

AWDC 2015 – Abstract book

Tuesday, 22 September 2015

FREE COMMUNICATION SESSIONS 01-20 and POSTER SESSIONS 01-16

FREE COMMUNICATIONS SESSIONS 01-20

Free Communication Session 1 – Room 215 | 2015-09-22 | 9:30–10:30

Theme: Dental Treatment & Restorative Dentistry – Caries

FC001

Cavity Preparation Performed While Viewing Images From an Intraoral Camera

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Aim and Purpose: The aim of this study was to compare the accuracy of cavity preparation performed while viewing images from an intraoral camera with that of preparation performed under direct vision.

Materials and Method: Subjects were 24 dental students who had received 30 h of training in cavity preparation performed under direct vision. They had also received 2.5 h training in cavity preparation performed while viewing images of maxillary molar from an intraoral camera. Teeth used in experiments had a flat occlusal surface, and were filled cylindrically with pink cement at the center surrounded by yellow plaster. Subjects were instructed to drill out as much of the cement as possible without cutting the surrounding plaster, using the difference in colors as an indicator. The first tooth was drilled under direct vision, while the second tooth was drilled while viewing images from the camera. The weight of the drilled out plaster and uncut cement was calculated after cavity preparation. For more precise cavity preparation, the weight of the drilled out and residual material should be lighter. Statistics were performed using the Wilcoxon signed rank sum test.

Results: The weights of drilled out and residual material after cavity preparation under direct vision were 62.7 ± 21.1 mg and 22.0 ± 10.1 mg, respectively, while the weights of materials using the camera were 69.6 ± 26.2 mg and 20.3 ± 7.8 mg, respectively, indicating no significant differences.

Summary and Conclusions: Despite relatively little training time for cavity preparation using an intraoral camera, subjects achieved a level of precision that was not significantly different from cavity preparation under direct vision.

FC002

Needs in Dental Treatment of Patients with Sickle Cell Disease

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Aim and purpose: This study's aim is to explore the needs in dental care with respect to conservative, preventive dentistry and endodontics of patients with Sickle cell disease because with this hemoglobinopathy any source of pain develop a crisis which affects them.

Materials and method: Subject of the study are patients suffering from sickle cell disease homozygotes aged from 12 to 45 year old. The examination of the complete medical file was performed for this form of sickle cell disease.

Our work involved carrying out an oral examination on all patients affected with sickle cell who visited a university hospital over a period of 2 months. Various pathologies were diagnosed and a treatment plan was proposed to 50 examined patients.

Results: This study has revealed a lack of oral hygiene and a need for preventive treatments coupled with a need for restorative and endodontic treatments in a far more important proportion than surgical and prosthetic care.

Summary and Conclusions: As any attack on the oral system stimulates a painful vaso-occlusive crisis the provision of medical treatment should ideally be coordinated with the required dental treatment. The necessity of a multi-disciplinary treatment for sickle cell subjects is emphasized with an automatic ophthalmological and dental examination.

FC003

Education of Minimal Intervention Dentistry: Survey of Dental Educators

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Aim and purpose: The objective was to understand the opinion of dental educators of operative dentistry in USA, Canada, United Kingdom and Australia, New Zealand, Sweden and Denmark on the need for the introduction of the Minimal Intervention Dentistry (MID) concepts in dental education, as well as their implementation.

Materials and method: An e-mailed questionnaire was sent to the heads of operative dentistry at the universities in the USA, UK,

Australia, New Zealand, Sweden, and Denmark. The list of the dental schools was taken from the website of the Federation Dentaire Internationale (FDI) from their website (<https://www.asdanet.org>). The questionnaire included ten Open-ended questions. The results were tabulated and frequencies were found using simple arithmetical calculations using SPSS software version 17.

Results: A response was received from forty 40/70 dental schools. There was 100% agreement about the need for the MID. A majority of the educators (55%) desired to replace GV Black designs by MID, while 25% desired teach both concepts. Thirty percent (30%) of the schools were not teaching GV Black designs, while 15% were teaching both types of designs and 10% were teaching GV Black designs only.

Forty percent (40%) responded negatively on the inclusion of GV Black designs in the textbooks. A wide variation was observed on details of cavity designs. Only 30 One half (50%) of the respondents favoured a change in dental licensing boards criteria. "Fundamentals of Operative Dentistry" was the most recommended textbook.

Summary and conclusions: There was a strong observed towards the teaching of minimal intervention dentistry by the respondents.

FC004

To compare effectiveness of Various Irrigation Techniques on Smear Layer removal In Root Canals: A Scanning Electron Microscopic Study

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Aim and purpose: To evaluate the effectiveness of the conventional needle irrigation, manual dynamic agitation, passive ultrasonic irrigation, apical negative pressure on smear layer removal in root canals.

Materials and method: 120 orthodontically extracted premolars were stored in 0.9% sodium chloride solution. The crowns were removed and root was adjusted to a standardized length of 14 mm. Working length (WL) was set at 13 mm and glide path was established using #8–15 K-files. During instrumentation, 1 ml of 2.5% NaOCl was used at each change of file. Samples was divided into 4 equal groups, group I- needle insertion (NI), group II-manual dynamic agitation (MDA), group III- passive ultrasonic irrigation (PUI), group IV- apical negative pressure (ANP). A final irrigation sequence of 5 ml 2.5% NaOCl, followed by 5 ml 17% EDTA, was used to remove the smear layer. Finally, the specimens was irrigated with 5 ml sterile distilled water, dried, temporarily sealed and stored. A longitudinal groove in the bucco-lingual direction was made using a diamond disk. Each sample was split longitudinally and subjected to scanning under SEM and results obtain was statistically evaluated.

Results: On observing the overall mean score for smear layer removal amongst all the groups, ANP had the highest smear layer removal efficacy.

This was followed by MDA and PUI, which were statistically not significant. Removal of the smear layer was least effective with NI technique.

Summary and conclusions: Final irrigant activation with apical negative pressure (EndoVac system) results in better smear layer

removal in root canals when compared with manual dynamic agitation, passive ultrasonic irrigation and needle irrigation.

Free Communication Session 2 – Room 216 | 2015-09-22 | 9:30–10:30

Theme: General Dentistry and Oral Health

FC005

Role of Dentist in Tobacco-Use Cessation

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Aim and purpose: Tobacco is most commonly used substance the world over and largest cause of preventable death world-wide. Tobacco is the second major cause of death in the world. The death toll from tobacco consumption is now 4.9 million people a year. India is the 3rd largest producer & consumer of tobacco.

Materials and method: The most significant effects of smoking on the oral cavity are oral cancers and pre-cancers, increased severity and extent of periodontal diseases, and poor wound healing.

The clear link between oral diseases and tobacco use provides an ideal opportunity for oral Health professionals to become involved in tobacco control initiatives.

Results: Dentists are the first to see the effects of tobacco in the mouth. And are thus in an ideal position to reinforce the anti-tobacco message.

Summary and conclusions: In this presentation a guideline that provides clear advice for dentist to become involved in smoking cessation programmers is detailed. Dentists can easily incorporate this model into their daily clinical practice by following a simple stepwise approach.

FC006

Evaluation of Myofibroblasts in Oral Submucous Fibrosis and Oral Squamous Cell Carcinoma- an Immunohistochemical Study

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Aim and purpose: To evaluate the presence of myofibroblasts in Oral Submucous Fibrosis and Oral Squamous Cell Carcinoma using α -SMA antibody.

Materials and method: 20 specimens of Oral Submucous Fibrosis (OSMF), (10 histologically diagnosed early OSMF and 10 histologically diagnosed advanced OSMF) and 20 specimens of Oral Squamous Cell Carcinoma (OSCC), [10 histologically diagnosed Well differentiated OSCC (WDOSCC) and 10 histologically diagnosed poorly differentiated OSCC (PDOSCC)] were subjected to immunohistochemistry using α -SMA antibody for detection of myofibroblasts. 10 normal oral mucosa specimens were also stained as controls.

Results: The number of α -SMA-stained myofibroblasts in OSMF and in OSCC were significantly increased when compared to that

of the normal controls ($p < 0.005$). Additionally, a statistically significant increase in the myofibroblasts population between early and advanced stages and between OSMF group and OSCC group were observed ($p = 0.005$). No significant result was found in myofibroblast population in WDOSCC and PDOSCC. Network pattern was found to be the predominant pattern of myofibroblasts distribution in OSCC groups though the results were not significant ($p > 0.005$).

Summary and conclusions: Our results support the hypothesis that OSMF actually represents an abnormal healing process in response to irritation because of areca nut chewing. Results obtained after comparing the staining index score between OSMF and OSCC could suggest that myofibroblasts might play a possible role in the malignant transformation of OSMF to OSCC.

FC007

Awareness of Radiation Hazard and Protection Among Dental students – A Study

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Aim and purpose: To assess the knowledge, attitude and perception of the clinical year dental students and interns towards biological hazards of dental x-ray and appropriate radiographic protection techniques.

Materials and method: This cross-sectional questionnaire based study was conducted on 174 undergraduate dental students. Data was collected from each participant through structured 17 response questionnaire with multiple choices. The collected data was subjected to statistical analysis using the SPSS software package version 17. Pearson chi-square test was done to evaluate the statistical significance.

Results: Results from the present study showed 54.22% correct response from third year graduates followed by 57.78% from final years and 61.64% from interns. The overall correct response was 57.57%.

Summary and conclusions: The results of the present study showed that Knowledge, approach and perception (KAP) level regard to biological hazards effect of x-ray and protection was low to medium among dental students. It is strongly recommended that the syllabus of dental radiology in dental colleges should be expanded to provide good knowledge regarding radiation hazards and protection so that dental students will be able to be well grounded with the principle governing dental radiography.

FC008

Clinical Analysis and Preventive Treatment Effects of Cracked Teeth

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Aim and purpose: To analyze and treat cracked teeth those are asymptomatic or have symptoms of reversible pulpitis to prevent their future possible fracture.

Materials and method: A total of 30 patients having 45 mesio-distally oriented cracked teeth were included in the study. During the treatment the teeth were classified into three groups according to the depth of the prepared cavity. Group A included teeth with cavity depth 0.5 to 1 mm into dentin ($n = 12$); Group B included teeth with prepared cavity depth 1.1 to 1.5 mm into dentin ($n = 15$); and Group C included teeth with prepared cavity depth 1.6 to 2 mm into dentin ($n = 18$). Group C was further sub-divided into two groups depending upon the presence (Group C-I) ($n = 10$) or absence (Group C-II) ($n = 8$) of visible crack line at the base of the cavity. All the teeth were restored with light cure posterior composite resin restorative material. The patients were recalled at 6 and 12 months and the condition of restoration, tooth and signs and symptoms recorded.

Results: There was significant difference between the depth of the crack ($p = 0.033$) and failure. However there was no significant difference ($p = 0.388$) between the treatment outcome for absence or presence of crack line at the base of the cavity of depth 2 mm into dentin.

Summary and conclusions: Posterior incomplete cracked teeth without caries or previous restoration and with a mesio-distal orientation, if is either asymptomatic or have signs and symptoms of reversible pulpitis, can be managed successfully in about 91.2% cases with direct composite resin restorative material for at least a period of 12 months.

Free Communication Session 3 – Room 217 | 2015-09-22 | 9:30–10:30

Theme: Implantology

FC009

Bone grafting for Dental Implants. Is Autograft a Gold Standard?

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Aim and purpose: A retrospective study was conducted to compare the effects of different types of bone grafts i.e. allograft, alloplast and combination of the two on the success of dental implants and to establish a gold standard.

Materials and method: It was a retrospective study conducted on 107 patients from August 2013 to December 2014. The patients were aged 18–63 the mean being 36.5. Three arms were established, in Arm A 32 patients were treated with autografts, in arm B 49 patients were treated with allografts. In arm C, 26 patients

were treated with a combination allografts and autografts. Cases were considered successful if implants were stable with minimal levels of bone resorption 6 months following loading.

Results: There was 1 failure of implants when autograft was used alone and 1 failure when autograft was combined with allografts. Hence, we are reporting 96.8% success in cases where autograft was used alone and 96.1% when autograft is combined with allograft. We have a success rate of 91.8% when allograft was used alone, with 4 failures in the 49 cases of group B. This establishes autograft as a gold standard for bone augmentation in dental implants.

Summary and conclusions: Autograft has been established as a gold standard for dental Implants when bone augmentation is indicated. Autograft when used in combination with allograft also gives reasonable and predictable success. Our study establishes that autograft either harvested intraorally or extraorally remains the gold standard.

FC010

Micromovements and Bacterial Penetration on Different Implant-Abutment Connection System

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Aim and purpose: The aim of this study was to analyse micromotion, presence of microgap and to evaluate, *in vitro*, the bacterial penetration through the implant-abutment interface of external hexagon, internal hexagon and morse taper connection, subjected to mechanical fatigue. A microgap has been described at the level of the implant-abutment connection. This microgap can be colonized by bacteria, and this fact could have relevance on the remodelling of the peri-implant crestal bone and on the long-term health of the peri-implant tissue. Dental implants like natural teeth can be affected by microorganism with the effect of peri-implantitis and peri-implant mucositis.

Materials and method: Multiples dental implants of external hexagon, internal hexagon, and morse taper connection, and their conical abutments with 10-years or longer follow-up times were found through a Pub Med, manual search and different international university.

Results: Presumably Morse cone connection implants showed the lowest count of microorganism, unlike External and internal hex implants showed a higher incidence of bacteria.

Summary and conclusions: However, the pumping effect caused by the micro movements plays an important role for crestal bone resorption. Is ascertained that the bone is contaminated with the presence of the microorganism and with the liquid contained in the dental implant.

FC011

Evaluation of Nanocrystalline Hydroxyapatite in Treatment of Periimplantitis Defects in Diabetic Patients

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Aim and purpose: Evaluate the 9 months results of perimplant defects treatment in diabetic patients using either a nanohydroxyapatite (NHA) or hydroxyapatite (HA).

Materials and method: Fifteen type II diabetic patients, suffering from moderate periimplantitis ($n = 20$ intra-bony defects) were randomly treated with access flap surgery (AFS), and the application of HA or with AFS and the application of NHA. Clinical and radiographic parameters were recorded at baseline and after 6 and 9 months for the studied groups.

Results: Both groups revealed clinically important mean probing pocket depth (PD) reductions (in HA: from 7.0 ± 1.6 to 4.7 ± 1.05 mm; NHA: from 7.88 ± 1.36 to 3.44 ± 0.52 mm) and increase in mean bone density (HA: from 47.39 ± 4.9 to 54.84 ± 2.98 ; NHA: from 49.26 ± 7.38 to 66.60 ± 4.24). These clinical and radiographic improvements seemed to be better in the NHA group than HA group at the end of the study period.

Summary and conclusions: Within the limits of the present investigation, it can be concluded that both treatment modalities have shown efficacy over a period of 9 months study period, however, the application of NHA may result in more clinical and radiographic improvement of healing outcomes.

FC012

Definition and Classification of Dental Implant Complication

Ahmed Adam Moneim

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Aim and purpose: To define and categorize dental implant complication.

Materials and method: This is a retrospective study that investigates complication rates, failure rates and the ratio of complications to failures in an 8-year private practice and defined dental implant complication and new classification according to the root cause of the complication.

Results: The sample was composed of 179 patients with a total of 349 dental implants.

The overall frequency of implant complications was 12.89%, which represents a complication rate 2.5 times higher than the failure rate of 5.15%. (Figure 1).

A chi-square test was conducted and showed that host and practitioner-technique related-causes had higher rates compared material-design and unknown causes.

Summary and conclusions: Based on our study, the likelihood of having a complication is 2.5 times greater than the likelihood of having a failure and the 4 types of classification are:

- 1 Host
- 2 Practitioner-technique

- 3 Material-design
- 4 Unknown causes

Free Communication Session 4 – Room 218 | 2015-09-22 | 9:30-10:30

Theme: Preventive Dentistry – Caries

FC013

Salivary pH Levels and Caries Among Siblings and Parents Within Families

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Aim and purpose: High level of caries activity is related to organisms in the dental plaque with high acidogenesis capacity. The aims of the study were: to test salivary pH in children of the same family and compare it with their caries status, to compare pH levels between children and their parents, to examine the relationship between pH and caries status among children of the same family and their parents.

Materials and method: We examined 123 children and adolescents aged 3–18, (73 boys and 50 girls) and 33 adults, (12 men and 21 women), parents of these children. Caries status was examined clinically, using DMF index. Salivary pH measurements were made by a digital pH meter.

Results: Among adults, increase in patient age led to increased DMF ($p = 0.005$). The higher the pH, the lower the DMF ($p = 0.037$). Among men, DMF was lower by 3 compared to women ($p = 0.049$). Children's pH correlated with the parents' ($p = 0.004$). Children's DMF correlated to their pH ($p = 0.001$). Children's pH was the best predictor of their DMF ($R^2 = 0.309$, $p = 0.001$).

Summary and conclusions: Among children, the higher the pH, the lower the DMFT. Children's pH was the best predictor of their DMF.

FC014

Influence of maternal dental anxiety on child's dental caries experience

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Aim and purpose: To assess the influence of maternal dental anxiety on dental caries experience among 2–5 year old preschool children in Mysore city, India.

Materials and method: An analytical cross sectional study was conducted on a stratified random sample of 635 mother child dyads. A pre tested proforma collected information on maternal dental anxiety using Modified Dental Anxiety Scale (MDAS). Scores from 5 to 10 were classified as low dental anxiety, 11 to 18 as moderate dental anxiety and 19–25 as high dental anxiety. Dental caries was assessed using dmft(t) and dmfs(s) indices. Descriptive analysis,

Chi-square test, Kruskal-Wallis test, Spearman correlation test and a binary logistic regression model was used.

Results: The dental caries prevalence among preschool children was 40.6%. Mothers who exhibited low, moderate and high dental anxiety were 50.2%, 39.1%, 10.7% respectively. Mean dental caries score was found to increase with increase in maternal dental anxiety levels but was not statistically significant ($p = 0.537$). In the binary regression model, maternal dental anxiety was not significantly associated with dental caries ($p > 0.05$).

Summary and Conclusions: No significant association was found between maternal dental anxiety and dental caries experience among preschool children.

FC015

Anti-Bacterial Efficacy of Coconut oil on Streptococcus Mutans - An In Vivo Study

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Aim and purpose: To evaluate the effect of coconut oil on streptococcus mutans count in the plaque and saliva and to compare it with chlorhexidine.

Materials and method: A comparative interventional study was done on fifty children between the age group of 8–12 years. The ethics committee approval and parent's consent were obtained. Random sampling was done and subjects were divided into 2 groups of 25 subjects each. Group A Coconut oil group(study group) Group B Chlorhexidine(control group).Each group performed oil swishing with coconut oil and chlorhexidine rinse respectively every day in the morning after brushing for 2–3 min. The number of S mutans in plaque and saliva was determined by simple chairside method using; the Dentocult SM Strip Mutans test. The plaque is collected with a sterile toothpick 1–2 h after brushing and is spread thoroughly on the plaque strip. For Saliva, the rough surface of Dentocult S M saliva strip is used. The strips was placed in the selective cultural broth and incubated at 48 h. The same procedure was repeated at 0, 1, 15 and 30th day. Wilcoxon matched pairs signed test or the Mann whitney u test used to compare the two groups.

Results: Statistically significant changes were observed from base line to 30 days by the use of coconut oil.

Statistically significant changes were observed from base line to 30 days by the use of chlorhexine.

No statistically significant changes were observed between coconut oil and chlorhexidine at the end of 30 days.

Summary and conclusions: Coconut oil is as effective as Chlorhexidine in reduction of streptococcus mutans.

FC016

Clinical Results of 2 Glass Ionomer Cements for Fissure Sealing in Primary Molars

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Aim and purpose: To study caries preventive effect of GIC Argem (AC) as fissure sealant in caries-free DM and to compare these data with those obtained in a previous study where GIC Fuji IX (FJ) was used.

Materials and method: Fissure sealants with AC were placed by one dentist in children aged 3–5 years from a public kindergarten in Tashkent (35 children, 140 DM). Fissure sealants with FJ had been placed by one dentist in children attending the dental service of the Volgograd University Dental School (112 children, 896 DM). Fissure sealants retention rate (%) and caries (dmft level) in molars with fissure sealants were recorded at baseline as well as 6 and 12 months later.

Results: After 6 months full retention rate of fissure sealants was 83.6% in the AC group and 90.6% in the FJ group; carious lesions were detected in 2% and 2.9% DM respectively. After 12 months 34 children with 135 fissure sealants of the AC group and 93 children with 733 fissure sealants of the FJ group could be re-examined. Full retention rate of fissure sealants was 75.5% in the AC group and 86.2% in the FJ group; carious lesions were detected in 10.2% and 4.5% DM respectively. These difference was statistically significant ($p = 0.001$ and 0.005 ; Chi-Square Test).

Summary and conclusions: Although the retention rate of FJ is significantly better than AC, it seems to be justified to use AC for sealing deciduous molars because it was also possible to prevent a very high number of caries lesions.

Free Communication Session 5 – Room 215 | 2015-09-22 | 11:00-12:00

Theme: Dental Treatment & Restorative Dentistry – Materials

FC017

Investigation of Flexural Strength and Elastic Modulus of Three CAD/CAM Dental Ceramics

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Aim and purpose: The aim of this research was to investigate the flexural strength and the Young's modulus of three different machinable dental ceramics: zirconia Cercon (Degudent, Hanau, Germany), glass-ceramic IPS e.max CAD (Ivoclar Vivadent, Schaan, Liechtenstein), and polymer-infiltrated hybrid ceramic Enamic (VITA Zahnfabrik, Bad Säckingen, Germany).

Materials and method: A total of 15 samples of each material were prepared according to the ISO-6872 standard. Three point bending tests were carried out on the specimens using a universal testing machine (Instron E3000) with a loading rate of 1 mm/min. The Weibull analysis was conducted on the experimental results and the Weibull distribution constants were recorded, i.e. Weibull modulus and the characteristic strength for 63.2% failure probability. The Young's modulus was derived from the load-displacement curve of the samples from the flexural strength test data.

Results: The Weibull modulus of Cercon, IPS e.max CAD and Enamic were 12.12, 7.01, and 18.90; the respective characteristic strength of the materials were 934.39, 381.12, and 139.59 MPa; and the calculated Young's modulus for the studied ceramics were found to be 91.79, 57.53, and 23.54 GPa.

Summary and conclusions: Enamic has a higher Weibull modulus which suggests that it has less scatter in its strength and is the most reliable material among others. However, its strength is the lowest. As Cercon is the stiffest (highest Young's modulus) material with the highest strength, it could be an appropriate framework material for dental bridges. Enamic could be feasible as an indirect restorative material for premolars and IPS e.max CAD for molars.

FC018

Antimicrobial Activity and Properties of Alginates Incorporated with Silver Nanoparticles

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Aim and purpose: The aim is to investigate the antimicrobial activity and properties of alginate impression materials incorporated with silver nanoparticles.

Materials and method: Antimicrobial activity and properties of two commercially available alginate impression materials were evaluated after incorporating varying concentrations of silver nanoparticles. Antimicrobial activity was determined using disc diffusion method. Gel strength, permanent deformation, flow and gelation time were measured as per American dental association

specification number 18. Analysis of variance was used to identify the significant differences within the groups and across the groups.

Results: Addition of silver nanoparticles to alginate impression materials resulted in superior antimicrobial activity without adversely affecting their properties. Addition of silver nanoparticles to Zelgan significantly increased the gel strength compared to control group except at 5.0 wt% whereas gel strength of Tropicalgin was unaffected except at 5.0 wt%. There was an increase in the permanent deformation with the incorporation of silver nanoparticles in both Zelgan and Tropicalgin. The flow of Zelgan increased with the incorporation of silver nanoparticles whereas a decrease in flow of Tropicalgin was observed at 1.0 wt% and 2.0 wt%. An increase in gelation time of both Zelgan and Tropicalgin was observed with the incorporation of silver nanoparticles.

Summary and conclusions: From the results, it can be concluded that silver nanoparticles can be incorporated into alginate impression materials as antimicrobial agents without adversely affecting their properties.

FC019

The Effect of Aging on the Cross Link Density of Packable Bulk-Fill, Sonic Activated Bulk-Fill and Conventional Packable Composite Resins

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Aim and purpose: To evaluate the effects of aging on the cross link density (CLD) of packable bulk-fill, sonic activated bulk-fill and conventional packable resin composites.

Materials and method: Packable bulk-fill, sonic activated bulk-fill and conventional packable resin composites were used in this study. Twenty disc shaped specimens ($N = 60$) were fabricated by placing unpolymerized composite resins into cylindrical cavities (diameter: 5 mm, height: 4 mm). After polymerization, the specimens were stored in air at 37°C for 24 h and subjected to hardness testing using a Vicker's microhardness tester (VHN1). A half of the specimens were then placed in absolute ethanol solution at 37°C for 24 h and the other half in distilled water at 37°C for 30 days. Post-conditioning hardness was determined (VHN2 and VHN3). Hardness deterioration was computed as follows: $\Delta VHN = VHN1 - VHN2$ and $VHN1 - VHN3$. The data were statistically analyzed by two-way ANOVA followed by Tukey's post hoc test.

Results: Composite resin type and aging both significantly influenced the CLD ($p < 0.05$). Tukey's post hoc test showed the differences among all groups except between sonic activated bulk-fill and conventional packable resin composites after immersion in absolute ethanol.

Summary and conclusions: Resin composite types affected the CLD. The aging process increased CLD of those three types of resin composites. Sonic activated bulk-fill resin composite showed the highest CLD after aging process, followed by packable bulk-fill and conventional packable resin composites. The most stable CLD prior-to and after aging was revealed by sonic activated bulk-fill resin composite.

FC020

The Hardness of Packable and Bulk-Fill Composite Resin with the Differences of Cavity Depths

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Aim and purpose: To determine the differences in hardness between packable and bulk -fill composite resin restorations with the cavity depth of 2 mm and 4 mm.

Materials and method: This study was conducted using 32 fiber-glass molds (diameter 5 mm), and were assigned randomly into 4 groups of 8 each. Group 1A, the molds were applied using packable composite resin with the cavity depth of 2 mm. Group 1B, bulk -fill with the cavity depth of 2 mm. Group 2A, packable with the cavity depth of 4 mm. Group 2B, using bulk -fill with the cavity depth of 4 mm. Each sample was immersed in artificial saliva with pH 6.8 and was stored in 37°C incubator for 24 h. Each sample was tested in hardness using Vickers hardness test. The data obtained were analyzed using two-way ANOVA, followed by Tukey's test.

Results: Bulk-fill composite resin with cavity depth of 2 mm had the highest hardness mean (31.09 ± 2.02), followed by packable composite resin with 2 mm depth (17.52 ± 1.25), bulk-fill with depth of 4 mm (11.97 ± 1.23) and packable with depth of 4 mm (3.18 ± 0.85). Two way ANOVA analysis revealed that significant differences between composite resins and cavity depth, as well as an interaction occurred between type of composite resin and cavity depth ($p < 0.05$).

Summary and conclusions: The hardness of packable composite resin was lower than bulk-fill either in cavity depth of 2 mm and 4 mm.

Free Communication Session 6 – Room 216 | 2015-09-22 | 11:00-12:00

Theme: General Dentistry and Oral Health

FC021

Perceived Sources of Stress and Management Strategies of Clinical Dental Students in a Private Dental School

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Aim and purpose: The purpose of this study was to identify sources of stress among clinical students in the dental school environment, and evaluate their perceived levels of stress, self-efficacy and effective coping strategies.

Materials and method: This study was conducted during the first semester of the academic year, 2014–2015, at a private dental school. The study group consisted of 130 undergraduate clinical dental students (3rd, 4th and senior year) and they were surveyed

with a detailed assessment tool, comprised of four different validated and translated questionnaires.

Results: Among the perceived sources of stress 'Patients being late or not showing for their appointments' and 'Lack of time for relaxation' were found to be the most stress provoking factors. Workload was the most stressful issue for clinical dental students, whereas social stressors had the lowest stressful issue. Total DES scores increased in accordance with the grade of the students ($p < 0.05$). Stressors on workload, patient treatment and clinical training affected female students more than male students ($p < 0.05$). Among clinical dental students, the most common coping strategy was found to be planning, whereas the least common coping strategy was substance use. While coping with stress, female students used self-distraction, emotional support, instrumental support, planning, and religion more than male students ($p < 0.05$).

Summary and conclusions: Clinical dental students displayed relatively high perceived stress scores. Strategies for stress management must be incorporated into dental education, especially for the senior year students, to ensure the output of effective dentists.

FC022

Development of Early Australian Dental Publications

Peter Deane Barnard

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Aim and purpose: To investigate the range of dental publications in Australia during the 19th century and their possible influence on changes in dentistry.

Materials and method: Early Australian dental publications were reviewed from the presenter's collection. Changes in content and possible sources of information have been noted.

Results: Dental care was from naval surgeons for the earliest convict settlement in Australia.

A few surgeons came to Australia to take up British Government land grants. Henry Jeanerette trained as a surgeon in England and a dentist in France and published the first dental book in Australia in 1830. The book was dedicated to the public as well as others giving dental treatment and preceded the first medical publication in Australia.

As population increased with development of the wool industry and gold mining, dental treatment was provided by surgeons, chemists, farriers and lay apprentices. There were a few dentists with overseas training and access to French, English and USA books. Newspaper advertising helped business and educating public.

Other early books were published by Paterson 1864, Lucaden-Wells 1882, Webb 1885, Norman 1892, and Bickle 1897. First Australian Journal of Dentistry was in 1887.

By the end of the century from 1890s there were active dental groups and associations. Plans were developed for dental legislation, and formal dental training.

Summary and conclusions: Information available to those carrying out dental work in Australia was limited early in the 19th century but by 1900 was extensive.

FC023

Developing a New Tooth Notation System –a Pilot Study

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Aim and purpose: Background: Universal, Palmer notation and FDI system are used to record dental problems. A new tooth notation identifies tooth classes and their types by letters I- incisor, C-canine, P-premolar, M-molar (MICAP) and digits 1, 2, 3 respectively. The digits 1, 2, 3 are printed as superscript and subscript on relevant letters (I, C, P, M) to indicate maxillary and mandibular teeth.

AIM: to assess the learning outcome of students of dental degree and dental allied health programmes using mock 'MICAP' dental chart.

Materials and method: Mock MICAP dental chart was prepared. Students of undergraduate dental degree [group A ($n = 39$)] and dental allied health programme [group B ($n = 39$)] who were further subdivided based on age such as [group 1 = 15–25 years, group 2 = 26–35 years, group 3 = 36–45 years], translated four MICAP symbols and vice versa in a cross sectional study after an hour lecture and video demonstration about the MICAP format. One way ANOVA and independent *t* test were performed to analyse the data.

Results: Group A was significantly better in translation of #1C (maxillary right canine) than group B [mean difference 95% CI: -0.128 (-0.285 , 0.028) $p = 0.001$]. Same results were for correct writing of 'mandibular right 2nd molar into #2M [mean difference 95%CI: 0.282 (0.083 , 0.480 , $p < 0.000$]. In terms of age, group 1 were better in translation of MICAP format ($p < 0.001$) as compared to other groups. Participants $>50\%$ agreed that MICAP notation system was easy to understand.

Summary and conclusions: MICAP can be an alternate dental charting tool. However, additional data is required to confirm the results.

FC024

Dental status of Children with the Syndrome of Ectodermal Dysplasia

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Aim and purpose: Study the dental status of children with the syndrome of ectodermal dysplasia.

Materials and method: The study involved seven children aged from 2 to 10 years. General and dental status was studied. Additionally was performed radiographic, genetic research, special tests on sweating, biochemical, serological blood tests. All patients had

hyperthermia, decreased sweating, and comorbidities of upper respiratory tract. Appearance: large square skull with protruding frontal eminence and eyebrows, sparse eyebrows and eyelashes, sunken cheeks, prominent lips, saddle nose, thinning hair, pronounced dryness and thinning of the skin. In 2 patients noted peeling, inconspicuous keratoderma of the palms and soles. Mental development was normal in 5 children and in 2 others showed signs of developmental delay.

Results: In oral cavity: in 3 children aged 6–10 years have been observed only 7 teeth – 2 permanent mandible molars, two molars in the maxilla, 3 teeth in the anterior maxilla conical shape, 5 teeth with tooth decay, was marked atrophy of the alveolar bone and dry mouth.

In 4 children aged 2–6 years in the oral cavity was indicated 4–6 deciduous teeth of irregular shape, in the sides 2 tooth, in the front - 1–2 tooth, in ortopantomogramm snap was determined only 2–4 tooth rudiments, mainly the first molars of the mandible. The diagnosis: primary edentia, hypodontia.

Summary and conclusions: Thus, the findings of the dental status in children with ectodermal dysplasia demonstrate the need for a comprehensive rehabilitation and individualized approach to treatment.

**Free Communication Session 7 – Room 217 | 2015-09-22 |
11:00-12:00**

Theme: Implantology

FC025

Difference in Bone Response as Well as Soft Tissue Parameters with Respect to Immediate Functional and Non-Functional Loading Implants: An in Vivo Study

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Aim and purpose: Some studies comparing immediate functionally loaded and non-functionally loaded implants have found a significant difference in crestal bone loss and implant survival rates while some others have found immediate functionally loaded and non-functionally loaded implants to be comparable with respect to the same parameters. There exists a dilemma regarding the protocol for immediate loading. This prospective experimental study was conducted to determine whether there exists a difference in bone response as well as soft tissue parameters with respect to immediate functional and non-functional loading.

Materials and method: This study consisted of 20 subjects who were partially edentulous in the mandibular arch and were randomly divided into 2 groups, each consisting of 10 subjects. GROUP I subjects were restored with implant system with immediate functional loading and GROUP II with implants system with immediate non-functional loading.

Both groups were evaluated for hard and soft tissue parameters at baseline, 3 months and 6 months for crestal bone level changes, radiographic bone density changes, modified Plaque Index changes, modified Sulcular Bleeding Index changes and peri-implant probing depth changes.

Results: There was a significant difference between immediate provisionally restored functionally and non-functionally loaded implants with respect to hard tissue parameters between baseline to 3 months and 3 to 6 months.

Summary and conclusions: Immediate provisionally restored functionally and non-functionally loaded implants was similar with respect to soft tissue parameters between baseline to 3 months and 3 to 6 months but difference was observed in hard tissue parameters.

FC026

Effects of prosthetic parameters on bone resorption around single implant restorations

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Aim and purpose: To analyze the influence of prosthetic parameters of dental implant such as its width, length, clinical and anatomical crowns to implant ratio on bone resorption around single implant restorations.

Materials and method: The research was conducted by looking at the differences of bone resorption. Twenty single dental implants were calculated by using single panoramic radiography paired in 11 patients aged ≤47 years at Prosthodontics Department Faculty of Dentistry Hasanuddin University, Makassar, Indonesia during December 2014 to February 2015. The calculation used Diagora software to compare the original insertion image and the photo of control. Moreover, the study also calculated dental implant length, diameter, anatomical and clinical crown to implant ratio as they all have influence on bone resorption. Data was analysed with one-way ANOVA test in one direction and the T-test ($p \leq 0.05$).

Results: Several parameters such as dental implant diameter and anatomical crown to implant ratio showed a significant effect on distal and mesial bone resorption ($p < 0.05$). Meanwhile, the length of implant and its clinical crown ratio showed no significant effect on distal and mesial bone resorption ($p > 0.05$). However, all these parameters showed a negative correlation to the distal and mesial bone resorption.

Summary and conclusions: Implant prosthetic parameters such as its width and anatomical crown to implant ratio of single implant restorations can affect the bone resorption around dental implants. The greater the prosthetic parameters, the smaller its bone resorption. Other parameters, however, did not affect it.

FC027

Comparison of Movements and Retention in Single and Two Implant Supported Overdentures

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Aim and purpose: Retention of the implant-supported overdentures possibly change with the alteration of the number of implants. On the other hand patients will choose single implant supported overdenture because of economic reason. It seems to be the most cost effective treatment. The present in vitro trial compared the stability, retention and movements of mandibular 1, and 2 implant supported overdentures.

Materials and method: In this in vitro trial, a mandibular model was fabricated to receive 3 implants on the distance between the lateral and canine teeth and also on the symphysis of the mandible. A metal overdenture was adjusted on the model. Retention and movement of the overdenture in the treatment options of 1- and 2- implants were measured after applying tensile load by Zwick universal testing machine.

Results: The overdenture movements in the 1-implant supported treatment were significantly higher than 2-implant supported design in total dimensions (all $p < 0.0001$) with the exception of oblique load applications in the incisor teeth which showed no significant differences between 1- and 2-implant supported overdenture designs. Maximum dislodging forces were higher in the 2-implant supported designs than 1-implant supported overdentures when applying vertical and oblique forces ($p < 0.0001$) totally.

Summary and conclusions: Within the study limitations, 2-implant supported overdentures led in higher retention than 1-implant supported overdentures as well as less overdenture movements in vitro conditions. Therefore, clinician can use 1 or 2-implant supported overdentures regarding the required retention to achieve successful overdenture treatments.

FC028

Neglected Areas in Oral Implantology Education in Pakistan

Maham Lone, Farhan Raza Khan

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Pakistan

Aim and Purpose: Objectives: Oral Implantology is a rapidly evolving area of dentistry which needs to be taught to the undergraduate students. The objectives of this study were to explore the status of Implantology teaching at BDS level education in Pakistan and to assess topics/areas in Implant dentistry curriculum being overlooked at the undergraduate level.

Materials and method: A questionnaire was distributed to faculty of Operative Dentistry, Prosthodontics, Oral Surgery and Periodontics in various dental institutions of Pakistan. The questionnaire gained information on: year of introduction, departments involved in teaching and format of teaching implantology etc. Data was analyzed using SPSS 19.0. Descriptive statistics and frequency distribution were computed.

Results: Out of the 33 forms received, 22 faculty members were fellows of College of Physicians and Surgeons of Pakistan or Royal College of Surgeons UK. Oral Surgeons were reported to be responsible for teaching by 19 of the faculty. In majority of the dental colleges, Implantology was introduced after the year 2005. Out of the 23 respondents who placed implants, 17 reported that they frequently allowed students to observe implant surgeries. Lec-

tures (64%) are the mainstay of teaching Implantology at undergraduate institutions.

Summary and conclusions: Oral Surgeons are primarily responsible for implant education at undergraduate level; hence the subject teaching is Surgery oriented. Implant education started in most institutions in last 5–10 years, therefore it is still in its infancy in Pakistan. Topics such as implant prosthetics, bone regeneration and grafting are poorly covered in implant teaching.

**Free Communication Session 8 – Room 218 | 2015-09-22 |
11:00-12:00**

Theme: Preventive Dentistry – Caries

FC029

Caries Control in Adults - Fluoride Varnishes Versus Non-Fluoride Agents

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London, UK

Aim and purpose: To assess the comparative effectiveness of fluoride varnishes with any non-fluoride anti-caries agents (NFAA), and also to assess the comparative effectiveness of fluoride varnishes vs. NFAA plus fluoride varnishes, in the control of caries in the adult population.

Materials and method: A systematic review was carried out involving a comprehensive search of The Cochrane Central Register of Controlled Trials (The Cochrane Library 2014, Issue 7) and PubMed (to July 2014) databases.

Randomized controlled trials comparing fluoride varnishes vs. any NFAA and fluoride varnishes vs. a combination of NFAA plus fluoride varnishes, conducted in adults aged 16 years and above, were included.

Selection of studies, data extraction and assessment of risk of bias was done by one reviewer under the direction of a supervisor. The primary measures of effect were prevented fraction (PF) (for caries increment) and mean difference (MD) (for caries progression or arrest or reversal).

Results: Four trials were included. For root caries increment, a non-significant small effect was obtained in favour of fluoride varnishes. For coronal caries increment, a non-significant large result was obtained in favour of xylitol gum. For caries progression, a non-significant small effect was obtained in favour of combination of fluoride varnish and chlorhexidine varnish.

Summary and conclusions: There is not enough clear evidence to indicate that fluoride varnishes are more effective than NFAA, either on their own or in combination with NFAA, due to lack of sound methodological quality trials. Therefore, it would be premature to firmly suggest the adjunctive use of NFAA with fluoride varnishes.

FC030

Translating Parental Knowledge and Perceptions into Children's Oral Health Practices

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Aim and purpose: To assess the extent of parental perception and knowledge translated into practice on caries prevention among public sector preschool children of Galle, Sri Lanka and improvement after an intervention.

Materials and method: Caries assessment (dmft and ICADS indices) of 408 children aged 3–5 years and Focus Group Discussion with their parents were conducted. As an intervention, health education sessions, fluoride varnish application and referrals for dental care were done. Improvement was assessed after 6-months using same method as a pre-intervention and post intervention comparison.

Results: 60% of parents were aware of main preventive strategies for dental caries (reduce sugar frequency, proper brushing, regular check-ups) and the knowledge improved up to 85% after intervention and 38% knowledgeable about initial signs of dental caries and 20% of parents knew the importance of early caries detection to halt disease progression and possibility to restore with simple restorations. However, from the children with active caries 46% found with extensive carious lesions (ICADS 11, Code 6).

90% of parents demonstrated correct oral health practice knowledge (2/day, toothbrush, fluoridated toothpaste and assisted brushing), 41% of children were on expected practice and from the children without correct practice, 70% have dmft>0, the above knowledge and practice improved up to 98% and 65% respectively.

44% parents perceived that preserving milk teeth was unimportant as they fall off and 83% did not perceive negative effect of premature extractions (children with extracted teeth: 10%) which changed up to 80% and 75% respectively.

Summary and conclusions: The intervention has successfully translated parental knowledge and perceptions into children's conducive oral health practices.

FC031

Dental undergraduate Student's Knowledge and Attitude About Caries Management and Prevention in Iraq

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Aim and purpose: Dental students have the potential to be the primary source of information on caries prevention for patients and the general public, and influence the use and adoption of caries preventive procedures. Therefore, students' attitudes toward caries

prevention can affect their future involvement in preventive practice. The aim of the present study was to assess the opinions and knowledge among fourth- and fifth-year dental students about caries prevention and management at one dental school in Iraq.

Materials and method: All the 4th and 5th dental students (n = 143) were asked to voluntarily fill in a self-administered pre-tested questionnaire during the fall term in 2014. A total of 103 students completed the questionnaire (response rate of 72%). The questionnaire requested information on students' knowledge of caries prevention and attitudes towards preventive dentistry.

Results: Almost thirty-nine (38.8%) of respondents strongly agreed that fluoride varnishes are more effective than other fluoride methods. More than half of students agree that use of fluoride varnish is not a cost-effective way of treating caries. Forty six percent reported that most incipient enamel lesions will progress into cavities. Only 4% of the students claimed that fluoride varnishes may stain teeth permanently. In their responses, 80 percent reported they would use chlorhexidine rinses for caries control, and 55 percent would use salivary tests for detecting cariogenic bacteria.

Summary and conclusions: It is proposed that the current predental education system in dental school should be improved in terms of prevention dental caries.

FC032

Effect of Low Power Diode Lasers Irradiation on Calcium Solubility in Human Dental Enamel: An Ex-Vivo Study

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Aim and purpose: To measure the amount of calcium dissolved from dental enamel of extracted human teeth immersed in lactic acid solution after irradiation by 532 nm (100 mW) and 671 nm (100 mW) diode lasers.

Materials and method: One hundred and forty freshly extracted human premolar teeth were used. Samples were prepared by cutting each tooth into two cubic specimens of 4 × 4 mm enamel surface (one for irradiation and the other as control). The surfaces of the cube were coated by acid resistant varnish leaving the 4 × 4 enamel on one surface uncovered. Irradiation was done for each wavelength with 4, 8, 12 and 16 min intervals. The control and the irradiated specimens were immersed in 3 ml lactic acid (pH 4.4) for 24 h under a temperature of 37°C. The amount of calcium dissolved was measured by an atomic absorption spectrophotometer. Comparison between variables was done by ANOVA and Chi-square tests with the p ≤ 0.05.

Results: The percentages of calcium dissolved in the laser groups were less. Eight minutes irradiation time revealed the highest percentages of teeth with less calcium content (for 671 nm diode laser—81.25% and for 532 nm—78.60%). The mean of calcium dissolved in acid decreased with increasing the irradiation time with P values of 0.013 and 0.000 for 532 nm and 671 nm, respectively.

Summary and conclusions: Low power diode lasers of wavelengths 532 nm and 671 nm showed a decrease in calcium solubility in comparison to the control group. By increasing irradiation time, to a certain value, resistance to acid dissolution also increases.

**Free Communication Session 9 – Room 215 | 2015-09-22 |
12:30-13:30**

Theme: Dental Treatment & Restorative Dentistry – Endodontics

FC033

Root Canal Morphology of Mandibular First Premolars of Bangladeshi Population

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Aim and purpose: To evaluate the root number and canal morphology of mandibular first premolars of Bangladeshi population.

Materials and method: In this study, 100 mandibular first premolar teeth were evaluated by clearing technique. Collected teeth were cleaned and merged with 5.25% NaOCl for 48 h. Then the teeth were decalcified with 5% nitric acid for 72 h followed by dehydrated sequentially with 80–100% alcohol. After dehydration, Indian Ink was injected into the canal through the previously prepared access cavity. Finally the teeth were made transparent by 98% methylsalicylate and examined.

Results: Out of 100 mandibular first premolar teeth, 89 were single rooted, 10 with double rooted and only 1 was triple. On evaluation of canal configuration according to Weine classification, mandibular first premolars had 64% type I, 5% type II, 22% type III and 9% type IV. Apical delta was found in case of 8% mandibular first premolar tooth.

Summary and conclusions: Mandibular first premolar teeth of Bangladeshi population have multiple roots and canals and variable canal configurations.

Results: All the materials used for access cavity sealing showed the bacterial leakage. Fastest leakage is shown by Type IX GIC, nano composite showed least leakage by 41st day. All retrograde filling materials also showed the bacterial leakage and fastest and maximal leakage was shown with endosequence syringe material and least microleakage was seen with endosequence putty material.

Summary and conclusions: Within the limitations of this study, all the materials used for access cavity sealing and retrograde filling showed bacterial leakage sooner or later. Among the tested materials, Nano composite as access cavity sealing material and endosequence putty as root end filling material showed less leakage than other materials they are compared to.

FC035

Trends of Endodontic Retreatment in Various Practices

Sana Ehsen Nagi, Farhan Raza Khan

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Aim and purpose: 1. To assess endodontic retreatment preferences and decision making among practicing dentists of Karachi.

2. To compare retreatment preferences of dentists with varying clinical experience.

Materials and method: A questionnaire was distributed by hand to dental teaching faculty at various institutions of Karachi and at some private practices. The questions gained information on aspects like: number of retreatment cases seen per month, most frequent cause of retreatment encountered in practice, use of medicaments & solvents, number of visits for retreatment, antibiotic prescription etc. Descriptive statistics & frequency distribution were computed. Chi-square test was applied to compare the difference between dentists having <5 years vs. more than 5 years of clinical experience. Level of significance was kept at 0.05.

Results: We received only 58 forms out of 100 sent. Thus, the response rate was 58%. The most commonly reported reason for endodontic retreatment was under prepared/under filled canals. Gates Glidden drills and hand instruments were the most commonly used endodontic instruments. Potaper was the preferred rotary system. Chloroform was the most preferred solvent. Calcium hydroxide was the most preferred intracanal medicament. There is no statistically significant difference between the dentists for endodontic retreatment and extraction decisions.

Summary and conclusions: It's alarming to note that almost half of the dentists reported inappropriate decision making in retreatment. Nearly 45% participants were confined to hand instruments only and 15% were not employing any solvent. This shows that in general, retreatment is not done as per the accepted standards.

FC034

Seepage Vs Sealing - Who wins the Battle?

Nagesh Bolla, Pragna Mandava, Rani Sirisha,
Sumalatha Chukkala

Department of Conservative Dentistry and Endodontics, Sivar Institute of Dental sciences, Guntur, Andhra Pradesh, India

Aim and purpose: The Aim of this paper is to evaluate the sealing ability of different access cavity materials and retrograde filling materials of root canal treated teeth using polymicrobial marker.

Materials and method: The access cavities of the extracted teeth have been restored with different materials like Type IX GIC, Micro composite restorative material, Nano ionomer restorative material, Nano composite restorative material ($n = 15$) and teeth were placed in split chamber model and subjected to bacterial leakage using polymicrobial marker having Enterococcus faecalis and candida albicans. Similarly, retrograde cavities were prepared for the root canal treated teeth using ultrasonic tips and they were restored with root end filling materials like MTA, Endosequence root repair material putty and Endosequence root repair material syringe material ($n = 15$) and placed in split chamber model and analysed for bacterial leakage. The study was carried out till all the specimens showed leakage.

FC036

A Survey on Endodontic Irrigants used by Dentists in Pakistan

Syeda Mahvish Hussain, Farhan Raza Khan

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Aim and purpose: To investigate the attitude of dentists in Pakistan towards the use of irrigants in endodontics.

To check if there is a difference in practice techniques of dentists working in private clinics compared to those working in teaching institutes.

Materials and method: Questionnaire was distributed by hand to dentists in major cities of Pakistan (Lahore, Karachi, Islamabad) which inquired about their choice of irrigant in teeth with a vital pulp, non-vital pulp, teeth with periapical radiolucency and teeth with immature apices. Questionnaire also sought information regarding volume and concentration of irrigant used. Descriptive statistics & frequency distribution were computed. Chi-square test was applied to compare difference between dentists working in teaching hospitals vs. those at private practices. Level of significance was kept at 0.05.

Results: Of the 400 survey forms sent, we received 269, giving us a response rate of 67%. Of the total number of responders, 134 dentists were practicing in teaching hospitals, while the remaining had private practices.

Most commonly used irrigant for endodontics was sodium hypochlorite: There was a statistically significant difference between choices of irrigant used for performing endodontics on Teeth with vital pulp, non-vital pulp, with peri-apical radiolucency and teeth with immature apices, by dentists holding private practice vs. teaching dentists.

Summary and conclusions: Sodium hypochlorite was most preferred irrigating solution for vital pulp, non-vital pulp and for periapical radiolucency.

Preferred concentration of sodium hypochlorite was 2.5% followed by a concentration of 0.5%.

A statistically significant difference was observed between full time teaching dentists and private practitioners on choice of irrigant used.

Free Communication Session 10 – Room 216 | 2015-09-22 | 12:30-13:30

Theme: General Dentistry and Oral Health

FC037

Correlation Of Dental Age, Chronological Age And Impact Of Body Mass Index On Dental Development Among Children Of Age Group 6–13 Years

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Aim and purpose: To evaluate and compare Body Mass Index & Dental development in normal & underweight children and to determine the nature of correlation among calculated dental age, chronological age and Body Mass Index in normal & underweight children of age group 6–13 years of Navi Mumbai.

Materials and method: 301 subjects i.e. 171 boys and 130 girls. The sample was divided into two groups: normal and underweight, depending on the BMI as per recommendations of WHO for Asian population.

Results: When BMI was less than normal, calculated dental age was less and thus the dental development was retarded and vice versa.

Summary and conclusions: There is a great impact of the nutrition on children's health. A healthy and correctly fed child is expected to have more healthy teeth. India being a developing country, is substantially struck with malnutrition. Malnutrition and underweight are major problems of our country. Underweight children are of great concern as it increases the risk of illness and mortality both. It can also have long lasting adverse effect on child's development.

FC038

Influence of Sexual Dimorphism on Mesio-distal Crown Width of Anterior Teeth in a Local Institute of Karachi

Muhammad Bilal Bashir Ahmed

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Aim and purpose: To evaluate effects of sexual dimorphism on mesio-distal crown width in a local institute of Karachi.

Materials and method: A total number of 1482 permanent teeth were taken from Oral Biology Department of Dr Ishrat-ul-Ibad Khan Institute of Oral Health Sciences Karachi. Patients with any dental deformity or anomaly & missing tooth due to any other reason, as well as patients with cleft lip & palate were excluded. Patients having a history of orthodontic treatment were also not included to minimize the chance of variation in crown width due to IPR. Out of total, 188 females and 59 males were selected. The patients included in this study were having the age between 18 and 22 years.

Statistical analysis of the data was performed by using computer software statistical package of social sciences (SPSS) 16.0. Descriptive analysis to calculate mean, standard deviations, frequencies and percentages. Followed by mean t test for comparison by keeping p value at 0.05.

Results: Generally, in males all anterior teeth are significantly higher in mesio-distal dimension in comparison with females. The mean value of right canine male 8.0786 mm was higher than right canine female 7.5461, similarly right lateral incisor male 6.9175 mm crown width is more than right later incisor female 6.5035 mm, right central incisor male 8.5198 mm is also more than right central female 8.0185 mm.

Summary and conclusions: The conclusion drawn from the study showed that the influence of sexual dimorphism on mesio distal crown width of anterior teeth in a local institute of Karachi.

FC039

A Randomized Clinical Trial of an Innovative Option to Improve Oral Health Behavior

Shervin Tony Hashemian

A.T. Still University, Mesa, USA

Aim and purpose: Text messaging is useful for promoting numerous health-related behaviours. The Text 2 Floss Study examines

whether a 7-day text messaging intervention improves oral health knowledge and behaviour in mothers of young children.

Materials and method: Mothers were recruited from a private practice and community clinic. Of 156 mothers enrolled, 129 randomized into TEXT (N = 60) or Control groups (N = 69) completed the trial. TEXT participants received text messages for 7-days asking about flossing and presenting oral health information. Oral health behaviors and knowledge were surveyed pre- and post-intervention.

Results: At baseline, there were no differences between TEXT and Control mothers on knowledge and behaviors ($p > 0.10$). Post-intervention, TEXT mothers flossed more ($p = 0.01$), had higher total ($p = 0.0006$) and specific ($p < 0.05$) knowledge, tried to improve their child's oral health behaviors ($p = 0.03$) and decreased their child's soda and sugary snacks ($p = 0.05$) than Control mothers. Text messages were accepted and perceived as useful.

Summary and conclusions: Mothers who received text messages improved their own oral health behaviors and knowledge as well as their behaviors regarding their child's oral health. Text messaging represents a viable method to improve oral health behaviors and knowledge. The high acceptance of text messaging may make it useful in the prevention of oral disease. Longer studies in diverse populations are needed.

**Free Communication Session 11 – Room 219 | 2015-09-22 |
14:00-15:00**

Theme: Implantology

FC041

Awareness of Dental Implants as a Treatment Choice in Ghaziabad Population

Vivek Juneja

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Aim and purpose: Replacement of missing or lost teeth with dental prostheses supported by oral implants has been accepted and received positive evaluations from patients who have undergone implant treatment. A general survey from a representative sample of the ghaziabad population was made to assess public awareness of oral implant treatment and determine sources of information about implants. A survey of 1000 dwellers of ghaziabad was conducted through a printed questionnaire that was supplied to patients in private clinics and dental hospitals in that area and completed by willing patients. Questionnaires were printed in local languages to enable completion.

Materials and method: Printed Questionnaires in local languages were given to enable completion.

Results: Only 32 percent of the Ghaziabad Population knew about the dental implant as an option for replacement of missing tooth....

Summary and conclusions: Still needs lot of awareness in general population of ghaziabad city about the dental implants as a fixed prostheses for replacement of missing teeth!

FC042

Randomized Clinical Trial of PEEK and Zirconia Implant Abutments

Pramod Kumar A V, Vinni T K

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Aim and purpose: The aim of the study was to evaluate the technical, biological, and esthetic parameters of polyether ether ketone (PEEK) implant abutments in restoring single tooth in esthetic zone in comparison with zirconia implant abutments.

Materials and method: 40 healthy patients who require replacement of single missing tooth in anterior maxilla were selected from age group 20–50 years without any sex predilection. The implant sites were randomly assigned to 20 implants receiving PEEK implant abutments and zirconia implant abutments each. E-max all-ceramic crowns were fabricated and cemented with resin cement. Cases were evaluated at baseline, 6, 12 and 18 months of loading for technical, biologic and esthetic parameters. Probing pocket depth (PPD), Plaque control record (PCR) and bleeding on probing (BOP) were the soft tissue parameters. Radiographs of the implants were made and bone level was measured referring to the implant shoulder on the mesial and distal sides. The difference in colour of the peri-implant mucosa and the gingiva of the control teeth was assessed with a spectrophotometer. The data were statistically analyzed with Mann-Whitney Rank and Students unpaired *t*-tests.

Results: The cases were examined for a follow-up period of 18 months. No fracture of abutments or dislodgement of crown was noticed. No difference in biologic outcome was observed. No discolouration of the peri-implant mucosa or final restoration was noticed.

Summary and conclusions: An 18 months evaluation of zirconia and PEEK abutments exhibited same survival biologic and esthetic outcome. PEEK abutment will be an economic alternative for zirconia in replacing teeth in esthetic zone.

FC043

Residual-Excess-Cement - Effect of Gingival Collar Height and Luting-Cement

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Department of Prosthodontics, Government Dental College Kozhikode, Kerala, India

Aim and purpose: To evaluate the amount of residual excess cement left undetected in implant restorations with different gingival collar height and to compare this with different types of implant luting cements.

Materials and method: Thirty implant sites were selected and classified into three groups based on the depth of gingival collar height (group I up to 2 mm, group II from 2 to 4 mm and group III >4 mm). Three types of implant luting cements (Resin cement, Glass ionomer cement and zincoxide noneugenol cement) were used in the study for evaluating the amount of residual excess cement formed in each group. The residual excess cement formed by each cement was measured with a modified metal ceramic

crown made for standardising the cases. Occlusal opening was given in these crowns for easy retrievability. The excess cement formed was collected, and measured and analysed statistically.

Results: The amount of residual excess cement formed by all the three types of luting cements showed statistically significant increase as the depth of the gingival collar height increased. When comparing the residual excess cement formed by three implant luting cements in a group, it was significantly greatest for resin cement and lowest for zincoxide noneugenol cement.

Summary and conclusions: If aesthetics permits the abutment crown margin should be within 2 mm for safe removal of trapped residual excess cement. In deep gingival collar height it could be advisable to use customized abutments with clinically visible margins and easy cleanable cement for luting cement-retained restorations or give preference to screw-retained prostheses.

FC044

Anterior Guided Implant: A Case Series

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Aim and purpose: This article present a comprehensive approach to optimize functional and esthetic results by blending surgical, technical, and restorative steps into one successful protocol.

Materials and method: The digital process chain work from Intra oral scan (Trios 3Shape) with and without try denture were performed and then CBCT (Newton Accord., co.th) without denture. The software started by placing virtual crowns according to prosthodontic setting. Proper depth and angulation were determined, ensuring that the implants were positioned to accommodate a maximum amount of bone while establishing optimal support and the platform needed to achieve an esthetic outcome for the proposed restoration. The plan was to fabricate anatomically accurate abutment crown and bridge by CAD/CAM zirconia.

Results: The fit precision of surgical splints were 100% fit to the rapid prototype. The satisfaction score were compared with the conventional splint and provisional crown improve in term of time and esthetic outcome but in term of the cost effective was not benefits in case of the single crown but for the multiple teeth (more than 3 teeth) replacement show not significant difference $p < 0.05$.

Summary and conclusions: The ability to digitally plan and visualize implant restorations prior to surgical intervention allow the clinician to virtually evaluate every aspect of a case before treatment begins from extraction, implantation, final prosthetic outcome. Intraoral scanning, digital treatment planning, guided surgery, CAD/CAM technology, and the versatility of provisional These technologies help to improve treatment outcomes, offering the benefits of provisionalization to a growing number of patients while helping to ensure an accurate, functional and esthetic final restoration.

Free Communication Session 12 – Room 218 | 2015-09-22 | 12:30-13:30

Theme 1: Preventive Dentistry – Caries

FC045

Caries Experience Among Children Attending Private Primary School in Kuala Lumpur, Malaysia

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Aim and purpose: Dental caries is the most prevalent oral health problem that can cause pain, suffering and diminished quality of life in children. Nationwide oral health survey of school children in Malaysia revealed a caries prevalence of 74.5% among 6 year olds (Ministry of Health Malaysia, 2009). Most of the studies and national surveys on caries prevalence focus on age groups of 6, 12 and 16 years which permit comparison between geographical areas and countries. Studies and surveys on caries in mixed dentition have not been widely reported. The aim of this study was to determine the caries prevalence and treatment needs in 7–12 year old school children attending the private primary school in Kuala Lumpur, Malaysia.

Materials and method: This is a cross sectional study incorporating dental screening and charting of teeth of the private schoolchildren. Dental caries was recorded using the DMFT index for permanent teeth.

Results: Nine hundred and eighty-six (986) children were examined from four private primary schools. The caries experience for permanent teeth were: School A (DMFT = 0.2), School B (DMFT = 0.3) School C (DMFT = 0.4) and School D (DMFT = 0.2). Mean DMFT = 0.3.

Summary and conclusions: The result showed that caries experience in permanent teeth among these children were very low. It may be due to high socio economic background as the schools are private school. Another contributing factors could be the diet because the children were served healthy food by schools instead of buying on their own at the school canteen and high awareness in oral health care.

FC046

Prevalence of Early Childhood Caries Among 3–5 Years Old Preschool Children in INDIA

Ankita Piplani, Manjunath Bc, Adarsh Kumar, Ankita Goyal, Ridhi Narang

Postgraduate Institute of Dental Sciences, Rohtak, India

Aim and purpose: Early childhood caries (ECC) is a major public health problem throughout the world and there is a paucity of data regarding ECC in India.

1. To assess the prevalence of early childhood caries among 3–5 years old preschool children in Rohtak city, Haryana.

2. To suggest measures to prevent ECC.

Materials and method: A cross sectional study was carried out from August and September 2014 in which 9 preschools of Roh-tak city, Haryana, India were selected by cluster random sampling

procedure in which every even roll numbered child was examined by a trained examiner. ECC was assessed using def index. Sample size was calculated at 95% significance level, 5% absolute margin of error, 32% caries prevalence from pilot study. Statistical analysis was done using SPSS 18.

Results: The total sample size consisted of 375 with a mean age of 4.076 ± 0.79 among which 55.5% and 44.5% were boys and girls respectively. The prevalence of dental caries was 34.9% with mean def being 1.28 ± 2.58 . Only 33.9% of children brushed twice daily. Consumption of sugar rich diet, visits to the dentists & parental caries experience was significantly associated with dental caries.

Summary and conclusions: Improper diet, poor oral hygiene practices, lack of dental visits along with poor parental knowledge about ECC were associated with prevalence of dental caries. Dental Health education programs targeted at parents may be beneficial to prevent ECC.

FC047

Salivary Total Antioxidant Capacity Determination in Sickle Cell Anemia Patients

Sudhindra Baliga

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Aim and purpose: To evaluate and compare the Total Antioxidant Capacity (TAC) of serum and saliva in sickle cell anemia patients.

Materials and method: Children aged 4–12 years ($n = 100$) were selected and divided into two equal groups: Children suffering from sickle cell anemia and healthy controls. Blood and saliva samples were collected aseptically from both groups and were subjected to phosphomolybdenum method. Absorbance was read spectrophotometrically at 695 nm. Concentration of total antioxidants was obtained by plotting the absorbance of test against standard graph.

Results: TAC in serum (10.89 ± 2.26) and saliva (11.17 ± 1.19) of sickle cell anaemia patients was reduced when compared with serum and saliva of the healthy children respectively. Levels of TAC were found to be statistically significant in serum and saliva in sickle cell anaemia patients. Reduction in the total antioxidant capacity was noted as the age advances as antioxidant defense mechanisms are not sufficient to prevent age related increase in oxidative damage.

Summary and conclusions: Saliva, a non-invasive biomarker could be an alternative for assessing the antioxidant status in sickle cell anaemia patients.

Theme 2: Preventive Dentistry – Epidemiology

FC048

Examination of Paramolar Tubercles in Turkish Population Using Cone-Beam Computed Tomography

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Aim and purpose: Paramolar tubercle is an additional cusp occurring on the buccal surface of both upper and lower permanent molars. Paramolar tubercle is also known as parastyle when the tubercle is present in upper molars, as protostyli when the tubercle is present in lower molars. The aim of this study is to evaluate the prevalence of paramolar tubercles in Turkish population using cone-beam computed tomography.

Materials and method: Presence of paramolar tubercles in molar teeth were evaluated retrospectively using cone-beam computed tomography images of 210 patients (102 male, 108 female) over 18 years old who were referred to the Department of Oral and Maxillofacial Radiology, between January 2014 and February 2015. 909 teeth were analysed but 85 impacted tooth, 171 tooth with big caries, restorations and crowns were excluded from the study. Finally, 653 tooth were examined for the research.

Results: The prevalence of paramolar tubercle was found 3.62% (n: 18) in Turkish population. The highest frequency of paramolar tubercle among all molar teeth was #27 (n: 5), #17 (n: 4), #48 (n: 2) respectively. In two cases; 2 paramolar tubercles on the same tooth (#17, #27) and in only one case bilateral paramolar tubercle (#36, #46) were found. No paramolar tubercle was detected on the upper first molars.

Summary and conclusions: Paramolar tubercle is an extremely rare developmental anomaly. More researches needed to identify this occurrence among populations.

Free Communication Session 13 – Room 215 | 2015-09-22 | 14:00-15:00

Theme: Dental Treatment & Restorative Dentistry – Endodontics

FC049

Comparison of Apical Microleakage of Dual-Curing Resin Cements with Fluid Filtration and Dye Extraction Techniques

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¹Department of Endodontics, Dental Faculty, Dicle University, Diyarbakir, Turkey, ²Department of Endodontics, Dental Faculty, Adnan Menderes University, Aydin, Turkey, ³Department of Endodontics, Dental Faculty, Abant Izzet Baysal University, Bolu, Turkey, ⁴Department of Prosthetic Dentistry, Dental Faculty, Dicle University, Diyarbakir, Turkey, ⁵Department of Pediatrics Dentistry, Dental Faculty, Dicle University, Diyarbakir, Turkey

Aim and purpose: Endodontically treated teeth with excessive loss of tooth structure are frequently restored using fiber posts. In this in vitro study, the apical leakage of self- and dual-activated curing modes for dual-curing resins cementing a translucent fiber post was evaluated using the computerized fluid filtration meter and dye extraction techniques.

Materials and method: One hundred and four extracted human maxillary incisors with single root and canal were used. Experimental samples embedded in a closed system were divided into 4 groups ($n = 20$) according to 2 dual-curing luting systems, with 2 different curing modes (either with self- or light-activation): (1) Panavia F 2.0 with self-cure, (2) Panavia F 2.0 with light-activation, (3) Clearfil

SA with self-cure, and (4) Clearfill SA with light activation. Twenty-four teeth served as negative and positive controls. Translucent fiber posts were luted in the roots except in the control groups. **Results:** Statistical analysis indicated no significant difference in leakage among groups ($p > 0.05$) with 4.12×10^{-4} (Panavia self-cure), 4.55×10^{-4} (Clearfill SA self-cure), 5.17×10^{-4} (Panavia dual-cure), and 5.59×10^{-4} (Clearfill SA dual-cure) in fluid-filtration method. Absorbance values for dye-extraction method were 266 nanometer (nm) (Panavia self-cure), 268 nm (Clearfill SA self-cure), 270 nm (Panavia dual-cure), and 271 nm (Clearfill SA dual-cure), in which difference among the groups were not statistically significant ($p > 0.05$). When comparing the leakage, assessment methods results showed no statistically significant difference between the tested evaluation techniques ($p > 0.05$).

Summary and conclusions: Light- and self-activation curing modes of Panavia F 2.0 and Clearfill SA perform similar to each other in a closed system.

FC051

The Use of SINGLE FILE Technique in Contemporary Endodontics

FC051

Fatima Barnes, Robert Block, Kirk McDonald

Meharry Medical College, Nashville, USA

Aim and purpose: This study compared the findings of two classes of 2013, 2014 Sophomore Dental students' Preclinical Endodontic learning perceptions of the Wave One Reciprocating File System at Meharry Medical College, School of Dentistry.

Materials and method: For two successive years, students were: Instructed with "Evidenced Based" didactic information in a flipped classroom (lectures, written protocols, scientific articles, videos, small group discussions, and students' PowerPoint presentations); Attended guest lectures presented by world renowned experts, Drs. Kuttler, and Ruddle;

The Wave One technique was performed on at least 5 teeth per student; and

At the conclusion of the laboratory course, a Final Clinical Competency Exam was assessed and graded.

Results: In general, the 2nd year instruction showed great improvement in students' understanding of the Wave One Technique.

The 24 questions were categorized in five sections, i.e., Concepts, Materials, Content, Benefits, and Limitations of the technique.

The class of 2014 had a great increase in understanding of the Wave One technique in all categories when compared to the previous class. The flipped classroom demonstrated a remarkably enhanced comprehension of the didactic material and the application of the Wave One technique.

Summary and conclusions: The survey responses identified one area in need of improvement – being the understanding of the concept of an apical stop during hand instrumentation. Additionally the survey results highlighted student suggestions. Improvements within the curriculum should comprise additional simulation procedures, instructional videos, and faculty "hands on" instruction. This should occur in the initial stages of the pre-clinic laboratory.

The Role of Single Nucleotide polymorphism of matrix metalloproteinase(MMP-13rs2252070) in the etiology of dental caries: A PCR based study

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Aim and purpose: To assess the impact of single nucleotide Polymorphism of MMP13 (rs2252070) in the etiology of Dental caries.

Materials and method: Step 1: Collection and storage of blood samples.

Step 2: Isolation of Genomic DNA.

Step 3: Polymerase Chain Reaction Test.

Step 4: Digestion with Restriction Enzyme Bsr1152.

Results: There is a strong relation of polymorphism of matrixmetalloproteinase-13, rs2252070 with dental caries.

Summary and Conclusions: The occurrence and progression of caries are known to be influenced by numerous environmental factors, including microbial flora, salivary flow and fluoride exposures. However, these variables alone may not entirely explain the disease development. This implicates that, because of genetic differences, certain environmental factors are potentially more cariogenic for some people than for others.

Thus the rationale of this study is to provide an alternative hypothesis for causation of dental caries and emphasize that genetics has a major role in disease process. As the relation is established between caries and gene (MMP-13), it will help in formulating guidelines for prevention and treatment of cariogenic subjects more effectively.

FC052

The INCIDENCE and DISTANCE of APICAL PROTRUSION into MAXILLARY SINUS

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Aim and purpose: This study aimed to determine the distances of the apices of the maxillary first and second molars to the maxillary

sinus and the prevalence of maxillary sinus protrusion is calculated.

Materials and method: 57 CBCT images that fulfilled selection criteria were selected and 228 maxillary molars measured using the iCAT software. The root lengths were first measured. Their apices were identified as being located “away”, “in contact” or “protrude into” the sinus, and classified accordingly. The bony distances between the apices and the maxillary sinus were denoted as positive measurements for those that were away, “0” for those in contact, and negative measurement for those that intruded into the maxillary sinus.

Results: There were 45.5% of first and 41.4% of second molar with any root apex that protruded into the sinus. Individual root wise, sinus protrusion involved the mesiobuccal root of the first molar (54.9%) the most, followed by the palatal root of the first molar (51.8%). The palatal root of the second molar is the least affected (28.2%). The average distances of protrusion for the first molar were -2.09 mm for the MB, -1.90 mm for DB and -2.17 mm for the Pa roots. The average distances of protrusion for the second molar were -1.91 mm for the MB, -1.39 mm for DB and -1.64 mm for the Pa roots.

Summary and conclusions: There is between 28.2% and 54.9% of maxillary sinus protrusion by any roots of the maxillary molars, with a deeper protrusion at the first molar (average distance of -2.06 mm) than the second molar (average -1.70 mm).

**Free Communication Session 14 – Room 216 | 2015-09-22 |
14:00–15:00**

Theme: General Dentistry and Oral Health

FC053

Digital (CAD/CAM) or Conventional Methods in Treatment with Occlusal Splints?

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Aim and purpose: The aim was to evaluate digital techniques (CAD/CAM) compared to conventional methods in fabrication and delivering of occlusal splints in a clinical perspective.

Materials and method: 60 subjects were randomly allocated into 3 groups. In group 1 jaws were scanned and jaw registrations made using an intraoral scanner, splints were milled using subtractive techniques. In group 2 alginate impressions and jaw registrations were made, a dental laboratory scanned the casts and milled the splints as in group 1. In 3 group impressions, jaw registrations were made, and splints were produced conventionally. The time for scannings/impressions, jaw registrations, delivering, and adjustment of the splints were measured. The splints' retention, fit in occlusion, and lateral/protrusive movements were registered.

Results: Time for scannings/impressions were significantly longer in group 1 (23 min) than in group 2 (9.6 min) and group 3 (11.5 min) ($p < 0.01$). Time for jaw registrations were similar in 3 groups. Time for retention adjustment were significantly shorter in group 1 (0.9 min) and group 2 (3 min) compared to group 3

(7 min) ($p < 0.01$). Time for adjustment in centric relation were significantly shorter in group 1 (6 min) and group 2 (4 min) compared to group 3 (15 min) ($p < 0.01$). Time for adjustment in laterotrusions/protrusion were similar in the 3 groups (<1 min). 55% of subjects in group 1 experienced discomfort during scanning/alginate impressions compared to group 2 (17%) and 3 (25%) ($p < 0.01$).

Summary and conclusions: Digital techniques (CAD/CAM) are more time consuming than conventional techniques. Digitally milled splints have a better clinical fit than conventional.

FC054

Infection Control in Dentistry: Time to Get Serious About It!

Ramakrishna Shenoi, Pratima Shenoi
VSPM Dental College, Nagpur, India

Aim and purpose: To enhance awareness of infection control amongst the Dental Practitioners

Materials and method: In an era where the infectious diseases are ever increasing and the risk of transmission goes hand in hand, the dental health care professional has an onerous task of maintaining high levels of sterilization and disinfection for the protection of patient, self and the staff around him or her.

Infection control protocol should be followed in the letter and spirit of the CDC and local regulatory guidelines comprehensively. It includes appropriate sterilization techniques of instruments, methods of disinfection of the operatory and the housekeeping surfaces; use of standard precautions like using personal (barrier) protection both for the operator and the assistants; Personal health elements such as education & training, immunizations and management of post exposure protocol. Hand hygiene which a very important aspect as it minimizes the risks of transmission of the disease. Using segregated areas of clean and sterile instruments, proper regulation of the biomedical waste that is generated is equally critical. A very important aspect often neglected is the dental unit waterlines which merits special mention. The use of for disposable products cannot be understated.

Results: Following optimal measures would be guard both the dentist and the patient from unwanted complications.

Summary and conclusions: Proper preparation of the dental team, complying with the regulatory authorities' guidelines, following meticulous sterilization and disinfection practices would provide a safe working environment and reduce health care-associated infections as well as occupational exposures.

FC055

Optimisation of Exposure Parameters Based on Head Size in Cone-Beam CT

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Aim and purpose: The objective of this study was to determine optimal exposure parameters for patients with varying head sizes in dental CBCT.

Materials and method: A modular PMMA phantom, containing a 2 cm diameter hydroxyapatite (HA) cylinder, was used. PMMA-filled inserts were removed one by one in order to simulate increasingly smaller patient sizes.

The phantom was scanned using the 3D Accuitomo 170 CBCT, with a 6 × 6 cm field of view and 87.5 mAs. The kV was varied between 70 and 90 (steps of 5 kV). A total of 35 scans (5 kV values * 7 phantom "fill states") were made.

The contrast-to-noise ratio (CNR) was measured on each scan. For each fill state and kV, the mAs required to achieve a fixed, predetermined CNR value was calculated. The relative dose reduction was estimated for the different combinations of kV/mAs corresponding to this fixed CNR value.

Results: A reduction in mAs was more dose-efficient than a kV reduction. At a fixed CNR, a dose reduction ranging from 34% to 51% was seen for the different fill states. An optimised exposure protocol with a setting of 90 kV, 61 mAs (30% dose reduction) was proposed for medium-sized patients (90–95% of adult male head size, e.g. adult females) and a value of 90 kV, 53 mAs (40% dose reduction) for small-sized patients (70–85% of adult head size, e.g. children).

Summary and conclusions: A considerable dose reduction is possible for pediatric patients in dental CBCT. The CBCT user should explore mAs reduction using the currently proposed exposure protocol as a reference value.

FC056

Assessment of Oral Health Status in Children Having Chronic Renal Disease

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Aim and purpose: to assess the oral health status among a group of Egyptian children with chronic renal disease and the oral health needs and demands of these children.

Materials and method: 75 Egyptian children aged between 5 and 16 years were included in this cross-sectional study. Ethical approval was obtained from the Research and Ethics Committee, Group I: included 25 children having stage 5 CKD, were treated with hemodialysis. Group II: included 25 children having CKD (stage 1–4 CKD = predialysis) receiving medical treatment. Group III: included 25 healthy children (Control) matching the CKD groups in age, gender and socioeconomic status. A survey questionnaire was designed to collect data from the parent of each child (medical and dental), clinical examination, dental examination chart was filled to assess the soft and hard tissue conditions. Saliva samples collected for microbiological study.

Results: extra oral examination showed significant difference between group (I, II) and III (face symmetry, skin pallor - eye buffness or juncdice-TMJ abnormalities. Group I and II had higher GI score than Group III. No significant difference between Group I and Group II, oral hygiene indices showed (bad oral hygiene in CKD groups). DMF, dmf were higher in healthy group than CKD groups. (enamel defects, tooth stains also higher in CKD groups than control). bacterial culture of saliva from Group III showed statistically significant higher Streptococcus and lactobacillus count compared to Groups I and II.

Summary and conclusions: Dental and medical care should be closely integrated for children CKD.

Free Communication Session 15 – Room 217 | 2015-09-22 | 14:00–15:00

Theme: Implantology

FC057

A Retrospective Study of Implants Placed in the Sites Grafted with Autogenous Ramus Block

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Aim and purpose: The purpose of this study was to evaluate the success of the overall procedure of treatment with dental implants in alveolar bone defects augmented using autogenous ramus block grafts.

Materials and method: Records consecutive patients with indication for autogenous ramus bone grafting before implant placement, treated at Marmara University, in a 7 year period (2008–2015), were reviewed. The need for bone grafting was defined by the impossibility of installing implants of adequate length or diameter to fulfil prosthetic requirements or for aesthetic reasons. Three primary outcome variables were considered: Surgical success of grafting procedure (bone gain, failure and complications) implant success (survival, marginal bone level changes after installing implants) prosthetic success (esthetic parameters). The predictor variables were categorized as defect related, implant related and prosthesis related. Defect related variables were sex, age, defect size and region. Implant related variables were number, size, angulation of implants. Prosthesis related variables were date of prosthesis delivery, and date of last follow-up.

Results: Ramus bone block graft surgery is a predictable operation for the use of dental implants. Implant placement in augmented areas presents high grafting implant and prosthetic success rates. **Summary and conclusions:** Ramus block grafts yields sufficient quality and volume of bone for predictable implant placement with long term esthetic and functional outcomes.

FC058

The Effect of Edentulism Types on Accuracy of Computer-Planned Implant Positions Placed Using Mucosa-Supported Surgical Templates

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Department of Oral and Maxillofacial Surgery, Marmara University, Istanbul, Turkey

Aim and purpose: The purpose of this study was to evaluate the efficiency of different type of edentulism on the accuracy of computer-planned implant positions placed using mucosa-supported surgical template.

Materials and method: Preoperative cone beam computer tomography (CBCT) scan was acquired from all patients for virtual implant planning with R2Gate software. A total of 56 implants were placed in 8 patients between February 2014 and May 2015 with the aid of 3D-based transfer templates. Preoperative planning was merged with postoperative CBCT data. Primary outcome variable was defined as implant positional changes evaluated by the implant position orthogonal projection validation method. The predictor variable defined as types of edentulism including single tooth, partial and total, maxillary or mandibular edentulism.

Results: Most of the implants were placed in proper positions when compared with the planning. Edentulism types do not have a statistically significant effect on the accuracy of implant positions.

Summary and conclusions: Computer-aided implant planning showed to be a clinically relevant tool.

FC059

Extraction for Immediate Implant Placement: An Innovative Technique

Vineet Jain

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Aim and purpose: Immediate implant placement has provided a paradigm shift in the treatment planning for implant patient. However extraction of tooth root remains a challenging task so as not to cause any damage to the bony housing especially in the anterior aesthetic area. Periotomes have been used with and without flap elevation for the extraction and sometimes an apical window is made in the cortex to facilitate root removal especially on horizontal fracture cases. But this often results in loss of bone in the critical area. This paper aims to present the case series in which root stump is removed by sequential drilling through the root. Implant drills are used in increasing sizes to hollow out the

root stump and then separated pieces could easily be removed without trauma to the surrounding bone.

Materials and method: Implant drills and periotomes. Drills are used in sequence to hollow out and divide the root in two parts. Separated roots are then easily removed using periotomes.

Results: Atraumatic and easy extraction of root stump.

Summary and conclusions: Drilling through the root stump provides an easy way to do the extraction without trauma to the underlying bone preventing costly bone augmentations and possibly better esthetic results.

FC060

Antibiotic Susceptibility of Oral Opportunistic Bacteria Isolated from HIV Patients

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Aim and purpose: This study identified oral opportunistic bacteria, virulence factors and antibiotic susceptibility among isolates from Thai HIV positive patients.

Materials and method: 70 “Staphylococcus aureus” strains (45 from HIV positive and 25 from controls) and 104 Aerobic Gram-negative bacilli (AGNB) isolates (93 from HIV and 11 from controls) were identified to species level. The strains were characterized phenotypically and genotypically for some virulence factors, presence of plasmids and for antibiotic susceptibility.

Results: A hemolytic subtype of “S. aureus” was frequently found in this group of Thais. Genes encoding for adhesins or toxins (including the PVL toxin) and plasmids were equally common in strains from HIV and controls. Six “S. aureus” strains (10%) from HIV positives were clindamycin resistant (MIC >256 µg/ml). Only one MRSA strain was found. Most common AGNB isolates were “Pseudomonas” spp (“P. aeruginosa, P. luteola”) 26 isolates, “Burkholderia” spp (“B. cepacia”) 13 isolates, “Aeromonas” spp 11 isolates, “Klebsiella” spp (“K. pneumonia, K. oxytoca”) 18 isolates, “Enterobacter” spp 13 isolates. Only one isolate of “Escherichia coli” was identified. The isolates showed a general resistance against penicillins, amoxicillin, clindamycin and doxycycline, whereas 84% were susceptible for gentamycin, 100% for ciprofloxacin, 92% for norfloxacin, 80% for ceftibuten, 78% for cefotaxime, and 94% for cefdazidime. The 5 isolates Stenotrophomonas maltophilia were resistant against all tested antibiotics.

Summary and conclusions: Multiresistant opportunistic bacteria are frequently occurring in HIV positive individuals and microbiological diagnostics and susceptibility test should be carried out if antibiotics are going to be prescribed in HIV positive patients.

**Free Communication Session 16 – Room 218 | 2015-09-22 |
14:00–15:00**

Theme: Preventive Dentistry – Epidemiology

FC061

Social Disparities in Oral Health Related Quality of Life in a Sample of 11–14 years Old School Children of Lahore Pakistan

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Aim and purpose: Social disparities in oral health are on the rise, higher levels of disease are found in more deprived areas in both industrialized and non-industrialized countries. This is unfair and unjust. Unfortunately no study has yet been conducted in Pakistan to determine whether there are social disparities in oral health related quality of life among school children. The aim of this study is to find out whether there are social disparities in oral health related quality of life among school children of Lahore, Pakistan.

Materials and method: A self-complete questionnaire based survey was conducted in six randomly selected schools (multi stage random sampling) of Lahore City. A standardized validated questionnaire Child Perception Questionnaire CPQ 11–14 (short form) was administered to the children aged 11–14 years from the selected schools. The data entry and analysis was carried out using SPSS version 17.0.

Results: The total response rate was 91%. 58.2% participants were from private and 41.8% were from public schools. A statistically significant difference ($p < 0.005$) exists between the type of school or social status and other variables i.e. quality of housing, transport ownership, global rating of oral health, overall well-being and the composite impact of oral health on quality of life.

Summary and conclusions: This study has shown that there are social disparities in oral health related quality of life of children. However the social disparities based on quality of housing and transport ownership need further investigation.

FC062

Erosion in Primary Dentition: An Increasing Major Problem in India

Bharat Bhushan Sharma, Neeti Prateek Mittal, Hari

Krishan Sharma

Santosh Dental College, Santosh University, Ghaziabad, Uttar Pradesh, India

Aim and purpose: AIM: To report on prevalence, clinical features and defect characteristics of dental erosion in primary dentition in school children of northern India as no data is available for this population.

Materials and method: A cross-sectional survey including a stratified random sample of 966, 4–6 year old school children of Gautam Budh Nagar, Uttar Pradesh, India was conducted. Diagnosis and recording of erosion was done employing O'Sullivan Tooth

Erosion Index (2000). All erupted primary teeth were examined. Entire set of examinations were carried out by a well-trained calibrated examiner (intra-examiner reliability as per kappa statistics = 94%). Statistical analysis included calculation of descriptive data sets as mean \pm SD and/or number (%) for prevalence, defect severity, extension and location. Intragroup comparative statistics were computed to compare the prevalence and extension of different type of erosion lesions in affected subjects.

Results: A prevalence of 20.5% was reported as 198/966 subjects were found to be affected. A total of 2.46 ± 2.069 teeth/subject were found to be affected with commonest lesion type being dentine involvement ($p = 0.000$). Mandibular teeth were more commonly affected than maxillary teeth with molars being more commonly affected than anterior teeth ($p < 0.001$).

Summary and conclusions: CONCLUSION: Erosion is a significant oral health problem affecting primary dentition in Indian 4–6 year old children as 1 out of every 5th child was reported to be affected. As India is a diverse country, further studies mapping the prevalence, clinical features and risk factors in primary dentition are required.

FC063

Association Between Orofacial Pain Symptoms and Demographic Factors in Indonesia

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Aim and purpose: The aim of this study is to determine the prevalence of orofacial pain in an Indonesian community sample and its correlation with demographic factors.

Materials and method: Seven hundred participants (177 male, 523 female) aged 18 years and over were recruited in this 2 years survey study. Prior to commencement of the study, ethical approval was obtained from the Faculty of Medicine – University of Padjadjaran Ethics Committee. All participants were interviewed by one interviewer based on a questionnaire that consists of 19 multiple questions about the symptoms of orofacial pain and demographic questions. The demographic factors investigated in this study was age and gender. All data were then analysed by cross tabs analysis from SPSS 19.

Results: Out of 700 participants, 391 (55.86%) reported that they had or have been experiencing symptom(s) of orofacial pain for the last 6 months. A cross tabs analysis revealed several significant correlations between age and jaw stiffness in the morning ($p = 0.04$), age and jaw pain shortly after eating ($p = 0.04$), and age and night clenching ($p = 0.007$). Another significant correlations found were the correlations between gender and night

clenching habit ($p = 0.000$) as well as between gender and pain just in front of the ears ($p = 0.029$).

Summary and conclusions: There is a high prevalence of orofacial pain symptoms in Indonesian community sample as well as significant correlations between some of the orofacial pain symptoms investigated and demographic factors. The result of this study can be used as future reference in managing orofacial pain in Indonesia.

FC064

Temporomandibular Joint Disorders in Elderly Population of Medellin (Colombia)

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Aim and purpose: To determine the prevalence of signs and symptoms of temporomandibular joint disorders (TJD) in older adults in Medellin and its related factors.

Materials and method: A Cross-sectional study was conducted by means a two-stage sampling in hospital units and centers attached to the network ESE Metrosalud in Medellin. 342 adults ≥ 65 years (57.8% women) participated. Variables: Sociodemographics, social support (Duke-11); Health indicators: self-perceived stress, mental health (GHQ12), self-perceived general health, satisfaction with dental status, self-perceived oral health, oral health problems (last 30 days), number of teeth, presence of prosthesis; TJD: Helkimo anamnestic index (HI) and clinical evaluation. The prevalence of TJD- HI was calculated according to sociodemographic and health variables and the prevalence of TMD according to clinical evaluation. Crude and adjusted OR (OR) with confidence intervals at 95% (95% CI) were calculated using logistic regression to estimate the association between TJD and HI and health indicators and TJD overall by sex.

Results: The prevalence of severe symptoms was higher in men (32%) and mild symptoms in women (18%). Differences according to sociodemographic factors and by sex were found. People who report symptoms were more likely to report higher prevalence of poor indicators of general and oral health status. The largest association was found for the indicator dental problems in the last 30 days (aOR 3.57; 95% CI 1.80–7.08) in case of women and for men in indicators of poor mental health (aOR 2.83; 95% CI 1.31–6.09).

Summary and conclusions: Epidemiological surveillance systems are required to establish more clearly the associations found.

Free Communication Session 17 – Room 215 | 2015-09-22 | 15:30–16:30

Theme: Dental Treatment & Restorative Dentistry – Endodontics

FC065

MB2: Elusively Illusive or Illusively Elusive

Varun Raj Kumar

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Aim and purpose: To determine the origin and termination of mesio-buccal 2 (MB2) canal and its distance from the mesio-buccal canal.

Materials and method: Five hundred human extracted maxillary molar teeth were selected for the study and their CBCT (Cone-beam computed tomography) images for analysis of MB2 canal were obtained. Using CS 3D (Corestream 3D) imaging software, the distance from the coronal reference point to the pulp chamber was measured, the origin of MB2 was noted and its distance from main mesio-buccal canal was measured. The termination point of MB2 canal was also observed by going apically. Using the same parameters, this study was correlated with 55 patients.

Results: The results of this study revealed that MB2 canal was present in 94% of the specimens. On average, distance of origin of MB2 canal from pulp chamber was 1.85 mm towards apex and 1.54 mm horizontally from main mesio-buccal canal. 93% of the samples showed independent termination of MB2 with 2.16 mm average distance from apical foramen while in 7 specimens MB2 terminated along with main mesio-buccal canal. Few teeth showed out of box results with distance of origin of MB2 from pulp chamber being 10.71 mm and 5.94 mm termination from apex. Almost similar results were observed when these calculations were transferred to clinical cases.

Summary and conclusions: Data obtained from this study provide theoretical and experimental evidence to aid in the clinical management of the MB2 canal and has the potential to increase the success rate for root canal treatment of the maxillary molars.

FC066

Clinical Significance of the Apical Morphology of Maxillary Molars

Thomas Gerhard Wolf, Carmen Valdez, Brita Willershausen, Benjamin Briseño

Department of Operative Dentistry, University Medical Center Mainz, Germany

Aim and purpose: Knowledge of the apical area morphology is decisive for of root canal treatment predictability.

Materials and method: The pulp chambers of extracted maxillary first (210) and second (158) molars were prepared. The paths of the root canals (RC) were traced by means of radiographs made with a mesial projection after having placed instruments (ISO 10) in each root canal. The roots main foramina number (MFN), established under magnification (40x), and their relationship with

the corresponding root canal configuration (RCC) was recorded and statistically analyzed.

Results: Regardless of the RCC in the coronal and middle thirds the results at the apical third of the first molar showed that 50.5% of the mesial roots had two RC and foramina, 42.8% had one RC and foramen, 4.8% had one RC and 2 foramina and 1.0% had 2 RC and one foramina. The distal and palatal roots had one RC and foramen in 95.2 and 99.5% respectively.

The results at the apical third of the mesial roots of the second molar showed that 44.2% had two RC and foramina, 52.5% had one RC and foramen, 0.6% had one RC and 2 foramina and 1.9% had 2 RC and one foramina. The distal and palatal roots had one RC and foramen in 96.8 and 99.4% respectively.

Summary and conclusions: Thus, it can be concluded that an accurate morphology determination of the apical area prior to an endodontic treatment by means of actual available clinical means (radiograph and apex locator) is practically non-existing.

FC067

Root Canal System Configuration of 368 Maxillary Molars

Benjamin Briseño, Carmen Valdez, Brita Willershausen, Thomas Gerhard Wolf

Department of Operative Dentistry, University Medical Center Mainz, Germany

Aim and purpose: Successful root canal treatment is enhanced through accurate knowledge of the configuration morphology of the root canal system.

Materials and method: The root canal configuration (RCC) of 210 first and 158 second maxillary molars were investigated. Access was gained and radiographs in a mesial projection after having placed instruments (ISO 10) in each root canal were made. RCC was numerically described in the coronal, middle and apical thirds and the main foramina number (MFN) (4th numerical figure). The results were statistically analyzed.

Results: The most common RCC/MFN in the first molar in the mesial root (mb1 and mb2 together) were 1-1-1-1 (11.4%), 2-2-1-2 (7.6%), 2-2-1-1 (25.2%) and 2-2-2-2 (38.6%). The most common RCC/MFN in the distal and palatal roots were 1-1-1-1 in 95.2% and 99.5% respectively.

The most common RCC/MFN in the second molar in the mesial root were 1-1-1-1 (23.4%), 2-1-2-2 (10.1%), 2-2-1-1 (22.8%) and 2-2-2-2 (26.6%) and 1-1-1-1 in 96.8% and 99.4% in the distal and palatal roots respectively.

Summary and conclusions: Under this investigation parameters two separate root canals from coronal to apical were observed in 51.4% (mesial), 1.4% (distal) and 0.0% (palatal) the first molar, and 46.2% (mesial) 2.5% (distal) and 0.0% (palatal) roots in the second molar. These results are a profitable guideline for the clinician during the planning of an endodontic treatment.

FC068

Reciprocating Files- Do They Increase the Fracture Resistance of Tooth?

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Aim and purpose: To determine the effect of instrumentation of Wave one, protaper and K- files on the fracture resistance of tooth.

Materials and method: ARMAMENTARIUM: 15 freshly extracted human teeth were taken for study. The teeth were scaled to remove calculus and residual tissue tags and were used within 3 months according to OSHA guidelines. Access cavity were prepared on all the teeth. Then the teeth were randomly divided into 3 groups. Group- I were prepared with Wave one file, group- II were prepared with protaper files and group- III were prepared with K - files. Obturation was done using Gutta Percha. The samples were then decoronated at 10 mm from the apex and then embedded in acrylic blocks and tested for fracture resistance using Instron universal testing machine.

Results: Teeth prepared with Wave one file shows significantly better resistance to fracture followed by protaper and then K - file.

Summary and conclusions: Wave one file shows significantly better resistance to fracture when tooth prepared by it.

Free Communication Session 18 – Room 216 | 2015-09-22 | 15:30–16:30

Theme: General Dentistry and Oral Health

FC069

Supernumerary Teeth in a Group of Sri Lankan Children

Chandra Kumari Herath¹, Ranjula Kumari Gunawardana², Andiyapillai Sundar², Yamuna Murin Walisadeera², Priyanka Dilrukshi Amugoda², Chantha Kumuduni Jayawardhana¹, Kanthi Perera³

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Aim and purpose: Presence of supernumerary teeth (ST) may cause variety of complications and features of ST have shown a great variation among different nations. This study aimed to investigate ST in a group of Sri Lankan children.

Materials and method: Sample includes all children presented to the dental clinic, Lady Ridgeway Children's Hospital, Sri Lanka with an evidence of ST within 1 year duration. Data were recorded from patients' clinical records, models and radiographs after obtaining ethical clearance.

Results: Among 15,105 patients, 123 patients showed ST indicating a prevalence of 0.8%. This sample consisted of 157 supernumerary teeth from 123 patients who were between 4 and 12 Years of age. Sixty one percent of patients (75) presented with a complaint of abnormal teeth while 25% (31) of them were detected by a doctor. Male to female ratio was 4.1: 1. There were 73% (114)

and 27% (43) erupted and unerupted teeth respectively. Hundred and fifty-five (99%) ST were found in the premaxilla and only 2 (1%) teeth were presented in the upper canine and lower incisor regions. The commonest shape of ST was conical, followed by tuberculate both in erupted and unerupted ST. Among unerupted teeth, majority of teeth 60% (26) were inverted while 30% (12) were in normal direction.

Summary and conclusions: The commonest shape of ST was conical irrespective of the eruption stage among Sri Lankans as reported for many other races. The ratio of male to female appears relatively higher compare to other nations. A high chance of undetected ST at early stages needs attention.

FC070

Dental Service Utilization Among Rural Elderly in South Indian District

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Aim and purpose: To evaluate the utilization of dental services and influencing factors among the 55 years and above population of a coastal district in South India.

Materials and method: A cross sectional questionnaire study was conducted using a stratified random sampling. 100 houses were randomly selected from each of the 13 villages in the study area and the subjects aged 55 years and above were selected from these houses. Descriptive statistics, chi square test and Binary logistic regression were used to analyze the data using SPSS v.20 software.

Results: Out of 621 participants, 55.6% of the study subjects were males and a majority of subjects in this study (60.9%) belonged to the upper lower socioeconomic status. Those who faced dental problems earlier (36.7%) had utilized dental services more frequently (chi-square $p = 0.00$). 31.9% of the study subjects utilized dental services at least once, and there was a significant difference ($p < 0.05$) in utilization between people from different castes and religions was observed.

Summary and conclusions: A poor dental care was observed among the study population which was found to be associated with factors like poor perception, religion, being from low socio economic class.

FC071

Masticatory Muscles Activity in Asymptomatic Young Adults

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Aim and purpose: The evaluation of the symmetry of the craniofacial complex generally involves models of mandibular movement and masticatory muscles activity. The symmetry of contraction of paired masticatory muscles during maximal occlusal contact are expected.

The aim of the study was to determine the association between the activity of the masticatory muscles, sex, and occlusal classes in asymptomatic young adults.

Materials and method: 144 Caucasian volunteers (96 females, 48 males) aged eighteen years participated.

A surface electromyography (sEMG) recording with a BioEMG III BioPAK Electromyograph (BioResearch, Inc., Milwaukee, WI, USA) was used to quantify the degree of asymmetry in the activity of the masticatory muscles, as well as to determine the balance between masseter (MM) and temporalis anterior (TA) muscles. In order to determine the degree of symmetry, the occlusal contact points were analyzed using a T-Scan III evolution 7.01 device (Tekscan Inc., South Boston, MA, USA). Occlusal classes were graded based on plaster study models.

Results: No significant differences were found between gender and occlusal class in the voltage of MM and right TA muscles. A significant difference of the left TA muscles were found, in correlation with gender and occlusal class. In all gender and occlusal groups, the asymmetry index shows the predominance of the right-side muscles.

Summary and conclusions: The electromyographic voltage of left TA was significantly higher in the female occlusal Class II, and decreasing from Class I to II in the male groups. This may be responsible for the asymmetry index which shows the predominance of the right-side muscles.

FC072

Identification of Vitamin D Receptor (VDR) in Gene Polymorphism in Supernumerary Teeth

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Aim and purpose: To identify vitamin D receptor gene polymorphism (VDR) in the occurrence of supernumerary teeth.

Materials and method: This is an observational analytic with cross sectional study. The study population was a junior high school students in Makassar city which has screened or diagnosed to have abnormality or supernumerary teeth through intraoral clinical and radiographs examinations. Sample that has identified to have abnormalities supernumerary teeth counted as sample unit to then undergo a VDR gene polymorphism examination or PCR (polymerase chain reaction) with RFLP method (restriction fragment length polymorphism).

Results: There is no identification of VDR gene polymorphism found in supernumerary teeth evidence.

Summary and conclusions: There is no VDR gene polymorphism identification in the occurrence of supernumerary teeth.

**Free Communication Session 19 – Room 217 | 2015-09-22 |
15:30–16:30**

Theme: Theme: Implantology - Oral Medicine

FC073

Odontogenic Abscesses as First Symptom in Diagnosis of Diabetes Mellitus

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Aim and purpose: Prevalence data of diabetes mellitus (DM) in western communities range from 5 to 8% and estimates for occult diabetes range from 2 to 5%. Levels of glycated hemoglobin (HbA1c) >6.0% or 42 mmol/mol can indicate an unknown DM. Unspecific symptoms of DM can be susceptibility to infections, abscesses and periodontopathy. The objective of this study was to assess the prevalence of known and occult DM in patients with odontogenic infections.

Materials and method: A retrospective study included all patients hospitalized for genuine odontogenic infections in a tertiary center during a 3.5 years period.

Patients were characterized by sex, age, body-mass-index (BMI), serum glucose level and HbA1c. Exclusion criteria were isolated infections of salivary glands or infections after extensive maxillo-facial surgeries.

Results: 343 patients (199 (58%) male) with a mean age of 56.6 years (16–99) were included. Median HbA1c was 6.2%, median glucose level 138 mg/dl, median BMI 26.3. In 62 (18%) patients DM was known (median HbA1c 7.4%; median BMI 30.3). In 34 (9%) patients, elevated HbA1c >6.0% pointed to a pathologic glucose tolerance and suggested presence of occult DM.

Summary and conclusions: In our cohort of odontogenic infections, prevalence of diabetic patients was higher than in estimates for the general public (18% vs. 8%). Elevated levels of HbA1c as in occult DM were found in 9% of patients in contrast to general estimates. We suggest a routine screening in patients with odontogenic infections for DM by HbA1c to ensure early detection and therapy of an unknown DM.

FC074

The Long-Term Effects of Immediate Implantation, Early Implantation and Delayed Implantation at Aesthetics Area

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Aim and purpose: Immediate Implantation after tooth extraction is considered to be the ideal way to retain the alveolar bone, but some scholars believe the aesthetic effect in the Early Implantation case are more reliable.

Materials and method: In this study, 89 patients were added to this retrospective study up to 5 years. Assessment indicators was including the survival of the implant (peri-implant infection,

implant loosening, shedding, crowns and occlusal), aesthetics (color and fullness gums, papilla height, probing depth, X-ray alveolar crest height, the patient's own aesthetic satisfaction, doctors aesthetics score), repair defects around the implant (peri-implant bone changes in height and thickness, whether the use of autologous bone graft, whether to use absorption/repair manual nonabsorbable material), treatment time, cost and the use of antibiotics.

Results: The results demonstrated that there is no significant difference in long-term success rate of immediate implantation, early implantation and delayed implantation ($p > 0.05$). But the results indicated immediate implantation group could get better aesthetic results after 2 years ($p < 0.05$), but may increase the risk of complications and failures ($p < 0.05$). High-risk indicators include gingival recession, labial bone wall damage, thin gingival biotypes, planting position and occlusal restoration bad and so on. No matter which type of implanting methods was selected, the extraction methods and bone defect amplification techniques are observed as a significant factors on aesthetic effect ($p < 0.05$).

Summary and conclusions: Therefore, this study did not find significant differences in long-term aesthetic results of immediate implantation, early implantation and delayed implantation.

FC075

Evaluation of Flow Pattern of Arteries in Oral Submucous Fibrosis by Color Doppler

Akhilanand Chaurasia, Dr. Ranjit Patil

Department of Oral Medicine and Radiology, King George Medical University, Lucknow, India

Aim and purpose: To evaluate the flow pattern of arteries in Oral Submucous Fibrosis by using Color Doppler Ultrasonography

Materials and method: Total 80 subjects were selected and were categorized as Group A, Group B and Group C. Group A included 40 clinically diagnosed OSMF patients. Group B included 20 subjects which were having habit of betel nut chewing without OSMF. Group C were included 20 healthy volunteers served as controls. After clinical and histopathological confirmation of oral submucous fibrosis, Color Doppler of main trunk of Facial artery, Buccinator, Superior Labial and Inferior Labial branches were done on both sides.

Results: After spectrum analysis of color doppler, the normal triphasic, laminar doppler flow pattern found in controls which changes to non-laminar flow patterns including Turbulent flow, Thud flow, Reverse flow, Tardus flow, Spectral broadening and Antegrade flow patterns in oral submucous fibrosis patients (Group A) and also in some patients with Group B.

Summary and conclusions: The present study confirms the positive co-relation of alteration in normal Doppler Spectrum or Flow Pattern between oral submucous fibrosis patients and healthy controls. As the severity of fibrosis increases in Oral Submucous Fibrosis there is decrease in Resistivity Index and increase in End Diastolic velocity.

FC076

Prognostic Value of Histopathologic Parameters is Assessing Cervical Lymph Node Metastasis and Extracapsular Spread in Oral Squamous Cell Carcinoma

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Baghirath Pacha

Department of oral pathology and microbiology, Panineeya institute of dental sciences and research center, Hyderabad, Telangana, India

Aim and purpose: The histological grading of oral squamous cell carcinoma (OSCC) is an important diagnostic tool to predict the clinical and biological behavior of the disease and cervical lymph node metastasis has major influence on survival rate. Extracapsular spread (ECS) represents the most significant negative prognostic indicator in oral squamous cell carcinoma. Evaluate and correlate the histopathological parameters as proposed by Anneroth's malignancy grading system with occurrence of cervical lymph node metastasis, extra capsular spread involved in oral squamous cell carcinoma.

Materials and method: The study was carried out on one hundred (68 males and 32 females; mean age 47 ± 3.2 years) diagnosed cases of primary oral squamous cell carcinoma (50 cases with and 50 cases without lymph node metastasis) who underwent surgical resection as a primary treatment modality at MNJ Institute of Oncology and Regional Hospital. Histopathological evaluation of biopsy specimens of OSCC from primary site and respective lymph nodes were reviewed. Chi square test was used to correlate various histological parameters with cervical lymph node metastasis and extra capsular spread.

Results: Anneroth's total malignancy grading score was significant ($p < 0.001$). Except for stage of invasion ($p = 0.438$) with extra capsular spread all the other histological parameters showed a significant ($p < 0.05$) correlation with lymph node metastasis and extra capsular spread.

Summary and conclusions: The histological features are of paramount importance in assessing the aggressiveness of tumor and a standardized grading system could be served as a predictor for cervical lymph node metastasis and patient outcome.

Free Communication Session 20 – Room 218 | 2015-09-22 | 15:30–16:30

Theme: Preventive Dentistry – Orthodontics

FC077

Accelerated Orthodontic Tooth Movement - The Current State of Evidence, a Systematic Review

Edmund Khoo

New York University College of Dentistry, Consortium for Translational Orthodontic Research, NYU Chapter for Evidence Based Orthodontics, New York, USA

Aim and purpose: Currently there are multiple non/minimally-invasive interventions purported to increase the rate of orthodontic tooth movement, decrease treatment duration and minimize the side-effects and sequelae of extended treatment. This systemic

review aims to 1. Identify the current interventions 2. Assess the quality of evidence supporting such interventions 3. Provide an evidence-based answer to determine if the interventions are effective.

Materials and method: Utilizing a Population, Intervention, Comparisons, Outcomes (PICO) format, we performed a systematic search of articles from PubMed, Cochrane, ADA Center for Evidence Based Dentistry and Google-Scholar. Selected abstracts were assessed as full-text articles and re-selected according to strict inclusion/exclusion criteria. They were then further categorized based on their interventions and methods of research. These articles were then critiqued and categorized based on their quality of evidence via the Critical Appraisal Skills Program (CASP) method.

Results: Our initial search yielded 992 articles, duplicate removal led to 533. Subsequent review excluded another 501 articles. The full-texts of the remaining 32 articles were assessed, 12 were selected consisting of 8 clinical trials and 4 systematic reviews. The 8 trials were divided into 3 main categories, Laser/Photo-biromodulation, Vibration/Shockwave and Corticotomy/Osteoperforation. All articles were critiqued with the CASP Method. The quality of evidence for Laser and Corticotomy/Osteoperforation interventions was moderate and all other interventions were weak.

Summary and conclusions: The only interventions that have a moderate level of evidence to support their effectiveness are Laser and Corticotomy/Osteoperforation. All other interventions although seemingly safe have no substantial evidence supporting their effectiveness either. More high quality research is needed in this field.

FC078

The Use of Super Elastic NiTi Wire in 180 Degrees Anterior Torque

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Aim and purpose: Achieving correct anterior torque has always been challenging in orthodontics. Our previously published research has shown that the use of super elastic NiTi and 180 degrees activation is effective in uprighting posterior teeth but there has been little research done on its effects on the anterior dentition. This case series aims to illustrate the use of super elastic NiTi and an activation of 180 degrees to achieve rapid and effective torque results in the anterior dentition.

Materials and method: Prior to the clinic application, the forces generated by a series of different NiTi wires were tested and calibrated in the Biomechanics Department. Subsequently, five consecutive patients had the procedure performed on them. The application was limited to only the upper and lower incisors. The NiTi wire used was of the 19×25 dimension and from the same manufacturer. Treatment progress was followed up until the desired result was achieved. Progress high resolution photographs were taken at each visit and torque values were measured both objectively and subjectively.

Results: Desired anterior torque values were achieved in all the five patients. The amount of time required to achieve the results ranged from 3 weeks to 12 weeks.

Summary and conclusions: The use of super elastic NiTi wire and an activation of 180 degrees is able to achieve desired anterior torque values in an efficient manner. This clinical technique is simple and does not require any additional auxiliaries making it a feasible option for clinicians wanting to achieve a desired anterior torque value.

FC079

Temporary Anchorage Devices (TADs) And Gummy smile

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Aim and purpose: The objective of this study was to evaluate the usability of TADs, as an anchor unit (units), in treatment of gummy smile associated with deep overbite.

Materials and method: The sample was made of 15 adult gummy smile patients (2 males and 13 females). All patients were suffering from increased lower facial height. Pre-treatment and post-intrusion gingival smile line (GSL) was measured in millimeters using digital caliper. Four TADs were used for each patient: two anterior TADs that were inserted between the roots of lateral incisors and canines; and the other two TADs were inserted posteriorly, between the roots of 2nd premolars and 1st molars. The anterior TADs were used as anchor units for intrusion of upper anterior teeth, while posterior TADs were used for en-mass retraction. Statistical analyses were carried out using Wilcoxon signed rank test.

Results: Statistical analyses revealed significant reduction in GSL and overbite. Radiographically, there were significant changes in the vertical and antero-posterior positions of upper anterior teeth. Posterior teeth showed no vertical changes.

Summary and conclusions: The findings of the present study indicate that gummy smile which is mainly due to maxillary dentoalveolar over growth can be treated effectively with intrusion using anterior TADs, particularly in case of divergent face. The findings also indicate that anterior and posterior TADs can provide absolute anchorage for treatment of deep overbite, and increased overjet.

FC080

Anatomic Landmarks of Class II and III Patients in Panoramic Radiographs

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Aim and purpose: The aim of this study was to compare anatomical land marks of the mandible between class II and III patients in panoramic radiographs and find landmarks which help to distinguish these patients by panoramic radiographs.

Materials and method: Documents of 382 patients were selected (188 boy and 193 girl), all of them between 8 and 14 years old. Half of them were class I and the other half were class III, confirmed by analysis of their lateral cephalograms, with no facial deformity or history of orthodontic therapy. Panoramic radiographs for each patient were then traced determining 8 angular and 24 linear landmarks. Thirty three determined ratios were then calculated using these linear and angular landmarks. Data were statically analyzed using T-tests and Pearson Correlation. The level of significance was set at 0.05 ($p < 0.05$).

Results: Linear measurements (PTM-PTM, Co-Co, Go-Go, Ramus width) in the class III patients were significantly different from class I patients and were lesser than them. Angular measurements showed that Me angle (the angle between left and right mandibular plans) and N angle (the angle between the posterior plan of ramus and posterior slop of condyle) in the class III patients were significantly different from class I patients and was lesser than them, but Go angle (the angle between mandibular plan and posterior plan of ramus at each side) were greater in panoramic radiographs of class III patients.

Summary and conclusions: It was concluded that some linear and angular land marks may help to differentiate class I patients from class III in panoramic radiographs.

POSTER SESSIONS 01-16

Poster session 1 – Room Cubicle 1 | 2015-09-22 | 10:00–11:00

Theme 1: Dental Treatment & Restorative Dentistry – Caries

P001

Antibacterial Opportunities of Primer Containing Fluor and MDPB

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Aim and purpose: The aim of our study is to assess the potential of two adhesive systems Clearfil Protect Bond and SE-Protect to inhibit cariogenic bacteria growth.

Materials and method: The materials were filled in the wells of agar plates inoculated with Streptococcus mutans, after 24 h of incubation inhibition zones around the materials were measured. For the tooth model test, three cavities on distance of 1 mm. size 1.5 × 1.5 mm, were prepared in the occlusal dentin of human extracted third molar. After sterilization, the teeth were left in broth culture of 1.56×10^8 CFU/ml of *S. mutans* at 37°C for 72 h for allowing bacteria to invade. The dentin bonding systems ClearfilSE Protect and Exite were vigorously rubbed onto the dentin surface separately to each of the two infected cavities, and the third cavity was control. The teeth were sealed with Filtek (ESPE) and kept in physiologic saline solution at 37°C for 72 h. The teeth were sectioned and amounts of dentin shells (120 ± 5 mg) were

obtained from the cavities and the number of survived bacteria were obtained.

Results: Statistical analysis was by One Way ANOVA, Kruskal Wallis and Mann–Whitney's *U* tests. The primer of ClearfilSE Protect Bond produced inhibition zones with statistical significance ($p < 0.05$) compared to Exite. When tested by the model cavity method, the application of Clearfil Protect Bond resulted in significantly less bacterial recovery than SE-Protect ($p < 0.05$), demonstrating substantial antibacterial effects.

Summary and conclusions: Based on the test-model due to its antibacterial properties, the use of Clearfil Protect Bond can be recommended in deep infected dentin.

P002

Use of a CAD/CAM System (KaVo Dental Teacher[®]) for Pre-Clinical Teaching Method Enhancing Learning Procedure and Performance

Zsolt Nagy, Patrik Kis

Department of Conservative Dentistry, Semmelweis University, Budapest, Hungary

Aim and purpose: To investigate the use of a CAD/CAM system (KaVo Dental Teacher[®]) for pre-clinical teaching method enhancing learning procedure and performance of undergraduate dental students in inlay preparations.

Materials and method: Two groups, six students in each group, were randomly chosen from fourth year dental students.

The task chosen for this study was to prepare on KaVo[®] models the tooth 16 for an esthetic MO inlay. For assessment, each tooth preparation was scanned with a digital scanner and the data analysed using KaVo Dental teacher[®].

In control group, second preparation was made by following supervisor instructions.

In test group, second preparation was made by following Dental Teacher[®] analysis.

Final cavities were all scanned and assessed by Dental Teacher[®] comparing the preparation similarity of their inlay cavity to the ideal preparation.

All data were recorded and analysed through the software containing cavity depth and width in occlusal and proximal box, the extent of cusp reduction on mesiobuccal cusp and possible presence of undercuts.

Results: Results showed that test group preparations were significantly closer to the ideal preparation than those of the control group.

Summary and conclusions: The use of a pre-clinical CAD/CAM system helped students to learn preparation technic more efficiently for inlay restorations and seems to be a promising method to facilitate their individual performance.

P003

Lactobacillus Acidophilus Inhibits Dentinogenesis on Human Dental Pulp

Ira Widjiastuti

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Aim and purpose: The aim of this study is to discover the expression of NFkB in regulating dentinogenesis on odontoblast exposed to Lactobacillus acidophilus.

Materials and method: pulp cells culture was taken from extracted third molar. The making of pulp cells culture by digesti method. Odontoblast like cells exposed to inactive Lactobacillus acidophilus then the expression of NFkB and DMP 1 are examined using immunohistochemical technique.

Results: the result shown that the track of NFkB is activated during the bacteria exposure to odontoblast and inhibits the expression of DMP 1.

Summary and conclusions: Lactobacillus acidophilus increases the expression of NFkB and inhibits the expression of DMP 1 on human dental pulp odontoblast like cells.

Theme 2: Dental Treatment & Restorative Dentistry – Endodontics

P004

Dye extraction Method Evaluation of the Sealing Ability of Three Types of Endodontic Sealers

Engy Medhat Kataia¹, Mohamed Medhat Kataia²

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Aim and purpose: This study aimed to: evaluate the sealing ability of AH Plus sealer, IRoot SP sealer, and Epiphany-Resilon root canal filling system by Dye extraction method.

Materials and method: MATERIAL-METHODS: 45 freshly extracted single rooted human teeth were instrumented with Revo-S; the sequence used was SC1, SC2, SU, AS30, AS35, and AS40 taper 0.06. The prepared specimens were then divided randomly into Negative controls ($n = 9$) and Positive controls ($n = 9$); the negative controls were completely covered with three layers of varnish, and the positive controls were enlarged, but not root filled. The remaining 27 teeth were then randomly divided into three groups of 9 teeth each according to the type of sealer used, as the following: Group 1 (AH Plus sealer), Group 2 (IRoot SP sealer), and Group 3 (Epiphany-Resilon root canal filling system). Apical leakage evaluation was done by dye extraction methods. Data were statistically analyzed.

Results: The positive control showed total dye absorbance of 5000, while negative control samples had a low absorbance of 75. The mean absorbance values were 370, 315, and 400 for Group 1 (AH Plus), Group 2 (IRoot SP), and Group3 (Epiphany-Resilon root canal filling system) respectively.

Summary and conclusions: CONCLUSION: The three tested sealers had the similar capability in apical sealing.

P005

Evaluation of the Antimicrobial Efficacy of 20% Punica Granatum, 0.2% Chlorhexidine Gluconate and 2.5% Sodium Hypochlorite used Alone or in Combinations Against Enterococcus Faecalis: An in vitro Study

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Aim and purpose: The present in vitro study was undertaken to evaluate and compare the antimicrobial efficacy of 20% Punica granatum, 2.5% Sodium hypochlorite and 0.2% Chlorhexidine gluconate when used alone and their combinations against Enterococcus faecalis.

Materials and method: Agar diffusion test was done to evaluate the antimicrobial efficacy of these intracanal irrigants. Enterococcus faecalis (ATCC 29212) was used as a test organism. The inoculum of E. faecalis was streaked on the agar plates. Using a punch, wells each measuring 6 mm in diameter and 4 mm depth were made and 50 µl of the experimental irrigant was pipetted into each well. A total of 240 wells were made, 40 for each group and the plates were placed in a carbon dioxide incubator at 37°C for 48 h. The zones of inhibition were measured using a mm scale and the results statistically analyzed using ANOVA test and Tukey's HSD.

Results: The zones of inhibition recorded were, for Group A (Punica granatum) is 18.9 mm, for Group B (sodium hypochlorite) is 15.9 mm. and for Group C (chlorhexidine gluconate) is 19.56 mm and combinations Group D (Punica granatum+ sodium hypochlorite) is 23.9 mm, for Group E (Punica granatum +Chlorhexidine) is 25.7 mm, for Group F (sodium hypochlorite + Chlorhexidine) 19.6 mm.

Summary and conclusions: Within the limitations of this experiment, the results of the present study concluded that the combination of Punica granatum and Chlorhexidine is the best irrigant combination against E.faecalis, among all the experimental irrigants used in this study.

Poster session 2 – Room Cubicle 2 | 2015-09-22 | 10:00–11:00

Theme: General Dentistry and Oral Health

P006

Influence of Smoking on Oral Cavity Mucosa Epithelium

Cytogram Peculiarities

Rudolf Yuy Tsun Shu

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Aim and purpose: To give cytological evaluation of smoking toxic effects on oral cavity mucosa (OCM) epithelium state in smokers depending on the period and intensity of smoking and non-smokers.

Materials and method: The object of our research was oral cavity mucosa swabs of 22 non-smokers and 84 smokers. Patients at the age of 18–47 were under study. Swabs were dried, fixed in spirit-acetone (1:1) and May-Grunvald and Romanovsky-Himsa stained. Epithelial cells in various stages of differentiation, contaminated epithelial cells, dystrophically changed ones, epithelial cells with neutrophil invasion, mononuclears, segmentonuclear neutrophils per 1000 cells were calculated in stained swabs. Basing on the cytogram results in order to evaluate the proliferation and differentiation processes in the epithelium of oral cavity mucosa, "keratinization index" (KI) and "epithelial cells differentiation index" (DI) were calculated. The analysis of obtained data and evaluation of credibility of differentiating averages were done using Student's test. Indexes of change were considered to be credible for $p < 0.05$.

Results: OCM hyperkeratosis develops in smokers and increases depending on the period and intensity of smoking and it leads to vivid differentiation and keratinization indexes rise. Smoking causes pathological mitosis increase, leucocytes invasion into epithelial cells and epithelial cells contamination. Lining mucosa type (lip, cheek) is the most informative for smoking toxic effect on OCM evaluation, less informative is specialized mucosa type (tongue) and the least informative is masticatory type (gingiva).

Summary and conclusions: According to the data of our research the quantitative indicators of DI and KI are sensitive indexes of smoking toxic effect on OCM.

P007

Tumour Budding: A Promising Parameter in Oral Squamous Cell Carcinoma

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Aim and purpose: The study aimed to identify the indicators that could be used to predict prognosis of Oral Squamous Cell Carcinoma based on tumour budding.

Materials and method: Thirty histological specimens of biopsy proven cases of Oral Squamous Cell Carcinoma were taken from departmental archives after approval from Institutional ethics committee. Serial sections of 4 µm thickness were taken and stained with hematoxylin and eosin.

Tumour budding is defined as single cancer cells and clusters composed of up to four cancer cells. These cancer cells were observed in cancer-stroma lesions at the invasive front of the tumour. Number of tumour budding foci were counted in the histological fields in which the tumour budding intensity was maximal. Tumour budding was classified into two groups: tumour budding – positive or negative [Bud (+)/Bud (-)]. Depending on the number of tumour buds per field, it was classified into three groups: Grade 0 (no budding foci); Grade 1 (up to two budding foci) and Grade 2 (three or more budding foci). Tumour budding was compared with lymphnode and margin status, recurrence and survival of the individual.

Chi – square test was used for comparing tumour budding with prognostic parameters on the basis $p < 0.05$ which was considered as statistically significant.

Results: This study aimed to find the impact of tumour budding on the progression and prognosis of Oral squamous cell carcinoma; more tumour budding was indicative of poorer prognosis.

Summary and conclusions: Presence of tumour budding foci is a significant indicator to predict the prognosis in Oral cancer patients.

P008

Use of Radiomorphometric Indices Measured on Digital Panoramic Radiographs in Early Diagnosis Osteoporosis

Esra Somitürk

Department of Oral and Maxillofacial Radiology, İstanbul Aydin University Faculty of Dentistry, İstanbul, Turkey

Aim and purpose: The aim of this study, to emphasize the importance of osteoporosis in many aspects of dentistry.

The purpose of this study, radiomorphometric indices of the mandible was measured on digital panoramic radiographs for diagnosis of postmenopausal osteoporosis.

Materials and method: Panoramic mandibular index (PMI), mandibular cortical index (MCI) and mandibular cortical width (MCW) values were measured on digital panoramic images in 150 postmenopausal and 150 normal women.

Results: There were statistically significant difference (negative for postmenopausal group) between postmenopausal and normal groups for these values.

Summary and conclusions: Osteoporosis may become apparent on a digital dental panoramic radiography as thinning of the mandibular cordices and a general radiolucency of the mandible, but radiomorphometric indices will never be a “gold standard” methods for osteoporosis diagnosis. However, this approach may be a useful cost effective method for identifying some individuals who would most likely benefit from referral for bone densitometry. Panoramic radiographs may be useful in early diagnosis of osteoporosis. Dentists can play an important role in early diagnosis, prevention and treatment of osteoporosis in patients.

P009

"Radiographic Position of Mental Foramen in a Selected Urban Population of Bangladesh"

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Aim and purpose: To investigate the most common position of the mental foramen in selected urban Bangladeshi population.

Materials and method: This study was based on one hundred and one (OPGs) of adult patients. This was cross sectional study design and the sampling technique was convenient sampling. The study period was 6 months from 15th September 2011–14th march 2012 at Out Patient Department, Update Dental College, Dhaka. All OPGs were examined two times in a dark room on an X-ray viewer.

Results: The most common Horizontal position of the mental foramen was below the root of second premolar tooth (37.6%). In vertical axis, the location of MF in lower half of body of mandible was found in all OPGs (100%). In vertical distance, three position was measured from the lower border and upper border of MF to the lower border of mandible on both side of OPGs. Position A: Distance between 0.4 and 0.9 mm. Position B: Distance between 1.0 and 1.5 mm. Position C: Distance between 1.6 mm and above. Position B, which is measured by distance between 1.0 mm and 1.5 mm, is the most common position of MF in all aspect as viewed in OPGs.

Summary and conclusions: Clinicians and anthropologists should expect to find the position of the mental foramen to be symmetrical and below the root of second premolar tooth.

In conclusion, according to our results the location of the mental foramen on the panoramic radiographs of selected Bangladeshi population was most commonly in the line with the long axis of second premolar tooth.

P010

Assessment of Prescription Pattern in Dental Teaching Hospitals, Karachi, Pakistan

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Aim and purpose: The survey was carried out to assess the prescribing pattern of dental professionals in dental teaching hospitals in Karachi, Pakistan.

Materials and method: 200 prescriptions written by dental students in their clinical years or house job were analysed and the presence or absence of all aspects of a well written prescription and the presence of certain prescription errors such as incorrect drug, drug-drug interactions, invalid abbreviations, illegible handwriting, incorrect frequency, missing prescriber's initials and unmentioned route of administration were recorded in the checklist based on WHO guidelines. The number of antimicrobials, analgesics, toothpastes and mouthwashes prescribed was also recorded for each prescription. Results were calculated using SPSS 16.

Results: Only 8 parameters out of 17 were mentioned in more than 50% of the prescriptions, the most common being the brand names of drugs prescribed and the least common being generic names of drugs. Analgesics were found to be the most common kind of drug prescribed, antimicrobials being the second most common. Unmentioned route of drug administration was the most common error, being absent in 188 prescriptions. Apart from some other errors and omissions, 17% of the prescriptions were illegible and 69% had no prescriber's signature. Possible future drug-drug interactions were noted in 1%.

Summary and conclusions: The prescription writing skills of dental students and house officers in dental teaching hospitals in Karachi are far from perfect. More education in this area needs to be given and prescribers should be made to follow strict guidelines. There is a need to spread awareness about common prescription errors and their complications.

Poster session 3 – Room Cubicle 3 | 2015-09-22 | 10:00–11:00

Theme: Implantology

P011

Determination of Implant Loading Timing: A Pilot Histomorphometric Human Study

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Aim and purpose: The purpose of this study are to perform a histomorphometric analysis of the peri-implant tissue reaction and the bone implant interface in early loaded implants and an unloaded implant in the edentulous maxilla, and to compare these results for determining proper timing of suprastructure placement. **Materials and method:** In this study, GS-II implant (Osstem Co., Korea) was used. GSII implant fixture is a dualthreaded internal connection type with upper microthreads and CellNest surfaces (anodic oxidation treatment). Three early loaded implants groups (5 days, 20 days, 50 days after surgical treatments) and an unloaded implant control group in the edentulous maxilla were retrieved with a 5.0 mm trephine bur. Histomorphometric analysis – percentage of bone-to-implant surface contact (BIC) and bone volume – was performed through digital imaging analysis.

Results: The histologic data showed that the osseointegration was achieved in both loaded and unloaded conditions. Five days group showed slightly higher BIC and bone volume than other early loaded groups. Unloaded group was failed to compare.

Summary and conclusions: Within the limitations of the study, the clinical and radiological results showed that the osseointegration was achieved. Immediate functional loading of implants could lead to favorable bone responses. More studies are needed so that, proper and faster way of loading implants can be developed.

P012

Load transfer Characteristics of 3-Implant-Retained Overdentures with Different Inter-Implant Distances

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Aim and purpose: Implant-retained overdentures are became as the first-choice of rehabilitation for edentulous mandibles. Bone morphologies and anatomic landmarks may be influenced location and angulation of implants, and distances between the implants. The aim of this study was to investigate stress distribution characteristics and to compare stress levels of three different attachment

designs of 3-implant-retained mandibular overdentures with three different inter-implant distances.

Materials and method: Three photoelastic mandibular models with three implants were fabricated using an edentulous mandible cast with moderate residual ridge resorption. The center implants were embedded parallel to the midline and the distal implants were aligned at a 20° angulation corresponding to the center implants. Distances between the center and distal implants were set 11 mm, 18 mm and 25 mm at the photoelastic models. Bar, bar-ball and locator attachment retained overdentures were prepared for the models. Vertical loads were applied to the overdentures, and stress levels and distribution were evaluated at circular polariscope.

Results: The greatest observed stress level was moderate for the tested overdenture designs. The locator attachment system showed lowest stress level at the 11 mm and 25 mm photoelastic models. The bar attachment design transmitted less stress compared to the other tested designs at the 18 mm photoelastic model.

Summary and conclusions: Stresses were observed on the loaded side of the photoelastic models. The lowest stress was found with the locator attachment at 11 mm photoelastic model that transmitted little discernible stress around the implants.

P013

X Ray Diffraction Analysis of Plasma Coated Hydroxyapatite on Ti and Ti-6Al-4V Dental Implants

Ravindra Kotian

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Aim and purpose: To study the effect of plasma gas atmosphere on the composition, structure and crystallinity of hydroxyapatite that is coated on implants.

Materials and method: Hydroxyapatite (Biotal, UK) was coated on commercially pure Titanium (ASTM B 348 Gr. 1) and Ti-6Al-4V (ASTM B 348 Gr. 5) by plasma spray using four different plasma gas compositions (i) argon/hydrogen, (ii) argon, (iii) nitrogen/hydrogen and (iv) nitrogen. The coatings were analyzed by x ray diffraction (JEOL-JDX-8P) for change in composition, structure, and crystallinity.

Results: Plasma gas composition has influence on Ca-P ratio. The most inert plasma atmosphere of argon showed highest Ca-P ratio as compared to nitrogen, nitrogen/hydrogen and argon/hydrogen. The nitrogen/hydrogen, nitrogen, argon/hydrogen, and argon atmospheres with decreasing order of enthalpy showed increasing order of porosity. Atmospheres having high enthalpy showed smooth surface with relatively low Ra value. Significant chemical reaction between the ingredients of HA and metal substrate observed. Reaction products such as CaTi3O4, CaV4O9, Ca4Ti3O4 and H2[Ti(PO4)2] formed further supporting chemical bonding between HA and metal substrate. The crystallinity due to plasma coating found to decrease with the incorporation of stresses in the structure.

Summary and conclusions: Ca-P ratio, crystallinity, surface roughness and porosity of hydroxyapatite play major role in the osseointegration of dental implants. The plasma gas composition showed varying effects on Ca-P ratio, crystallinity, surface roughness and porosity.

P014

Statistical Analysis of the Survival Rates of 216 Dental Implants

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 Kuniko Hirose, Fumitaka Kobayashi
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Aim and purpose: In the present study, we evaluated the survival rates of the HA-coated one-piece implants and reported the summary of the results.

Materials and method: Study subjects in this study were 85 patients who visited our clinic from March 2006 to March 2009. Roughened surface implants were used in this study except for 2 cases. 1) gender, 2) age, 3) area for implant placement, 4) type of implants, 5) implant length, 6) implant diameter, 8) plaque index and 9) survival rate were evaluated for each case.

Results: Participants (total: 85, age between 40 and 88 years) in this study were 67 females (mean age: 65.8 years) and 18 males (mean age: 69.1 years). There were 122 maxillary implants and 94 mandibular implants (total: 216). One hundred sixty-one (161) (74.5%) AQB implants (Advance, Tokyo, Japan), were used.

The diameter of all loosened implants was 4 mm in diameter. Also they were < 10 mm in length except for one implant. All loosened implants were AQB implants. The survival rate was 95.4%. The mean plaque index of patients experienced loss of implants was 49.2% and that of 75 patients with intact implants was 13.2%.

Summary and conclusions: The survival rate of implants was 95.4% in the present study, displaying comparable results with previous studies. Patients experienced implant loss did not attend for regular check-up and their plaque index was 49.2%. In contrast, that of patients attended regular check-up was 13.2%. This result suggests proper oral hygiene instruction is a key to implant treatment success.

P015

Evaluation of Different Designs of Implants Supported Maxillary Overdentures

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Aim and purpose: OBJECTIVES: the aim of this study is to evaluate the marginal bone height and density around implants-supported maxillary overdentures retained with two different types of attachments (bar attachments and locator attachments) placed in the canine and molar regions after 9 months of loading and function.

Materials and method: fourteen patients were selected having completely edentulous upper arch opposed by natural teeth, divided into two groups, group A having implant-supported maxillary overdenture with bar attachment and group B having implant-supported maxillary overdenture with locator attachment. In both groups, the implants were placed in the canine and molar regions, radiographic evaluation at 0, 6 and 9 months for changing in the bone height and density of supporting structures of abutments using digital radiograph imaging(DIGORA).

Results: the data obtained from the present study showed decreased in the marginal bone height in group B than in group A

especially in the distal surface of the implants installed in the molar region. This means that implants retained with locator attachments received.

Summary and conclusions: CONCLUSION: As a treatment modality of a maxillary edentulous patients, it could be concluded that implants retained with a splinted type of attachments (bar attachments) had a better effect load distribution over bone structures than using a non-splinted type of attachments (locator attachments).

Poster session 4 – Room Cubicle 4 | 2015-09-22 | 10:00–11:00

Theme: Preventive Dentistry - Caries

P016

Combined Effects of Er: YAG Laser and Casein Phosphopeptide-Amorphous Calcium Phosphate on the Inhibition of Enamel Demineralization

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Aim and purpose: Development of white spot lesions on enamel is a significant and common problem during the fixed orthodontic treatment. Various preventive methods have been suggested. The purpose of this study was to evaluate the preventive potential of MI Paste Plus, Er: YAG Laser and combined under similar in vitro conditions against demineralization.

Materials and method: In this experimental in vitro study, 60 extracted premolars were randomly allocated to four groups ($n = 15$) of control, MI Paste Plus, Laser and MI + Laser (MIL). Enamel surface of each group was treated with one of above materials before and during the pH cycling for 12 days through a daily procedure of demineralization and remineralization for 3 h and 20 h, respectively.

Teeth were sectioned and evaluated quantitatively by cross-sectional microhardness testing at 20 μm intervals from the outer enamel surface toward dentinoenamel junction up to 160 μm and data were analyzed using the one-way analysis of variance and Tukey test. $p < 0.05$ was considered as significant.

Results: MIL group had the least amount of demineralization ($p < 0.001$). Control group (C group) had the greatest relative mineral loss and the laser group (L group) had 45% less mineral loss than the C group and there was no significant difference between the MI Paste Plus and L group ($p = 0.154$).

Summary and conclusions: Based on these results, Er: YAG laser was able to decrease demineralization and was a potential alternative to preventive dentistry and was more effective when combined with casein phosphopeptide-amorphous calcium phosphate products.

P017

Assessment of Soluble Fluoride Concentrations in Fluoridated Tooth Pastes Marketed in Sri Lanka

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Aim and purpose: Fluoride (F) is effective in caries control by several mechanisms. For anti-caries effect the concentration of F in the topical form in toothpastes should be ideally 1000 ppmF and be available in chemically free form in the formulations. The objective of this study is to assess the soluble F concentrations in toothpastes marketed in Sri Lanka.

Materials and method: Commercially available nine brands of toothpastes were used, two of which were non-fluoridated herbal toothpastes used as negative controls. Out of seven brands three were manufactured in Sri Lanka with two of them containing clove. Using F electrode coupled to an ion analyzer standardized F analyses were carried out in triplicate within 4 months of manufacturing the toothpastes.

Results: Out of seven fluoridated toothpastes only two had the minimum of 1,000 ppmF. Five brands contained about 917 ± 31.1 to 998.9 ± 21.6 ppmF which may be acceptable according to the Sri Lanka standard specification for toothpastes which ranges between 850 and 1150 ppmF. One brand of toothpaste had more total F content (1585 ppmF) with 22.4% of insoluble F. Two brands of toothpastes which are mainly prescribed for sensitivity also contained around 900 ppmF of soluble F.

Summary and conclusions: In terms of anti-caries effect the soluble concentrations may be adequate as water sources in Sri Lanka and the common beverages like tea also contain F. Since MFP-based formulations release free F ion due to hydrolysis that reacts with calcium to form insoluble F salts, further analysis to evaluate the stability of soluble F and their decay during toothpaste storage is necessary.

P018

In-Vitro Study of Maltitol on Growth and Acid Production of Streptococcus Mutans

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Aim and purpose: To evaluate the inhibitory effects of maltitol on growth and acid production of *Streptococcus mutans* (*S. mutans*) in an in-vitro study.

Materials and method: There were four groups in this study, 2.5% maltitol added in TYE culture medium (test group), three control groups (2.5% xylitol, 2.5% sucrose and blank). *S. mutans* was incubated respectively in four groups at 37°C under anaerobic conditions (80%N₂, 20%CO₂). The OD (660 nm) and pH value

of the mediums were measured at different time points, 0 h, 3 h, 6 h, 9 h, and 12 h. SPSS 13.0 was used in statistical analysis.

Results: At the baseline, there were no significant differences in the mean OD values among groups ($p > 0.05$). However, from the 3 hr time point, the OD value of *S. mutans* in culture with sucrose was statistically significantly higher than those in other groups ($p < 0.001$) and no significant differences were found in culture with maltitol and xylitol ($p < 0.05$). After incubation for 9 h, the pH value in culture with sucrose was lower than 5.5. Even the pH values in other groups slightly decreased at the beginning and then changed to be stable and still be much higher than 5.5.

Summary and conclusions: Compared with sucrose, maltitol, as xylitol, has the inhibitory effects on growth and acid production of *S. mutans* and it can be used as a promising sweetener in reducing caries risk.

P019

Quantitative Analysis of *Streptococcus mutans* and *Streptococcus sobrinus* in Child's plaque

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Aim and purpose: To compare *S. mutans* and *S. sobrinus* level in initial and mature plaque sample, clinical parameter and risk factor between severe early childhood caries (S-ECC) and caries-free children.

Materials and method: Initial (<4 h formed) and mature (overnight formed) supragingival plaque samples were obtained from 120 children age 2–5 years (60 S-ECC, 60 caries free). Saliva was collected for determine salivary mutans, pH and buffer capacity. Plaque and gingival index scores were recorded. After DNA extraction, *S. mutans* and *S. sobrinus* in plaque were quantified by real-time PCR. Child and guardian's general information and associated factor were obtained from the questionnaire. Statistical analysis of the different quantities of *S. mutans* and *S. sobrinus*, the correlation between each quantitative variable and the association of factor in questionnaire with caries status was performed. ($p < 0.05$ was accepted as statistically significant).

Results: *S. mutans* and *S. sobrinus* level, the ratio of *S. mutans* to total bacteria in initial and mature plaque sample from S-ECC were significantly higher than caries-free. *S. sobrinus* level in both plaque sample were significantly correlated to dmft and plaque index scores but only dmft scores was correlated to *S. mutans* level. The factors significantly associated with caries were guardian's education, duration of bottle feeding, bottle feeding during sleeping and the frequency of consuming cariogenic food between meal.

Summary and conclusions: High level of *S. mutans* and *S. sobrinus*, dmft and plaque index scores, dietary and oral hygiene behavior were associated with dental caries.

P020

Quantitative Analysis of *{Streptococcus mutans}* and *{Lactobacillus}* in Child's Plaque

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Aim and purpose: To compare quantitatively *S. mutans* and *Lactobacillus spp* in initial and mature plaque including clinical parameters and risk factors of severe early childhood caries (S-ECC) and caries free samples.

Materials and method: One hundred and twenty children aged 2–5 years (60 S-ECC, 60 Caries free) were collected mature (overnight formed) and initial (less than 4 h formed) supragingival plaque and saliva to determine pH, buffer capacity and salivary mutans. Plaque index, gingival index and dmft scores were recorded. Child and guardian's demographic data and related risk factors were obtained from the questionnaires. All plaque samples were extracted to bacterial DNA and quantitative real-time PCR using specific primers and SYBR green were performed.

Results: *S. mutans* level, *Lactobacillus* level, and the ratio of *S. mutans* and *Lactobacillus* to the total bacteria in S-ECC from initial and mature plaque were significantly higher than caries free group ($p < 0.05$). *Lactobacillus* level in both plaque were significantly correlated with dmft scores and plaque index scores, while *S. mutans* level only correlated with dmft scores ($p < 0.05$). The statistically significant risk factors associated with caries were guardian's education, duration of bottle feeding, history of sleeping with bottle and the frequency of consuming cariogenic food between meals ($p < 0.05$).

Summary and conclusions: *S. mutans* and *Lactobacillus* level in both plaque were significantly higher in S-ECC group and related with dmft scores, oral hygiene and dietary habits.

Poster session 5 – Room Cubicle 1 | 2015-09-22 | 11:30-12:30

Theme: Dental Treatment & Restorative Dentistry – Endodontics

P021

The Effect of Different Shaping Techniques with the Use of NiTi Rotary Instruments on Curvature Parameters in Simulated Root Canals

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Aim and purpose: To evaluate *ex vivo* the root canal curvature parameters, measured after the preparation of simulated curved canals using rotary instruments and three different shaping techniques.

Materials and method: Blocks ($n = 3 \times 7$) featuring curved root canals (40 degrees, radius 5 mm, 02) were used. Complete preparations were performed using three NiTi rotary systems up to size 030, according to manufacturer specification.

Group A – blocks prepared with MTtwo and single length technique, group B – with Revo-S and traditional crown-down tech-

nique, group C – with Hyflex CM and hybrid method. The root canal curvature degree, the radius of the curvature (CR) and curvature height (CH) were recorded after instrumentation based on established criteria.

Reproducible photographs were compared before and after shaping procedure. Curvature parameters traced on the basis of the axis of the canals were determined by means of an image analysis programme and custom-made model. Differences between the groups were tested for significance.

Results: The Schneider's angle of instrumented canals was ranged as 28–34 degrees. The increase of CR after instrumentation was (mean): 6.65 mm (A), 7.04 mm (B), and 6.83 mm (C). There was no statistically significant difference between the techniques, with regard to curvature parameters. Results were irrespective of the mode of preparation. The correlation between the CH and CR was consistent for Revo-S system.

Summary and conclusions: Endodontic preparation using rotary instruments affects the profile of severe root canal curvature, by increasing the curvature radius and decreasing the curvature high. Straightening of the canals seems to be more pronounced with crown down technique.

P022

Dental Pulp Tissue-engineering with Stem Cells in Rat Molars

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Aim and purpose: This study was conducted to develop a dental pulp tissue-engineering strategy in pulpotomized rat molars.

Materials and method: All experiments were conducted under the approval of the Animal Care Committee, Niigata University. Rat mesenchymal stem cells (RMSC, Lonza) and porous poly-L-lactic acid (PLLA) scaffolds were used for implantation. Under 8% chloral hydrate anesthesia, pulp exposure was made in upper first molars of 5-week-old female Wistar rats ($n = 9$). Then, the coronal pulp tissue under the exposure site was removed, RMSC/PLLA constructs were implanted in the cavity, and the cavity was double-sealed with a temporary restorative and a flowable resin composite. Teeth implanted with PLLA scaffolds without RMSC and untreated teeth served as controls. Seven days after implantation, the rats were killed under chloral hydrate anesthesia. Then, maxillary first molars were retrieved and processed for histological analysis (H.E staining and immunostaining for T lymphocytes).

Results: Pulp-like tissue was successfully engineered in the teeth implanted with RMSC/PLLA constructs. No obvious infiltration of neutrophils was observed in all teeth examined. Moreover, the number of T lymphocytes was not significantly different from that in untreated control teeth. The teeth implanted with scaffolds without MSC showed no obvious inflammation, but no tissue was engineered in the pulpotomized region.

Summary and conclusions: Here we show that dental pulp tissue was successfully engineered in pulpotomized rat molars by the implantation of RMSC/PLLA constructs.

P023

Effects of Lipopolysaccharide-Stimulation on CD146 and MAP1B mRNA Expression in Dental Pulp Stem Cells

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Aim and purpose: Mesenchymal stem cells may undergo proliferation and/or differentiation and modulate inflammation before achieving tissue repair, whereas responses of dental pulp stem cells to pro-inflammatory stimuli remain to be elucidated. Thus, this study aimed to analyze changes in the gene expression levels of stem cell-associated markers, CD146 (a differentiation potential marker) and microtubule-associated protein 1B (MAP1B; a cell proliferation marker), in lipopolysaccharide (LPS) stimulated stem cells from human exfoliated deciduous teeth (SHED).

Materials and method: SHED (AllCells, Emeryville, CA; 1 × 105 cells in 2 ml culture medium) were seeded into six-well plates and cultured for 12 h. After the change of fresh medium, LPS (E. coli; 1 µg/ml) or saline (control) was added. Following 3, 12, 24, and 48 h, total RNA was extracted and cDNA was synthesized. Then, TaqMan® gene expression assays for CD146, MAP1B and 18S was performed by using a real-time PCR system (StepOne, Applied Biosystems).

Results: At 3 h after the LPS-stimulation, mRNA expression of both CD146 and MAP1B was significantly down-regulated as compared with the control ($p < 0.05$, Mann–Whitney U-test with Bonferroni correction). Then, the expression level of CD146 mRNA was increased between 6 and 24 h, and significantly higher than that of the control between 12 and 48 h ($p < 0.05$). MAP1B mRNA expression was also increased between 6 and 48 h, and significantly higher compared with the control at 48 h ($p < 0.05$).

Summary and conclusions: LPS-stimulation induced increased mRNA expression of CD146 and MAP1B in SHED.

P024

Risk Assessment of Endodontic Treatment According to Results of CBCT

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Aim and purpose: To form a risk group of endodontic interventions to assess the degree of complexity of root canals treatment according to CBCT

Materials and method: The analysis of 160 researches CBCT of patients aged 17–60 years was carried out. 1487 root channels of 828 teeth, with the carried-out earlier endodontic treatment were analyzed.

Results: According to the results of the CBCT with median of probability of filling defects of root channels of cured teeth were formed three groups: group 1 with values ranging from 0.37 to 0.51 – had the lowest risk of the number of root channels with defects of filling, group 2 (0.52 – 0.75) – had a medium risk of the number of root channels with defects of filling; group 3 (0.76–1.00) – root canals of teeth with a high value for the number of defects in the filling.

The results of the study designed colour coded perceived risks of endodontic treatment on the principle of «traffic lights»:

Group 1 – Green: root canals, endodontic treatment which can be carried out without the use of optical zoom.

Group 2 – Yellow: root canal endodontic treatment to be carried out after full examination including CBCT, the recommended use of the optical zoom.

Group 3 – Red: of root channels endodontic treatment to be carried out after full examination including CBCT with mandatory use of an operating microscope.

Summary and conclusions: The results obtained allow a preliminary assessment of the degree of difficulty of endodontic treatment using optical magnifying devices and CBCT.

P025

Angiogenic Properties of Human Dental Pulp Cells

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Aim and purpose: Aim Dental pulp in immature tooth poses a clinical challenge and healing by vascularity and angiogenic potential of the tissues. This research aimed to characterize angiogenesis of human dental pulp cells in healthy and carious immature permanent teeth with the expression of the human hematopoietic progenitor cell antigen CD34.

Materials and method: Material and Method In this study we have examined 30 human teeth under 3 different clinical conditions: healthy teeth, shallow and deep cavities. Teeth were extracted and immediately cut longitudinally; pulp tissue was extirpated and fixed in formalin for 24 h at 4°C. The specimens were embedded in paraffin, according to standardized laboratory procedure. Sections were cut at 5 µm thicknesses and stained by the streptavidin – biotin complex immunoperoxidase method. To characterize the vascularization of human dental pulp, we examined the expression of the human hematopoietic progenitor cell antigen CD34.

Results: Results The findings indicate that angiogenesis of dental pulp is process that is present in healthy teeth with single CD34 positive cell. In carious teeth these cells subsequently coalesce to form solid vascular cords inside the connective tissue, which later aggregate with the progression of the carious lesion. Pericites were

embedded within the newly formed microvessels basement membrane.

Summary and conclusions: Conclusions Present study demonstrated that presence of CD34 endothelial cells reveals the continuous adjustment of vessels in response to functional needs and dental tissue homeostasis. Endothelial cells play a key role in immune and inflammatory reactions by regulating lymphocyte and leukocyte movement into dental pulp.

Poster session 6 – Room Cubicle 2 | 2015-09-22 | 11:30-12:30

Theme: General Dentistry and Oral Health

P026

Social Profile and Oral Health of Thalassaemic Patients, Sri Lanka

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Aim and purpose: To investigate the socio-demographic profile and oral health status of Thalassaemic patients attending the National Thalassaemic Centre (NTC) Kurunegala, Sri Lanka.

Materials and method: The descriptive cross sectional study design was used and all attendees of NTC (2013) were included as the sample (400). Sample size was estimated with 50% prevalence of dental caries among thalassaemic patients in the absence of previous studies, 5% absolute error and 95% confidence interval. Data was collected using an interviewer administered, pre-tested, validated questionnaire and a clinical oral health examination form. Ethical approval was obtained from Ethics review Committee, Faculty of Dental Sciences, University of Peradeniya Sri Lanka (FDS-FRC/2013/06). Written informed consent was obtained from participants above 18 years and for children below 18 years from their guardians as well.

Results: Majority were from lower socioeconomic levels.

94.2% of them had convex facial profile, 99.5% had class II skeletal pattern, 91% had average FMPA and 92% were without any developmental dental anomaly while 75% of the participants' permanent teeth were free of caries with 93% had no fillings and 89% had no missing teeth. Periodontal examination revealed 67.8% were without bleeding on probing while 12.5% of the sample had a bleeding score of 10-19% and 98.7% of the sample was with PPD less than 2 mm.

Summary and conclusions: Thalassaemic patients attending the NTC are from lower socioeconomic class and those families may require financial support to look after these patients. Their caries, periodontal status and health of the oral mucosa were satisfactory and compatible with general population.

P027

An analysis of the Decision to Extract Third Molar Teeth

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Aim and purpose: This study aimed to explore the impact of the parameters including patient age and sex, number and position of teeth, and clinical status on the decision to extract third molars.

Materials and method: This study reviewed the medical data of 180 randomly selected patients who applied to our clinics, with erupted or unerupted third molar teeth that had an indication to extract between 2014 and 2015. The patients were grouped according to patient age and sex, number and position of teeth, and clinical status; the study data were then analyzed using Chi-square test and SPSS statistics software package, CHAID decision trees, and SPSS Clementine software package. A p value was considered statistically significant as 0.05.

Results: Of the study population, 39.4% were asymptomatic; the extraction was carried out for pericoronitis in 15% of the patients and for an orthodontic indication in 11.1%.

In erupted or semi-erupted teeth (n = 79) the indication of extraction was pericoronitis in 31.6% and decayed teeth in 18.9%, while 29.1% of the extracted teeth caused no symptoms.

As for the fully impacted teeth (n = 101), the rate of extraction of asymptomatic teeth was 47.5%; the rate of extraction of asymptomatic teeth was 46% in patients younger than 21 years and 49% in those older than 21 years of age ($p < 0.05$).

Summary and conclusions: This small-scale study suggested that a wide-scale public discussion should be undertaken on the impact of extraction of asymptomatic teeth on the social security system of Turkey that has approximately 25 million young adults.

P028

Evaluation of Mandibular Lateral Lingual Foramina Using Cone-Beam Computed Tomography

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Aim and purpose: The aim of the present study was to evaluate the frequency and the location of lateral lingual foramina (LLF) at the mandibular interforaminal area using cone beam computed tomography (CBCT) and additionally to evaluate their bony canals and anastomoses with the incisive canal.

Materials and method: This retrospective study was approved by the Ethical Review Board of the Faculty of Dentistry, Ankara University. Mandibular CBCT images of 463 patients (197 males, 266 females) taken at the Faculty of Dentistry, Gazi University, were retrospectively reviewed. The images were acquired using Promax[®] 3D (Planmeca, Finland) CBCT system. LLF and bony

canals localized between each mental foramen and the midline of the mandible were evaluated bilaterally using axial and reformatting cross-sectional images.

The obtained data were statistically evaluated at a confidence level of 0.95.

Results: The study detected at least one LLF in total of 250 patients (54%). The LLF were mostly located at the region of premolar teeth substantially in close proximity to the first premolar teeth. The rate of anastomoses with the mandibular incisive canal was 46%. There was no statistically significant difference between genders in terms of frequency of LLF, and anastomoses of LLF with the incisive canal ($p > 0.05$).

Summary and conclusions: The clinicians must consider LLF and bony canals in order to avoid complications. CBCT imaging systems are recommended for successful imaging of the LLF and bony canals.

P029

Alveolar Bone Changes in Post-Menopausal Osteopenic and Osteoporosis Women

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Aim and purpose: Osteoporosis is imposing public health burden especially in postmenopausal women and elderly population. It is leading cause of morbidity and mortality in postmenopausal women. The aim of this study to evaluate the alveolar bone changes in osteopenic and osteoporosis condition of postmenopausal women.

Materials and method: Total 1315 postmenopausal women were included in this study. All patients were evaluated by dual-energy X-ray absorptiometry (DXA) for BMD and dental radiograph such as orthopantomography (OPG), radiovesiography (RVG). Among those women 72 were normal, 276 were osteopenic and 967 were osteoporotic. Mandibular cortical index (MCI), Pixel intensity (PI), Mandibular alveolar bone mass (MABM), and Alveolar bone resorption pattern (ABRP) were evaluated from dental radiograph. Calculation of mean and standard deviation, as well as correlation and difference, were performed using SPSS 11.5 for Windows (Windows XP).

Results: The changes of mandibular cortical index (C2&C3) were more in osteoporotic condition (87.48%) rather than osteopenic (31.34%) and normal (12.50%). The numbers of presenting teeth were more in normal and osteopenic women rather than osteoporotic women. Pixel intensity and mandibular alveolar bone mass were significantly different from normal vs. osteopenic and osteoporosis, osteopenic vs. osteoporosis. Horizontal alveolar bone resorption pattern was more in osteoporosis women (91.21%).

Summary and conclusions: Changes in postmenopausal alveolar bone were strongly correlated with the BMD of systemic skeletal bone. This combined relationship can be used for innovations as an easy osteoporosis diagnosis tool.

P030

Improvement of Mandibular Alveolar Bone Mass in Postmenopausal Osteoporosis Patient with treatment of Zoledronic acid

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Aim and purpose: The aim of this study was to see the improvement of mandibular alveolar bone mass in postmenopausal osteoporosis patients treated with Zoledronic acid.

Materials and method: A total 1108 postmenopausal women were divided into two groups under the condition of treated with zoledronic acid ($n = 141$) and non-treated ($n = 967$) osteoporosis patients. All patient had been evaluated by dual energy X-Ray absorptiometry (DXA) and Radiovesiography (RVG). Bisphosphonate Related Osteonecrosis of Jaw Bone (BRONJ) was considered for evaluation of improvement. BRONJ was searched by Orthopantomography (OPG) and clinical examination.

Results: Mandibular alveolar bone mass in Zoledronic acid (5 mg iv per year) treated group was significantly different from non-treated osteoporosis group. None of treated (Zoledronic acid) patient had even stage 0 BRONJ.

Summary and conclusions: There are significant improvement of mandibular bone mass in Postmenopausal osteoporosis patient with treatment of Zoledronic acid.

Poster session 7 – Room Cubicle 3 | 2015-09-22 | 11:30-12:30

Theme: Implantology

P031

Lower Anterior Teeth Replacement with 2.8 mm Bone Level Implant in Elderly Patient

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Aim and purpose: Implant placement at anterior mandible at elderly patient is a challenging because of a narrow ridge. The aim of this case report is to observe in anterior implant placement in elderly patient.

Materials and method: A fifty-seven years old female patient came to the clinic with chief complaint of uncomfortable in speech and mastication with her denture seeking a fix prosthesis. Four pieces bone level implant with diameter 2.8 mm and 14 mm length were inserted at 33, 32, 42, 43 position. Five months later after osseointegration a bridgework with six unit crowns were inserted.

Results: Four years evaluation no mobility on the implants, healthy gingiva shown, and the restorations were in good condition. On radiograph there was no radiolucent and no significant alveolar crest resorption. The treatment fulfilled patient expectation to enhance speech and mastication.

Summary and conclusions: The implant placement in this case was successful

P032

Biological Effect of Implant Supported Cantilever Restorations with Early Loading

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Aim and purpose: What is the effect of two cantilever extensions on peri-implant bone loss and pocket depth at early loading?

Methods: Full metal fixed partial dentures were done supported by one implant (4 mm diameter, 10 mm length, Dentium system, Korea) located at mandibular molar position. Patients were assigned to 2 groups (10 FPDs) each, according to distal cantilevers (from the distal end of the implant to the most distal point). Group 1: 4 mm extension. Group 2: 6 mm. Early loading after 2 months from implant placement till 18 months follow-up. Periapical radiographs, pocket depth measurements recorded every 3 months. Exposure parameters were fixed. Software was used to mark bone level, implant shoulder and to measure distance between them (measuring bone loss). Graduated probe was used for measuring pocket depths. Statistical analysis with one-way ANOVA and Tukey's post-hoc for pair-wise comparisons between mean values when ANOVA test was significant.

Results: 1 month after loading, group 2 showed mean pocket depth (2.31 ± 0.25). Group 1 showed lower mean pocket depth (2.13 ± 0.22). 3,6,12 and 18 months. No difference between group 1 and 2; both showed low mean pocket depth. Through all periods, Group 2 showed low mean bone loss (after 6 months $1.22 \text{ mm} \pm 0.32$). Group 1 showed lower mean bone loss (after 6 months $0.94 \text{ mm} \pm 0.27$).

Summary and conclusions: Within the limitations in this case study; it is apparent that higher stresses of implants with cantilevers were within the load bearing capacity of bone. Increase in pocket depth and bone loss was detected with increase in distal cantilevers.

P033

Case Presentation for Implant Retained Prosthesis

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Introduction: Case presentation for implant retained prosthesis for a 38 old patient who came to the clinic with two missing upper centrals and two upper laterals with grade III mobility and after proper diagnosis for the case the patient was medically free. Two immediate implants were made after extraction of two upper laterals and another two implants were made at site of upper centrals.

The problem is that after 2 weeks from the operation the patient complained from facial cellulitis related to the operation site: Proper diagnostic X-ray was made urgently and there was no signs of bone resorption around implants and the patient was prescribed for prophylactic antibiotic, anti-inflammatory and anti-edematous drugs for 4 days and the edema was subsided and after 3 months second stage surgery was made and normal prosthetic procedures

were followed and another follow up X-ray was made after another 6 months after loading with normal findings.

Conclusions:: This proves according to clinical findings of this case that swelling, edema and facial cellulitis at site of implant surgery after operation not necessarily leads to bone resorption and implant failure after loading.

P034

Optimization of Esthetic and Anteroposterior Distance Using Computer Guided Surgery

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Aim and purpose: The objective of this case report was to describe the surgical and prosthetic rehabilitation of patient having inadequate bone in posterior region to optimize the implant placement between mental foramen using computer guided surgery (CGS) and to provide better aesthetic result using a mesio-substructure prosthesis.

Methods: After clinical and radiographic examination of patient who had severely resorbed edentulous mandible, CGS was planned to place six implants between the mental foramen providing optimal anteroposterior implant distance. Temporary prosthesis was fabricated and duplicated in radiopaque resin to serve as scanning template. Data getting from CT scan was transferred into 3-dimensional implant planning program (SimPlant, Materialise) to allow for accurate planning and placement of six implants between foramen mentales. The final position of the implant was defined, preoperative data such as implant size or the distance from anatomical structures were recorded. The plan was then sent to a manufacturing facility (Materialise, Belgium) that fabricated and delivered the surgical guide. Implant surgery was performed. After osseointegration, an impression was taken from implants and a mesio-substructure was fabricated from a screw-retained metal framework that had four metal-abutments. Full arch metal-porcelain superstructure was fabricated and cemented onto mesio-substructure.

Results: Optimal anteroposterior distance was provided between the most distally and mesially placed implants that could be reason of the long-term success of prosthesis both biomechanically and biologically. Mesio-substructure resulted the better esthetic result with hiding the screw holes beneath the superstructure and using the porcelain instead of acrylic in occlusal surfaces.

Summary and conclusions: For rehabilitation of patients having inadequate bone in the posterior region using CGS and mesio-substructure prosthesis could be successful treatment method for aesthetics and biomechanics.

P035

Marriage Made in Heaven – All on 4 Implants with Computer Guided Surgery

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All on 4 technique for dental implant placement has recently generated increased interest in patients, as a highly functional aesthetic cost effective alternative for a large group of patient's. It is a good treatment option patients who are not willing for sinus grafting or extensive bone augmentation procedures and desire fixed natural looking dentition. Computer guided dental implant is a modern and revolutionary system in dental industry. It offers a more accurate and safer positioning and implant placement using "guided" technologies have shown to have greater accuracy and precision when compared to free hand techniques. All on 4 implants through guided surgery is both easy for surgeon and patient. For the surgeon it is easy as they don't have to apply too much surgical expertise and for patient, it is less traumatic, with less post-operative complications and implant is placed in best available bone. This paper presents a, case report of a fully edentulous patient who was restored with fixed prosthesis in both maxilla and mandible through guided, all on 4 technique and followed up for 12 months period.

Poster session 8 – Room Cubicle 4 | 2015-09-22 | 11:30-12:30

Theme: Preventive Dentistry – Caries

P036

Quantitative Analysis of Streptococcus Mutans and Bifidobacterium in Child's Plaque

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Aim and purpose: To perform a quantitative comparison of *S. mutans* and Bifidobacterium spp in initial and mature plaques including clinical parameters and risk factors of severe early childhood caries.

(S-ECC) and caries free sample.

Materials and method: Initial (formed less than 4 h) and mature (formed overnight) supragingival plaque and saliva were collected from one hundred and twenty children aged 2–5 years (60 S-ECC, 60 caries free). Saliva was collected to determine pH, buffer capacity and salivary mutans. Plaque index, gingival index and dmft scores were recorded. The demographic data of children and guardians and related risk factors were obtained via questionnaires. Bacterial DNA derived from all plaque samples were subjected to quantitative real-time PCR using specific primers and SYBR green.

Results: *S. mutans* level, Bifidobacterium level, and the ratio of *S. mutans* and Bifidobacterium to the total bacteria in S-ECC from initial and mature plaques were significantly higher than in the caries free group ($p < 0.05$). Significant correlations between Bifi-

dobacterium levels in both plaques and dmft scores and plaque index were recorded, while *S. mutans* level only correlated with dmft scores ($p < 0.05$). The level of education of the guardian, duration of bottle-feeding, history of sleeping with bottle and the frequency of consuming cariogenic food between meals were found to have significant association with caries ($p < 0.05$).

Summary and conclusions: *S. mutans* and Bifidobacterium levels in both plaques were significantly higher in S-ECC group and correlated with dmft score, oral hygiene and dietary habits.

P037

Performance of the Soprolife Camera for Detection of Occlusal Lesions in Children

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Aim and purpose: Diagnosis of carious lesions is usually based on both visual and X-ray examinations; a complementary method based on laser fluorescence is often required for suspect lesions. The aim of this study was to assess the performance of a light fluorescence device, Soprolife (Acteon Group, France) in detecting occlusal caries in children.

Materials and method: A multi-centric study was carried out to validate Soprolife in 103 children, aged from 5 to 15 years, on 744 molars (310 temporary and 434 permanent). The sensitivity (SE), specificity (SP) and the area under the ROC curve (AUC) were evaluated using both visual (ICDASII) and X-ray examinations as gold standard. In case of cavitated lesions, the level of demineralization was validated after excavating for the restorative treatment. The performance of the Soprolife was compared to those of the DIAGNOdent (Kavo) on the same teeth. The reproducibilities were assessed using weighted Kappa coefficient.

Results: SE, SP and AUC were respectively of 89.04, 81.81 and 0.90 on temporary teeth, and of 88.10, 63.41 and 0.80 on permanent teeth. The performance of the Soprolife did not vary using gold standard supplemented by the observation of the level of demineralization of the only treated cavitated lesions. SE and AUC of the Soprolife (88.50; 0.84) were respectively significantly higher than those of DIAGNOdent (75.32; 0.80). SP were not significantly different (70.73 vs. 72.19). The inter- and intra-examiner kappa coefficients were respectively of 0.87 and 0.85.

Summary and conclusions: Soprolife was more precise on the temporary teeth because of difference in specificity and gave better results than DIAGNOdent.

P038

Dental Drug Delivery System (3DS) as a New Oral Management System for Adults

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Aim and purpose: Daily demineralization and remineralization by enamel is a dynamic process occurring when cariogenic bacteria form a biofilm on the enamel surface. Topical application of fluoride using individual trays is effective to promote remineralization. Dental Drug Delivery System (3DS) is a new dental management system using individual custom trays. In this study, we verified the benefit of individual trays and topical drug application system for adults as well as children.

Materials and method: Custom fitted plastic trays (individual trays) were made by dental professionals to be filled with fluoride gel or chlorhexidine (CHX) 0.2% gel.

Fifty five adult patients with middle or high levels of the mutans streptococci in saliva were participated in this study. The salivary levels of mutans streptococci were determined by BML laboratory testing Inc, Japan.

Stannous fluoride and/or chlorhexidine (CHX) 0.2% gel were delivered with individual trays by the patients themselves.

Results: The 3DS method drastically decrease the salivary levels of the mutans streptococci of each patient. DMFT of 47 people did not change during thirteen years from the start of this study. DMFT of 8 people were increased. However, these increments were mainly due to the periodontal diseases.

Summary and conclusions: We showed that individual trays for topical application with combination use of stannous fluoride and chlorhexidine (CHX) 0.2% gel are a powerful tool for caries prevention.

P039

Effect of Fluoride Toothpaste to Remineralization Processes of Enamel

Rena Qurban Aliyeva, Gulshan Kamal Zeynalova

Department of Pediatric Dentistry Azerbaijan Medical University, Baku, Azerbaijan

Aim and purpose: Multilateral and expressed influence of fluoride toothpaste on all the basic processes in the oral cavity led to their great effect. Azerbaijan has enough experience in the use of fluoride toothpastes for preventing dental disease.

It is important for us to acquisition own experience of preventive use of fluoride toothpaste, identifying their clinical and preventive influence, especially influence on different processes in an oral cavity.

Materials and method: For determining relationship between different levels entering of fluoride into organism and happened processes directed against of caries process with the aim of prophylactic of the caries. 909 primary school children were examed (7–10 years) in Baku, only 74 children were studied indexes of white spots and at the sometime were carried out 639 measuring run through of enamel.

Results: Carrying out of analyses quality of white spots in the comparison group, showed that all spots possessed expressed violation permeability of enamel, at an average 6.24 ± 0.22 point. After a year without any prophylactic interference with the help of which penetrating of enamel statistical significantly decreased to 4.96 ± 0.27 (till 20.5% in baseline), and in 2 years of observations- practice twice (till 52.7%).

Summary and conclusions: Oral hygiene leads to sharp decrease of the index of hygiene, which leads to the improvement of periodontal. Occurs expressed normalization of the penetrating process, which promotes preventive of caries and extraction of local demineralization.

P040

National Survey on School-Based Fluoride Mouth Rinsing Programme in Japan: 2014

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Aim and purpose: The purpose of this investigation was to clarify the spread conditions of Fluoride Mouth Rinsing Programme (S-FMR) throughout Japan.

Materials and method: The latest survey, the first joint with WHO Collaborating Center for Translation of Oral Health Science, 8020 Promotion Foundation, Japanese Association of School Dentists and NPO-JPUF, was conducted in 2014. Questionnaires were sent to manager of oral health in all 47 prefectures and 93 cities having own public health centers.

Results: In Japan, the total number of schools and children participating in the S-FMR were 10,335 and 1,046,489 in 915 municipalities (52.5% of all municipalities), respectively, the ratio by the total number of schools: 14.8%, the ratio by the total number of children aged 4–14: 8.3% (recovery rate 100%). In many regions, the S-FMR was implemented more widely, and received higher participation from children in either elementary schools and junior high schools or preschools and kindergartens. We have recognized considerable disparities among regions even though the number of schools and children implementing the S-FMR was widen. Regional health-related organizations (municipalities, their boards of education and dental associations) can play an important role in implementing and sustaining the S-FMR, and in reducing health inequalities concerning dental caries (among regions and individuals).

Summary and conclusions: We propose using the results of this survey as basic data for formulating S-FMR goals and adopting S-FMR as a concrete measure in the second Healthy Japan 21 from 2013 through 2022, and within the basic matters of the Act Concerning the Promotion of Dental and Oral Health.

Poster session 9 – Room Cubicle 1 | 2015-09-22 | 13:00-14:00

Theme: Dental Treatment & Restorative Dentistry – Endodontics

P041

CD24-Expression Variation of Stem Cell from Apical Papilla

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Aim and purpose:

Aim of the study: Stem cell from apical papilla (SCAP) is express more than 90% of mesenchymal stem cell markers such as CD90 and CD44. However, level of CD24 expression that was claimed as a specific marker for SCAP in previous reports is varied. The objective of this study was to investigate the CD24 expression level in SCAP.

Materials and method: SCAPs were collected from immature third molar teeth from 17 to 20 year-old patients under approval of Human Ethic Committee. 16 cell lines were used in this experiment at passage two. Cells were obtained by the outgrowth technique and maintained in 10% fetal calf serum in α-MEM culture medium. Exact mesenchymal stem cell markers (CD90, CD44) and CD24 were analyzed by flow cytometry analysis. The isotype of immunoglobulins were use as negative control for theses markers. The expression of CD45 was measured to confirm that these cells were not hematopoietic cells. Each cell line was done in triplicate at 100,000 cells per test.

Results: All SCAP cell lines expressed mesenchymal stem cell markers, CD90 and CD44 more than 95% and showed negative to hematopoietic cell marker, CD45. However, CD24 expression was observed in range of 0% to 86% (n = 16) which were 0–7% (n = 10), 20–48% (n = 5) and the highest level of expression (86%) found only one cell line.

Summary and conclusions: SCAP expressed mesenchymal stem cell markers. However, CD24 expression level was varied (0-86%) among the lines.

P042

The Antibacterial Effect of Xanthorrhizol as an Endodontic Irrigant on Enterococcus Faecalis

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Aim and purpose: The aim of this study was to evaluate the antibacterial effect of xanthorrhizol (XTZ), a potential new endodontic irrigant on *E. faecalis*, compared with 2% chlorhexidine (CHX).

Materials and method: Three states of *E. faecalis* were used: normal physiological state (NS), starvation state (SS), and alkalinization state (AS). A solution containing 1% XTZ in 30% ethanol, 1% dimethyl sulfoxide(DMSO), and 100 mg/ml sodium methyl cocoyl taurate was used(Xan). To determine the minimal bactericidal concentration (MBC) of Xan and CHX, 500µl of *E. faecalis* was added to a microtube containing 500µl of serial 2-fold dilutions of 1% Xan and 2% CHX (1:2–1:128). After mixing, 100µl was streaked on BHI agar plates and incubated at 37°C for 24 h under anaerobic conditions. Plate count method was used for counting bacteria.

Results: The MBC of Xan and CHX was same (0.25%), except for AS treated with Xan (0.125%). The antibacterial effect of Xan against *E. faecalis* was greater in AS than any other states at 0.125% and 0.03325% Xan ($p < 0.05$). In contrast, CHX was more effective against *E. faecalis* in SS than the other states at 0.0625% CHX ($p < 0.05$). In SS, CHX was more effective than that of Xan at 0.125% and 0.0625% ($p < 0.05$), while Xan showed more antibacterial effective than CHX at 0.0625% and 0.03325% ($p < 0.05$) in AS.

Summary and conclusions: Xan and CHX have similar antibacterial effect on *E. faecalis*, but especially in AS, Xan has more antibacterial effectiveness than CHX. Therefore, in endodontic retreatment cases in which it is important to effectively remove *E. faecalis* from the infected root canal, Xan may be more suitable when combined with NaOCl than CHX.

P043

Evaluation of Apical Leakage After Final Rinse of Qmix Activated with EndoActivator

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Aim and purpose: To evaluate and to compare the effect of Qmix as a final rinse on apical leakage whether or not activated with EndoActivator.

Materials and method: One hundred single rooted human maxillary incisor teeth were used. The root canals were instrumented with crown-down technique using ProTaper rotary instruments up to F4 and irrigated with 2.5% NaOCl and distilled water following each instrument. The teeth were divided into 3 groups (n = 30) according to the final irrigation solution used: 5.25% NaOCl, 2% Chlorhexidine and Qmix. Also, ten teeth were used as negative and positive control groups. Following final irrigation, groups were divided into two subgroups whether or not solutions were activated using EndoActivator. Root canals were obturated by cold lateral compaction technique with AH Plus and gutta-percha. The specimens were placed in Rhodamine-B dye solution and centrifuged at 30 G for 5 min and the sections were evaluated using stereomicroscope. Data was statistically analyzed with two-way ANOVA.

Results: The highest microleakage levels were detected in chlorhexidine groups although there was no significant difference among the apical leakage values of groups ($p > 0.05$). Usage of EndoActivator showed no statistically significant effect on apical leakage ($p = 0.826$).

Summary and conclusions: Use of Qmix as a final rinse does not improve apical sealing of epoxy resin based root canal sealer. Also, activation of all irrigation solutions with EndoActivator does not improve apical sealing of sealer.

P044

Prevalence of MB2 Canal in Mesibuccal Root of Permanent Maxillary First Molar in Malay Population

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Aim and purpose: To investigate the prevalence of extra canal MB2 in maxillary first molar among the Malay population using radiographic and clinical examinations and to evaluate the agreement between the two assessment methods.

Materials and method: This was an in-vitro cross-sectional study on total of 83 extracted maxillary first permanent molars of Malay patients who attended the Polyclinic, Kulliyah of Dentistry, IIUM. All teeth were cleaned, mounted in a wax box and were sent for a PA radiograph and cone beam computed tomography imaging. Cavity access was performed on all teeth followed by coronal patency under surgical microscope.

Results: Out of 83 teeth, 69% were found with MB2 canal. However, prevalence of MB2 canal found in both clinical and radiographic examinations was 68%. Kappa statistic between clinical and radiographic examination was 0.94 ($p < 0.001$).

Summary and conclusions: This study showed high prevalence of MB2 canal among a sample of Malay population. The agreement between clinical and radiographic assessments was almost perfect (94%).

P045

Clinical Evaluation of Mineral Trioxide Aggregate in Endodontic Surgery

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Research Center and Advanced Studies in Dentistry "Dr Keisaburo Miyata", Autonomous University of Mexico State, Toluca, Mexico

Introduction: Endodontic surgery is performed to solve inflammatory process that can't be successfully treated by conventional techniques, which may be due to complex canal and/or apical anatomy and external inflammatory process.

Objective: Evaluate clinical results involving the use of MTA in endodontic surgery treatment of maxillary lateral incisor with palato-gingival groove

Materials and methods: A 28-year-old male was referred for the treatment of left maxillary lateral incisor. Clinically, the tooth was hypersensitive to horizontal and vertical percussion, negative

response to sensitivity tests. Radiographic examination revealed a large radiolucent lesion periapical lesion.

The tooth was anesthetized and isolated; after the endodontic access were located two canals. The canals were cleaned and shaped using hybrid instrumentation.

During surgical phase, the patient was anesthetized, a full-thickness mucoperiosteal flap was reflected, and the inflammatory lesion was thoroughly removed by curettage. The apex of the tooth was resected. A deep and wide root-end cavity was prepared and filled with MTA. The flap was repositioned and sutured. The sutures were removed after 7 days.

Results: The patient had clinical and radiographic examinations 2 and 6 months after the treatment with favorable clinical and radiographic outcomes. MTA was used as a retrofilling material mainly because of its superior sealing ability compared to other retrofilling materials as well as its higher biocompatibility and stimulation effect in the regeneration of periapical tissues.

Summary and conclusions: Due to its sealing properties, biocompatibility, and hydrophilic nature, MTA is considered the best choice for a retrofilling material. Its handling characteristics are considered excellent material.

Poster session 10 – Room Cubicle 2 | 2015-09-22 | 13:00-14:00

Theme: General Dentistry and Oral Health

P046

Prophylactic Removal of Impacted Third Molar: Is It Necessary?

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Aim and purpose: The purpose of this study was to determine the occurrence of distal caries in second molar with the presence of mesioangularly impacted wisdom tooth and to evaluate factors contributing to the formation of caries in-patient attended Universiti Sains Islam Malaysia Dental Polyclinic.

Materials and method: The clinical record and dental panoramic radiograph of five hundred and twenty-eight impacted mandibular third molar of patients attending USIM Dental Polyclinic were reviewed in this retrospective study. The variables analyzed were the patient's age, gender, type of third molar impaction according to Pell and Gregory classification, third molar angulation, the distance between cementoenamel junction of impacted third molar and the second molar presented with distal caries.

Results: The result showed 44.7% cases are mesioangular type of impaction. 71.6% of mesioangular impaction manifests presence of distal caries in second molar. The distal caries prevalence was 52.8% when the impacted third molar is in IB Pell & Gregory Classification ($p \leq 0.05$). 23.6% were found in the angulation of 60°–69° followed by 40°–49° (19.8%) and 50°–59° (16.9%). The distance of 5.0 mm–6.9 mm and 7.0 mm–8.9 mm between cementoenamel junctions show 48% and 39.6% occurrence of distal caries in second molar respectively.

Summary and conclusions: The large number of distal caries in second molar may justifies prophylactic removal of mesioangularly impacted mandibular third molar that have IB Pell & Gregory

Classification with 5 mm–9 mm distance between the cementoenamel junctions.

P047

Effects of D-Amino Acids on Biofilm Dispersion in Dental Unit Water Line

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Aim and purpose: Bacterial biofilms are the common source of microorganisms that heavily contaminate water outputs from dental unit. These biofilms, once formed, are extremely difficult to eliminate either with mechanical or chemical approaches. Our study aims to evaluate the efficacy of four D-amino acids mixture on biofilm dispersion in dental unit waterlines (DUWL).

Materials and method: Mixture of 4 D-amino acids (D-Methionine, D-Tryptophan, D-Leucine and D-Tyrosine) and 0.1 M hydrochloric acid (HCl), which serves as dissolvent control, were used to disperse biofilms on pieces of DUWL *in vitro*. Dispersed biofilms were quantitate by OD. Remaining biofilms on DUWL were also subjected to examine by SEM. DUWLs of twelve dental units were randomly divided into three groups, flushed and incubated for 2 and 5 days with a mixture of D-amino acids, HCl or distilled water, respectively. Water samples were collected for microbial count every other day for 2 weeks.

Results: Neither D-amino nor HCl was able to disperse all biofilms from DUWL *in vitro* as demonstrated by OD. However, some part of the biofilms were visibly loosen, though not detached, from DUWL. When examined by SEM, neither D-amino nor HCl affected large mesh of algae on the biofilms but both did reduce amount of bacteria on top of them. In clinical setting, both D-amino and HCl were able to detach large amount of biofilms from DUWL as observed by eyes. Amount of bacteria recovered from DUWL treated with D-amino demonstrate slower regrowth rate.

Summary and conclusions: Mixture of D-amino acids might be applicable as biofilms dispersant in DUWL.

P048

Assessment of Amalgam Waste Management in Karachi Pakistan

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Aim and purpose: Silver amalgam is one of the oldest filling materials used in dentistry. The mercury particles are released from several sources and amalgam waste is one of them. These releases make the environment polluted through direct waste water, land filling and sewerage sludge incineration.

This research was carried out to see whether amalgam is disposed according to the FDI and WHO recommendations. A specialized questionnaire was designed to estimate the dental amalgam disposal; the data was collected from different dental teaching institutions of Karachi.

Materials and method: A cross-sectional study was conducted over a period of 3 months from Jan to Mar 2015 in Karachi. The target population included students/Residents/Faculty from teaching dental hospitals. Participants were recruited by convenience sampling. Data was collected using a self-administered questionnaire, close ended in English language.

Results: Among all the visited 5 dental teaching hospitals in Karachi 350 questionnaires were distributed and 300 were received back. The mean age of the sample size was (24.96 ± 6.27) . Out of which mean amalgam filling done per week was 3.38 ± 1.627 , minimum number of amalgam filling done per week was (2), maximum no of amalgam filling done per week (7), 46% agreed the facility has scrap amalgam container, 43% didn't know the disposal method of amalgam. 76% of the target population disposed the waste amalgam washed down the sink.

Summary and conclusions: Amalgam restorations are practiced on daily basis as posterior restorations. A protocol should be followed on amalgam waste disposal. Mercury recycling should be introduced and its hazards should be taught to the staff and students performing restorations.

P049

Salivary α -Amylase in Relation to Oral Health Parameters in Iraqi Children

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Aim and purpose: The aim of this study was to investigate the level of salivary α -amylase in healthy, primary school children in relation to some oral health status parameters and family history of diabetes mellitus.

Materials and method: A questionnaires consisted of demography, medical history and family history of diabetes mellitus were filled by families. Saliva samples were collected for 5- min between 9:00 and 11:00 AM from 114 healthy students aged 6–13 years, divided into four age groups. Flow- rate, Plaque and Gingival Index were assessed with dentition status was investigated by DMFS/DMFT and dmft/dmfs using WHO criteria. Salivary amylase was analyzed using EnzyChrom™ α -Amylase Assay Kit.

Results: A significant positive correlation was found between age and salivary flow-rate, ($r = 0.362$, $p < 0.001$). Salivary α -amylase concentration increased significantly with age (one way ANOVA, $p < 0.001$). For each 1 year increase in age, amylase level is expected to increase by 5.2 U/L.

A male gender is expected to reduce salivary α -amylase level by 10.6 U/L compared to female, however the effect was not significant.

Gingival index and positive family history of diabetes mellitus were positively, although non-significantly associated with salivary α -amylase concentration.

DMFS showed a significant weak positive linear correlation with salivary amylase level ($r = 0.309$ $p < 0.001$), while deciduous teeth

decay experience and plaque index were negatively associated with salivary amylase, however fail to reach significance.

Summary and conclusions: Our results emphasize the importance of salivary amylase, as a non-invasive biomarker in regulating oral, dental and systemic health status in children.

P050

Multiple Idiopathic Cervical Resorption: A Case Report

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Aim and purpose: The purpose of this study was to see the pattern of resorption occurring at the cervical portion of teeth and manage it in a proper way to stop the progression of resorption.

Materials and method: A detailed medical history was taken followed by biochemical investigations were also carried out to rule out any endocrinological disorders leading to resorption of bone and teeth. Serum Calcium, Alkaline Phosphatase, T3, T4, TSH were done to see the resorption pattern.

Results: The treatment protocol followed was extraction of 24 and 25, root canal treatment of 13 and 23 in which the resorption approximated the pulp, followed by flap reflection and removal of the smear layer from the tooth surface, and cervical restoration with glass ionomer cement. Finally for prosthetic rehabilitation, a cast partial denture made of cobalt chromium alloy was delivered to the patient. The patient was kept under a regular follow up every 3 months to check for progression of disease. It was seen that the resorption ceased after the treatment.

Summary and conclusions: Multiple idiopathic cervical root resorption is an occult, progressive condition of unknown aetiology till today. However, the resorption can be arrested in the initial stage by flap reflection and restoration of the teeth with calcium hydroxide and glass ionomer cement.

Poster session 11 – Room Cubicle 3 | 2015-09-22 | 13:00-14:00

Theme 1: Implantology

P051

Efficiency of Bone Substitutes for Maxillary Sinus Floor Elevation: Haydarpasa Experience

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Aim and purpose: The aim of this study was to retrospective evaluation of the efficacy of bone substitutes, namely allografts and xenografts, for augmenting maxillary sinus in the implant treatment.

Materials and method: Of the 383 dental implant patients, who underwent dental implant placement surgery between the years of

2010 to 2013 at Department of Oral and Maxillofacial Surgery of GMMA Haydarpasa Teaching Hospital, Turkey. Of 383 dental implant patients, 43 of them were received dental implant treatment using the maxillary subantral bone augmentation. For 39.5% of those patients, freeze-dried bone allograft (MinerOss[®]), but for the remaining 26 patients, deproteinized bovine bone mineral (Bio-Oss[®]) was used.

Results: Of the 50 transalveolar sinus floor elevation, Schneiderian sinus membrane rupture was occurred in 5 (10%) and membrane repair was done using collagen membrane. Of 5 membrane rupture cases, all of them healed uneventfully. Of the all 50 sinus lift, there was no postoperative complication such as infection. All the 103 dental implants were osseointegrated (100%). Porcelain fused metal (PFM) bridge or crowns were delivered to all of the 43 patients for prosthetic rehabilitation. Follow-up period was between 2 years and 7 months to 3 months.

Summary and conclusions: In conclusion, within the limits of this retrospective study, it may be concluded that subantral sinus floor augmentation can be performed in conjunction with the application of bone substitute grafting materials effectively and predictably.

P052

Effect of Phosphoric Acid Modified Titanium Surface on Physical Characteristics and MC3T3-E1 Cell Attachment

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Aim and purpose: The aims of the present study were to evaluate effect of phosphoric acid (H3PO4) modified titanium surface on surface physical characteristics and murine osteoblast cell (MC3T3-E1) behaviors.

Materials and method: Commercial pure titanium surfaces were modified by deionized water (control), 5% H3PO4, 10% H3PO4, or 20% H3PO4 solution. The surface characteristics were evaluated by profilometer, contact angle meter, and scanning electron microscopy with energy dispersive X-rays. MC3T3-E1 were seeded on the various modified titanium surfaces. Cell attachment and spreading were evaluated using SEM and immunohistochemistry staining.

Results: There was no significant difference in surface roughness (Ra) and hydrophilicity among all groups. In the 10% and 20% H3PO4 modified group, the phosphate and oxygen on the surfaces were significantly higher than the control group. The number of attached cells was significantly increased on the titanium surface treated with 10% and 20% H3PO4 at 20 min. Though, there was no difference among all groups at 1 h. In addition, cells on 20% H3PO4 modified titanium surface exhibited better orientated-cytoskeleton fibers but there was no difference in cell spreading stage among all treatment groups at 1 h.

Summary and conclusions: These results demonstrate that H3PO4 modified titanium surface may improve early cell attachment and spreading.

P053

Patients' Awareness of A dental Implant as an Option for Tooth Replacement: A survey in Alkharj Province, Saudi Arabia

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Aim and purpose: To evaluate patient awareness's and source of information about dental implant as an option of treatment to replace the missing teeth, in Alkharj Province Saudi Arabia.

Materials and method: Cross-sectional study performed to access the level of awareness regarding dental implants. The survey was conducted between September 1 And November 20, 2014. Self-explanatory questionnaire was designed and handed to the patients during their regular dental visits. The quantitative data was entered onto (SPSS) Version 18 for Windows. Descriptive analysis was undertaken to present an overview of the findings from this population. Differences between groups were examined using the Student's t-test. ANOVA test were used to test the significance level ($p < 0.05$).

Results: Out of 360 persons approached, 355 answered the questionnaire. 276 respondents heard about dental implant (77.7%) and 79(22.3%) persons they did not heard about dental implant. 105 (32.31%) of the patient heard about dental implant from newspaper Magazine, 91 (28%) from friends, 75 (23.08%) from dentist and 54 (16.61%) from other patients. Answer of the respondents to question what the advantages you know about replacing missing teeth with dental implants, 170 (44.5%) believed that it provided a higher esthetic, 153(40.05%) improve function, 32(8.38%) high success rate and 27 (7.07) no risk.

Summary and conclusions: Among the participants the awareness level was more than seventy percent and media were the major sources of information. Patient are willing to know more about dental implant and the dentists should give more detailed information to the patients about dental implants and different treatment options that implant will provide.

P054

Guided Implant Placement with Immediate Provisional Crown or Bridge in Esthetic Zone Compare with the Conventional

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Aim and purpose: This study aims to evaluate the guided implant placement with immediate provisional crown or bridge with conventional implant placement in esthetic zone. The main objectives of this study was to evaluate the accuracy of the digital surgical guide and the position of the provisional crown or bridge.

Materials and method: The software start by placing virtual crowns according to prosthodontic setting. The designed implant supported crown or bridge using the 3Shape software. The plan was to fabricate anatomically accurate abutment crown and bridge by CAD/CAM zirconia. Preparation of the implant bed with sequence of bone drill. The restoration should not be removed during the healing period of approximately 6 weeks. The patient should be educated in how to function during the healing period and adequate oral hygiene. Screw-retained provisional restorations are recommended. Patients with parafunctional occlusal habits should be fixed with a habit appliance.

Results: The satisfaction score compare with the conventional splint and provisional crown improve in term of time and esthetic outcome but in term of the cost effective is not benefits in case of the single crown but for the multiple teeth (more than 3 teeth) replacement show not significant difference $p < 0.05$.

Summary and conclusions: Immediate restoration and loading can be used when the bone volume at the site was close to ideal no simultaneous guided bone regeneration procedures are required. Patient satisfaction is another important factor in predicting the success of implant therapy in the anterior maxilla.

Theme 2: Implantology – Oral Medicine

P055

Buccal Mucoadhesive HPMC Polymer for Delivery of Triamcinolone Acetonide

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Aim and purpose: Triamcinolone acetonide (TA) is a first-line drug for the treatment of inflammatory oral lesions, with 0.1% as its most effective concentration. Topical applications have low retention at the oral mucosa. Mucoadhesive hydroxypropyl methylcellulose (HPMC) polymers are well-known and widely used for buccal drug delivery systems. They enhance the drug's ability to adhere onto the oral mucosa. The aim of this study was to prepare a new buccal mucoadhesive polymer based on HPMC for the delivery of 0.1% TA and test for mucoadhesion.

Materials and method: Testing of the buccal patches were carried out using a texture analyzer (TA.XT plus, Stable Micro Systems, UK), equipped with a 50-N load cell and a bioadhesive holder. Patches of about $20 \times 20 \times 10$ mm³ were attached to a cylindrical probe (10 mm in diameter). The probe with buccal patches was moved downward to attach the tissue with a specified contact force of 0.2 N and a contact time of 30 s before withdrawal at a speed of 10 mm/s. By using the texture analyzer, the maximum force needed to separate the probe from the tissue (maximum detachment force, Fmax) was derived directly and calculated the work of mucoadhesion (ml/cm²). Each experiment was carried out five times.

Results: Mucoadhesion of TA loaded into 0.5%, 1%, 2%, 3% HPMC polymer was achieved.

Summary and conclusions: This study produces a buccal mucoadhesive polymer for alternative treatment in oral mucosa. It could increase the contact time of the drug with the mucosal surface leading to an improved response to drug treatment.

Poster session 12 – Room Cubicle 4 | 2015-09-22 | 13:00-14:00**Theme: Preventive Dentistry – Caries**

P056

The Occurrence of Cariogenic and Periodontal Bacteria in 1-yr-old Infants with Very Low Birth Weights and Their MothersZdenek Broukal¹, Vlasta Merglova², Jana Duskova¹, Romana Ivancakova Koberova³, Jiri Dorts²¹1st Faculty of Medicine, Charles University in Prague, Czech Republic, ²Faculty of Medicine in Pilsen, Czech Republic, ³Faculty of Medicine in Hradec Kralove, Prague, Czech Republic

Aim and purpose: To identify the representative cariogenic and periodontal bacteria in 12-months-old infants and to compare their occurrence between a cohort of very-low- birth- weight infants (VLBW) and a control cohort of full-term children (FT). The approval of the Ethics committee of the presenter's institution was obtained.

Materials and method: Totally, 86 1-year-old infants were examined, 44 VLBW and 42 FT. The samples of dental plaque were processed for the identification of cariogenic and periodontal bacteria using a real time PCR method. Statistics: Chi-square and Fisher's tests.

Results: At least one species of cariogenic bacteria were detected in 82.3% of the VLBW infants and in all FT infants. Periodontal pathogens were found in 61.8% of VLBW and 89.6% of FT. Significant differences between the cohorts were found in terms of the presence of Streptococcus mutans (SM). While in FT cohort S. mutans was present in all children, in VLBW cohort it was identified only in 3.8% of children ($p = 0.0001$). Aggregatibacter actinomycetemcomitans was found in 63.5% and 65.8% of VLBW and FT children resp. ($p = 0.173$) and Fusobacteria and Capnocytophaga were present in less than 40% equally in both cohorts. The in vitro plaque formation, acid-tolerance and the broad metabolic activity was found in all SM isolates.

Summary and conclusions: The early transmission of cariogenic and periodontal bacteria to the oral cavity of 1-yr-old infants was found. The early presence of cariogenic bacteria is a risk factor for future caries development. The clinical significance of oral periodontal pathogens occurrence at such a young age could be the matter of future research.

P057

Effectiveness of Fluoride Varnish and Chewing Cheese in RemineralisationWan Nurfaizliyana Wan Fauzi¹, Zati Balqis Mohammed Azme¹, Susi Sukmasari², Anisa Kusumawardani³, Iswan Zuaraidi Zainol⁴¹Kulliyyah of Dentistry, International Islamic University Malaysia, Kuantan, Malaysia, ²Department of Paediatric Dentistry, Kulliyyah of Dentistry, International Islamic University Malaysia, Kuantan, Malaysia, ³Department of Conservative Dentistry, Kulliyyah of Dentistry, International Islamic University Malaysia, Kuantan, Malaysia, ⁴Department of Orthodontic, Kulliyyah of Dentistry, International Islamic University Malaysia, Kuantan, Malaysia

Aim and purpose: To investigate the effectiveness of combining the application of fluoride varnish with chewing cheese in white spot lesions remineralisation.

Materials and method: A researcher blinded quasi experimental study was conducted on 521 occlusal white spot lesions (OWSL) of 69 dental students with age between 20 and 21 years old who were randomly assigned into three different treatment groups; Fluoride varnish (FV), Cheese (C) and combination of Fluoride varnish and Cheese (FVC). The reduction of DIAGNOdent reading (DR) values represented OWSL remineralization. The DR at screening was compared with 2nd, 4th and 6th weeks follow-up. Repeated Measures ANOVA was used for data analysis.

Results: The mean ($\pm SD$) DR of FV at screening, 2nd, 4th and 6th week follow-up were, 13 (± 5.40), 10 (± 7.53), 10 (± 7.23) and 9 (± 6.23); those of C were 13 (± 5.15), 11 (± 7.46), 11 (± 6.96) and 10 (± 7.04); and those of FVC were 14 (± 5.56), 13 (± 9.81), 12 (± 8.57) and 11 (± 7.31) respectively. All treatment groups showed reduction of DR, however the DR was increased in FV at 4th week follow-up. Levene's Test of Equality of Error Variances showed significant of DR at 2nd and 6th week follow-up ($p = 0.00$ and $p = 0.04$) respectively whereas there were no significant of DR at screening and 4th week follow-up ($p = 0.39$ and $p = 0.07$) respectively.

Summary and conclusions: All 3 treatments had remineralisation effect on white spot lesions. With significant results at 2nd and 6th week, however the most effective group cannot be determined.

P058

Impact Decrease IL-8 Expression Of Salivary Neutrophils At Human Neutrophils Peptide Secretion In Oral Cavity Severe Early Childhood CariesMuhammad Luthfi Adnan¹, Retno Indrawati Roestamadji¹, Ira Arundina¹, Yoes Prijatna Dachlan²¹Oral Biology Department, Airlangga University, Surabaya, Indonesia, ²Parasitology Department, Medical Faculty of Airlangga University, Surabaya, Indonesia

Aim and purpose: Analyzed the impact of the decrease IL-8 expression of salivary neutrophils at human neutrophils peptide 1-3 (HNP 1-3) secretion in oral cavity severe early Childhood caries.

Materials and method: Antibodi Monoklonal HNP 1-3, PerCp/Cy5.5 anti-human IL-8, Deterjen Nonidet P-40, Method: Subjects should not eat, drink, chew gum, or brushing teeth for 60 min before sampling. Having collected the samples were frozen at -80 ° C for analysis (Phattarataratip, 2010). Two groups i.e, 20 caries-free children and 20 severe early childhood caries taken salivary to be analyzed HNP 1-3 secretion by ELISA and the results of mouthwash NaCl 1.5% to be analyzed IL-8 expression on salivary neutrophils by flow cytometry.

Results: Based on the average value is known that HNP 1-3 secretion in early Childhood caries-free is lower (140.39 + 31.91 pg/ml) in comparison to the severe early Childhood caries (172.76 + 41.64 pg/ml), but instead the expression of IL-8 neutrophil salivary neutrophils in early Childhood caries-free higher (3.31 + 0.50) in comparison to the severe early Childhood caries (2.95 + 0.56).

Summary and conclusions: Decreased expression of IL-8 salivary neutrophils impacted increased HNP 1-3 secretion in oral cavity at severe early childhood caries

P059

Field Evaluation for SMART Preventive Restoration in 2–4 years-old Children

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Aim and purpose: The purpose of the study was to evaluate the oral health outcome of SMART preventive restoration in 2–4 year old children in rural setting in Uttradit, Thailand.

Materials and method: The study was approved by ethic committee, Mahidol University. One hundred and seventy-nine children were stratified randomization from 4 day-care centers each as control (90) and study group (89). Control group had standard oral health care from the Ministry of Public Health including oral health education, after-lunch tooth brushing with fluoride toothpaste, fluoride varnish every 6 months and referral for dental treatment. In study group, glass ionomer sealants and Smart preventive restoration which using partial caries removal and restored with capsulated glass ionomer were added, at day-care centers. Incremental caries status (after 1-year follow-up) was compared as well as oral hygiene (simplified debris index, DI-S) between two groups.

Results: The results showed incremental caries in study group was 0.8 ± 1.6 dmft which was significant different with 3.2 ± 2.7 dmft in control group ($p < 0.001$). DI-S was also statistically significant better in study group, 1.5 ± 0.5 , than control group, 1.8 ± 0.5 , ($p < 0.001$). Incremental cost-effectiveness ratio showed net social saving 736 Baht per child per unit of dmft averted.

Summary and conclusions: In conclusion, 1-year evaluation of providing sealant and SMART preventive restoration with capsulated glass ionomer in carious lesions for 2–4 year-old children, at on-site day care centers, demonstrated obvious impact outcome for less incremental caries and cleaner oral hygiene and cost saving as well.

P060

Process Evaluation of Field SMART Preventive Restoration at Paktongchai, Thailand

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Aim and purpose: Process evaluation of field SMART preventive restoration in primary teeth of young children was undertaken at Paktongchai district, Nakornrajsima, Thailand.

Materials and method: In 2014, a total sample survey at Paktongchai district, Nakornrajsima province, Thailand, on 2,085 children of 3–5 years old showed 35% caries free and dmft was 7.1 which 96.4% untreated (d). Therefore, SMART preventive restoration, i.e. partial caries removal and restored with capsulated self-cure glass ionomer cement, has been implemented by trained dental nurses on 1,075 carious children as 1,284 SMART restoration and 1,628 sealants on primary teeth with the same glass ionomer cement, in the field day-care setting. Each child who had frank open cavity was treated in average 2.7 teeth, both SMART preventive restoration and sealant.

Results: The process evaluation found that, on average, one capsulated self-cure glass ionomer cement could be enough for 2.4 primary teeth, either SMART preventive restoration or sealant which was cost-effective as around US\$1 per tooth for material cost of capsulated glass ionomer cement. The time used for each child was average 16 min since there was no drill, no injection and no pain on this SMART preventive restoration and sealant. With this SMART preventive restoration, there was 43% increase in restored primary teeth for these children.

Summary and conclusions: In summary, SMART preventive restoration, with self-cure capsulated glass ionomer cement, might be practical and cost-effective for young children especially in the outreach population.

Poster session 13 – Room Cubicle 1 | 2015-09-22 | 14:30-15:30

Theme: Dental Treatment & Restorative Dentistry – Endodontics

P061

Evaluation of Physicochemical Properties in Two Kinds of Endodontic Sealers

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Aim and purpose: Due to the diversity of composition of the available sealers and variation of products, the objective of this study was to evaluate the physicochemical properties of two common endodontic sealers (AH26® and Sealer 26®). In this study we evaluated setting time (ST), flow (FL) and radiopacity (RD) according to Standard ISO 6876.

Materials and method: Five samples of each material were prepared for each test. For ST, stainless steel ring molds were filled with sealers and tested with a Gilmore needle. For FL, 0.05 ml of each sealer was placed on a clean glass plate. Another plate and a load of 120 ± 2 g were applied on the sealer, 180s after the start of mixing. The diameters of the discs formed between the plates were measured by digital micrometer. About RD, circular molds (according to Standard ISO 6876) were filled with the sealers, radiographed and analyzed using digital radiographs and compare with standard Aluminium wedge. All the steps were performed according to the ISO 6876:2012.

Results: Both of evaluated sealers (AH26[®] and Sealer 26[®]) about evaluated properties fulfilled ISO 6876 requirements. According to statistical analysis, RD of AH26 (7.87 ± 0.36 mm Al) was greater than sealer 26 (5.26 ± 0.16 mm Al). FL of sealer 26 (24.575 ± 1.05 mm) was greater than AH26 (22.586 ± 0.89 mm). The duration of ST for sealer 26 (46.25 ± 1.76 h) was longer than AH26 (30.75 ± 1.08 h). All differences was statistically significant ($p < 0.05$).

Summary and conclusions: All evaluated physicochemical properties of the tested sealers adapted to ISO 6876:2012 requirements. So both of them are useful in suitable cases.

P062

Effectiveness of Propolis and Natrium Hypoclorite for the Cleanliness Root Canal Walls

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Aim and purpose: To analysis of the cleanliness the root canal walls, irrigated with aquadest, 8% East Java propolis extract, 2.5% NaOCl and 5% NaOCl

Materials and method: Twenty eight extracted teeth with straight single root canals were randomized divided into 4 groups ($n = 7$). The specimens instrumented with ProTaper. During instrumentations, irrigations with the different solutions: Control Group: aquadest; Group 1: 8% East Java propolis extract; Group 2: 2.5% NaOCl and Group 3: 5% NaOCl. After that, the root were cut at apical third and SEM scores were submitted to Mann-Whitney test at the significance level of $p = 5\%$ and Median Control Test.

Results: For Mann-Whitney there were significant differences between control group with group 1, 2 and 3 ($p < 0.05$). Median value of 8% East Java propolis extract and NaOCl 5% shown 1,000, which is the better value compared with NaOCl 2.5% and aquadest.

Summary and conclusions: 8% East Java propolis extract and the 5% NaOCl is better in cleaning the root canal walls compared with 2.5% NaOCl.

P063

Effects of Bleaching on Laser Doppler Blood-Flow Signals Recorded from the Underlying Pulp Cavity in Human Teeth in Vitro

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Aim and purpose: To determine the effect of bleaching on laser Doppler blood-flow (LDF) signals recorded from dental pulp.

Materials and method: Observations were made on 11 human premolars extracted from young patients during orthodontic treatment. The remaining pulp tissue was removed and filled with

saline. Blood flow signals were recorded from the buccal surface of the crown with a laser Doppler flow meter while diluted blood was pumped at 0, 3, 6, and 10 ml/h through a cannula inserted into the pulp cavity. Recordings were made from the enamel surface before and after bleaching with 38% hydrogen peroxide according to the manufacturer's instructions. Tooth-colored changes were determined at the cervical, middle, and occlusal third of the buccal surface using the digital spectrophotometer VITA Easyshade Advance.

Results: There were approximately linear relationships between blood flow rate and signal both before and after bleaching. Furthermore, the mean slope of the regression line between blood flow rate and signal increased significantly ($p < 0.001$), while the shading parameters of either ΔE or L obtained from cervical third were significantly higher after bleaching ($p < 0.05$, paired t-test). The significant correlation between percentage changes after bleaching of the blood flow signal and the shading parameters of h value was 0.66 ($p < 0.05$).

Summary and conclusions: When recording pulpal blood flow from a human tooth with a laser Doppler flow meter, a substantially better signal-to-noise ratio would be obtained after bleaching, and this will affect the validity in the evaluation of bleaching effect on pulpal blood flow in human.

P064

Root Canal Morphology of Mandibular Anterior Teeth in Thai Subpopulation

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Aim and purpose: To investigate the root canal morphology of the mandibular anterior teeth in a Thai subpopulation using cone-beam computed tomography (CBCT).

Materials and method: 135 CBCT radiographs from the patients' (2011–2013) of Oral and Maxillofacial Radiology Clinic, Faculty of Dentistry, Chiang Mai University were evaluated in sagittal, coronal and axial plane. The following data was recorded: The number of root canal, position of canal bifurcation and canals orientation of mandibular anterior teeth. Data was analyzed with chi-square test & McNemar test.

Results: 165 central incisors, 176 lateral incisors and 217 canines were evaluated and found that the prevalence of 2 root canals in mandibular central incisors, lateral incisors and canines were 9.70%, 22.73% and 11.06% respectively. There is no significant difference of root canal variation in male and female ($p > 0.05$). The McNemar test shows that the number of root canal of tooth on the left and right side of mandible in same person is conformed

($p > 0.05$). The level of bifurcation of mandibular central incisors located mostly in the middle third of the root while mandibular lateral incisors and canines the bifurcation located in coronal third.

Summary and conclusions: There is a high prevalence of 2 root canals in mandibular anterior teeth, especially in lateral incisors. This study provides clinical information about the root canal morphology of mandibular anterior teeth in a Thai subpopulation. Moreover, CBCT is an effective tool for the study of root canal morphology.

P065

CRISPR-Cas and Bacteriophages Association in Endodontic, Oral and Multidrug-Resistant Hospital-Acquired Enterococcus Faecalis

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Aim and purpose: The objectives were to investigate the presence of bacteriophages phiEF11 and phiFL1A in collections of endodontic ($n = 34$) and oral ($n = 21$) *E. faecalis*, and phiFL1A in multi-drug resistant hospital-acquired *E. faecalis* strains ($n = 23$); and the strain-specific relationship between the prokaryotic immune system CRISPR-cas and the presence of bacteriophages.

Materials and method: *E. faecalis* strains used had previously been screened for the presence of CRISPR1-cas and CRISPR3-cas. Chromosomal integration sites of phages were determined via PCR. Amplifications were performed across the phage junction sites using primers specific for the phages phiEF11 and phiFL1A. Strain-specific associations between the presence of the phages and the absence of the prokaryotic immune system CRISPR-cas were evaluated.

Results: phiEF11 was detected in 23.5% of endodontic and 28.5% of the oral strains. PhiFL1A was detected in 8.8% of the endodontic, 14.3% of the oral and 26% of the hospital-acquired strains. Simultaneous presence of CRISPR-cas and phiEF11 was observed in two endodontic and three oral strains, and of CRISPR-cas and phiFL1A in two endodontic and one oral strain. Associations were found between the presence of bacteriophage phiEF11 and the absence of CRISPR-cas ($p < 0.05$) in oral and endodontic strains; and between phiFL1A and the absence of CRISPR-cas in multi-drug resistant hospital acquired strains ($p < 0.05$).

Summary and conclusions: Bacteriophage phiEF11 could be detected in endodontic and oral *E. faecalis* strains, but the incidence was low and was associated with the absence of CRISPR-cas. PhiFL1A was detected in a higher proportion of hospital acquired *E. faecalis* strains, especially when CRISPR-cas was not present. (CAPES/10342-12-5).

Poster session 14 – Room Cubicle 2 | 2015-09-22 | 14:30-15:30

Theme: General Dentistry and Oral Health

P066

Peripheral Giant Cell Granuloma: A Case Report

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Introduction: Peripheral giant cell granuloma (PGCG) is the most common non-neoplastic oral giant cell lesion representing a local hyperplastic reaction to injury or inflammation. The usual localization for PGCG is premolar region and crest of the edentulous ridge. Solitary gingival enlargements in children are a relatively common finding. Radiographs and histopathologic examinations are very important for diagnosing this lesion.

Case description: An 11-year-old female patient reported with a chief complaint of pain and swelling in the upper right back region of the mouth since 4 months with no history of trauma. The solitary swelling was 2 by 1 cm² in size extending from permanent right maxillary canine to the first molar region and was sessile, irregular with overlying surface erythema and ulceration. The lesion was soft and tender with tendency to bleed. Radiographic examination revealed ground glass appearance of alveolar process of right maxilla with bony outgrowth along with associated soft tissue component arising from its inner surface. It predominantly involved the premolar region and protruded into the oral cavity giving the impression of peripheral odontogenic fibroma. Based on histopathologic examination, final diagnosis of peripheral giant cell granuloma was made. Under local anesthesia, the lesion was surgically excised and patient was placed on antibiotics and analgesics for 5 days with follow-up visit at 10 days interval.

Conclusion: Early and definite diagnosis correlating clinical, radiographic and histopathologic examination is important for conservative management of such lesion in children, thus eliminating potential risk to adjacent hard tissue structures.

P067

Parental Knowledge, Attitudes and Awareness on Dental Radiography for Children

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Aim and purpose: Radiographs are an essential part in dental examinations and diagnoses. Children behave differently to the adults in radiology departments. Parents usually bring their children for radiographic investigations and parental participation in the process is vital. The aim of the study was to assess the knowledge and attitudes of parents towards dental radiographs for their children.

Materials and method: A self-administered 25 item questionnaire, covering socio-demographics parental level of radiation knowledge and their attitudes was used. Sliding scale was used to assess par-

ent's knowledge and attitudes. Informed written consent were taken from all participants Ethical clearance for the study was obtained from the Faculty Research Committee, Faculty of Dental Sciences, University of Peradeniya. Data was analyzed using SPSS version 17.

Results: 500 parents attending the dental radiology unit, Dental Hospital, Peradeniya participated in the study. 75% of the participants were mothers and most (44.7%) had education up to GCE Ordinary Level. Average age of the participants was 40 years. Most parents displayed a low level of knowledge (n = 318), but had a positive attitude towards dental radiographs (n = 350). Mothers, families with higher number of family members, families with high monthly income and parents with higher educational qualifications showed a statistically significant level of knowledge about dental radiography.

Summary and conclusions: Most parents have a positive attitude towards dental radiographs on their children. However, the majority of parents lack knowledge regarding dental radiography, especially regarding the risks involved.

P068

Incidental and Anatomical Findings in the Maxillary Antrum Identified on CBCT Scans- A Retrospective Study

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Aim and purpose: CBCT has various applications in dentistry. Even though CBCT provides information on hard tissues only, it clearly demonstrates the antral soft tissue structures. Currently, only limited data are available regarding the occurrence of incidental findings with CBCT imaging. Aims were to determine the prevalence of incidental maxillary sinus pathologies and anatomical variations in patients by CBCT and to assess the relationships of such abnormalities with age and gender.

Materials and method: All the maxillary CBCT scans taken at the Radiology unit, Faculty of Dental Sciences (FDS) were reviewed. Images taken to assess maxillary antral pathology, poor quality images and patients with craniofacial syndromes, or cleft palate were excluded. Gender, age and reason for referral were recorded. Ethical clearance was obtained from the Faculty Research Committee, FDS, University of Peradeniya. The data was analyzed with SPSS 17.0 software.

Results: 226 scans were included in the study. There were 84 males. Average of the patients was 26 years. Assessment of impacted teeth was the commonest request followed by the implant assessment. 93 patients had antral pathologies, commonly in the right side (71). Mucosal thickening was the commonest pathology followed by sinus polyps. Few patients had septa and 3 patients had evidence of fibro-osseous lesions. Floor of the antrum was the commonest site of involvement. There was no relationship between age and gender with antral pathology.

Summary and conclusions: Antral pathologies are common in Sri Lankan patients who underwent CBCT scans. It is mandatory for

clinicians to assess the maxillary antrum in CBCT to exclude any antral pathology.

P069

CBCT Evaluation of Obstructive Sleep Apnea risk Among Dental Patients

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Aim and purpose: To investigate if the Uvula-Airway Index (UAI) can be utilized as a risk predictor for Obstructive Sleep Apnea (OSA).

Materials and method: This cross-sectional study was conducted using 52 CBCT volumes that were acquired for pre-implant imaging. The CBCT records were accessed remotely after obtaining necessary IRB approvals. The average width and length of the patient's uvula, the perimeter of the airway and the severity of the retropharyngeal tissue thickening in the posterior pharyngeal wall were measured in mm using CS3D Imaging software and its 2D measurement tool.

Results: The measurements of uvula length ranged from 27.9 mm to 49.3 mm among the subjects studied. The width of uvula ranged from 5.03 mm to 11.93 mm among the subjects studied.

The perimeter length of the upper airway ranged from 155.9 mm to 221.1 mm among the subjects studied. A new Uvula-Airway Index is proposed and ratios were calculated for all 52 patients.

Summary and conclusions: An enlarged soft palate and an elongated uvula that rests on the base of the tongue impinging on the posterior airway just above the larynx could cause an increased risk of OSA (1). The UAI has been proposed to aid in the diagnosis of OSA. Based on this index, when a patient has an above average airway but below average airway perimeter, the ratio is affected and shows an increase in risk of OSA.

P070

Which Irrigants to Use for Surgical Removal of Wisdom Tooth?

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Aim and purpose: This pilot study is to compare the efficacy and cost effectiveness of different irrigants for surgical removal of lower wisdom teeth.

Materials and method: A total number of 23 patients attended Islamic Science University of Malaysia (USIM) polyclinic from March 2014 to August 2014 with American Society of Anaesthesiologists (ASA) 2 or less was recruited. This single blinded study was carried out with patients being randomly divided into group A (normal saline), B (distilled water) and C (chlorhexidine gluconate 0.12%). The inclusion criteria were: orthopantomogram radiographs taken for assessment, patients indicated for surgical removal of lower wisdom tooth according to United Kingdom guidelines and not taking any antibiotic or anti-inflammatory medication 7 days prior to the surgery. Patient with distal angulation of impacted tooth was excluded. All the patients that underwent standard surgical procedures were treated under local anaesthesia, either with normal saline, distilled water or chlorhexidine gluconate 0.12% as an irrigant respectively. Ethical approval was granted from the USIM ethics committee. Prior to the surgery, written consents were taken. Standard post-operative instructions and medications were prescribed. Patient was reviewed on day 1 and day 7 post-operatively for complications (pain, swelling, infection and delayed wound healing).

Results: There is no significant ($p < 0.05$) post-operative complications were found between the groups.

Summary and conclusions: Distilled water is found to be the most cost effective irrigating solution with similar efficacy like other irrigating solutions for surgical removal of lower wisdom tooth.

Poster session 15 – Room Cubicle 3 | 2015-09-22 | 14:30-15:30

Theme: Implantology - Oral Medicine

P071

Anatomic Variation in Lingual Foramen –A Cone Beam Computed Tomography Study

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Aim and purpose: To assess the appearance, visibility, location, types of lingual foramen in the mandibular region using cone-beam computed tomography (CBCT).

Materials and method: A cross sectional retrospective study was conducted using CBCT images of 116 patients who attended the department for various imaging purposes. The examinations were carried out using the Promax 3D CBCT unit. The images were examined in the midline of the mandible to detect the presence of the lingual foramen, its number, position and variation. The position of the canal was measured from the alveolar crest to the foramen and from the foramen to the lower cortex. Positions of the canal were compared in different groups.

Results: We observed lingual foramen in 116 patients and their number ranged from 1 to 3. When comparing the position it was observed that lingual foramen was located at approximately 2/3rd (60th percentile from the alveolar crest) distance from the alveolar crest to lower border of the mandible and there was no significant difference in various age groups or between both genders.

Summary and conclusions: Lingual foramen transmits neurovascular bundles to surrounding structures hence any damage to the lingual foramina during surgical procedures can result in hemorrhage and/neurosensory disturbances. It is therefore mandatory for a dentist to be aware of the structures present in the anterior mandible when considering any surgical procedures or implant planning. Hence.

CBCT plays a pivotal role during implant planning and surgical procedures in dentistry.

P072

Rationalizing Risk Assessment in Oral Potentially Malignant Disorder Management

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Introduction: The concept of a “potentially malignant” disease state is confusing to both clinicians and patients. It is recognised that a range of oral potentially malignant disorders (PMD) harbour an increased risk of squamous carcinoma development, but contemporary clinical practice remains unable to predict lesion behaviour, quantify risk of malignant transformation or objectively plan treatment. Uncertainty and unpredictability confound management protocols.

Aim and purpose: The aim of this paper was to distinguish between high and low risk influences on oral carcinogenesis in order to aid clinical identification of PMD patients at increased risk of malignancy.

Materials and method: A literature review of 300 recent publications documenting risk factors and oral carcinogenesis was carried out.

Results: “High risk” patients misuse tobacco and alcohol exhibiting a strong addiction to smoking and persistent high alcohol consumption, together with a diet low in fruit and vegetables, and poor oral hygiene and irregular dental care. Most commonly, patients will be males of short-stature, low socioeconomic status and low educational attainment, experiencing periods of material deprivation or long-term unemployment or primarily engaged in manual occupations such as bricklaying and painting. In contrast, patients’ age, medical history or medication use and human papillomavirus exposure are seen to be less helpful in predicting disease status and risk.

Summary and conclusions: Integration of risk profiling to existing diagnostic and clinic surveillance protocols is a pragmatic tool to aid discrimination of “high” and “low” risk PMD patients. Further application, ideally as part of a multi-centre trial, will determine a more precise role in patient management.

P073

Oral Warts in HIV-Positive and -Negative Patients: Case ReportsIrna Sufiawati*Department of Oral Medicine, Faculty of Dentistry, Universitas Padjadjaran, Bandung, Indonesia*

Aim and purpose: Oral warts among HIV-positive patients appears to be increasing in the era of highly active antiretroviral therapy, but rarely seen in immunocompetent hosts. We aimed to present two cases of oral warts in both HIV-positive and -negative patients. **CASES:** The first case was a 44-year-old HIV-positive man with a CD4 count of 133 cells/mm³ with a raised lesion on his lower lip 8 months after starting HAART. Clinical examination showed a solitary cauliflower-like nodule on the mucosal surface of the lower lip. He had history of similar lesions on genital area. The second case was a 33-year-old man with the chief complaint of a slowly growing painless mass on his hard palate for 10 months. He reported a negative HIV test 6 months earlier. Intraoral examination revealed a well-demarcated exophytic lesions, cauliflower-like surface on the hard palate. No history of similar lesions on skin and genital area. The patient did not have any medical history. In both cases, they had history of sex with multiple partners, tobacco and alcohol use. The second patient had also history of injection drug use. The patients were treated with excisional biopsy of the lesion. The histological findings were consistent with the clinical consideration of oral warts. No epithelial dysplasia was identified. **CONCLUSION:** Oral warts are considered a sexually transmitted disease that may present in both of HIV-positive and negative patients. Dentist can play an important role in the early detection of the disease that may undergo malignant transformation.

P074

Expression of TLR-2 and TLR-4 Protein in the Epithelial Cells of the Oral Mucosal Patients with Recurrent Aphthous Stomatitis (RAS)Diah Savitri Ernawati*Diah Savitri Ernawati, Desiana Radithia, Bagus Soebadi**Department of Oral Medicine Airlangga University Indonesia*

Aim and purpose: Toll-Like Receptors (TLRs) play an important role in the human immune system. The objective of this study was to disclose or discover RAU using etiopathogenetic molecular approach by observing the TLRs. Particular objective of this study was to understand the expression of toll-like receptors 2 (TLRs-2) and TLR-4 in epithelial cells of oral mucosa, and to investigate the role of toll-like receptors in the innate immunity.

Materials and method: Human oral epithelial cells were obtained by scraping the oral mucosal from 40 patients with recurrent aphthous ulcerative and 10 healthy adult volunteers. The epithelial cells are made into smears. Immunohistochemistry was performed for identification of TLR-2 and TLR-4 protein using monoclonal antibodies anti-TLR-2 and TLR-4.

Results: TLR2 and TLR4 protein were expressed in the oral mucosal epithelial cells especially in surface and nuclear cells. The expression of the TLR-2 in patients with minor RAU was

41.02%, while major RAU is expressed 43.58%. RAU patients with positive TLR-4 was 48.71% in major RAU, while in minor RAU TLR-4 was expressed 38.46%.

Summary and conclusions: This study is the first to establish the presence of both TLR-2 and TLR-4 protein on epithelial cells of oral mucosa, and their expression can be up-regulated in infectious conditions. These results show that TLR-2 and TLR-4 may play an important role in local host defense of oral mucosal.

P075

Oral Lichen Planus Versus Lichenoid Reaction: Clinical Similarities and Challenges in DiagnosisDima Bader*Dental Department, Al-Bashir Hospital, Jordanian Ministry of Health, Amman, Jordan*

Aim and purpose: Oral Lichen Planus (OLP) and Oral Lichenoid Reaction (OLR) have a similar clinical presentation and microscopic features, which poses a challenge in diagnosis. However, the pathogenesis differ between the two entities, and establishing an early diagnosis leads to a more satisfactory therapeutic approach.

Materials and method: An electronic search of the literature was conducted using the keywords: Oral Lichen Planus, Oral Lichenoid Reaction, Etiology, Clinical presentation, Treatment, Diagnosis.

In addition, a case of Amalgam Lichenoid reaction will be presented, detailing the clinical similarities and differences, differential diagnoses, assessment, treatment modalities, and the follow up of the case.

Results: While OLP appears to be a T-cell mediated reaction to self-antigen, OLRs have triggers, and a cause-effect relationship has been established, mainly metallic restorative materials, drugs and toothpastes, among other causative agent.

Microscopic features appear to be the same, while some clinical differences have been reported.

Summary and conclusions: Understanding the etiology of OLR, as well as being acquainted with the subtle clinical differences in presentation between it and OLP, helps the clinician to reach a diagnosis and to instigate the proper treatment.

Removal of the triggering factor leads to a satisfactory resolution of the lesions in OLR.

Poster session 16 – Room Cubicle 4 | 2015-09-22 | 14:30–15:30**Theme: Preventive Dentistry – Caries**

P076

{“In vitro”} Remineralization Efficacy of Beta-Hydroxyapatite with QLFSawitree Buakhaw¹, Niramol Boonsamraj¹, Saovanee Ninlux¹, Thanyada Sukmanee², Kanet Wongravee²¹*Lion Corporation Thailand Limited, Bangkok, Thailand, ²Sensor Research Unit SRU, Department of Chemistry, Faculty of Science, Chulalongkorn University, Bangkok, Thailand*

Aim and purpose: The aim of the study was to evaluate the remineralization efficacy of innovative Beta-hydroxyapatite nanoparticles (β -CaHAP-nano) on white spot lesions by using Quantitative Light-induced Fluorescence (QLF).

Materials and method: Innovative β -CaHAP-nano with lateral size of 5–10 micrometers and thickness of 100–300 nanometers synthesized at Chulalongkorn University was used in the study. “In vitro” remineralization process using 5% and 10% w/w of β -CaHAP-nano, in comparison with 10% commercial hydroxyapatite (CaHAP) and 1,000 ppm fluoride on artificial white spot lesions human enamel slabs was determined by QLF after 21 testing days.

Results: Remineralization efficacy from QLF study was gradually increased with time (days). However, the remineralization efficiency of the 10% β -CaHAP-nano was closely to 1,000 ppm fluoride (13% vs. 16% teeth recovery respectively) whereas 10% commercial CaHAP gave only 4% teeth recovery. The remineralization efficacy of 10% β -CaHAP-nano was approximately 3 times better than the 10% commercial CaHAP. The observed phenomenon might relate to the releasing power of calcium and phosphate ions from β -CaHAP-nano which is much higher compared to the commercial CaHAP.

Summary and conclusions: The in vitro 10% innovative β -CaHAP-nano demonstrated better remineralization efficiency than commercial CaHAP and similar to 1,000 ppm fluoride on white spot lesions investigating by QLF. This innovative β -CaHAP-nano is a promising material to be used in toothpaste for alternative caries prevention.

P077

Caries Regression on Adjacent Smooth Surface After Using Fluoride-Releasing Sealant

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Aim and purpose: To evaluate the caries regression on the buccal, lingual/palatal and occlusal surface of primary molars which were sealed with high-fluoride releasing glass ionomer cement (GIC) sealant before and after 6-month follow up.

Materials and method: The study was a randomized controlled clinical trial. Ninety four children (752 molars), aged 3–5 years, from two public schools with caries-free (code 0) to non-cavitated dentin occlusal caries (code 4) determined by using ICDAS II criteria on primary molars were recruited to the trial after informed consent given by parents. The participants were randomly divided into 2 groups (47 children/group). Both groups received a standard preventive care including oral hygiene instruction and 6-month-periodic fluoride varnish application. The study group, primary molars were sealed with high-fluoride releasing GIC sealant. At baseline, caries status on the occlusal and adjacent buccal and lingual surfaces were recorded. At 6-month follow-up period, caries transition and sealant retention were evaluated and analyzed by Mann-Whitney U test.

Results: The regression of caries (buccal and lingual/palatal surface) of GIC and control group were 15.9% (10.6% and 5.3%) and 4.2% (2.9% and 1.3%), respectively. There was statistically

significant difference between the two groups ($p < 0.05$). When compare GIC group with control group, the caries progression of the re-exposed occlusal surface was 2.9% and 19.3%, respectively which showed statistically significant difference ($p < 0.05$).

Summary and conclusions: GIC sealant showed caries preventive effect to adjacent buccal and lingual/palatal surface and also the re-exposed occlusal surface after sealing with high-fluoride releasing GIC sealant occlusally at 6-month follow up.

P078

Remineralization of Different Fluoride Varnishes on Advanced Artificial Enamel Caries

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Aim and purpose: To compare the remineralization effect of three different fluoride varnishes on advanced artificial enamel caries

Materials and method: Fifty premolars with 2 × 2-mm²-size window were demineralized for 28 days to create advanced artificial enamel caries, then divided to five groups: 5% NaF varnish, 5% NaF varnish with TCP, 5% NaF varnish containing Ca and PO₄ salt nano-coated with xylitol, NaF toothpaste and control group. They were fixed temporarily to silicone blocks to mimic the proximal contact before applying fluoride varnish, then entered to 10-day pH-cycle with twice daily NaF toothpaste slurry soaking except the control group. The specimens were measured three times: baseline, post-deminerlization and post-remineralization, using a Micro-CT (SkyScan 1173). The percentages of remineralization were compared using one-way ANOVA and Tukey's method.

Results: The depths of artificial caries were 277.3(±82.5) microns. The percentages of remineralization of 5% NaF varnish, 5% NaF varnish with TCP, 5% NaF varnish containing Ca and PO₄ salt nano-coated with xylitol, NaF toothpaste and control group were -26.9(±15), -37(±25.1), -36.1(±18), -42.6(±27.8) and -74.9 (±25.1), respectively. There was no significant difference among groups but 5% NaF varnish showed significant difference from the control group at more than 200-micron depth. ($p < 0.05$).

Summary and conclusions: Remineralization effect of 5% NaF varnish, 5% NaF varnish with TCP, 5% NaF varnish containing Ca and PO₄ salt nano-coated with xylitol and NaF toothpaste was not significantly different except 5% NaF varnish at the depth deeper than 200 microns.

P079

Measurement of the Longevity of Fissure Sealant in School Children of Rural Sri Lanka

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Aim and purpose: Dental caries is highly prevalent and become a “silent epidemic”. In the fight against dental caries Ministry of

health has introduced “Save the Molar” project where fissure sealant is applied in schoolchildren by school dental therapists (SDT). As fissure sealant was a new introduction to the government system, the study aims to assess the retention of fissure sealant applied by SDT.

Materials and method: Six SDT were selected from a rural district in Sri Lanka and they were trained for 2 days on selection of children and application of glass ionomer fissure sealant. Three of them had applied fissure sealant in a mobile setup while the other three had applied the same fissure sealant in the school dental clinics. After a period of 6 months, the fissure sealants were reviewed to see whether they are fully intact, broken or completely dislodged. Selected children were between ages 9–11.

Results: 76.84% of the fissure sealant were present in the molar teeth after 6 months and 11.33% were broken and 11.82% were and completely dislodged from the teeth. In clinic setup 75.61% fully intact while 12.68% and 11.70% were broken or completely dislodged respectively. However, in mobile setup results were much better, 79% of the fissure sealants were intact while 8.95% and 11.94% are either broken or dislodged respectively.

Summary and conclusions: This study shows no much difference in retention of glass ionomer fissure sealant applied in clinic setup and mobile setup. Overall retention percentages are high.

P080

Effect of Silver Diamine Fluoride on Hardness of Carious Dentine

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Aim and purpose: This study measured microhardness of root carious dentin applied with Silver Diamine Fluoride (SDF) in patients. Microhardness of control group was conducted as comparison to evaluate the effect of SDF *in vivo*.

Materials and method: Eleven pairs of teeth diagnosed for extraction as part of periodontal treatment were included. Each pair of teeth was on the same patient with similar root carious lesion but on different side. Ethics approval was provided by the ethics committee of Metropolitan hospital. With simple randomization, a tooth was extracted. The other tooth was applied with Silver Diamine Fluoride (SDF) on carious root dentine for 1 min prior to extraction on the next visit. The SDF applied tooth was left in a mouth for a month before extraction. The two teeth after extraction were mounted with epoxy resin, cut to expose carious lesion and the Vickers microhardness was measured with hardness tester (Future-tech, FM-700e, Tokyo, Japan) with load of 50 g. for 5 s. Ten indentations with at least 100 microns apart were conducted and average hardness of carious dentin from both teeth were compared using paired t-test.

Results: The microhardness of carious lesions applied with SDF (average hardness of 19.47 ± 10.45 VHN) were not significant different ($p > 0.05$) from the hardness of carious dentin of the control teeth (average hardness of 16.77 ± 4.19 VHN).

Summary and conclusions: There was no significant change of hardness of carious dentin after SDF application for a month though hardness values were higher after treatment.