and method:** The diode-pumped solid-state laser on continuous wave (CW) of middle output power was applied to occlude dentinal tubules on exposed dentin. And the extracted human molars and premolars were used. The prepared teeth to examine laser therapy effect were irradiated with designed laser outputs. The treatment effects were investigated by scanning electron microscope (SEM) observations of the teeth before and after the laser irradiations.

**Results:** The green laser of 532 nm with 1W power showed the treatment effects with occlusion and narrowing of the dentinal tubules through normal SEM images.

**Summary and conclusions:** The visible diode-pumped solid-state laser on 1W output power with CW mode was irradiated on exposed dentin surface. The laser could give a photo-thermal effect on the exposed dentin surface and it caused occlusion of the dentinal tubules.

**P233**

_The Effects of Diode Laser Treatment in Decreasing the Level of Peri-implantitis from Titanium Screw Implant of Rats_

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**Aim and purpose:** Peri-implantitis is defined by an inflammation that occurs at the soft tissue and the alveolar bone around the site of an implant. The failure of implant placement or the loss of the supporting bone may occur due to peri-implantitis. To remove the cause of the disease, many non-invasive methods are being studied, one of which is through a diode laser treatment to decrease the level of peri-implantitis by decontamination.

**Materials and method:** Animal: Eight-week-old male Sprague-Dawley rats weighing 300 g were purchased. The size of 1 * 3 mm hole was drilled into the hard plate of the maxillary bone to insert 1.2 * 4 mm SLA surfaced implant. Test groups were divided into control, titanium screw implant group, peri-implantitis group, and laser-treated peri-implantitis group. Peri-implantitis was induced by adding a thread around the titanium screw. The degree of microbial reproduction was checked through real-time PCR (qPCR) for each group.

**Results:** A Titanium screw was implanted in the maxillary bone of SD rats and was observed over a period of 14 days. The screw was preserved on the first day, but a loss of the titanium screw was observed from day 4 (40.4%), day 7 (34.6%), and day 14
(25%). The causative agent of thread-induced peri-implantitis was observed from days 1–4 through Q-PCR.

Summary and conclusions: From our data, the diode laser treatment showed a significant decrease in the causative agent of peri-implantitis, as well as in the prevention of collapse of the alveolar bone. Further study is required to improve and further develop the treatment method.

P234

Esthetic Crown Lengthening for a Short Clinical Crown Using Chu’s Aesthetic Gauges – Case Report

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¹Affiliation missing, ²Affiliation missing, ³Affiliation missing, ⁴Affiliation missing, ⁵Affiliation missing

Excessive gingival display space and short clinical crown are major concerns for a large number of patients visiting the dentist. Disproportional restorations commonly appears when clinicians want to reconstruct natural dentition. A crown lengthening procedure will reshape the excess gum, exposing the shape of the natural tooth and may also remove bone to reshape the area. A case is reported here on the cosmetic correction of short clinical crown wherein periodontal plastic surgery using chu’s aesthetic gauges to determine tooth proportion as a guide to make a crown lengthening. Which is the value are mathematically aligned with a preset tooth proportion ratio of 78%. By using this aesthetic gauge directly on the patient’s teeth, the correct position of the supporting osseus topography can be measured for the best aesthetic result.

P235

Experience of the Application of the EGOHID Questionnaire in Russia

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Aim and purpose: Assessment of the level of oral health and analysis of its determinants are important components of the development of effective forms of dental care management.

AIM: To estimate possibilities of the use of the EGOHID questionnaire among Russian-speaking population for studying the global oral health.

Materials and method: Data were obtained from questionnaire surveys of 460 inhabitants of Krasnoyarsk aged from 16 to 72 years. The questions of education required a significant adaptation. The remaining questions and answers were formulated in accordance with the original source. For comparison, the data of Eurobarometer 72.3 «Oral Health» were used.

Results: The vast majority of the Russians (78.9%) and the Europeans (88.0%) consider that it would be possible for them to see a dentist when needed within a distance of 30 min from their home or place of work. According to the analysis 49.0% of the Russians and 57.0% of the Europeans reported having visited the dentist in the past year. The main cause of the last visit for the Russian respondents was routine treatment (66.7% of cases). Only 33.0% of the Europeans indicated that cause. A majority of the Europeans (50.0%) stated that a check-up or a professional teeth cleaning were the reasons of their last visit to a dentist. A total of 14.5% of the Russian respondents reported check-ups on their own initiative.

Summary and conclusions: Analysis of the survey’s results showed the possibility of using the EGOHID questionnaire for the study of global oral health in Russia.

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Knowledge and Practices Related to Caries Prevention among a Group of Thai Adults

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Aim and purpose: To study the knowledge and practices related to dental caries prevention among a group of Thai adults

Materials and method: A self-administered questionnaire was distributed to a group of patients attending their appointment at a dental clinic (special clinic of Faculty of Dentistry, Chulalongkorn University). The questionnaire includes three parts: knowledge and practices on caries prevention; and demographic data. Data was analysed by descriptive analyses and Chi-square tests using SPSS (version 22.0).

Results: Results 413 dental patients (166 male and 247 female) were recruited into the study. They were 15–60+ years old. Most (31.7%) of them were government officers, 60% had family monthly income over 30,000 Baht (~392 US$). Most samples (54.5–95.6%) correctly answered on knowledge related to dental caries prevention. Few of their responses were incorrect (1.7–36.1%) or not sure (2.7–26.6%). The sample had the most incorrect answer (63.2%) in “Having snack within meals decreases risk of caries” and the most not sure answer (26.6%) in “Caries is the state of demineralized tooth, with or without cavity”. 19.6% of the sample specified their brushing as modified Bass technique and 20.4% of them flossed once a day. Chi-square test indicated significant association between age, education and income (p-value<0.05) and knowledge related to dental caries prevention; and between age, education and tongue cleaning, flossing.

Summary and conclusions: Knowledge on caries prevention was widely comprehended, but there was some confused topics. Dentists played a major role in advising the proper tooth brushing technique and flossing.
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Prevalence of Second-hand and Third-hand Smoke Exposure among the Medical and Dental Students
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Aim and purpose: To estimate the prevalence of second-hand smoke (SHS) and third-hand smoke (THS) exposure among the Medical and Dental Students of selected institutes in Dhaka, Bangladesh.

Materials and method: It was a cross-sectional study conducted in March-November, 2014. A total of 501 students were selected by systematic sampling method from two medical [one govt. and one private]-Dhaka Medical College & East-West Medical College] and two dental [one govt. and one private]-Dhaka Dental College & Update Dental College] colleges in Dhaka city, Bangladesh. Data were collected using pretested semi-structured questionnaire by face to face interview. 1st year to final year medical and dental students of mentioned institutes were the population of this study.

Results: Among the respondents 32.3% were male and 47.7% were female. From this study it was found that almost all (94.4%) respondents were exposed to SHS. Indoor places were most common site followed by outdoor places for SHS exposure. More than two-third (70.5%) respondents were exposed to THS. Prevalence of THS exposure was more common at institute than home. Prevalence of SHS and THS exposure was significantly associated with gender of the respondents.

Summary and conclusions: Prevalence of students exposed to SHS and THS exposure were very high. Efforts should be made to plan strategy to promote smoke-free policies to protect non-smokers from SHS and THS exposure.

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Oral Injuries and Mouthguard among Martial Arts Athletes in Nepal
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Aim and purpose: The aim of this study was to investigate about the incidence of oral injuries and mouthguard usage and its awareness among Nepalese martial arts athletes.

Materials and method: Total study population was 143 martial arts athletes, consisted of 103 taekwondo (80 males and 23 females) and 40 Shotokan karate (31 males and 9 females) players. Data were collected by means of standardized questionnaire about history of oral injury along with the level of usage and awareness of mouthguard. Statistical analyses were performed with Chi-square test and Fisher’s exact probability test (p < 0.05).

Results: 25.2% of taekwondo and 37.5% of karate players had suffered from oral injuries (p = 0.154). In taekwondo, the types of oral injuries were laceration of oral soft tissues (47.2%), subluxation of tooth (11.1%), jaw contusion and fractured tooth (8.3%), concussion and avulsion (5.6%) and jaw dislocation and lateral luxation (2.8%). In karate, the types were soft tissue lacerations (76.2%), dislocation of the jaws (9.5%), jaw fracture, tooth fracture and subluxation (4.8%). The incidence of oral soft tissue injury was significantly higher in karate players than taekwondo players (p < 0.01). There were no significant differences for tooth and jaw injuries (p = 0.236 and 0.4). 75.0% of karate and 14.5% of taekwondo players had habit of wearing mouthguard, however none of player was familiar to custom made mouthguard.

Summary and conclusions: The considerable number of oral injuries found in martial arts athletes of Nepal, indicated that the dental professions should promote the sports safety education and encourage players to employ custom made mouthguard.

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Body Mass Index (BMI) and Dental Caries in Children of Eastern Region of Nepal
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Aim and purpose: To assess the association between dental caries and body mass index (BMI) in school children of the eastern region of Nepal

Materials and method: It was a cross-sectional study comprising 600 school children in the eastern region of Nepal. Anthropometric measures for the calculation of BMI was recorded for each child. BMI and occurrence of dental caries and fillings in the primary dentition (dft/dfs) and permanent dentition (DMFT/DMFS) was calculated for each child. The results were analyzed using appropriate statistical tests, namely: Chi-square test, independent sample t test and Spearman’s ranked correlation test. Statistical significance was established at p < 0.05. Ethical clearance was obtained prior to the commencement of the study.

Results: Dental caries prevalence was 57.3%. The difference in caries experience among gender was insignificant. Caries experience decreased significantly with increase in years of schooling and with increase in age. Although, the caries experience increased with an increase in BMI; it was not significant. There was a positive correlation between BMI and DMFT/DMFS but was not statistically significant. The correlation between dft, dfs and BMI was statistically significant.
Summary and conclusions: It was observed that chance of getting dental caries increased with an increase in BMI in the permanent dentition whereas an increase in BMI had a protective effect in the primary dentition. Since obesity and dental caries have common risk determinants, a comprehensive multidisciplinary approach by both medical and dental healthcare professionals is required to overcome this problem.