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THURSDAY, 14 JUNE 2007

GROWTH AND DEVELOPMENT

OS001

Oligodontia interdisciplanary treatment strategy

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Objective: A guideline will be presented for an interdisciplinary approach for the treatment of oligodontia patients. There is a variety of names to define the congenitally missing of teeth. In a consensus conference, it is suggested as follows: 1–5 missing teeth is called hypodontia; six and more is called oligodontia; if all permanent teeth are missing, it's called anodontia. Congenitally missing teeth can disable people seriously both physically and emotionally.

Essential decision points are:

- The position of the permanent teeth.
- The form and size of the teeth.
- The quality of the teeth and their periodontium.
- The quantity of tooth material.
- The relationship between upper and lower jaw,
- The condition of the edentulous parts of the processes.
- Psychological status of the patient.
- Age.

There are three stages in the treatment planning: stage 1: 0–10 years: there is emphasis on prevention but the psychological aspects are very important. The preservation of deciduous teeth is a goal in order to preserve the alveolar crest. Adhesive techniques are used to make the appearance of the dentition more adequate to the age; stage 2: 10–18 years: a minimal invasive restorative treatment plan is designed. Early consideration of the final treatment goal is important. The different specialists will cooperate to achieve this goal. A minimal invasive approach is important to keep the options of new techniques open. The treatment time span is long. A team of orthodontist, restorative dentist, implantologist or surgeon assess the aesthetic and occlusal possibilities. Stage 3: implementation of the 'final' treatment plan: implantology restorative dentistry.

THURSDAY, 14 JUNE 2007

GROWTH AND DEVELOPMENT

OS002

Central incisor of a child as a face size predictor

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It is known that the cranium is strongly influenced genetically, while the facial structures are more related to the environmental factors. The size and form of a person's tooth is controlled genetically, and they are in harmony with those of the face. In relation to these concepts, predicting the size of facial structures may be possible from maxillary central incisors of children.

Purpose: The purpose of this study was to verify the relationship between the mesio-distal width of maxillary central incisors and the craniofacial structures. And so in consequence pediatric dentists may apply this ratio relationships to predict the width of the child's future face when he/she becomes an adult.

Methods: Standardized postero-anterior cephalometric radiographs and dental casting models were taken from the students at School of Dentistry, Kyung Hee University. The sample size for this study included 130 students, 84 men and 46 women. The selection criteria includes the subjects to have natural maxillary central incisors, without any restorations, and no history of facial plastic surgery. Widths of craniofacial structures, such as facial width, cranial width, interorbital width, mandibular width, were measured on the cephalometric tracings anthropometrically, and the mesio-distal width of the maxillary central incisors were measured on the casting models. The ratio between the widths of the craniofacial structures and the mesio-distal width of the maxillary central incisors were calculated and mean values were analyzed statistically.

Conclusion: Obviously, predicting the growth of a child's facial structure is very difficult, and validating the relationship between facial form and the tooth shape is also not easy. Through this study, however, we found that relationship does somewhat exist between some craniofacial structures and the widths of the maxillary central incisors.

THURSDAY, 14 JUNE 2007

GROWTH AND DEVELOPMENT

OS003

Role of dental-pulp on root-resorption of deciduous teeth without successors

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Objectives: The aims of this study were to analyze the expression of odontoclast marker genes and osteoclast-inducing cytokines in dental pulp and periodontal tissues of deciduous teeth in the absence of permanent tooth germ in Beagle dog, and to observe the effect of early pulpectomy on root resorption of those deciduous teeth.
Methods: Mandibular left and right second, third and fourth permanent premolar germs were surgically removed in a 2.5-month old male Beagle dog. During the operation, pulpectomy was performed in deciduous molars on one side of the lower jaw. Deciduous molars on the other side of the lower jaw were left untreated. Root resorption of these deciduous teeth without permanent successors was observed by taking periapical films every 2 weeks. Jaw specimens were taken when obvious root resorption was observed. The expression of odontoclast marker genes and osteoclast-inducing cytokines such as RANKL and OPG were analyzed by immunohistochemistry on tissue sections.
Results: On radiographic examination, root resorption of the deciduous teeth without permanent successors was delayed for about 6 weeks, comparing to physiological root resorption in the presence of permanent tooth germ. By pulp extirpation, the resorption was further delayed. Histochemical analysis of deciduous molars which were not treated with pulpectomy showed that during the process of root resorption, TRAP- and MMP9-positive multinucleated odontoclasts were mainly present on the pulpal surface of the root, and few were seen on the outer surface. High expression of RANKL was observed in dental pulp, while OPG was mainly expressed in periodontium.
Conclusion: In the absence of permanent tooth germ, root resorption of deciduous tooth is primarily mediated by dental pulp; early pulpectomy can significantly delay root resorption of deciduous tooth in the absence of permanent tooth germ.

THURSDAY, 14 JUNE 2007

ORTHODONTICS

OS004

Early interceptive treatment for ectopic eruption of first permanent molar

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Background: Although some instances the ectopically erupting first permanent molar may correct itself and erupt into its normal position after causing only minor destruction of the primary molar, early diagnosis and treatment may prevent a more complicated malocclusion. The dentist must be alert to these problems and complicating sequelae.

Objective: To probe into a new method for the early interceptive treatment of the ectopic first permanent molar.

Materials and methods: Ten cases in the early mixed dentition with ectopic eruption of the first permanent molar were used the fixed appliance with the spring to move the permanent molar distally and make it normally erupts.

Results: The ectopic eruption of the first molar in all the cases was relieved, and at last these cases were used the Nance Arch or Lingual Arch to maintain the normal position of the first permanent molars.

Conclusion: Because of moving the first permanent molar distally, the present method prevent prematurely loss of the second primary molar, which can lead to the space loss and make the dental arch crowding. The method is different from the before-mentioned ones, and it is high efficiency and easy to operate especially in the early mixed dentition.

THURSDAY, 14 JUNE 2007

ENDODONTICS

OS005

MTA and calcium hydroxyapatite pulpotomies in monkey permanent teeth

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Objective: To compare Mineral Trioxide Aggregate (Pro Root® MTA, Dentsply Tulsa Dental, USA) and calcium hydroxyapatite (CHA) as pulpotomy agents in permanent monkey teeth with inflamed pulps.

Methods: Twenty teeth in four juvenile Vervet monkeys (*Cercopithecus aethiops*) were subjected to cavity preparation, pulp exposure and placement of *Streptococcus mutans*. They were randomly divided into two groups and after 14 days a pulpotomy was performed with one of the tested materials. Ferric sulphate was applied to control haemorrhage. Cavities were restored with glass ionomer cement (Fuji II LC, GC Japan) and amalgam. Histological assessment for the presence of vital pulp, dentine bridge and periapicial inflammation was performed by light microscopy after an evaluation period of 12 months.

Results: Twelve months after treatment 18 teeth (10 MTA, 8 CHA) were available for histological assessment. Fisher's Exact test revealed that 60% of teeth treated with MTA had vital pulps with complete and thick dentine bridges compared to pulpal necrosis seen in all teeth of the CHA group ($P = 0.01282$). Inflammation in the CHA group was evident periapically, but there was no statistical difference when compared to non-vital teeth in the MTA group ($P = 0.2283$).

Conclusion: MTA was effective as a pulpotomy material and able to stimulate reparative dentine bridge formation at 12 months. Calcium hydroxyapatite is biocompatible and neutral and more research is needed in order to assess its activity at the interface of living tissues. This study showed that MTA is preferable to CHA for the treatment of inflamed pulps of permanent teeth.

THURSDAY, 14 JUNE 2007

ENDODONTICS

OS006

Comparison of 4 pulpotomy techniques in primary molars: long-term follow-up

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Objective: The aim of this study was to compare the effect of formocresol (FC), ferric sulphate (FS), calcium hydroxide [$Ca(OH)_2$] and mineral trioxide aggregate (MTA) as pulp dressing agents in pulpotomized primary molars.
Methods: Sixteen children each with at least four primary molars requiring pulpotomy were selected. Eighty selected teeth were divided into four groups and treated with one of the pulpotomy agents. The children were recalled for clinical and radiographic examinations every 6 months during 2 years follow-up.
Results: Eleven children with 56 teeth arrived for clinical and radiographical follow-up evaluation at 24 months. The follow-up evaluations revealed that the success rate was 76.92% for FC, 73.33% for FS, 46.15% for $Ca(OH)_2$ and 66.66% for MTA.
Conclusion: $Ca(OH)_2$ is less appropriate for primary teeth pulpotomies than the other pulpotomy agents. FC and FS appeared to be superior to the other agents.

THURSDAY, 14 JUNE 2007

ENDODONTICS

OS007

Obturation of permanent molars with ZOE using endodontic pressure syringe

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Objective: With newer materials and techniques getting introduced into the field of endodontics, the need for simpler, user friendly, economical techniques with less armamentarium is the need of the hour. Hence a clinical study in which zinc oxide eugenol (ZOE) alone can be used as a sole obturating material without core material, using endodontic pressure syringe was planned and carrried out. The objective was to evaluate clinically and radiographically the success of permanent molars obturated with ZOE using endodontic pressure syringe.
Methods: Thirty first permanent molars with signs of irreversible pulpitis were chosen for the study. Pulp tissue was extirpated and biomechanical preparation was carried out with K files. The study group consisted of twenty first permanent molars, obturated with ZOE alone. The remaining ten teeth obturated with Gutta-percha points by conventional lateral condensation method, served as the control group.
Results: There was no significant difference between the clincial and radiographic success of the study and the control group after a follow up of 24 months.
Conclusion: Zinc oxide eugenol when used as the sole obturating material without any solid core material, with endodontic pressure syringe proves to be a cost effective technique for obturation of first permanent molars.

THURSDAY, 14 JUNE 2007

ENDODONTICS

OS008

In vitro comparison of three root canal instrumentation techniques in primary teeth

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Aim: (I) To assess root canal instrumentation capacity in extracted primary teeth using 2 different methods. (II) To assess instrumentation time in each group.
Methods: 20 extracted primary teeth with intact roots were assigned to one of 2 groups: group A - Er,Cr:YSGG Lasers system (EL); group B - conventional manual instrumentation (CMI). Root canals were stained using India ink and instrumented with one of the two above methods. Instrumentation time was recorded. The roots were sectioned into cervical, middle and apical thirds and the extent of dye removal was evaluated using the Proscope HR(tm) under 200x magnification.
Results: Results: (I) Differences in instrumentation capacity between EL and CMI groups were not statistically significant ($P = 0.31$) judging by the extent of dye removal. The CMI technique demonstrated less cleaning of the middle third of the root canal as compared to the apical and cervical portions, although not statistically significantly ($P = 0.18$). However, both techniques did not achieve complete dye removal at all times, especially in the apical root sections. (II) The two techniques varied significantly in the time needed for instrumentation. CMI required 3.5 times more time than the EL group ($P = 0.0002$).
Conclusions: The present study demonstrates no differences in the cleaning capacity between EL and CMI techniques. A reduction in instrumentation time using lasers was a significant factor considering the limited scope of "working time" in children.

THURSDAY, 14 JUNE 2007

DENTAL ANXIETY AND BEHAVIORAL MANAGEMENT

OS009

Parents' attitude on physical restraint among physically/mentally handicapped children

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Objectives: The objectives of this study were to determine the attitude of parents/guardian toward physical restraint as a modality in managing anxious physically/mentally handicapped children for dental care and to compare the attitude between parents/guardian of those children with and without physical/mental handicap.

Methods: A descriptive study using self-completion questionnaire whereby the parents/guardian filled up relevant information and answered five questions. Parents/guardian was required to read written information on various modalities in managing anxious children prior to answering the questions. The answer to each question is in the form of analogue scale of 1–5 which ranged between totally disagree to totally agree. The data obtained were processed using SPSS statistical software. A total of 96 completed forms were analysed with 40% of it were completed by parents/guardian of children with physical/mental handicap. Half of the samples were from new referrals.

Results: It was found that 65% of parents/guardian agreed that physical restraint be applied to those children. A significantly higher number of parents/guardian who disagreed to physical restraint thought that it might cause the children to fear dental treatment in later years. There were more parents/guardian with physical/mental handicap children who would agree to physical restraint than those without but it was not statistically significant ($P > 0.05$). However, about half of them thought that physical restraint might cause the children to fear dental treatment in later years. It was also found that behaviour modification such as positive reinforcement and modelling was the most preferred modality in managing those children.

Conclusion: It can be concluded that parents/guardian largely agreed to the use of physical restraint for dental care among physically/mentally handicapped children. However there was no significant difference in agreement between parents/guardian of those children with and without physical/mental handicap.

THURSDAY, 14 JUNE 2007

DENTAL ANXIETY AND BEHAVIORAL MANAGEMENT

OS010

Incidence of adverse reactions following 4% septocaine use in children

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Objective: To report the incidence of adverse events following the use of 4% Septocaine as local anesthetic in children.
Methods: A prospective study was carried out on children ages 2–17 years attending the pediatric dental clinics for regular restorative care under local anesthesia with or without conscious sedation. Data collection included patient demographics, medical history, amount of anesthesia, injection site and complexity of treatment. Follow-up telephone interviews were conducted with the parents at 3, 5, 24 and 48 hours regarding duration of anesthesia, soft tissue injury and pain.
Results: Preliminary results were collected on 141 subjects (82 boys and 59 girls) aged 2–20 years (mean 7.21). Among those, 79 (56%) Caucasians, 47 (33%) African Americans and 13 (9%) Hispanics. Prolonged paresthesia was reported in 29% at 3 hours and 8% at 5 hours post-operatively. Incidence of soft tissue injury occurred in 15% of the patients at 3 hours with the highest occurring with lip biting and was related to mandibular block infiltration. There were no differences in the amount of local anesthesia used with regards to prolonged paresthesia or soft tissue injury. Twelve percent reported post-op pain at 3 and 5 hours. There were no statistically significant differences between boys and girls with respect to duration of anesthesia, soft tissue injuries and pain.
Conclusion: Incidence of adverse reactions in children of all age groups following the use of Septocaine is low; however prolonged paresthesia appears to be the most frequent adverse event. Parents need to be informed and reassured accordingly.

THURSDAY, 14 JUNE 2007

DENTAL ANXIETY AND BEHAVIORAL MANAGEMENT

OS011

Hydroxyzine for sedation in the pediatric dental patient

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Aim: This study evaluated and compared the effect of two different dosages of hydroxyzine supported by 50% nitrous oxide inhalation sedation in child patient.
Subjects and methods: Thirty uncooperative healthy children with an age range of 31–120 months were included in the study. Patients were randomly assigned into two groups. The patients in group 1 were given 20 mg of Atarax 24 hours preoperatively. On the operation day, 3.7 mg/kg Atarax was administered orally for all patients. All subjects also received 50% nitrous oxide inhalation sedation. The child's behavior was evaluated every 5 min by using Houpt Sedation Rating Scale. The oxygen saturation and heart rates were also followed.
Results: The mean age of the children in the study was 62 (SD: 11.96) for group 1 and 54 months (SD: 12.86) for group 2. Evaluation of the results showed that there were no significant differences ($P < 0.05$) between behavioral attitudes and sedation degree of the patients.
Conclusion: A 20 mg of hydroxyzine administered 24 hours preoperatively has no significant benefit on sedation of the child.

THURSDAY, 14 JUNE 2007

DENTAL ANXIETY AND BEHAVIORAL MANAGEMENT

OS012

Factor analysis of questionnaire assessing every day and dental pain

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Objective: The aim was to further analyse data from an epidemiological questionnaire study of dental and every day pain experiences in Swedish children, aged 7–19 years. The main purpose was to reduce and group item data of dental and everyday pain experiences and to form new, easy-to-grasp factors for use in future analyses.

Methods: The correlation matrix of 38 everyday-pain and dental treatment related pain items based on a modified CPI (Children's Pain Inventory) assessment were reduced using a common Factor Analysis, by means of the statistic program SPSS. The matrix contained 11 eigenvalues of one or higher. A first analysis of reduction was made in order to select the items most highly related to the first principal component. Reduction was performed taking gender into consideration. The quantity of items was further decomposed due to low response frequencies and low item loadings. Factor loadings greater than 0.40 were accepted.

Results: Our final model showed 29 items with 8 eigenvalues over one or more. 46.6% of the variance could be explained by this model which consisted of four factors. The factors were well separated from each other. Our preliminary labelling of the four factors is: general and accident pains, skin and mucous membrane related pains, invasive dental treatment pains and other dental treatment pains.

Conclusion: The reduction of items created a new four factor structure which will simplify further analyses of our material and guide the design of new surveys.

THURSDAY, 14 JUNE 2007

DENTAL ANXIETY AND BEHAVIORAL MANAGEMENT

OS013

Sedation for dental treatment in children in primary care (UK)

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Background: Recently there has been renewed interest in provision of IV sedative techniques for paediatric dentistry in the UK. There is no data reported to date from existing dental sedation clinics in the primary care sector. The aims of this project were to audit the clinical practice of a dental sedation service in the primary care.
Materials and methods: Data was extracted from patient records between 2002–2005 (100 sampled randomly from each year) from a dental sedation clinic in West Sussex, UK. Patients were under 16 years of age.
Results: Four-hundred children, 202 male and 198 female, mean age 8.5 years (range, 5–12 years) had all been referred from the General Dental Practitioner (GDP). 78% were for caries, the remainder for orthodontic extractions. Most of the children were in a good health (80.5%). The number of visits to complete the treatment was (96.3%) in one visit, and (3.3%) in two visit, only two patients needed three visit to complete the treatment (0.5%). A mixture of drugs was used to complete the treatment, IV midazolam/ketamine/fentanyl was used in 40% of cases, and IV midazolam/ketamine was used in 46% of cases. Fifty patients had sealant on their permanent teeth (12.5%), while only one patient had sealant on his primary teeth. 181 patients had filling on their primary teeth (45.3%), and 241 patients had extraction of their primary teeth (60.3%). On the other hand 71 patients had filling on their permanent teeth (17.8%), and 98 patients had extraction of their permanent teeth (24.5%). Finally local anaesthetic (LA) was used in 180 patients (45%). No adverse events were recorded.
Conclusion: In this dental sedation centre, use of IV sedation seemed to allow provision of dental care to large numbers of children with no reported adverse effects.

THURSDAY, 14 JUNE 2007

DENTAL ANXIETY AND BEHAVIORAL MANAGEMENT

OS014

Injection pain using an electronically-assisted system (sleeper one™)

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Purpose: To evaluate injection pain of 4% articain with 1:200 000 epinephrine using the computer-assisted sleeper one™ injection system.
Study design: This study was performed by two trained operators and a group of trained students of the CHU of Rennes. A total of 110 infiltration anesthesia were performed in 82 patients (44 females and 38 males aged 8.9 ± 2.8 year). The pain as evaluated by the patients was recorded on a faces pain scale, FPS, scored 1 (no pain) to 6 (Hicks *et al*, 2001) and on a visual scale, EVA, scored 0–10. Practitioners were also asked to evaluate pain during needle insertion and solution deposition.
Results: The mean pain score was 1.64 ± 1.03 using the FPS and 1.09 ± 1.14 using the EVA scale. A FPS score of 1 (no pain) or 2 (mild pain) was found in respectively 65 (59.1%) and 32 (29.1%) of cases. Scores of 1 and 2 were found significantly more often with the two trained practitioners than with the students ($P < 0.05$). There was no difference in efficacy of anesthesia, whatever the treatment performed. Out of 95 children with previous experience of dental anesthesia with usual metal syringe, 67 (70.5%) preferred computer-assisted injection. Practitioners/students noticed pain during needle insertion and injection in respectively 40 (36.4%) and 11 (10.0%) of cases. FPS scores were higher when pain was noted (2.91 ± 1.51 v. 1.49 ± 0.87).
Conclusion: In this study, most of children preferred computer-assisted injection. Most them felt no or little pain as indicated by pain scales scores. Computer assistance seems therefore to be useful for trained specialists in paediatric dentistry.

THURSDAY, 14 JUNE 2007

DENTAL ANXIETY AND BEHAVIORAL MANAGEMENT

OS015

Cognitive ability and dental fear and anxiety in children

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The prevalence of dental fear and anxiety among children is between 5.7–6.7%. Sixteen percent of all children have an intelligence quotient (IQ) <85, and many of these children have learning problems.

Objective: The aim was to investigate if there is a correlation between cognitive function and dental fear.

Methods: Children born in 1991 and living in the municipality of Sigtuna in Stockholm County in 2001 ($n = 555$) were screened for attention/behavioral and learning problems. A total of 155 children were found to be screen positive and underwent a comprehensive clinical assessment including a parental interview and a cognitive assessment of the child according to the Wechsler Intelligence Scale for Children (WISC III). Sixty-eight children (51 boys and 17 girls) were subjected to a clinical dental examination. One parent of each child completed two questionnaires: the Dental Subscale of Children's Fear Survey Schedule (CFSS-DS) to estimate the dental fear of the child, and the Corah Dental Anxiety Scale (CDAS) to estimate the dental fear of the parent.

Results: Thirty-six of the children had an IQ <85, and these children had a higher mean CFSS-DS than the children with an IQ >85 ($P = 0.024$). There was a significant correlation between total IQ and CFSS-DS ($r = -0.25$, $P = 0.042$), between CDAS and CFSS-DS ($r = 0.55$, $P < 0.001$), and between the IQ-index verbal comprehension and CFSS-DS ($r = -0.30$, $P = 0.013$). No correlation between total IQ and caries prevalence was found.

Conclusion: Children with a cognitive deficiency exhibit higher dental fear and anxiety. Verbal comprehension was the only IQ-index that had a correlation with dental fear. In a clinical situation verbal communication is the most powerful technique for managing behavior when treating a fearful child dental patient. As this might not be sufficient for the child with a cognitive deficiency, alternative ways to communicate with the fearful child dental patient should be considered.

THURSDAY, 14 JUNE 2007

DENTAL ANXIETY AND BEHAVIORAL MANAGEMENT

OS016

Acceptability of carisolv® for early childhood caries of anxious children

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Aims: To investigate the acceptability of atraumatic removal of dental caries with Carisolv® by children who were suffering from early childhood caries and dental anxiety, as well as by the pediatric dentists.
Methods: A total of 20 preschool children with early childhood caries who refused dental treatment because of severe dental anxiety were included in the study. The main reasons of dental fear and accept of Carisolv® as an alternative of caries removal were assessed. At the same time five pediatric dentists having experience in using Carisolv® were surveyed about their consideration of the technique and the related affecting factors.
Results: All the 20 children agreed to try the technique, and 95% of the 20 cases preferred this technique to conventional ones for further treatment, with one of them refusing all the available techniques for the removal of caries. 80% of pediatric dentists agreed the chemomechanical caries removal could effectively reduce the level of dental fear and hence prevent children from developing dental anxiety after procedure.
Conclusion: It was concluded from the study that Carisolv® could be promising as an alternative technique of caries removal without inducing dental anxiety or other behavioral problems among early childhood caries patients.

THURSDAY, 14 JUNE 2007

DENTAL ANXIETY AND BEHAVIORAL MANAGEMENT

OS017

Parents' attitude towards general anaesthesia for their children's dental treatment

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Objectives: 1. To investigate the factors that affects parents' attitude towards General Anaesthesia when deciding the best options for their children's dental treatment. 2. To co-relate parent's personal, dental and general anaesthetic experience to their choice for their children's dental treatment.
Methods: Ninety-three questionnaires were completed by parents attending out patient consultation clinics at the Paediatric Dentistry department at Chelsea and Westminster hospital with their children. Children were between the age of 2–16 years old. Paediatric dentistry specialists discussed and explained options (local analgesia, sedation and General Anaesthesia) for paediatric patients' dental treatment. Seventy parents chose general anaesthesia for their children's dental treatment. A pilot study was conducted at the beginning of the audit to test the questionnaire. The questionnaire was structured to obtain information regarding parents' attitude and personal experiences of general anaesthesia for dental treatment.
Results: • 53 (76%) parents were registered with dentists of whom 50 (71%) claimed attending regularly while only 31 (44%) parents saw their dentists within the previous 12 months.
• 61 (87%) parents chose local analgesia options for themselves if they needed dental treatment.
• There was a significant ($P < 0.05$) relationship between their choices and the children's chronological age and the complexity of the required dental treatment.
• There was a significant ($P < 0.05$) relationship between parents' personal good experience of General Anaesthesia and their choice for their children's dental treatment.
Conclusion: This audit suggests that parents' choice of management for their child is significantly influenced by their own experience, length and complexity of dental treatment and their child's age.

THURSDAY, 14 JUNE 2007

DENTAL ANXIETY AND BEHAVIORAL MANAGEMENT

OS018

Fear of blood, injury and injections-relationship to dental avoidance

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Objectives: The aims of this study were to explore the relationships between dental phobia, intra-oral injection phobia and blood-injury phobia, and to explore to what extent these phobias are related to avoidance of dental treatment if dental injection is needed.
Methods: The subjects were a representative and randomized sample of 1385 18-year-olds attending high schools in Norway, and the data were collected by use of questionnaires completed in classroom. The survey instruments applied were Dental Fear Survey (DFS), Mutilation Questionnaire (MQ) and Injection Phobia Scale-Anxiety (IPS-A). The respondents were asked to estimate the probability of proceeding with dental treatment in a situation where they had tooth ache and when a dental injection was needed, using a six point scale (100%, 80%, 60%, 40%, 20% and 0%).
Results: There were statistically significantly correlations between all the three phobias, with the largest overlap between blood-injury phobia and injection phobia ($r = 0.65$). About 11% of subjects with dental phobia, blood-injury phobia and injection phobia, respectively, were avoiding dental treatment (≤40% probability of being willing to proceed with treatment) in a situation where a dental injection was needed. In multiple regression analysis only dental phobia contributed to this avoidance of dental treatment.
Conclusion: The results indicate that dental phobia is relatively often connected with blood-injury-injection phobia, and that subtypes of this phobia may contribute to avoidance of dental treatment due to fear of dental injections. Providers of dental care should especially pay attention to children and adolescents reporting to have fainted or nearly fainted during dental injections.

THURSDAY, 14 JUNE 2007

DENTAL ANXIETY AND BEHAVIORAL MANAGEMENT

OS019

Causes of pain during dental injections: injectors or anxiety?

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Aim: The present study was designed to investigate the determinative factor in pain perception: the injection devices or the anxiety experienced.

Materials and methods: Two dental injectors, a computerized device (the Wand) and a traditional plastic syringe, were compared. Forty-five children aged 9–13 year who had registered for treatment at the School of Dentistry, Marmara University, Istanbul, Turkey, participated in the study. Both anxious and non-anxious children were included in the study group. The Children's Fear Survey Schedule – Dental Subscale (CFSS-DS), Facial Image Scale (FIS), Spielberger's State Anxiety Index for Children (SSAI-C) and heart rates (HR) were used to determine the anxiety levels. The first appointment was designed as an introductive, familiarisation session and injections were administered in the second and third sessions, with one or the other injector. The Visual Analog Scale (VAS) was used for pain measurement after injections.

Results: No significant differences of pain scores were noted between injectors for both sessions. Children reporting pain were found to be more anxious than the ones reporting no pain.

Conclusion: Anxiety plays an important role in the pain reaction of children, and was found to be more determinative in pain perception than the injection devices preferred.

THURSDAY, 14 JUNE 2007

SPECIAL NEEDS PATIENT

OS020

Aggressive management of oral-mucormycosis in a child with Evan's syndrome

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Presenting problem: A 12-year-old girl was admitted with pallor and breathlessness into ICU. After appropriate evaluation, found to have Evan's syndrome (Autoimmune hemolytic anemia with thrombocytopenia). Treatment started with high dose IV steroids, immunoglobulin and Rituximab (CD20 monoclonal antibody) 375 mg/m^2. Just prior to her second dose of Rituximab, mobility of a tooth and halitosis was noticed and was referred to pediatric dental unit for an opinion. Intra-oral examination revealed mobility of tooth #11, rapidly involved teeth #12, 13, 21, 22, 23, 24 and 25, within next 2 days. Palatal muco-periostium started showing signs of avascular necrosis. Pan-tomograph showed no changes but CT scan depicted mass filling left maxillary sinuses.
Clinical management: The child was managed ab initio with debridement of necrotic soft and hard tissues of the affected region under GA and specimens were sent for histopathological and microbiological studies. Results confirmed avascular necrosis and culture revealed mucormycosis. IV antifungal drug liposomal amphotericin-B was started along with hyperbaric oxygen Therapy and further dose of Rituximob was differed due to intense fungal element. Satisfactory hematological parameters were maintained with low dose oral steroid. The affected area of maxilla was clearly seen demarcated from healthy bone. She was later treated surgically by Subtotal Maxillectomy under GA resulting remarkable overall improvement.
Discussion: Evan's syndrome is a rare autoimmune childhood disease. Management includes Corticosteroids resulting Immune-suppression. Mucormycosis is an aggressive, opportunistic infection caused by fungi class of phycomycetes. Early diagnosis followed by prompt, aggressive and multi-pronged approach is most prudent in management of such belligerent fungal disease. This report acquaints pediatric dental professionals about timely recognition and management of infections in immune-compromised individuals.

THURSDAY, 14 JUNE 2007

SPECIAL NEEDS PATIENT

OS021

Dental treatment under general anaesthesia in children of special care

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The aim of the study was to analyse the state of oral cavity in a group of children and adolescents who undergo dental treatment under general anaesthesia, particularly with reference to children requiring special attention. In this paper we describe procedures under general anaesthesia with naso-tracheal intubation, as one of the forms of complex dental treatment of children and adolescents. In Department of Paedodontics of Lublin Medical University 257 children (age 3–18) were treated under general anaesthesia in 2000–2006. Children with mixed dentition constitute the highest percentage of the patients. Next are those with permanent and primary dentition. The largest group of the patients treated comprises mentally impaired children, next those with cerebral palsy, epilepsy, cardiovascular disorders, dentophobia, autism and hyperexcitability. We present the results of clinical examinations of oral cavity state. Caries intensity was 100%. The high values of DMFt index indicate a bad state of dentition. A low dental treatment index (DTI) is the result of the lack of proper, earlier dental treatment and prophylaxis.
Conclusions: There is the need for the complex, dental assanations under general anaesthesia; the highest percentage of treated children are these with mixed dentition (age 5–12); the largest group of patients were mentally impaired children; prophylactic measures and health education are recommended.

THURSDAY, 14 JUNE 2007

SPECIAL NEEDS PATIENT

OS022

Oral findings of Down syndrome children in Chennai city India

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Objective: To assess the common oral anomalies, caries prevalence and treatment needs of Down syndrome children of Chennai city, India.
Methods: Among the 130 Down syndrome children examined, 102 children aged 15 years and below were included in the study. There were 57 male children and 45 female children in the total study sample. A specially prepared case record was used to record the findings in each child. The case record had four major sections to record the following: a brief family and personal history; anomalies of soft tissues, teeth, occlusion and temporomandibular joint; dentition status with treatment needs and the overall treatment required. Age wise and sex wise comparisons of the findings were done.
Results: About 97 children (95%) had the habit of regular tooth brushing. Everted lower lip (66%), retained deciduous teeth (31%), midface deficiency (76%) were the most commonly seen soft tissue, dental and occlusion anomalies respectively. Only 29% of the total sample was caries free. Extraction was the most needed specific treatment for primary teeth (38 children) and one surface filling was the specific treatment need for permanent teeth (26 children). Oral prophylaxis (99%) was the most required treatment in the overall treatment category.
Conclusion: This study does contradict previous literatures in certain aspects like the percentage of caries free Down syndrome children, which was found to be comparatively less. Their basic dental needs like oral prophylaxis, restorations and extractions remain the same and can be easily fulfilled by an efficient dental team. Our dental institution has offered to treat all the children examined free of cost.

THURSDAY, 14 JUNE 2007

SPECIAL NEEDS PATIENT

OS023

Restorative needs of patients with disability referred for general anaesthesia

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Objective: To investigate how factors including gender, area of residence, disability type, and source of referral relate to restorative treatment need.
Methods: An audit of referrals and treatment requirements was undertaken for patients with a disability attending Cork University Hospital, Ireland, for restorative care under general anaesthesia. The numbers of procedures were analysed with respect to gender, disability, designated health board area of residence and referring practitioner type.
Results: 494 general anaesthetic episodes for restorative treatment for patients aged 3 to 52 years were audited. There was a mean of 8.0 restorative procedures for males and 7.1 for females. The equivalent figures related to the patient's disability type were; cerebral palsy 7.6, Down syndrome 6.7, other syndromes 7.4 and non-specific 7.9. Sources of referral in order of increasing frequency were hospital service dentists, medical hospital consultant doctors, private dental practitioners, allied health professionals and community health service dentists. The mean numbers of procedures required from these sources were 7.2, 8.3, 8.5, 7.1 and 7.2 respectively. There were no significant differences in the average levels of procedures between the sexes or between the areas of residence or the disability types or the referring source categories used in the study.
Conclusion: Neither patient characteristics nor referrer type significantly affected the amount of restorative treatment required. The results suggest an even pattern of referral based on treatment need.

THURSDAY, 14 JUNE 2007

SPECIAL NEEDS PATIENT

OS024

Oral health of children with special health care needs from Maputo-Mozambique

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Objectives: The present study was conducted to assess the oral health status of children with special health care needs, to give oral health instructions to their family or tutors and to access their dental treatment needs.

Methods: Epidemiological examination of special needs children was undertaken by a single examiner to determine dental caries (dmft/DMFT), oral lesions, occlusion and other alterations of the teeth. Age, sex, diseases and kind of limitation were evaluated.

Results: 74 outpatients from the Psychosocial Rehabilitation Center of Maputo-Mozambique was included in this study. The mean age was 7.4 ± 3.1, ranged from 2 to 13 years old. 40% were females and 60% males. 47% of them were caries free. The dmft/DMFT was 2.5/0.5. The prevalence of oral lesions were 50% been the most common gingivitis (38%), angular queilitis (5%), labial herpes simplex (2%), gingival hyperplasia (2%), median romboid glossitis (2%), parotid enlargement (2%) and seborreic dermatitis (2%). 7% presented number anomalies of the teeth, 12% general abrasion, 21% extrinsic pigmentation, 10% malocclusion and 8% traumatized tooth.

Conclusion: The children with special health care needs showed a high prevalence of dmft, oral lesions and other alterations of the teeth. These children require an oral health care of specialized nature due to the impact that oral diseases can have in their overall health.

THURSDAY, 14 JUNE 2007

SPECIAL NEEDS PATIENT

OS025

Needs for prosthetics in first permanent molars of mentally-impaired athletes

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Health care for people with mental impairment usually focuses on their primary illness, leaving dental care on a secondary place. The first permanent molar (M6) is the most affected tooth.
Aims: 1. To evaluate the status and needs for prosthetic restorations of M6 in a group of Romanian Special Olympics (SO) athletes. 2. To compare the situation to that of subjects within the same age range in the general population.
Material and methods: The study group consisted of 318 subjects (246 males) aged between 10 and 18 years (15.19 $\pm$ 1.83), screened during five SO competitions (2005–2006). The control group consisted of 175 pupils within the same age range. Examination was performed according to the WHO recommendations (1987). Status of the M6 and needs for crown/bridge restorations were recorded. Data was processed using a dedicated software package.
Results: Study group: 20.4% of the M6 needed prosthetics. 87.7% of these were either missing or to be extracted, requiring bridges. The remaining 12.3% had massive crown destructions recommending crowns. Upper M6 needed prosthetics in a lower proportion than lower ones (14.8 v. 26.0%). 13.2% of the subjects had at least one M6 extracted or to be extracted. Control group: 14.1% M6 needed prosthetics, 55.7% of which were missing or to be extracted. Subjects in the study group had significantly higher prosthetic needs than controls ($P < 0.05$).
Conclusion: 1. A relatively high proportion of first permanent molars needed prosthetics. 2. Mentally impaired subjects had a higher proportion of missing/compromised M6, indicating a higher need for more complex treatment than the control group. 3. Prevention programs could help lower the complexity and costs of treatment in both mentally impaired and normal patients.

THURSDAY, 14 JUNE 2007

SPECIAL NEEDS PATIENT

OS026

$SatO_2$ of autistic children during dental treatment under protective stabilization

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The purpose of this study was to examine SatO2 level of autistic children during dental treatment by using protective stabilization (Papoose Board). The samples consisted of 30 autistic patients, aged 3–12 years, who were in-patients or out-patients of Yuwaprasart Child Psychiatric Hospital, Thailand. Pulse oximeter was used to evaluate SatO2, heart rate and blood pressure before dental procedures. The SatO2, heart rate were measured and recorded during treatment. These parameters were recorded by another dental staff. The number of SatO2 level $< 95\%$ SpO2 was recorded. The mean, standard deviation of each parameter was calculated. In this study the paired *t*-test was used to compare SatO2 level in each 5-min interval. This study found that there was no statistic significance ($P \leq 0.05$) of SatO2 level between base line which was determined before dental treatment and during dental treatment. The result suggested that SatO2 level of autistic children under the protective stabilization does not decrease less than safety limit (95% SpO2).

THURSDAY, 14 JUNE 2007

SPECIAL NEEDS PATIENT

OS027

Which is the best for mentally disabled children: caretaker or family?

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Introduction: Behaviour and attitudes of children are influenced by their parent's and caretaker's knowledge of health and prevention of disease, including oral diseases. The absence of family support might also influence oral health behaviour.
Objective: The aim of this study was determining and comparing the caries prevalence of mentally disabled (MD) children who living in a governmental institution and MD children that living within a family. Dental status and daily dietary attitudes of these groups of mentally disabled children compared with each other.
Methods: A total of 81 children were examined aged between 6–13 years, are divided into three groups (Group A, B, C). The children of group A that living a governmental institution all day. Group B composed of children that living partly in a governmental rehabilitation center. Group C composed of children who are living with their parents. Tooth brushing habits and periodontal status of children were recorded. Daily dietary schedules of all groups were also recorded.
Results: Mean age of group A, B, C were (10.1; 8.5; 9.1 years) respectively. The caries status of all groups was determined by using DMFT and dft index. The mean dft in group A was 0.78 ± 1.40 and DMFT was 1.30 ± 1.64. In group B, the mean dft was 1.46 ± 1.65 and DMFT was 1 ± 1.65 and in group C the mean dft was 5.04 ± 3.29 and DMFT was 3.4 ± 2.17. The level of dental caries was the highest in group C.
Conclusion: From a preventive dental health perspective, special attention should be focused on subjects with MD who are not living in institutions. Increasing caretaker's and families participation and improving their knowledge and experience on training in the care of children with MD and frequent follow-ups and recall intervals are essential in maintaining appropriate and satisfactory dental health care for this special group

THURSDAY, 14 JUNE 2007

PREVENTION

OS028

Fluoride varnish (Fluor protector) in adolescents with fixed orthodontic appliances

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Objective: To evaluate the efficacy of topical fluoride varnish applications on white spot lesion (WSL) formation in adolescents during treatment with fixed orthodontic appliances in a double-blinded randomised placebo-controlled trial with two parallel arms.

Methods: The material consisted of 273 consecutive 12–15 year-old children referred for maxillary treatment with fixed orthodontic appliances. The patients were randomly assigned to a test or a control group with topical applications of either a fluoride varnish (Fluor protector) or a placebo varnish every 6th week during the treatment period. The outcome measures were prevalence and incidence of WSL on the upper incisors, cuspids and premolars as scored from digital photographs by two independent examiners.

Results: The attrition rate was 5%. The mean number of varnish applications was 10 (range 4–20) in both groups. The incidence of WSL during the treatment with fixed appliances was 7.4% in the fluoride varnish compared to 25.3% placebo group ($P < 0.001$). The mean progression score was significantly lower in the fluoride varnish group than in the placebo group, 0.8 ± 2.0 v. 2.6 ± 2.8 ($P < 0.001$). The absolute risk reduction was 18% and the number needed to treat was calculated to 5.5.

Conclusion: The results from the present study strongly suggest that regular topical fluoride varnish applications during treatment with fixed appliances may reduce the development of white spot lesions adjacent to the bracket base. In conclusion application of fluoride varnish should be advocated as a routine measure in orthodontic practice.

THURSDAY, 14 JUNE 2007

PREVENTION

OS029

Caries-risk-assessment with a new chair-side test compared to established methods

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Objective: The aim of this pilot study was to assess the diagnostic value of a new chair-side test, lactic-acid production on the tongue (Clinpro Cario™ L-Pop™, 3M Espe, Seefeld), for caries-risk-assessment.
Methods: 16 girls, 19 boys (7.6 ± 0.7 years old) participated in the study. At baseline, clinical [dmft/DMFT, Approximal Plaque Index (API)] and subclinical data [buffering capacity of stimulated saliva (BC), counts of mutans streptococci (MS)/lactobacilli (LB) in saliva, lactic-acid production on the tongue (LAP)] were collected. After 2 years, the examination of the children was repeated (dmft/DMFT). The increase in DMFT values (dif-DMFT) was used for the assessment of the caries-risk: group n-CR: dif-DMFT = 0, group CR: dif-DMFT ≥ 0. To determine sensitivity and specificity of caries-risk-diagnosis methods, groups were built using the MS/LB counts (MS/LB < 105, MS/LB ≥ 105), BC (BC1: high or moderate, BC2: low) and LAP (LAP1: 1–6 no or moderate caries risk; LAP2: 7–9 high caries risk). Statistical analysis was performed using Spearman's test for nonparametric correlations.
Results: At the baseline, the mean dmft/DMFT was 1.7 ± 3.0/0.3 ± 0.8. After two years the mean value of dmft decreased to 1.4 ± 2.4 and the mean DMFT increased to 1.2 ± 1.6. The mean dif-DMFT value was 0.9 ± 1.3; 20 subjects were in the n-CR-group and 15 in the CR-group. All subjects in n-CR had good oral hygiene (API < 36%); in the CR-group 10 children showed good (API < 36%), five children moderate (35% < API < 70%) or insufficient (API > 70%) oral hygiene. The sensitivity of BC, MS, LB and LAP was 45%, 56%, 60%, 17%, and the specificity 64%, 74%, 74% and 51%. The correlation analysis showed only for LB and API significant correlations to caries risk in the children ($P < 0.05$).
Conclusion: Due to low sensitivity and specificity in this study, the LAP should not be used as a sole predictor for caries-risk assessment.

THURSDAY, 14 JUNE 2007

PREVENTION

OS030

Community based programs for prevention of ECC after 10 years

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Objectives: To increase the oral health knowledge and preventive behaviours of parents and to improve oral health status of their 4–5 year old children at initial presentation to regional preschools.
Methods: The day care centre program was implemented in 1994 to support 196 day care centres and 18, 000 children annually. The ante and post natal program was designed to target approximately 8000 mothers annually at regional maternity hospitals and child health clinic since 1996. Both programs involve oral health education, infant feeding advice and provision of child toothbrushes and fluoride toothpaste to young children by dental therapists using traditional health promotion techniques. Evaluation of program outcomes was performed in 1998, 2000 and 2004 by stratified sampling of 4–5 year old children to determine ECC experience using dmft and dmfs indices and other risk factors using a self administered parental questionnaire.
Results: Both programs demonstrated lower ECC experience compared with non-participating children in 1998 and 2000. These differences were statistically significant for the postnatal program in 2004. Overall ECC experience increased in 2004 compared with previous years. Participation rates have decreased substantially for the day care centre program since 2000.
Conclusion: The initial reduction in ECC experience supports continuation of current funding for the programs. However, the declining participation rate of the day care centre program suggests a change of program format and service delivery is required.

THURSDAY, 14 JUNE 2007

PREVENTION

OS031

Lactate formation capability test reveals unchanged caries risk over 2 years

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Objective: A recently developed chair side test (Clinpro™ Cario Diagnosis L-Pop™, 3M Espe, CCLP) evaluates the capability of the oral micro flora to form lactate after contact with sucrose. The outcome of this test (scores 1–9) gives evidence for the current caries risk. These scores are summarised in three categories (low, medium or high caries risk). The aim of the study was to examine changes of this test in preschool children with no specific preventive regimens being undertaken over a period of 2 years.
Methods: In 58 kindergarten children aged 3 to 5 years the CCLP test was performed. The test was reconducted 2 years later. Both test results were correlated and the change of the two test outcomes was calculated. The outcome alterations were statistically compared with respect to the initial risk categories (chi-square test).
Results: The results of both tests at the beginning and the end of the observation period correlated significantly. 22.4% of the children showed the same risk score at the end of the observation period as at the beginning, and a difference of one score was observed in 31.0%. With respect to the risk categories 55.2% remained in their initial category, 10.3% improved for one unit and 34.5% changed for one category worse. The percentage of children with unaltered test results was 44.4% in category I (low risk), 57.7% in category II (medium risk), and 64.3% in group III (high risk), exhibiting no statistically significant differences.
Conclusion: The CCLP-test outcome is remarkably stable over a period of 2 years if no preventive intervention is conducted. In particular, the high percentage of unaltered test results for high caries risk underlines the need for such interventions once the unfavourable risk category has been determined.

THURSDAY, 14 JUNE 2007

PREVENTION

OS032

Dental caries and childhood obesity

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Approximately 25% of New Zealand children are considered overweight or obese. It has been shown that this is associated with high consumption of sweetened foods and drinks which is also a risk factor for dental caries. To date there have been conflicting reports of the association of obesity and dental caries.

Objective: To compare the heights, weights and body mass indices (BMI) of children with high and low rates of dental caries.

Methods: Data including dmft, height, and weight were recorded for 200 children aged 8 years and under who were seen in an undergraduate student clinic.

Results: Fifty three percent were female and the dmft scores ranged from 0 to 15. There was no significant association of dmft severity with ethnicity in this group of children. The children's ethnicities were 70.5% European, 16.5% Maori, 6.5% Pacific Island and 6.5% Asian/other. Twenty percent of children were classified as being over weight or at being at risk of over weight using CDC 2000 data. No significant relationships between increasing BMI and high dmfts were found ($P = 0.932$). However there were significant differences between the BMIs of the different ethnic groups with 46.2 percent of the Pacific Island and 19.1 percent of European children having BMIs in the highest quartile ($P = 0.007$).

Conclusion: As the children with high dmfts also had histories of chronic pain and eating problems, further work is planned to follow these children and those who continue to get new caries to determine if there are any longer term relationships between obesity and dental caries.

THURSDAY, 14 JUNE 2007

PREVENTION

OS033

Implementation of an infant oral care program

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The American Academy of Pediatric Dentistry and the American Association of Pediatrics recommend dental assessments and evaluations for children during their first year of life. Early dental intervention evaluates a child's risk status based on parental interviews and oral examinations. These early screenings present an opportunity to educate parents about the medical, dental, and cost benefits of preventive-rather than restorative-care and may be more effective in reducing early childhood caries than traditional infectious disease models. A comprehensive infant oral care program includes (1) risk assessments at regularly scheduled dental visits; (2) preventive treatments such as fluoride varnishes or sealants; (3) parental education on the correct methods to clean the baby's mouth; and (4) incentives to encourage participation in ongoing self management goals. Recruiting mothers during pregnancy improves the likelihood that they will participate in the assessment program. To maximize interest, trust, and success among participating parents, educational and treatment programs must be tailored to the social and cultural norms within the community being served. A discussion and rationale of the Caries Management by Risk Assessment tool (CAMBRA) targeting children 0–5 will be presented. In addition an overview of the six steps of the infant oral care visit will be discussed and protocols for evidence-based standard of care for infants will be recommended.

FRIDAY, 15 JUNE 2007

ORAL MEDICINE AND PATHOLOGY

OS036

Limited mouth opening due to unilateral coronoid hyperplasia

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Full mouth opening requires a coordinated interplay between the muscles attaching the mandible to the skull and the free movement of the condyles in the temporomandibular joints. During mandibular opening, the condyles undergo an initial rotation movement in the glenoid fossae followed by a translation movement towards the articular eminences. The coronoid processes should also be able to rotate freely during this time. Any condition which hinders the above process leads to LMO. There are many causes of LMO. It is the purpose of this presentation to draw particular attention to coronoid process enlargement as a cause. There are two types of enlargement of the coronoid process. The bilateral type tends to be developmental hyperplasia and results in enlarged but normally shaped processes. The unilateral type usually has a previous history of trauma and tends to be an exostoses. The first reported case of unilateral coronoid enlargement was by Brandt in 1943 and the first reported case of bilateral coronoid hyperplasia was in 1957 by Ginestet *et al*. The management of a 9-year-old female child presenting with LMO due to unilateral coronoid process hyperplasia is described.

FRIDAY, 15 JUNE 2007

ORAL MEDICINE AND PATHOLOGY

OS037

Submasseteric abscess misdiagnosed as recurrent parotitis. A case report

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The submasseteric abscess is a localized, often chronic infection located between the masseter muscle and the mandibular ramus. Submasseteric abscess are rare and easily misdiagnosed as parotid swellings. This report describes a case that was initially misdiagnosed and managed as recurrent parotitis of childhood. An 11-year-old boy was referred for evaluation of a persistent right facial swelling of 4 months duration. A diagnosis of parotitis had been made by the referring paediatrician, who had prescribed multiple courses of antibiotics. It was reported that resolution of the swelling occurred only to develop again with cessation of antibiotics. Examination showed a firm, non-fluctuant, slightly tender swelling involving the right mandibular ramus. Significant trismus was present. Intraoral examination revealed a partially erupted right second mandibular molar with pus discharging from beneath the operculum. An ultrasound and a computed tomography scan showed a thickened right masseter muscle and abscess formation in the submasseteric space. A diagnosis of submasseteric abscess secondary to pericoronitis of the right mandibular molar was made. The abscess was incised and drained combined with operculectomy. A one-year follow-up showed complete resolution of the facial swelling with no evidence of recurrence.

FRIDAY, 15 JUNE 2007

ORAL MEDICINE AND PATHOLOGY

OS038

Challenges in the management of a dentigerous cyst: case report

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Dentigerous cysts are the most common cysts presenting during the first decade of life. They are developmental cysts arising due to enlargement of the dental follicle around the crown of an unerupted tooth. The most frequent site of occurrence is the mandibular third molar region, followed by the maxillary cuspid region. This report describes the presentation, management and long-term consequences of such a cyst in a 7-year-old girl. She was referred to our department with a left sided facial swelling that had gradually increased in size over a 6-week period. Intra oral examination revealed buccal expansion of the alveolus extending from the primary lateral incisor to the second primary molar (62, 65) with a reduction in sulcular depth. On radiographic examination, a unilateral radiolucency in the left maxilla extending from the unerupted lateral incisor to the first permanent molar region was evident. The lateral incisor was ectopically positioned and the canine appeared to be missing. Tooth development was evident in the maxillary left premolar and retromolar regions. Surgical exploration under general anaesthesia revealed a large cystic lesion extending from the maxillary left central incisor to the second molar region and superiorly to the antral floor. The cyst was enucleated with the attached canine, which had been displaced to the posterior maxillary region. A premolar unit in the quadrant, which had also been displaced, was removed. Post-operative recovery was uneventful. Histopathological findings were consistent with the diagnosis of a dentigerous cyst. The patient is currently being monitored to assess the resolution of the cystic area and development of the permanent dentition. This case demonstrates extensive displacement of permanent units by a dentigerous cyst. Potential long-term complications are a reduction in alveolar bone and further tooth loss, making oral rehabilitation a challenge.

FRIDAY, 15 JUNE 2007

ORAL MEDICINE AND PATHOLOGY

OS039

Salivary secretion after fractionated or single dose TBI

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Allgeneic stem cell transplantation (SCT) is an accepted treatment for patients with haematological malignancies. Modification of total body irradiation in fractionated schedules (fTBI) has enabled an escalation in total radiation dose. fTBI has been associated with less tissue toxicity compared to single-dose TBI.

Objectives: The hypothesis to be tested was that dose fractionation of TBI will result in significantly less salivary dysfunction after SCT.

Materials and methods: Between January 1994 and December 2005, 80 consecutive children below 12 years of age received allogeneic SCT. Thirty-seven patients, old enough to cooperate to salivary sampling and who survived more than 1 year were available for follow-up. The children, diagnosed mostly with acute lymphoblastic leukaemia, either received cyclophosphamide (CY) in combination with 10 Gy of single-dose TBI ($n = 23$) or CY in combination with fractionated TBI (3 Gy x 4; $n = 14$) on 2 days. Unstimulated saliva was collected during 10 min and paraffin-stimulated saliva was collected during 5 min.

Results: At baseline there were no differences in age, unstimulated or stimulated salivary secretion rates between the two groups. At the one-year follow up children treated with fTBI had an unstimulated salivary secretion rate of 0.3 ± 0.2 ml/min, a 13% reduction compared to baseline, the TBI-group had 0.1 ± 0.1 ml/min, a 65% reduction ($P < 0.0010$). Regarding the stimulated salivary secretion rate children treated with fTBI had a secretion rate of 0.9 ± 0.5 ml/min, a 14% reduction compared to baseline, the TBI-group had 0.5 ± 0.3 ml/min, a 58% reduction ($P < 0.0046$). The incidence of chronic graft-versus-host was similar in the two groups.

Conclusion: Fractionated TBI resulted in a significantly better salivary secretion rate one year after stem cell transplantation compared to single dose TBI, despite a higher total dose.

FRIDAY, 15 JUNE 2007

ORAL MEDICINE AND PATHOLOGY

OS040

Gingival bleeding and diabetes mellitus in children

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Objective: To assess gingival bleeding in diabetic children during the mixed dentition period.
Methods: Three hundred and fifty five 6–13-year old diabetic (99% Type 1) and non-diabetic control children in the mixed dentition stage were evaluated from a total cohort of seven hundred 6–18 year-old children. Gingival status was assessed and data on important diabetes-related variables were collected. Analyses were performed using Poisson regression.
Results: Children with diabetes had significantly more gingival bleeding than controls for both primary and permanent teeth. The risk of gingival bleeding about primary teeth in cases was 35% more than the control group ($P = 0.001$); and the risk of gingival bleeding about permanent teeth in cases was 57% more than controls ($P < 0.001$). The number of teeth with bleeding had a very modest, but statistically significant, association with mean HbA1c, BMI-for-age percentile, and duration of diabetes.
Conclusion: These findings demonstrate that children with diabetes are at a significantly higher risk for gingival bleeding. Diabetes-related oral complications affect the primary periodontium as early as age 6 and possibly earlier. The emphasis on oral hygiene may be valuable in preventing future periodontal complications in patients with diabetes.

FRIDAY, 15 JUNE 2007

ORAL MEDICINE AND PATHOLOGY

OS041

Oral manifestation of juvenile diabetes mellitus and its management

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Juvenile diabetes mellitus is one of the most common serious diseases occurring in children and adolescents. It is characterized by an increased in the blood glucose level, glycosuria, polydipsia, polyuria, polyphagia, and weight loss. Juvenile diabetes mellitus resulted from inability of the pancreas to produce adequate amounts of insulin. Factors associated with the development of diabetes are genetic factor, viral infection, and autoimmune disorder. Oral manifestation in juvenile diabetes is generally related to poor glycemic control. The most common problems are periodontal disease, xerostomia, and oral infections. Dental management will be succeeded if there was a good relationship between the dentist, physician, parents, and the patient himself.

FRIDAY, 15 JUNE 2007

ORAL MEDICINE AND PATHOLOGY

OS042

Paediatric patients treated with bisphosphonates and avascular necrosis

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Objective: The use of intravenous bisphosphonates is widely accepted in children with osteoporotic bone disorders. Adult bisphosphonate use has been linked to avascular necrosis of the maxilla or mandible. This complication has not been assessed in a pediatric population receiving bisphosphonates. Most children with osteoporotic bone disorders on bisphosphonates have been seen routinely in the Department of Dentistry at the Royal Children's Hospital in Melbourne. Therefore with the increasing awareness of the possibility of avascular necrosis in adult patients on bisphosphonates, the main objective of this clinical observational study was to determine if avascular necrosis was present in pediatric patients with osteoporotic bony disorders receiving bisphosphonate therapy.
Methods: All current patients receiving bisphosphonate therapy (zoledronic acid and/or disodium pamidronate) were assessed clinically and radiographically for any signs or symptoms of avascular necorsis. A history of any dental extractions or minor surgical procedure during bisphosphonate therapy was noted. Clinical examination for the presence of non-healing ulcers, exposed alveolar bone, periapical or periodontal infections, abnormal mobility of teeth and radiographic examination for any persistent radiolucencies were undertaken and recorded.
Results: In 42 cases assessed to date, 11 patients have had dental extractions and/or minor surgical procedures previously. None of the 11 patients assessed demonstrated signs and symptoms of avascular necrosis either currently or previously documented.
Conclusion: Avascular necrosis of the jaw has not been demonstrated in this pediatric population to date. However, until further safety data is available, any necessary dental or surgical procedures should ideally be carried out prior to bisphosphonate therapy with close coordination between the medical and dental teams.

FRIDAY, 15 JUNE 2007

ORAL MEDICINE AND PATHOLOGY

OS043

Chronic osteomyelitis of the mandible in children

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Objective: Osteomyelitis is a purulent inflammation of the medullary cavity and adjacent cortex of bone. This paper describes the clinical features and management of chronic mandibular osteomyelitis in children.
Methods: Six children diagnosed with osteomyelitis of the mandible were managed by a pre-surgical course of antibiotics followed by removal of the causative non-vital tooth, curettage or sequestrectomy of the affected bone, and then given Clindamycin orally for 4–6 weeks. The children were followed-up post-operatively from 6 months to 2 years.
Results: There were four males and two females between the ages of 3 to 12 years (mean 6.2 years). The time period from onset of symptoms until diagnosis was between 1 to 12 months (mean 3.6 months). Each child had a non-vital tooth at or near the site of infection and reported mild symptoms with slow increase of jaw size. Cutaneous fistulas with discharging sinuses were seen in four cases. On imaging, the affected side of mandible body, ramus and condyle showed bone sclerosis, resorption and patchy radiolucency. Cultures of pus and granulation tissue obtained during surgery showed a mixed growth, including ß-haemolytic streptococci, *S. aureus*, *Klebsiella*, *E coli* and Gram-negative *cocci bacilli*. In five of the six cases, the surgical specimens were confirmed as osteomyelitis. In one case, histopathological examination was non-conclusive but post-operative antibiotic therapy was sufficient to resolve the bony swelling as revealed by CT scans. Radiographic findings showed normalization of the bone appearance at about 3 months post-operatively, but with residual loss of mandibular outline.
Conclusion: The combination of antibiotic therapy and surgical debridement was effective in the management of chronic osteomyelitis of the mandible in children.

FRIDAY, 15 JUNE 2007

ORAL MEDICINE AND PATHOLOGY

OS044

Idiopathic tooth loss and failure of root development

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Background: Tooth loss in children is mostly a physiological process which takes place when primary teeth are replaced by the permanent dentition. However, trauma and pathological processes may also result in the early loss of teeth. Conditions resulting in premature exfoliation are uncommon and usually represent significant pathology. A case of unexplained tooth loss and failure of root formation is presented.
Case report: A 7-year-old girl of Portuguese background, presented for a first dental examination complaining of early loss of primary teeth. She was an obese girl (above 97 percentile for weight), and tall for her age (above 90 percentile). Clinical examination revealed a caries-free early mixed dentition with several missing primary teeth. A panoramic radiograph confirmed the absence of the primary teeth and also showed rootless permanent teeth. However, a radiolucent outline of the roots was seen on the film and some small areas of discreet radiopacity that appeared to demonstrate attempted root calcification. The morphology of all permanent crowns appeared clinically normal. The child was referred to a number of specialists to determine the cause of her peculiar dental anomaly. This included a battery of tests, all of which were essentially normal. Other conditions such as hypophosphatasia, rickets and dentine dysplasia have been excluded. She continues to see a paediatric endocrinologist and a paediatrician for management of her obesity; however, we have been unable to establish an appropriate diagnosis for this condition. In summary, the prognosis for this case is poor and tooth loss has continued due to the failure of root development. Consequently, early replacement of this dentition will need careful consideration in the absence of a correct diagnosis. This case is presented in the hope that others might assist in the management of the patient.

FRIDAY, 15 JUNE 2007

ORAL MEDICINE AND PATHOLOGY

OS045

The oral care of children with acute lymphoblastic leukaemia

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Objectives: The primary objective was to determine the oral candida load of children with acute lymphoblastic leulaemia (ALL) during 6 months chemotherapy and to compare it to the oral candida load of healthy children. The secondary objectives were to determine the species of candida present in both groups, to monitor the oral signs and symptoms of children undergoing chemotherapy and to identify whether a relationship existed between the degree of neutropenia and the number of oral candida present.
Methods: Monthly assessment of children in the study group over a period of 6 months and single assessment of children in the control group (matched individually for age, in years, and gender) was performed. Assessment involved scoring oral signs and symptoms using a modified Eilers (1988) Oral Assessment Guide, before each child held 5 ml of sterile water in his/her mouth for 30 seconds. The neutrophil count of children in the study group at the time of each rinse was recorded. Samples were analysed in the oral microbiology laboratory.
Results: (i) 28 children with ALL (ranging in age from 5 to 19 years) participated; (ii) only one child in the study group experienced oral mucositis; candida was not detected in the oral rinse; (iii) candida was isolated from 22% (35) children in the study group; 91% isolates were *C. albicans*; (iv) children in the control group were less likely than children in the study group to be carriers of candida; (v) a simple linear relationship between neutrophil count and candida load was not apparent
Conclusion: (i) The children undergoing chemotherapy for the treatment of ALL rarely experienced oral side effects; (ii) oral signs and symptoms did not correlate well to oral candida load; (iii) the oral care protocol used by the department was effective.

FRIDAY, 15 JUNE 2007

ORAL MEDICINE AND PATHOLOGY

OS046

Space maintenance following a cystic challenge

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Dentigerous cysts in the mixed dentition are often associated with the crown of an unerupted permanent successor of a non-vital primary tooth. This report describes the management of a developing dentition, subjected to one such cystic challenge. A 10-year-old girl was referred by her general dental practitioner to our department for the management of an unerupted left mandibular premolar, associated with a large cystic type lesion. Extra oral examination did not reveal any facial asymmetry, swelling or lymphadenopathy. Intra oral examination of the patient who presented with a class I skeletal relation confirmed the presence of a mixed dentition. Unrestorable caries was evident in most of the primary teeth, and one of her first permanent molars. A non-tender buccal expansion extended from the left mandubular permanent canine to the first permanent molar region. A dental panoramic tomogram revealed a unilocular radiolucency associated with the displaced unerupted second premolar and unresorbed roots of the carious primary successor. The differential diagnosis was an infected dentigerous cyst or a radicular cyst. Extraction of all the unrestorable primary teeth and marsupialisation was carried out under general anaesthesia. The wound site was dressed with a BIP pack. Histopathological appearance of the tissue was consistent with a secondary inflamed dentigerous cyst. During the immediate postoperative period the pack was periodically changed after wound irrigation and removed after 3 weeks. A band and loop space maintainer was fabricated and fit to maintain the space for the eruption of the mandibular second premolar for the next 26 months. Targeted prevention was continued throughout the management; in view of the high caries risk. Eruption of the premolar was monitored over the next 3 years. Optimum alignment of the tooth was thus facilitated by space maintenance, following the surgical management of the inflamed dentigerous cyst.

FRIDAY, 15 JUNE 2007

ORAL MEDICINE AND PATHOLOGY

OS047

LLL in recurrent aphtous stomatitis

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Objectives: RAS is one of the most common ulcerative lesions of the oral cavity. According to some investigations of the properties of pain relief and anti-inflammatory properties of a LLL, as well as in other experimental studies, the LLL has been effective in treating RAS. This study examined the efficiency of LLL in the treatment of RAS.
Methods: In this blind clinical trial, we selected 24 individuals with minor RAS, for which no drugs had been used, and where there was no other systemic disease, and randomly divided them into two groups (case-control). In this research, we used a low-level laser (AZOR-2K, Russian) In-Ga-Al-p, with a wavelength of 600–700 nm with 3J/Point energy, in three- to six-minute treatments. The pain intensity data, calculated by VAS, were analyzed by *t*-test, paired t test, and analyses of covariance.
Results: This study showed that remission time was 5 ± 1.41 days in the case group and 8.25 ± 0.96 days in the control group. The time of complete pain relief was 24 ± 22.04 hours in the case group and 68.33 ± 11.53 hours in the control group. Significant differences existed between the groups ($P < 0.001$). Pain intensity before laser treatment was 4.41 ± 2.35 in the case group and 4 ± 1.90 in the control group, and pain intensity after laser treatment 1.08 ± 1.44 in the case group and 1.87 ± 1.41 in the control group. Significant differences existed within groups ($P < 0.001$). By covariance analysis, we determined that differences in pain intensity in the two groups, before and after laser treatment, were significant ($P < 0.05$).
Conclusion: LLL can reduce remission time and to pain relief in individuals with RAS. Also, laser treatment showed greater reduction of pain intensity in the case group.

FRIDAY, 15 JUNE 2007

SYNDROMES AND GENETICS

OS049

Prenatal development in deciduous canines of Down syndrome and CP

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Objective: Abnormal development of the second deciduous molar in Down syndrome and CP begins before birth. In view of these results we have turned our attention to the earlier stages of dental development in utero, represented by the primary canine, in order to see if we can identify more precisely the origin and timing of developmental insults in these conditions.

Methods: The study was carried out on exfoliated or extracted maxillary primary canines of children with Down syndrome (DS) and CP and they were compared to a control group of children. Thin sections were made through the mid sagittal bucco-palatinal axis. Using a light microscope, the width of prenatal enamel and postnatal enamel, defined by the neonatal line was measured on each section. The chemical composition of the enamel was then measured using an energy dispersive spectrophotometer (ESR) in a high vacuum mode.

Results: The total enamel width in DS and controls was similar and greater than that of CP canines. Significantly more enamel was laid down prenatally in DS teeth than in controls and it was more highly mineralized. The results for CP teeth showed that more prenatal enamel was laid down prenatally than in controls. Mineralization in CP was poor during the first two trimesters and improved significantly during the last trimester.

Conclusion: These results for DS canines support the hypothesis of accelerated growth in the early stages of intra-uterine development, prior to the establishment of reduced growth trajectories in the later stages. In CP canines, enamel apposition was increased prenattaly but mineralization was poor, suggesting that CP is a hereditary condition. While this approach is retrospective, we propose that it may aid in identifying the onset of developmental anomalies of known or unknown etiology that are expressed in later life.

FRIDAY, 15 JUNE 2007

SYNDROMES AND GENETICS

OS051

Study on dental pulp stem cells from hypophosphatasia patients

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Hypophosphatasia is a genetic disease, characterized by defect in alkaline phosphatase activity in serum and bone. Early tooth loss is a common manifestation of the patients, with calcification problem of bone and teeth. Studies showed that the patients have cementum developing defect, and dentin development may also be involved. There is no report about whether the differentiation process of dental pulp stem cells was influenced.

Objective: To study the biological difference of cultured human dental pulp stem cells from deciduous teeth between hypophosphatasia and normal healthy children.

Methods: Anterior deciduous teeth were collected from hypophosphatasia and normal healthy children respectively. The dental pulp stem cells were separated and cultured in MEM with 10% fetal bovine serum, 2 mM L-glutamine, 100 units/ml penicillin and 100 ug/ml streptomycin. The characteristics of cell proliferation, differentiation and calcification was studied and compared between the two groups of children. MTT assay was performed to study the growth curves of the cells; RT-PCR was performed to learn the expression of alkaline phosphatase at different stages; Alizarin red staining was used to test formed calcification nodules after inducing by the culture media containing dexamethasone, β sodium glycerophosphate and vitamine C for 3 weeks.

Results: For proliferation activity and the expression of alkaline phosphatase, the dental pulp stem cells from hypophosphatasia children was obviously lower than control children. Calcified nodules could be seen in both groups, but the nodules were less in hypophosphatasia children than in normal control.

Conclusion: The proliferation, alkaline phosphatase expression and calcification capability of dental pulp stem cells were influenced in hypophosphatasia patients, and this may be relevant to the tooth calcification defect.

FRIDAY, 15 JUNE 2007

SYNDROMES AND GENETICS

OS052

Ectodermal dysplasia: case reports of affected family members

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Objective: The ectodermal dysplasias manifest in a wide range of conditions involving disturbances in tissues of ectodermal origin, the most common dental feature being hypodontia, often severe. The purpose of this report is to present a case of three generations of a family with ectodermal dysplasia; the manifestation and presenting complaints, management and treatment modalities.
Methods: Three brothers were referred for management of hypodontia. Detailed examination was carried out and documented, including photograph and radiographic investigations. History revealed similar oral manifestation in two sisters, their mother and a niece. Medical and dental records of the family were subsequently maintained and appropriate treatment rendered. Prostheses were provided to the family members affected, including implants for complete anodontia. The patients' initial clinical presentations, investigations, treatment modalities and prognosis are discussed.
Results: It was a non-consanguinous marriage of the parents, with 10 offsprings, five of whom were afflicted with ectordermal dysplasia. Ridge augmentation and mini implants were placed to support overdentures for the anodontia, orthodontic realignment and crowns were provided for a brother with oligodontia, partial dentures for the sisters with missing teeth and composite restorations placed to close the diastema present in the mother. No treatment was rendered to a brother with complete anodontia, who unfortunately succumbed to infection and a high fever. All the patients are on regular follow-up including a four-year-old niece with microdontia and marked spacing of the deciduous teeth.
Conclusion: Dental management allows patients with ectodermal dysplasia preventive and supportive aesthetic activity, indirectly avoiding social and psychological problems which could arise particularly in adolescents. Excellent oral hygiene is crucial for the successful treatment of these patients, the parents of young children must be made aware of the possible consequences of tooth loss and the necessity for conserving the available teeth.

FRIDAY, 15 JUNE 2007

SYNDROMES AND GENETICS

OS053

Fibrodysplasia ossificans progressiva – a case report

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Fibrodysplasia ossificans progressiva (FOP) is an extremely rare and disabling heritable disorder of connective tissue characterized by progressive postnatal heterotopic ossification of soft tissue. The genetic defect and the pathogenesis of bone formation in FOP was unknown till recently. Previous reports suggest that the incriminating gene was located on chromosome 20 and codes for the synthesis of bone morphogenetic proteins. Here we report a rare case of FOP in a 4-year-old female patient. At birth, she was found to have the skeletal malformation of her big toes 'hallus valgus deformity'. Her feet showed the characteristic clinical and radiological confirmatory feature of hallus valgus deformity. The first manifestation of impending ossification at an anatomic site is the occurrence of warm, painful, nodules in the soft connective tissues. These nodules occasionally regress, but most often they mature rapidly to form lamellar bone that bridges and rigidly immobilizes the joints, rendering movement impossible. Heterotopic ossification usually appears within the first decade of life following spontaneous or trauma induced flare-ups. The temporomandibular joint is characteristically among the last joints to be affected with heterotopic ossification. Intramuscular injections of local anaesthetic during dental procedures pose substantial added risk for inciting heterotopic ossification and subsequent ankylosis of the TMJ in patients with FOP.

FRIDAY, 15 JUNE 2007

SYNDROMES AND GENETICS

OS054

Alveolar cleft repair when and how

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Cleft of the face take many forms from mere notch on the lip to complete cleft of the hard and soft tissues. It is often forgotten that the alveolus bone caries teeth and gingival tissues. The cleft of alveolus causes many problems and they are as follow: (i) oral and nasal communication; (ii) lack of nasal support; (iii) lack of alveolar continuity; (iv) disrupted gingival tissue at the alveolar cleft; and (v) lack of facial harmony.Therefore when such defect is present can compromise the facial aesthetic, because missing teeth due to alveolar cleft. Also cleft has a huge adverse effect on the facial growth. It is also important for children to have nice smile with straight teeth, both for eating and self confidence. The goals of alveolar bone graft are to repair the defect for closure of oral and nasal communication; also for nasal base support and new bone for developing teeth to emerge from. In this presentation timings of alveolar bone graft, different options of bone graft sites and materials as well as various surgical techniques will be discussed.

FRIDAY, 15 JUNE 2007

DENTAL TRAUMA

OS055

Pediatric dental trauma changing etiological perspectives

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'When the first Child smiled for the first Time, that smile broke into a thousand pieces which went skipping about. and that was the beginning of the fairies!' – Peter PanSmiling children are mankind's greatest asset! Any entity which tries to hamper these innocent smiles could be one of nature's most cruel offerings. Unfortunately, we come face to face with this gruesome reality whenever we see a child's traumatized smile. Can we dare to imagine the physical agony and mental anguish experienced by these tiny tots and their parents when they are victim to an episode of oro-facial trauma? The complexities and dynamics of the growing pediatric facial skeleton coupled by the inherent behavioral issues associated with any episode of dental trauma make it imperative for us to take a fresh look at some of the primordial aspects of preventing these episodes rather than planning for their meticulous rehabilitation. This could only be achieved by re-addressing the changing perspectives of their etiological origin which have seen a sea-change in the recent past. Today, the increasing episodes of child abuse, juvenile delinquency, single parent families, broken homes, rampant drug abuse etc have not only increased the number of pediatric trauma cases but have also accentuated the gravity of their magnitude. The present paper tries to emphasize some of these changing etiological perspectives which are unique to the Indian scenario. Once we understand their origin. Prevent trauma and preserve a smile.!?

FRIDAY, 15 JUNE 2007

DENTAL TRAUMA

OS056

Oro-facial injuries in children attending hospital in Jeddah, Saudi

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Aims: To determine the occurrence, causes, types of trauma and the time elapsed until seeking dental care in children seen in a hospital in Jeddah, Saudi Arabia.
Methods and materials: Data included all cases of dental trauma for children aged 17 years and younger who presented at the emergency and dental departments of the hospital during a 12-month period.
Results: A total of 112 patients with traumatic dental injuries visited the hospital during this period. 79 were males and 33 were females. The highest frequency of injury was seen in 9–11 year old children. The most common cause of trauma was due to falls (68%). Most of the dental injuries occurred in the street (57%). The most common types of injury were luxation injuries and complicated crown fractures. Maxillary teeth were more affected than mandibular teeth. Maxillary central incisors were found to be the most affected teeth. 51 patients had soft tissue injuries and 13 patients had facial bone fractures. The largest number of injuries presented on the same day for treatment (70%) or 1 day after (36%).
Conclusions: There was no tendency for delay in presentation for dental care after injury in the sample of our study.

FRIDAY, 15 JUNE 2007

DENTAL TRAUMA

OS057

Child's dental emergencies

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Dental emergencies are conditions of an unforeseen dental occurrence or combination of circumstances that calls for immediate action or remedy. The condition is divided into five categories which covers dental trauma, post-surgical extraction emergencies, endodontic and periodontic conditions, and oral ulcerations. In some countries, this extremely common occur in children and in some circumstances may lead to missing school days due to acute dental problems. This paper will discuss five categories of dental emergencies, its management and prevention. This paper also will present some cases found in Dental Hospital, Faculty of Dentistry, Padjadjaran University, Bandung – Indonesia.

FRIDAY, 15 JUNE 2007

DENTAL TRAUMA

OS058

Root banking following cervical root fracture: a case report

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Objective: Banking of the root of an unrestorable traumatized maxillary incisor in order to preserve alveolar bone in a young child.
Methods: A 10 years old Caucasian girl was referred for a persisting fistula in the buccal mucosa of the maxillar left central incisor 21. Due to a traumatic injury 4 years ago, tooth 21 had a composite restoration. A slightly increased mobility was seen but without discoloration or pain. X-ray revealed an immature root with apical radiolucency and an asymmetric development when compared to 11. In a first treatment session, apexification and apical healing was obtained by using MTA. Two years later, she was referred by her orthodontist complaining of a loosen tooth 21. Cervical root fracture was suspected and proven by X-ray. In consult with her orthodontist, it was decided to maintain the root in order to prevent resorption of the alveolar crest. The crown was used as a splint for aesthetic reasons.
Results: After an observation period of one year follow-up, the incisor root was successfully retained. An aesthetical as well as a functional result was achieved by splinting the original crown to the neighbouring teeth.
Conclusion: Management of crown root fractures at the level of the gingival margin is complex especially in case of an immature root with thin divergent walls. Nevertheless, retaining the tooth root following the loss of the clinical crown is one of the most effective means of preserving alveolar bone. Root banking is a successful clinical procedure to prevent complications during osseointegration of implants to be placed at an appropriate age.

FRIDAY, 15 JUNE 2007

DENTAL TRAUMA

OS059

Localised periodontitis following circumferential foreign body impaction: diagnosis and management

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This report discusses the presentation and management of few cases of severe localised periodontitis caused by circumferential impaction of foreign bodies around the cervical region of the teeth. All cases involved extremely mobile teeth and were referred for specialist consultation and management by general dental practitioners. The initial diagnosis by the referring practitioners varied from dental trauma to early onset periodontitis. These interesting foreign bodies recovered were not elastic bands usually reported in literature on this topic. It is important to be aware of the fact that children can manage to insert bizarre objects into periodontal tissues with out parental knowledge and be asymptomatic for significant periods of time. The periodontal effects of foreign body impaction have been reported since 1870. Severe localised periodontitis is extremely rare in children and if seen should be investigated thoroughly to isolate the cause. A detailed history and an accurate diagnosis is essential to avoid potential complications which may result in loss of teeth. A foreign body hidden in the periodontal space must be suspected when severe mobility and unusual clinical attachment level loss and bone destruction is seen in childhood. Often the impacted foreign body is radiolucent and cannot be seen on radiographs. The clinician must be familiar with the clinical signs and symptoms and appropriate treatment procedures to ensure repair of tissues and survival of the affected teeth.

FRIDAY, 15 JUNE 2007

DENTAL TRAUMA

OS060

Use of implants in adolescents: 10 year follow-up

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Implants are providing a new option for oral rehabilitation, not only in adolescents with an anterior tooth loss due to trauma, but also in subjects suffering hypodontia, ranging from a single missing tooth to multiple missing teeth of ectodermal dysplasia. When considering implants as a prosthetic solution for adolescents, it is of special interest to determine when may be an acceptable time to place implants for them. However, it is not advisable for clinician to determine when to place implants in adolescents by only taking into consideration the age of patients. This is because there is a large range of timing for growth cessation among individuals. Most authors recommend that dental and skeletal maturation must be evaluated in each young individual who is a candidate for implants treatment. This includes dental age, a handwrist radiograph, growth curve of body height and superimposition of lateral cephalogram. However, any of these should not be the sole guideline for the timing of implant placement in adolescents. Two clinical cases are described in which 13, 14 year-old girls with anterior tooth loss due to dental trauma were treated using implant. It is the main purpose of this report to discuss some characteristics of implants in adolescents demonstrated by 10-year follow-up. In these cases, implants may be adequate alternative treatment to replace a missing tooth in adolescents who still have some slight remaining growth. It is important to confirm that growth has vritually ceased before placing implants to avoid disadvantages that may occur if they are placed early.

FRIDAY, 15 JUNE 2007

DENTAL MATERIALS

OS061

Bonding strength on dentin from primary tooth with amelogenesis imperfecta

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Objective: Dentin of many teeth with amelogenesis imperfecta (AI) is histologically altered following loss of the overlying hypoplastic enamel and exposure to the oral environment. Such dentin becomes hypermineralized and sclerotic with obliteration of the dentinal tubules, which makes bonding less predictable. This study examined the effect of etching time on the microtensile bond strength (MTBS) of an etch-and-rinse adhesive to dentin from primary tooth with AI.
Methods: Flat coronal dentin surfaces from six primary molars affected by AI were divided into two groups according to the etching time (I) 15 seconds and (II) 30 seconds. Following etching, a two-step etch-and-rinse adhesive, Prime and Bond NT (Dentsply De Trey) was applied to dentin surfaces, air-dried and light-cured. Composite build-ups were performed using Filtek Z250 (3M ESPE) for MTBS testing. Flat dentin surfaces from six extracted, non-carious human primary molars were similarly bonded and were used as controls. The bonded teeth were sectioned into beams of 0.8 mm^2 and stressed to failure under tension at a crosshead speed of 1 mm/min. Representative fractured beams from each group were prepared for fractographic analysis under scanning electron microscope (SEM).
Results: One-way ANOVA and Tukey's multiple comparison tests showed that MTBS of dentin from primary tooth group with AI was significantly low (15 seconds: 19.8 ± 6.6, 30 seconds: 21.1 ± 7.7) compared to sound dentin groups (15 seconds: 31.8 ± 4.8, 30 seconds 24.9 ± 5.1). SEM observation of the fractured surfaces revealed predominantly adhesive failure for dentin in AI groups. The low MTBS observed in AI groups could be attributed to the porous hybrid layer and short resin tags that were retained on the composite side of the fractured beams.
Conclusion: The bonding efficacy of etch-and-rinse adhesive was compromised by dentin in AI groups and could not be improved by extending the etching time to 30 seconds.

FRIDAY, 15 JUNE 2007

DENTAL MATERIALS

OS062

Outcomes of restorations placed under general anaesthesia by paediatric specialists

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Objective: There has been considerable controversy regarding the benefit of restoring carious primary teeth in the dental literature. Therefore, the objectives of this study were to review the outcomes of the care provided for primary teeth under general anaesthesia by Paediatric Dental Specialists.
Methods: The study was a retrospective longitudinal analysis of outcomes for restorations placed. It was conducted in two phases: Phase I: Identification of patients and analysis of dental records. Phase II: Recall of a proportion of the patients and assessment of restorations using a modified Cvar and Ryge Index. The study population was made up of patients who had received comprehensive care of the primary dentition by Paediatric Dental Specialists at Leeds General Infirmary and Dewsbury and District Hospital between 1st January 2001 and 31st December 2003.
Results: The population for phase I of the study consisted of 410 children, who had received comprehensive care of the primary dentition under general anaesthesia. The mean age of the children included in the study was 5.13 years at the time of treatment. The mean number of carious teeth was 8.3. The mean number of restorations placed was 3.42 with 4.88 being the mean number of primary teeth extracted per child. The mean length of follow-up was 17.2 months ranging from 1–63 months. From the records composite was found to be the most frequently used restorative material followed by stainless steel crowns. Stainless steel crowns were found to be the most successful restoration. Ninety-three percent of the restorations clinically examined in phase II of the study were deemed successful.
Conclusion: This study indicated that most of the restorative procedures used had successful medium to long-term outcomes.

FRIDAY, 15 JUNE 2007

DENTAL MATERIALS

OS063

Experimental evaluation of direct pulp capping with two adhesives

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Objective: To evaluate the pulp responses to direct capping with adhesives, with or without direct etching of the exposure site, and comparing their sealing against bacterial penetration into the pulp.
Methods: Deep class V cavities were prepared in 160 permanent dogs teeth under general anesthesia and aseptic conditions and the pulp intentionally exposed with small round bur.Groups I and II (control): The exposed pulps were capped with calcium hydroxide (Dycal), then cavity etched, restored with composite resin and Single Bond adhesive for GI and Prime&BondNT for GII. Groups III and IV: The cavity including the exposure site was etched (subgroups IIIA, IVA) or not including the exposure (subgroups IIIB, IVB) then restored with composite resin and Single Bond adhesive for Group III and Prime&BondNT for group IV. After 7, 30, 90 and 180 days, the animals were sacrificed. The teeth sections stained with H&E for histopathologic examination and with Taylor's modified Gram's stain for microbiological examination. The pulps sections were scored for inflammatory cell response, fibroblastic activity, reparative dentin formation and for the detection and location of microorganisms.
Results: All pulps showed initial moderate to pronounced superficial inflammatory response and fibroblastic activities that decreased throughout the follow-up periods. There was no significant difference between all groups. However the etched pulps tended to show more inflammatory reaction and less fibroblastic activity. At 90 days reparative dentin was present in all teeth except 40% of subgroups IIIA & IVA and by 180 days it was evident in all teeth. No bacterial penetration was detected inside dentinal tubules or pulp cavities in all teeth.
Conclusion: The adhesives tested provide acceptable marginal seal against bacterial penetration and seems to be promising for direct pulp capping.

FRIDAY, 15 JUNE 2007

DENTAL MATERIALS

OS064

Effect of corrosion environments on orthodontic wires' surface hardness

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Orthodontics is a discipline that takes up the normal structure and growth, anomalies and their treatment of tooth, jaw bone and face complex. Wires, springs and brackets used in orthodontic treatment must be produced from materials that appropriate with oral cavity and used without suffering corrosion and losing mechanical properties. In this study, wires chosen from the materials mostly aforementioned in scientific literature and used by orthodontists are put into three artificial saliva solution which are modified Fusuyama, modified Fusuyama with 1 g/l NaF addition and modified Fusuyama with 1.7% H_3PO_4 addition in a situation that is equal to oral cavity temperature and corrosion behaviors observed by using weight loss method. Changes on surface and surface hardness are investigated by looking through microstructure photographs and taking surface micro hardness measurements. Consequently, it is determined that corrosion rates of wires kept in the modified Fusuyama solutions with NaF and H_3PO_4 addition are higher and the most affected wires are nickel titanium and beta titanium alloy wires. Additionally, maximum increase on surface hardness occurs in the modified Fusuyama solutions with NaF for all types of wires. It is seen that the change of beta-titaniums surface hardness is 15.68% in modified Fusuyama solution with NaF.

FRIDAY, 15 JUNE 2007

DENTAL MATERIALS

OS065

Bond strength of self-etch adhesives to bur-cut dentin

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Objective: This study examined the effects of cutting dentin with different burs at various speeds on microtensile bond strength (μTBS) of two self-etch adhesive systems.

Methods: Flat deep dentin surfaces from fifty extracted human third molars were divided into five groups according to bur type and speed of rotation (I) high-speed diamond bur, (II) low-speed diamond bur, (III) high-speed tungsten carbide bur, (IV) low-speed tungsten carbide bur. Controls were abraded with #600 grit SiC paper. A two-step self-etch adhesive, Clearfil SE Bond (SE; Kuraray) and a one-step self-etch adhesive, Clearfil S3 Bond (S3; Kuraray) were applied to dentin surfaces and light-cured. Composite build-ups were performed using Filtek Z250 (3M ESPE). For μTBS evaluation, composite-dentin beams of 0.8 mm^2 were stressed to failure at a crosshead speed of 1 mm/min. The μTBS data was analyzed using two-way ANOVA and Tukey's multiple comparison tests. Representative fractured beams from each group were prepared for fractographic analysis under SEM.

Results: Two-way ANOVA showed that the effects of dentin surface preparation, adhesives systems and their interaction were statistically significant ($P < 0.05$). The μTBS were significantly lowered when bonding SE or S3 to dentin cut with a high-speed diamond bur ($P < 0.05$), which produced a thick smear layer and irregular surface for bonding. SEM observation of the fractured surfaces revealed mixed and adhesive failures for SE groups; while in S3 groups adhesive failures with numerous inclusion droplets predominated.

Conclusion: Higher bond strengths are achieved with tungsten carbide burs than diamond burs. Thus, proper bur selection is essential to optimize dentin adhesion of self-etch adhesives.

FRIDAY, 15 JUNE 2007

DENTAL MATERIALS

OS066

Micro leakage study in newer generation bonding agents using flowable-composite

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Objective: The aim of this invitro study was to evaluate the extent of micro leakage using 5th and 6th generation bonding agents in a preventive resin restoration technique using flowable composite.
Methods: Eighty human maxillary premolar extracted for orthodontic reasons ware selected. Standard round bur of smallest size available with the Mani Company (No BR-49) was used to prepare the fissure. The depth of preparation was standardized as per the bur head. The teeth were divided into four groups of 20 each where group I -Single bond, group II – xeno bond, group III – adhese, group IV – adper prompt respectively. Group I was the control. After restoration the groups were subjected to thermo cycling and dye penetration test. The specimens were sectioned buccoligually and the degree of dye penetration in the cavity wall was assessed using a stereomicroscope. The score for microleakage were measured in mm. All the data were then transferred to SPSS soft ware and the scores were statistically analyzed using a one way analysis of variance and Tukey test.
Results: The entire test group showed some amount of dye penetration. These were statistically significant. Differences in microleakage among the different groups were, group II (xeno bond) showed highest microleakage followed by group I Single bond, group III (adhese) and group IV (adper prompt).
Conclusion: It can be conclude that the performance of adper prompt and adhese (6th generation) was better than Single bond (5th generation) and xeno bond (6th generation).

FRIDAY, 15 JUNE 2007

DENTAL MATERIALS

OS067

Stimulation of BMP-2, TGFβ-1 and TBARS production by dentin adhesives

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Objective: The aim of this study was to evaluate and compare the effects of two proprietary self-etch adhesives (Adper Prompt L-Pop/3MEspe and iBond Gluma inside/Heraues Kulzer) on the induction of oxidative stress and production of TGF-β1 and BMP-2 by cultured human gingival fibroblasts (HGF).

Methods: HGF were cultured from healthy attached gingiva, obtained by informed consent. Following 24- and 72-hours exposure of HGF to two different elutes of the test materials, cell viability was determined using 3-(4,5-dimethyl-2-thiazolyl)-2,5-diphenyl tetrazolium bromide (MTT) assay. Lipid peroxidation, a major indicator of oxidative stress, was measured by the thiobarbituric acid reactive substances (TBARS) assay. TGF-β1 and BMP-2 levels in cell-free culture media were determined by enzyme-linked immunosorbent assay (ELISA).

Results: Cell viability of the test groups was significantly lower than that of control at 24 and 72 hours ($P < 0.001$), but showed an increase at 72 hours ($P < 0.001$) with no significant difference among test materials ($P > 0.05$). The TBARS levels of both test groups were significantly greater than that of control ($P < 0.05$), and displayed similar values at 72 hours ($P > 0.05$). Similarly, the TGF β-1 and BMP-2 levels for both materials were significantly greater than that of control ($P < 0.05$). Both test groups showed increased TGF β-1 levels within time ($P < 0.001$), but the BMP-2 levels showed a tendency to decrease toward 72 hours.

Conclusion: These results suggest that, despite the demonstration of their cytotoxic and oxidative stress-producing potential, the tested adhesive resins might be capable of eliciting a biological response in HGF by production of TGF-β1 and BMP-2.

FRIDAY, 15 JUNE 2007

DENTAL MATERIALS

OS068

Biological restorations! a myth or reality

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An increasing interest in the preservation of teeth stored in the Human Tooth Bank and supplied for various research and clinical use has led to the concept of biological restorations. However, the focus of great concern has always been prevention of cross infection and structural integrity of teeth stored from time of extraction till placement in the oral cavity. Is the human tooth bank still a myth or have recent advances of institutionalisation turned it to a reality. A clinical research on the effects of storage on sterilization and structural integrity of teeth used as biological restorations in mutilated early childhood caries cases is presented.

FRIDAY, 15 JUNE 2007

DENTAL MATERIALS

OS069

Glass-fibre reinforced composite resin – applications in pediatric dentistry

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Premature loss of both anterior and posterior primary teeth may result in well known undesirable sequelae. An effective space maintainer may be indicated to maintain space and function. Similarly, in severely destructed primary anteriors, where conventional restorative techniques are often unsatisfactory, intra-canal retention may be mandatory for functional coronal restoration following pulpectomy.

Objectives: To evaluate the clinical efficacy of glass-fibre reinforced composite resin (GFRCR) as: (i) a post in comparison to an omega shaped stainless steel wire in endodontically treated primary incisors and (ii) a space maintainer for primary teeth as compared to conventional band and loop.

Methods: 1. Application as a post: study group included ten healthy children, aged 3–4 years and requiring endodontic treatment for two or more primary incisors. Each of these children received both GFRCR and omega shaped stainless steel wire posts in atleast two primary incisors. Final coronal restorations were completed with composite strip crowns. They were then evaluated for esthetics, marginal adaptation and retention at regular intervals. 2. Application as a space maintainer: experimental group consisted of thirty children, 3–8 years of age fulfilling criteria for space maintenance and requiring space maintainers in two quadrants. All the children received both space maintainers, viz. conventional band and loop in one quadrant and GFRCR in the other. Retention of space maintainers was evaluated periodically. The results were tabulated and subjected to statistical analysis.

Results: The GFRCR post showed better retention (80%) and marginal adaptation (99%) as compared to the omega shaped stainless steel wire post. The GFRCR space maintainer showed better retention (85%), required a less cumbersome procedure and met with the demands of both parents and patients, as compared to the widely used conventional space maintainers.

Conclusion: The success of both applications of GFRCR are being currently reviewed.

FRIDAY, 15 JUNE 2007

DENTAL MATERIALS

OS070

Effect of shade on the depth of cure of PAM-C

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Objective: The objective of this in vitro study was to compare the depth of cure (DoC) of several polyacid-modified composite resins (PAM-C) as a function of their different shades.
Methods: The PAM-C's used in the study were F2000® (3M Espe), Compoglass F® (Vivadent), Glasiosite® (Voco), Dyract® and Dyract Extra® (Dentsply De Trey) with their different shades (A1, A2, A3, A4, B3, C2, D3). The DoC was determined by using a digital penetrometer test method (*J Dent* 1993; **21**, 305). The materials were cured in bulk using a conventional halogen-based unit (Elipar trilight, 450 mW/cm^2, 40 seconds) in split stainless steel moulds (10-mm long, 4-mm in diameter). Immediately after curing, the height (mm) of the cured material was measured and taken as the DoC.
Results: The mean depths of cure (mm) ranged from 4.66–7.37 (F2000); 3.76–4.62 (Compoglass F); 5.06–6.53 (Glasiosite); 4.18–5.22 (Dyract) and 4.96–6.21 (Dyract Extra). Statistical analysis (ANOVA) revealed significant differences ($P < 0.001$) between shades and materials. For a given material shade C2 exhibited the lowest value for DoC whereas shade A1 resulted in the highest value. Moreover in general the A shades showed the highest DoC values and the C shades the lowest. For F2000 however the darker shades A2 and B2 scored higher DoC values than the shade A1 from the other materials.
Conclusion: The DoC differs significantly among the different materials for a given shade. There are also significant differences between the shades for a given material. Hence the darker the shade the lower the value of the DoC. Regarding the different materials and their shades F2000 and glasiosite exhibited the highest values for DoC and Compoglass F the lowest values.

FRIDAY, 15 JUNE 2007

DENTAL MATERIALS

OS071

Comparison of monomer release from different composite materials

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Objective: The study was performed to determine the leaching monomer type and amount from the composite materials of different particle sizes, Filtek Flow, Filtek A110, Filtek P60 and Filtek Supreme (3M Dental Products, St Paul, MN, USA) used in the restorations of primary and permanent teeth.
Methods: Three different sizes of sample discs (2, 4, 6 mm) prepared for each material group were polymerized by two different light curing units, LED (Elipar Freelight I) and Halogen (Visilux II) (3M Dental Products, St Paul, MN, USA) and placed in artificial saliva. The monomer release in 30 minute and 24 hours from the species was analyzed by High Performance Liquid Chromotograph (HPLC) which has been calibrated for TEGDMA, UDMA, Bis-GMA and Bis-EMA monomer extracts. The statistical analysis of the data was performed by Kruskal Wallis, Dunn's Multiple Comparison and Mann–Whitney *U*-tests.
Results: TEGDMA monomer release was detected in all four material groups and UDMA was detected in the group of Filtek Supreme. Significant differences in monomer release of TEGDMA and UDMA were obtained between the different sizes of discs. In some groups, high monomer release was observed as the surface area has increased. Significantly high amount of TEGDMA and UDMA monomer release was obtained in LED than Halogen group. Lower amount of monomer release was obtained in species of 30 minute than 24 hours.
Conclusion: It has been determined that all composite materials, Filtek Flow, Filtek A110, Filtek P60 and Filtek Supreme, polymerized by lower output curing light device could cause high monomer release. Therefore, clinical applications of composite materials and the type of curing units have important effects in the success of restorations and in the decrease of side potential effects.
Acknowledgement: This study was supported by The Research Support Unit of Istanbul University as the project no: T-198/06032003.

FRIDAY, 15 JUNE 2007

DENTAL MATERIALS

OS073

ALP activity assessment of two endodontic materials: a preliminary study

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Objective: The aim of this *in vitro* study was to assess MG-63 human osteosarcoma cells' alkaline phosphatase (ALP) activity when in contact with calcium hydroxide powder (powder), calcium hydroxide paste (paste) and mineral trioxide aggregate (MTA).
Methods: MG-63 cells were seeded to the three selected materials at concentrations ranging from 0.5 to 25% for durations of 0.25, 0.5, 1, 24, 48 and 72 hours. The controls were modified EMEM without fetal calf serum or test materials. BCIP-NBT assay was used and ALP activity quantified using Enzyme-linked Immunosorbant Assay (ELISA) reader at 410 nm.
Results: The overall analysis for ALP activity indicated significant interaction between test materials and control. Duration was a significant factor. Subsequently, the test materials were paired and analysed for initial (0.25, 0.5, 1 hour) and delayed response (24, 48 and 72 hours). During the initial response, Powder exhibited an increased ALP activity compared to MTA. This interaction was not dependant on duration. During the delayed response, elevated ALP activity was noted with Paste when compared to MTA and powder. The interaction of paste was dependant on duration.
Conclusion: All three materials exhibited increased ALP activity.

FRIDAY, 15 JUNE 2007

DENTAL MATERIALS

OS074

Culture of human dental pulp cells on glass fibre

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Objective: The medical application of tissue engineering is already a reality with a range of engineered products used successfully in the clinical setting. The goal with respect to the dental tissues is to eventually regenerate the whole dental organ. Biodegradable scaffolds provide a physiological and biological three-dimensional microenvironment promoting cell adhesion, migration, growth and differentiation. Such a scaffold can effectively transport nutrients, give physical and mechanical strength, as well as the ability to gradually degrade and be replaced by regenerative tissue. The benefits of using scaffolds, thus future research is required to investigate their use in promoting regeneration of pulp tissues. The aim of this study is to investigate the use of biodegradable phosphate-based glass fibres as a potential scaffold material for the *in vitro* regeneration of pulp cells.
Methods: Pulpal tissue from 12 primary teeth and six adult teeth was removed and cultured *in vitro* to expand cell numbers. Cells from two teeth (one primary and one adult) were then seeded on phosphate-based glass fibre scaffolds, with controls seeded on tissue culture plastic. Samples were viewed under modulation contrast microscopy over a 7-day period and RNA was isolated from these cells for relative quantification PCR.
Results: Cells from one adult tooth and one primary tooth were successfully cultured. Histologically, the cultured cells appeared fibroblast-like, but differences were noted between adult and primary cells. Soluble glass fibres were shown to biocompatible with the human pulp cells.
Conclusion: Phosphate-based glass fibres have the potential to serve as a scaffold material for the *in vitro* regeneration of pulp cells. Future investigation is required to study the longer-term response to the glass fibres *in vitro*.

FRIDAY, 15 JUNE 2007

DENTAL MATERIALS

OS075

ART an alternative technique for complicated clinique situations part I

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The Atraumatic Restorative Treatment is a minimally invasive and maximally preventive approach to stop further progression of dental caries. It involves the removal of soft, completely demineralized carious tooth tissues with hand instruments. followed by the restoration of the cavity with an adhesive dental material (a high resistance glass ionomer), and simultaneously seals the remaining pits and fissures that remain at risk. This technique is fundamentally based in the manipulation facility, simplicity of the restoration, and fluoride liberation. The use of this technique is prescripted for places where equipment is not complete or totally adequate for odontologic practices. It is also useful for treatments in which the patient shows a difficult behavior. In countries like Argentina, where the use of sedation and general anesthetics are not so common, this treatment is recommended. This presentation looks at the development of the technique, its performance and potential areas of application. In the first part of this presentation we shall show the use of A.R.T. in children from very remote areas and with low resources from the Northwest of Argentina as a part of a general prevention program that takes place in this region of the country. In the second part of the program we shall show the use in disabled patients.

Methods: Dental practitioners, hand instruments, material filling.

Conclusion: ART is an economical, effective method for preventing and controlling caries in vulnerable populations. ART reduces the stress and anxiety in patients that conventional restoration methods produce. This technique promises major benefits for Latin America. However, given its limitations with dental cavities on two or more surfaces, it is recommended that more research on this approach be encouraged, with the aim of improving the technique's effectiveness based on its characteristics, indications, and technical merits.

FRIDAY, 15 JUNE 2007

DENTAL MATERIALS

OS076

ART an alternative technique for complicated clinique situations II

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There are numerous difficulties associated with the dental care of children with special needs. Special care dentistry includes people with a variety of disabilities (mental disorders, genetic syndromes, motor disfunction, etc…). Decayed teeth as well as other oral findings vary according to individual factors, which also may depend on the general pathology. Children with special needs have not the ability to chew or to brush the teeth properly. They usually cannot cooperate for different reasons, moreover when dental procedures take too long or are somewhat painful. When the patient cooperates, a 'motivation' approach is compatible. In some cases, conscious sedation may help.general anaesthesia is suggested as a last resource if previous options did not succeed. Many neurologically compromised patients have involuntary associated movements, which may impede a proper accessibility to caries lesions with rotary instruments. The atraumatic restorative treatment (ART) appears to be quite suitable to approach caries lesions in disabled patients. The administration of local anaesthesia is not required in most cases. ART is proposed as the answer to the unavailability of restorative care for this population.

SATURDAY, 16 JUNE 2007

CARIOLOGY

OS078

Dental caries and salivary levels of s-mutans and lactobacilli in asthmatic children receiving anti-asthma inhalers

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Aim: The aim of present study was to assess salivary levels of' 'streptococcus mutans' and 'lactobacilli 'in addition to DMFS score of asthmatic children and non-asthmatic controls.

Methods: Forty-five asthmatic children between age 6 and 12 and 46 matched control non-asthmatics entered the study. DMFS score recorded according to visual-tactile method. Stimulated saliva sample obtained from each patient during a 5-min period. Demographic data and complete medical history recorded. Data analysis performed using Mann–Whitney, Rank correlation, Chi-square, Fisher exact and *t*-test, ridge regression.

Results: The difference between mean DMFS score of asthmatics (3.98 ± 2.53) and non-asthmatics (4.30 ± 2.81) was not significant. Microbial count revealed no significant difference between salivary levels of *Lactobacilli* in asthmatics (2.01 × 104) CFU and non-asthmatics (2.34×10^4) CFU. However streptococcus mutans count was significantly different between asthmatics (8.9 × 104) CFU and nonasthmatics (1.5×10^5) CFU. asthmatic children receiving anti-asthma regimens containing combination of β2-agonist and a corticosteroid inhaler had better DMFS score although it was not significant ($P = 0.11$). In asthmatic children the co-varieties in regard to dental caries such as (age, sex, drug regimen and duration of usage, technique of spray application, use of spacer, level of parent's education, number of family members, and monthly income) being considered at first. Variables with $P < 0.2$ were considered and their significant interferences were assessed by ridge regression with $P < 0.05$. The significant parameter concerning caries was drug regimen (corticosteroid along with reliever bronchodilators versus bronchodilators, alone).

Conclusions: Asthmatic children use inhalers had a better dental health, in compare to healthy controls, (although it was not significant). This maybe because of regular visits to their physicians. Asthmatics receiving a protective corticosteroid along with reliever bronchodilators less frequently had asthma attacks, leading to less use of bronchodilators, which are potent xerostomic drugs, and less caries.

SATURDAY, 16 JUNE 2007

CARIOLOGY

OS079

Streptococcus mutans count in saliva of caries free children

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Objectives: The aim of this study was to estimate the count of *Streptococcus mutans* in saliva of caries free children using Dentocult SM Strip Mutans and to evaluate the effect of fluoride varnish on the *Streptococcus mutans* count in saliva of these caries free children.
Methods: Thirty caries free children were selected for the study based on the information obtained from a questionnaire prepared. They were randomly assigned into the control group and the study group consisting of ten and twenty children respectively. Samples of saliva were collected using the saliva strips from the Dentocult SM kit and after incubation the presence of the *Streptococcus mutans* was evaluated using the manufacturers' chart. The study group was subjected to Fluor Protector fluoride varnish application after 24 hours following which the samples were collected again.
Results: The average *Streptococcus mutans* count in primary dentition of caries free children was in the range of 10^4 to 10^5 colony forming units/ml. The average *Streptococcus mutans* count in primary dentition of caries free children after Fluor Protector fluoride varnish application was below 10^4 colony forming units/ml.
Conclusions: Fluor Protector fluoride varnish application showed a statistically significant reduction in the *Streptococcus mutans* count in saliva of the caries free children in the study group.

SATURDAY, 16 JUNE 2007

CARIOLOGY

OS080

Dental treatment of children at a Jeddah hospital, Saudi Arabia

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Objective: The objective of the study was to investigate the frequency of dental extractions and restorations of carious teeth in children treated under general anesthesia at the National Guard Hospital, Jeddah.

Methods: The complete electronic records of 327 children treated between 2001 and 2005 were reviewed retrospectively. The age, gender, indication for GA, and type of treatment was recorded. The restorations were classified as stainless steel crowns, glass ionomers, composites, and amalgams. Preventive resin restorations and fissure sealants were included. The data was entered into the computer and descriptive statistics were generated using SPSS for windows software.

Results: The mean age was 5.9 (range 2–15) years, and 51% were girls. The most common indication for GA was uncooperativeness (n = 149, 45.6%). Of a total 1511 extracted primary teeth, the most were the mandibular first molars (n = 253), and the least were mandibular lateral incisors (n = 62). Of the 90 permanent teeth extracted, the most frequent were the mandibular first molars (89%). The predominant restorations on primary molars were stainless steel crowns (n = 994). Of the 1023 glass ionomer restorations, only 29% were on primary molars. The extractions and restorations were bilateral on the affected teeth. There was a high proportion of extractions among each primary tooth type, compared to a high proportion of restored and protected permanent teeth.

Conclusion: The finding indicated the teeth at most risk for caries which can be targeted for prevention.The frequency of extractions and restorations reflected the high caries rates reported in Saudi children. The extractions and restorations were found to be highly bilateral and confirmed reported bilaterality of primary caries in the children. The reasons for the caries prevalence and the need for preventive measures will be discussed.

SATURDAY, 16 JUNE 2007

CARIOLOGY

OS081

Breastfeeding and eruption of the first tooth in Nigerian children

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Aim: This study specifically examines the effect of the form and duration of breastfeeding on the timing of eruption of the first tooth in Nigerian preschool children. Breastfeeding form was classified as exclusive when the mother gave only breast milk without any other supplements; almost exclusively breast fed if water or other non-nutritive liquids were used in addition to exclusive breast-feeding and partial (mixed) when the child is fed with breast-milk and other sources of energy and nutrient.

Materials and methods: A cross sectional study of 27 children (14 girls and 13 boys) age between 8 to 16 months was conducted. The age of the child was calculated from the date of birth in months. The appropriate age for the child was fixed as the attained age in months. The mothers were also questioned on the duration and form of breast feeding. Mothers of the children were also asked to recall the age of eruption of the first deciduous teeth. Only cases where the age of tooth eruption could be recalled were included in the data collection process. Association between form and duration of breastfeeding was then analysed for. Statistical significance was inferred at $P < 0.05$.

Results: There was no association between duration of breastfeeding and timing of eruption of the first teeth ($P = 0.404$) as well as the form of breastfeeding and the timing of eruption of the first teeth ($P = 0.610$).

Conclusion: The result of this preliminary study shows that form and duration of breast feeding does not appear to influence the timing of eruption of the first teeth. A larger sample is however needed to be able to draw a conclusion on this.

SATURDAY, 16 JUNE 2007

CARIOLOGY

OS082

Body weight of 194 young children with dental treatment needs

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Objective: The aim of the present study was to evaluate possible correlations between caries prevalence (dmft) and body mass index (BMI) among young children with dental treatment needs.
Methods: A total of 194 children aged 13–36 months (101 boys and 93 girls; dmft > 2) were included in the study. The dental findings, the weight and height of the children were recorded the same day the dental treatment was performed under general anaesthesia. The statistical analysis was conducted by means of Fisher Test or Spearman's rank correlation coefficient.
Results: The mean dmft of the children was 9.34 ± 4.14 and showed a statistically significant correlation to the age of the children (mean age: 29.15 ± 5.62 months) ($P < 0.05$). The dmft value of the boys (9.98 ± 4.47) was higher than in the girls (8.63 ± 3.65); but the difference was only marginally significant with a *P*-value of 0.051. The mean age and the BMI distribution of both genders differed not significantly. 16.0% of the children were underweight (mean age: 28.77 ± 5.23 months; mean dmft = 9.13 ± 4.39), 73.1% had normal weight (mean age: 29.25 ± 5.70 months; mean, dmft = 9.18 ± 4.02), 5.2% were overweight (mean age: 30.10 ± 5.63 months; mean dmft = 11.50 ± 5.32), and 5.7% were obese (mean age: 28.18 ± 6.05 months; mean dmft = 10.00 ± 3.69).
Conclusion: The BMI values correlated neither with the age nor with the caries prevalence of the children.

SATURDAY, 16 JUNE 2007

CARIOLOGY

OS083

Long-term effect of treatment of approximal caries on marginal peridontium

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The aim of this study was to evaluate the effect of treatment of approximal caries on the alterations of marginal periodontium of both primary and permanent teeth of the same children up to 5 years. The study was consisted of 46 teeth in 28 children at the aged 5–9 years with approximal caries and loss of marginal periodontium on first and second primary molars. The clinical probing depths at baseline and after the restorations of approximal caries from the same sites were recorded. The clinical probing depth measurements were performed from mesial or distal surface of the primary molars and permanent premolars. Both periapical and bite-wing radiographs were also taken. The children were followed up to 5 years. At the end of this period, 11 out of 28 children were dropped out due to some reasons. Therefore, 28 teeth in 17 children were evaluated. There were radiographical bone gains in approximal bony defects of the primary teeth following caries treatment. The results of clinical and radiographical evaluations for the permanent teeth revealed the presence of healthy periodontium. As a conclusion within the limits of these followed up cases, bone gain in the marginal periodontium of primary teeth as a consequence of successful treatment of approximal caries resulted in a healthy periodontium of permanent teeth.

SATURDAY, 16 JUNE 2007

CARIOLOGY

OS084

Micro-hardness of dentine after silver diamine fluoride application

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Objective: The study is to describe the variations in micro-hardness of silver diamine fluoride-treated dentine caries.
Methods: Children who participated in a 30-month clinical trial of silver diamine fluoride treatment with very mobile primary teeth were invited to have them extracted. Each tooth was sectioned longitudinally along the midline of the carious lesion and the surface of one half was polished using a metallurgical technique. The specimens were mounted and the hardness of the carious lesions was measured by the Knoop indenter of a micro-hardness tester using 5 gf for 10 seconds. The hardness of dentine was determined with the micro-hardness tester at sites below the surface of the tooth at the center of the carious lesion every 25 μm to the pulp. Three sets of measurements were made on each specimen on parallel tracks approximately 150–200 μm apart.
Results: The median Knoop Hardness (KH) in clinically diagnosed arrested caries was found to be more than 40 in the outer 50 μm of the surface lesion. It then lay mostly in the range of 20 to 30 at points deeper than 50–500 μm from the surface lesion. The KH of soft dentine caries was below 10 in the outer 50 μm of the surface lesion and was less than 15 in the outer 100 μm. It then gradually increased to 20 at 200 μm from the surface lesion. At a distance of 200 μm or more from the surface of the lesion, the micro-hardness of dentine was found to be in the range of 20–30.
Conclusions: The Knoop Hardness in clinically diagnosed arrested dentine caries was more than 40 where as soft caries was below 10 in the outer 50 μm of the surface lesion.

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CARIOLOGY

OS085

High-definition X-ray microtomography of dental caries and developmental defects

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Objective: To use a high definition X-ray microtomography (XMT) scanner with polychromatic calibration to study the mineral concentration (Cmin) of teeth with caries and developmental enamel defects in 2 and 3-dimensions (2D and 3D).
Methods: Most laboratory-based commercial XMT scanners are capable of producing 3D images for morphological analysis. However, they are not sensitive to measuring small changes in Cmin due to polychromatic artefacts and low contrast ratio. The high definition XMT scanner developed at Queen Mary, University of London, uses novel aluminium step wedge to calibrate the multi-energy X-ray beam to one with an effective energy of 40 KeV and a novel scanning methodology to improve contrast ratio. This scanner was used to scan carious teeth before and after caries removal using either a hand excavator or Carisolv TM. Teeth with developmental defects were also scanned to ascertain the difference in Cmin of the defective tissues. 2D analyses were carried out by measuring the Cmin gradients from ADJ to surface of XMT slices. 3D analyses were carried out using Cmin histograms for the whole sample.
Results: No polychromatic artefacts were detected in the reconstructed XMT images. The carious enamel and dentine had bowl-shape appearance. Carious dentine removed by an excavator had a different histogram pattern to that removed using CarisolvTM. The Cmin of carious dentine followed a 'decay' gradient from sound dentine towards the lesion edge. The Cmin of defective enamel had an increasing gradient from the surface towards the enamel-dentine junction.
Conclusion: The aluminium step wedge calibration eliminated the polychromatic artefacts in the 3D XMT images. Therefore, small changes in Cmin between two methods of caries removal and a reversed Cmin gradient from ADJ to surface in developmental defects of enamel were detected.

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CARIOLOGY

OS086

Longevity of restorations placed in primary molars by general practitioners

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Objective: To investigate the longevity of restorations placed in primary molars by general dental practitioners (GDPs).
Methods: As part of a randomised control trial of a novel method (Hall technique) of placing preformed metal crowns (PMCs), GDP (n = 17) in Tayside, Scotland (dmft 2.7), placed a conventional restoration in a primary molar in 132 children, as the control for the molar receiving the PMC. 32% of the molars had class I lesions, 68% class II lesions. 42% of lesions appeared radiographically to be > ½ way through dentine. GDPs were asked to place a restoration following their usual practice. The patients were followed up for 30 months. 'Minor failure' was ascribed if the restoration needed repair/ replacement, 'Major failure' if there was a pulpal event; abscess/tooth disintegrated.
Results: Materials used for control restorations were glass ionomer (91); composite (14); amalgam (12); compomer (8); fissure sealant (2); PMC (1); no restoration (4). 78% of cavities had complete caries removal; 22% partial or no caries removal. There were 17 major failures and 55 minor failures of conventional restorations after 30 months. There were significant relationships between major failures and initial lesions > ½ way through dentine (P = 0.004), but not between class I or class II restorations (P = 0.3). There were significant relationships between minor failures and the use of glass ionomer compared with the other materials (P = 0.002) and for class II glass ionomer compared with class I glass ionomer restorations (P = 0.002), but otherwise not for site or extent of initial lesion.
Conclusion: The longevity of restorations placed by GDPs in primary molars in the NHS was poor. A contributory factor was the extensive use of glass ionomer for class II restorations. Supported by CSO Scottish Executive, and 3M/ESPE.

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CARIOLOGY

OS087

The HALL technique: 30 month randomised control trial results

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Objectives: To compare clinical outcomes of the Hall technique with those of conventional restorations for carious primary molars in General Dental Practice (GDP) in Scotland, using longevity of restorations and pulpal signs/symptoms as outcome measures.
Introduction: A growing body of evidence supports the premise that effectively sealing caries into a tooth, thus altering the carious lesion's environment, can slow and perhaps even arrest caries progression. The challenge is to determine how this may be used to clinical advantage, avoiding unnecessary tooth substance removal and invasive procedures. The Hall technique is a novel use of preformed metal crowns (PMCs) to seal caries into primary molars. No LA, tooth preparation or caries removal is carried out prior to cementing the PMCs.
Material and methods: GDP-based randomised control clinical trial (132 children, aged 3–10), comparing conventional restorations (control) to the Hall technique (intervention), in carious primary molars with lesions matched clinically and radiographically. Dentists used their preferred restorative option for the control tooth. A PMC was cemented onto the study tooth with glass-ionomer cement (RelyX, 3M) using the Hall technique. The teeth were followed up clinically and radiographically.
Results: Over 80% of patients were available for follow-up at 30 months. The intervention (Hall) technique outperformed the conventional fillings: (i) irreversible pulpitis/interradicular area/abscess formation; 17 control: 2 Hall, ($P < 0.000$); (ii) pain; 12 control: 1 Hall ($P < 0.002$); (iii) minor failure of restoration; 55 control: 8 Hall ($P < 0.000$).
Conclusion: Sealing caries into primary molars using the Hall technique showed more favourable outcomes for both clinical pulpal health and restoration longevity than the standard restorative techniques being carried out in GDP in Scotland. The Hall technique would appear to significantly slow caries progression. Supported by CSO Scottish Executive, and 3M/ESPE

SATURDAY, 16 JUNE 2007

CARIOLOGY

OS088

Effect of iron supplements on mouse teeth caries

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Introduction: Supplements containing iron compounds have been effectively used in the treatment of iron deficiency which cause stains on teeth. A common misconception among mothers is that iron containing drugs will cause dental decay in their children.

Objective: The objective of this study on animals is to carry out a histological investigation of the impact of one of the most commonly used iron containing supplements (i.e., ferrous sulfate) on the supposed cariogenesis.

Materials and methods: In this intervention experimental study, two groups of six rats were selected for the experiments. The first group was fed with iron containing supplements in their cariogenic diets (containing sugar) for 4 months while the second group received only the carigenic diet over the same period. Finally, after sacrificing the rats, 20 micron histological sections of their posterior teeth were prepared using the Ground Section method to be studied under polarized light microscopy. The resulting data were subjects to statistical analysis using chi square tests.

Results: The statistical analysis revealed that the differences between the values for the two groups were significant ($P = 0.001$).

Discussion: From the results obtained from the present histological study, it may be concluded that although iron oral drops may cause stains on the external enamel surface due to sedimentation of iron salts, it will not have an effect on dental cariogensis. Iron orals seem to be attributable to the formation of iron salts increasing enamel surface resistance against the acids produced from the activities of microorganisms.

SATURDAY, 16 JUNE 2007

DENTAL ANOMALIES

OS089

Oligodontia: a family affair

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An anomaly of teeth number associated with a group of missing teeth is oligodontia.Though congenital absence of one or more teeth is common, Oligodontia(>6 missing teeth) is rarer. Failure of teeth to develop may be due to environmental and genetic factors but hypodontia has been attributed to have a genetic predisposition. Interestingly, our understanding of the genetic factors of the agenesis of human tooth is still largely based on the selective agenesis of predominantly posterior teeth. An isolated hypodontia/oligodontia is inherited as an autosomal dominant trait with incomplete penetration and variable expression. This report is an attempt to demonstrate and determine the isolated hypodontia/oligodontia that exist maternally in three siblings. The diagnosis and treatment of hypodontia/oligodontia should be carried out at the earliest to prevent both esthetic and functional problems in the dentition.

SATURDAY, 16 JUNE 2007

DENTAL ANOMALIES

OS090

Treatment strategy for children suffering from MIH

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Objective: To present a treatment strategy for children suffering from molar incisor hypomineralisation (MIH) based on extraction therapy.
Methods: Patients with MIH often requires a multidisciplinary dental management. The hypomineralised molars show a variable expression varying from simple white opacities until complete breakdown. This can occur however in the same dentition. In this respect some molars are indicated for adhesive restoration or restorations with stainless steel crowns while others are indicated for extraction. From an orthodontic point of view non-symmetrical extraction if 6-year molars is not an option. Symmetrical extraction can be considered if planned with caution. At the department of paediatric dentistry of the Ghent University hospital a standard strategy of symmetrical extraction was introduced. MIH molars become temporary restored with adhesives or stainless steel crown at young age. General anesthesia is often indicated. Patients are followed with special attention for the development of the 12-years molars. As soon as the bifurcation of these molars is clearly calcified extraction therapy is planned. The heavily restored teeth as well as 'sound' 6-year molars are extracted. Patients are followed without additional orthodontics except this was already started up for other reasons.
Results: Via some cases the described strategy will be illustrated. Children who underwent these treatments end up with a healthy dentition and an acceptable occlusion. Further simple guidelines will be given for the decision-making of this strategy.
Conclusion: Symmetrical extraction therapy is a valuable treatment option in children suffering from MIH. No lifelong follow-up of hypominerlized molars is needed.

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DENTAL ANOMALIES

OS091

Infection or trauma in primary teeth. Do they affect equally at the germs successor? Report of two cases

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The injuries affecting a developing tooth germ caused by infection or trauma on its corresponding primary tooth are several and they can go from a soft enamel hypoplasia to the complete loss of the germ. These pathologies are irreversibles and also have other consequences such as: loss of the tooth integrity, increased caries risk, position and occlusion alterations, alterations in position and tooth shape, etc. This paper describes two cases in which the loss of the permanent teeth germs has occurred, one due to a severe infection and the other due to a traumatic lesion to their primary teeth. In both cases the development of the germ had stopped, and later the body tended to reject them as foreign bodies, also one of them suffered an important anatomic deformation. The clinic story revealed de age of the beginning of the injury and its severity. Histopathologic studies were carried on and helped to determine de developing tissues behaviour as well as the reason for this behaviour. As said before, the damages caused by this kind of injuries are irreversibles and they cause a rupture of the balance in the oral health of the children, who are in the most important growth age, however they can be avoided using preventive measures.

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DENTAL ANOMALIES

OS092

Supernumerary teeth: a survey of 208 cases

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Objectives: A retrospective study to describe the characteristics and distribution of supernumerary teeth in the southern Chinese children.
Methods: The study population consisted of 208 children who visited the Paediatric dentistry clinic of the University of Hong Kong. Patients ranged in age from 2 to 15 years. Supernumeraries were detected by clinical and radiographic examinations.
Results: Males were more frequently affected than females in the ratio 3.1:1. Of the 283 supernumerary teeth, 45.5% were unilateral, 43.8% bilateral and 10.5% had three or more supernumeraries, of which 6% were odontomes. Ninety-five percent of the supernumerary teeth occurred in the premaxilla, of which 90.3% occurred in the central incisor region while, the remaining 5% of the supernumeraries were located in the canine, premolar and molar regions. Seventy one percent of the supernumeraries were conical, 47.7% were inverted and 16.9% were erupted. The mean age at the time of diagnosis was 7.3 $\pm$ 2.7 years with a minimum of 2.1 years while; the mean age at the time of supernumerary removal was 8.1 $\pm$ 2.7 years with a minimum of 4.1 years. Seventy percent of the children were in mixed dentition and 80% of the supernumeraries were removed under General anesthesia. Prior to the removal of the supernumeraries, 53.8% of the children exhibited crowding that involved delayed eruption, rotations and changes in the orientation of the long axis and/or shifts in the maxillary centerline. Furthermore, 3.3% of children exhibited hypodontia in association with supernumerary teeth.
Conclusion: In accordance with the previous studies, majority of the supernumerary teeth were conical, occurred in the pre-maxillary region assumed an inverted orientation and remained unerupted. The finding that supernumeraries occur more frequently in the mixed dentition is probably a reflection of the time of diagnosis rather than a real difference in their time of development.

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EPIDEMIOLOGY

OS093

A systematic review of child oral health research 2000–2005

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Objective: Over the past 20 years the position of children in society has changed with increasing emphasis on children's rights and child-centred services. This study aimed to describe the extent to which contemporary oral health research has been conducted with or on children.
Methods: A systematic review of the child dental literature from 2000–2005 was conducted. A purposive sample of papers was used to develop a series of categories describing the level of involvement of children in research. Four main categories were developed: children as the objects of research, use of proxies on behalf of the child, children as the subjects of the research with some involvement and children as active participants with their perspectives explored. Electronic databases (Medline and Embase) were searched. Studies with no primary data or conference proceedings were excluded. Each of the resulting papers was examined and categorised by two reviewers independently. The frequency distribution in each category was calculated.
Results: The search revealed 5005 individual papers published in dental journals which reduced to 3266 on application of the exclusion criteria. Of these 87.1% were categorised as being research where children were used as objects, 5.7% were found to involve proxies (parents or clinicians) instead of the child, 7.0% involved children to some extent in the research process and 0.3% involved children as active participants.
Conclusion: Most oral health research is conducted on children without obtaining their perspectives or involving them in the research process. To recognise the changing position of children in society, future child oral health research should strive to be conducted with children, involving them as fully as possible.

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EPIDEMIOLOGY

OS094

Assessing quality of reporting of clinical trials in paediatric dentistry

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Objectives: The objectives were to assess the quality of reporting of published clinical trials in Paediatric Dentistry between 1985–2006 in order to:1. Ascertain whether quality of reporting is adequate to allow readers to assess validity of trials.2. Assess whether the quality of reporting has improved as the introduction of the CONSORT guidelines.
Methods: In order to identify suitable trials for inclusion in this study, a hand search of paediatric journals was performed for the years 1981–2006. Inclusion criteria, the trial was in English, was performed on children, and was a randomised controlled trial. Next, the CONSORT guidelines was made into an operational checklist, which was used to assess the quality of reporting. Each included trial was assessed by two independent researchers to reduce errors. The results were collated and analysed. Checklist items that were not applicable in trials were excluded from the analysis. The overall proportion of adequately reported items and insufficiently reported items was analysed. Trials published between 1985–1997 were compared to trials published between 1998–2006 to examine whether there has been any improvement in quality of reporting since the publication of the CONSORT guidelines.
Results: Report quality show considerable heterogeneity but overall the quality of the majority of the clinical trials published in paediatric dentistry journals is poor, even though report quality has improved significantly since the publication of the CONSORT. Only a few trials were reported adequately.
Conclusion: The quality of reporting of clinical trials has improved since the publication of the CONSORT but in most cases, the quality of reporting is not adequate to allow readers to assess the validity of the trial/intervention. All authors and journals should adopt the CONSORT guidelines to improve the quality of reporting of trials.

SATURDAY, 16 JUNE 2007

EPIDEMIOLOGY

OS095

Children's perception of their dentists

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Objective: To identify children's perception of their dentist.
Method: A questionnaire was filled out by 383 children age range 9–12 years in public schools in of Riyadh, Saudi Arabia to find out how they perceived their dentist.
Results: Seventy-three percent of the children had been to the dentist before while 26.4% had never been to the dentist. Sixty-two percent of those who had visited the dentist reported liking their visit, 10.4% didn't like their visit, 11.2% were afraid. Children's feeling about their dental experience was found to be significantly influenced by gender as female children liked their visit more than boys ($P < 0.05$). Ninety percent of the children preferred their dentist to wear the white coat, while 38.6% preferred him/her to wear mask and protective eye glasses as protective measure during treatment. Eighty-seven percent of the children preferred their male dentist to wear the formal clothes in the clinic. For clinic design, 58.2% selected the decorated dental clinic over plain clinic and that was true among 9–10 years old children ($P < 0.05$). Fear of local anesthesia and tooth extraction were the most common reasons cited for not liking to have dental treatment.
Conclusion: Sixty-four of children in this study liked their visit to the dentist. Two third of the children prefer the dentist to wear white coat and to treat them in a decorated clinic.

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EPIDEMIOLOGY

OS096

Subsequent publication of abstracts from IAPD meetings 1999 and 2001

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It is often assumed that information contained in an abstract presented at an international congress will subsequently be published in a scientific journal in full length form.

Objectives: To investigate if abstracts presented to the IAPD meetings result in a subsequent scientific publication and if orally presented abstracts are significantly more often published than poster presentations.

Materials and methods: A total of 771 abstracts were identified from two IAPD congresses in London 1999 and Paris 2001. To determine whether an abstract had been followed by publication of a complete paper, searches of PubMed that included all publications by the first, second and last authors were performed in December 2006. A publication was defined as a full-length manuscript. For each abstract data were extracted regarding authors, country were the research had been performed, area of paediatric dentistry, study design.

Results: Of the abstracts, 231 (30%) were presented orally, 327 (42%) as poster discussion presentations and 212 (28%) as poster presentations. s on prevention were most prevalent ($n = 138$) followed by dental traumatic injuries ($n = 87$). The abstracts originated from 59 different countries. Of all abstracts 204 (27%) were followed by subsequent publication. s presented orally were significantly more often followed by subsequent publication of a scientific article, 40% compared to 21% for poster discussion and 19% for poster presentations ($P < 0.001$). The mean time from presentation of the abstract and publication was 19 ± 19 months (range 19–80 months). Papers in the areas of pain and dental traumatic injuries were significantly more often followed by a publication.

Conclusion: Forty percent of orally presented abstracts at IAPD congresses were followed by subsequent publication in a PubMed indexed journal. Most papers were published in paediatric dentistry speciality journals.

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EPIDEMIOLOGY

OS097

Study of children caries status in shanghai in 25 years

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Objective: Caries status of deciduous teeth of 1–6 year-old children in Shanghai from 1981 to 2005 were compared and analyzed.
Methods: Large-scale survey of caries status of 1–6 year-old children in Shanghai were conducted in 1981, 1990 and 2005, with the study sample of 7047, 10864 and 7279 children, respectively. The changed data were compared, analyzed and investigated.
Results: In 1981, the caries prevalence and mean dft score were 51.80% and 2.71 in 1–6 year-old children; caries prevalence and mean dft score were highest in 6-year-old children (81.9% and 5.16). In 1990, the caries prevalence and mean dft score increased in all age groups,while caries prevalence of 3-year-old children decreased slightly. The caries prevalence and mean dft score of 6-year-old children rose by 6.80% and 0.71 respectively. Comparing to data in 1990, The caries prevalence and mean dft score descended greatly as 51.35% and 2.59, especially for caries prevalence of 4-year-old children and mean dft score of 6-year-old children. Significant difference was found among the results of three survey ($P < 0.01$).
Conclusion: Caries status of deciduous teeth of 1–6 year-old children in Shanghai was worse from 1980 to 1990, and has getting better from 1990 to 2005. Such change in recent years contributed to the success of caries prevention campaign in Shanghai.

GROWTH AND DEVELOPMENT

PO001

Risk factors and dental anomalies in children with orofacial-clefts

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Objective: The aim of this study is to assess the risk factors and dental anomalies in children with cleft lip and/or palate in Istanbul, Turkey.
Method: The records of 90 children (51 boys, 39 girls; mean age:10.22 + 3.08) with cleft lip and/or palate attended the clinics of Pedodontics, Istanbul University, were reviewed; associated risk factors and dental anomalies were evaluated according to gender and cleft types. The clefts were classified as cleft lip (CL), cleft palate (CP), cleft lip and palate (CLP), unilateral (U), bilateral (B), syndromic (S), non-syndromic (NS). Genetic (family history, consanguinity), exogenous (maternal diseases-medication, alcohol-tobacco use during pregnancy), mixed (genetic and exogenous) and unknown factors were evaluated as risk factors; agenesis (A), supernumerary teeth (ST), mineralization defects (MD) were assessed as dental anomalies. The data was statistically analyzed by chi-square test.
Results: Prevalences of the cleft types were: CL (1.11%), CP (3.33%), CLP (95.56%), UCLP (61.11%), BCLP (34.45%), S (3.33%), NS (96.67%). The left side was affected more often (45.56%) in unilateral cases.% of risk factors were: genetic 26.67% (family history 7.78%, consanguinity 18.89%), exogenous 21.11% (maternal diseases 7.78%, maternal medication 13.33%, alcohol-tobacco use 0%), mixed (3.33%), unknown (48.89%).The frequences of A, ST, MD were 38.89%, 8.89%, 65.56%, respectively. The most frequently missing tooth was maxillary lateral incisors (37.31%). MD was found mostly in maxillary central incisors (25.61%). Agenesis was found mostly in BCLP (58.06%); significant difference ($P < 0.05$) was found between agenesis and cleft type. No significancy in ST, MD and risk factors ($P > 0.05$) was found by gender or cleft type.
Conclusion: Data revealed that UCLP, MD have occurred with highest frequency in the cleft population and genetic, maternal factors could increase the risk of orofacial clefts; studies establishing the further analysis of exogenous, nutritional risk factors are required.

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GROWTH AND DEVELOPMENT

PO002

Expression of rankl-rank in deciduous and permanent teeth replacement

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Objective: The purpose of this research was to observe the expression of receptor activator of nuclear factor kappa-B ligand (RANKL) and it's receptor RANK in dogs during the replacement of deciduous teeth with permanent teeth.
Methods: In this study, we analyzed expression of RANKL and RANK in dogs replacement of deciduous teeth with permanent teeth using immunohistochemistry, *in situ* hybridization, and cell culture.
Results: *In vivo*, RANKL immunolocalized to multinucleated odontoclasts of the deciduous roots, osteoclasts in the alveolar resorption lacunae, as well as dental follicle, enamel, ameloblasts and odontoblasts of the developing permanent tooth germs. Furthermore, RANK immunoreactivity was also found in odontoclasts, osteoclasts and odontoblasts of the developing permanent tooth germs, although the functional significance of RANKL and RANK has remained unclear in tooth development. In addition, compared with the deciduous root stable and permanent dentition groups, RANKL and RANK-immunostainings were stronger in the deciduous root-resorbing group.
Conclusion: RANKL and RANK participate in replacement of primary and permanent teeth and their dynamic spatiotemporal expression pattern has a role in regulating deciduous tooth root resorption, permanent dental germ development and permanent tooth eruption during this process.

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GROWTH AND DEVELOPMENT

PO003

Early chilhood caries: effect on children's height and body weight

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The purpose of this study was to investigate the effect of severe ECC on height and body weight of children from 4 to 5 years of age in Santiago-Chile. 127 children with ECC and 127 children without ECC who presented to the Santiago Children's Hospital for examination on emergencies were selected for this study. Only children without systemic pathologies were included. Clinical examination was made utilizing one SECA scale. The diagnostic criteria of ECC was based in AAPD references. Different risk parameters were considered, accord dmf values, like WHO suggests in low, medium, high and very high risk for decay. All body weights and heights were recorder in standard deviation (SD) and charted on standard growth charts. Analysis on body weight and height differences was performed using chi-square test, for each body weight and height category , the dmf of representative patients was compared utilizing ANOVA test. When low, medium and high risk for decay group were compared with the control subjects respect of body weight and height variables on SD, significative differences were not found (weight: $P = 0.485/P = 0.995/P = 0.511$; height: $P = 0.452/P = 0.884/P = 0.304$). To the compare the very high risk for decay group (dmf > 7) with the control patients, respect of body weight and height on SD a statistically significant difference was recorder for both measurements (weight: $P < 0.005$; height $P < 0.05$). This study demostrated the negative effect of severe Early Chilhood Caries (dmf > 7) on body weight and height in preschool children. Children with severe ECC weighted and heighted less than the control children.

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GROWTH AND DEVELOPMENT

PO004

Influence of tube feeding on hippocampus in SAMP1 mice

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Objectives: It has been reported that a tube feeding, which reduces the ability of taking food orally and the deterioration of general conditions, results in the decrease of the levels of ADL in elderly patients. In recent study, a significant relationship between reduced mastication ability and senile dementia has been suggested. The purpose of this study is the effects of tube feeding on the number of dendritic spines in hippocampal pyramidal cells and spatial learning ability in senescence-accelerated mice (SAM) P1.
Methods: Twenty male SAM P1 (15 weeks after birth as young group and 35 weeks after birth as old group,) were used. In order to evaluate the involvement of decreased ability to take food in hippocampal function, we breed the mice by tube feeding for 7 days and examined the influences of tube feeding on spatial learning ability in a water maze test and on dendritic spines density using Golgi-cox method.
Results: There were no differences in the body weight and the activity in both groups. In the old group tube feeding enhanced the deficits in spatial learning ability in SAM P1. Histochemical studies in the old group also disclosed that the reduction in the dendritic spines density in hippocampal CA1 pyramidal cells was found. In the young group there were no significant differences in both spatial learning ability and the dendritic spines.
Conclusion: The present results suggest that a tube feeding probably reduces input activities in the hippocampus, thereby results in deficits in spatial memory.

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GROWTH AND DEVELOPMENT

PO005

Do paediatric dentists neglect child dental neglect? A UK survey

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Objective: To investigate paediatric dentists' self-reported management of children with neglected dentitions.
Methods: An anonymous self-administered postal questionnaire was developed by extrapolating multi-agency child protection procedural guidance on managing suspected neglect to a dental context. It was sent in March 2005 to all 813 members of the British Society of Paediatric Dentistry: dentists and dental care professionals working in hospital/university, salaried/community (SCDS) and specialist/general practice (SGDP) settings.
Results: A total of 490 completed questionnaires were returned (60% response rate). Forty-one were excluded (non-dentists or not clinically active in UK) leaving 449 responses for analysis. Eighty one percent of respondents stated that they saw children with neglected dentitions once a week or more frequently. 48% reported this more than once daily. When managing these children, a clear majority of respondents always or sometimes 'explain concerns to parents' (100%), 'give advice on prevention of dental disease' (100%), 'record findings' (99.6%), 'review progress' (97.5%) and 'set targets for improvement' (90.1%). Actions involving multi-agency communication were less frequently undertaken: 57.7% always or sometimes 'discuss the case with another health professional,' 7.4% 'make a child protection register enquiry' and 4.1% 'refer to social services'. More of those with previous postgraduate child protection training would ever undertake multi-agency communication compared to those without training ($P < 0.01$). Fewer SGDP dentists would ever undertake multi-agency communication ($P < 0.05$) compared to those working in other settings. Significantly more SCDS dentists always or sometimes 'discuss with another health professional' ($P = 0.000$).
Conclusion: UK paediatric dentists encounter children with neglected dentitions frequently and almost universally take appropriate actions aiming to promote their oral health. Since dental neglect may be an indicator of general neglect, actions involving multi-agency communication should always be considered in such cases but are currently undertaken less often by this group of professionals. Supported by the Department of Health, England and BASPCAN.

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GROWTH AND DEVELOPMENT

PO006

The culture and identification of rat incisor cervical-loop epithelial cells

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Objective: The rat incisor had represented no root development since its special cervical-loop structure maintained the crown fate and grew continuously. Now they were used in the study of none root development, and clarified the relationship between the dental epithelium and the mesenchyme during root formation. So the study wanted to establish an effective method of culture the rat incisor cervical-loop epithelium.
Methods: The cervical-loop tissues were cut from 5-dpn rat lower insicors. Then the apical buds were isolated mechanically and digested with collagenase. The dispersed cells were cultured. Epithelial-like cells were purified and immunostained with anti-cytokeratin 14 antibody, anti-amelogenin antibody and anti-vimentin antibody.
Results: The primary culture were miscellaneous and the fibroblast-like cells could be completely removed after differential digestion. The detection showed purified epithelial-like cells were immunopositive for cytokeratin 14 and amelogenin, and immunonegative for vimentin.
Conclusion: We established a method of isolation and culture of rat cervical-loop epithelial cells successfully.

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GROWTH AND DEVELOPMENT

PO007

New insight in the eruption pattern in Belgian children

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Aim: To re-evaluate the sequence of eruption of permanent incisors and first molars and to re-evaluate the age of apparition of the first permanent teeth.
Material and method: A total of 401 children attending the paediatric dentistry department of the Hôpital des Enfants-Reine Fabiola from 2004 until 2005 were distributed in seven age groups (A, B, C, D, E, F, G) respectively 3–4, 4–5, 5–6, 6–7, 7–8 years old. For each group the presence of permanent molars and incisors was recorded.
Results: For group A, no permanent teeth were erupted. For the other groups, the mean results for first lower incisors, second lower incisors and lower molars were respectively: 3.9%, 0% and 0% for group B; 6.7%, 1.7% and 10% for group C; 27.15%, 9.55% and 22.85% for group D; 40.45%, 14.7% and 34.55% for group E; 69.45%, 45.35% and 74.1% for group F; 100%, 84.55% and 100% for group G. For the first superior incisors, second superior incisors and superior molars, the results were respectively: 0%, 0% and 0% for group B; 2.5%, 0.0% and 7.5% for group C; 10.6%, 2.15% and 21.25% for group D; 22.8%, 7.4% and 29.4% for group E; 52.8%, 31.45% and 65.75% for group F; 92.9%, 72.6% and 100% for group G.
Conclusion: There seems to be an inversion in the eruption sequence in this recorded population: first lower incisors tending to erupted before first molars.

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GROWTH AND DEVELOPMENT

PO008

Development of tooth germs allotransplanted at different developmental stages

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Objectives: The purpose of this study was to compare and determine the appropriate developmental stage of a tooth germ for transplantation to be followed by normal calcification process, thereby to increase success rate of transplantation.
Method: Tooth germs at the 15th and 17th embryonic day, and the 3rd day of birth were obtained for allotransplantation into the maxilla of adult white rat of 11 weeks. Calcification processes were analyzed radiographically and histopathologically at 4 weeks and 8 weeks after the allotransplantation.
Result: 1. Tooth germs at 4 weeks and at 8 weeks after the allotransplantation showed delayed calcification process compared to normal odontogenesis process. 2. At 4 weeks after the allotransplantation, abnormal calcified tissues were observed, such as such as odontoma and ankylosis of osteodentin with surrounding alveolar bone. 3. At 8 weeks after the allotransplantation, tooth germs obtained at the 15th and 17th embryonic day showed calcification and osteodentin formation surrounded by the periodontal ligament. 4. At 8 weeks after the allotransplantation, tooth germs obtained at the 3rd day of birth showed calcification composed of cementum and osteodentin.
Conclusion: In this study, we observed small sized and amorphous calcified tissue formed by the allotransplanted tooth germs. However, these calcified tissues observed in this study were underdeveloped and shaped irregularly compared to calcified tissue in normal tooth. Therefore, further investigation is required to obtain normal calcified tissue from transplanted tooth germs; this study must include means to reduce surgical trauma, appropriate developmental stage of a tooth germ for transplantation, providing adequate blood supply from the recipient site, fixation method in transplanted site, and period of transplantation.

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GROWTH AND DEVELOPMENT

PO009

Acoustical evaluation of articulation for children with tongue-tie, pilot study

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Objective: The children with articulatory disorder by tongue-tie were usually adapted the frenectomy of lingual frenulum. The purpose of the study was to investigate the characteristic phonation of children with tongue-tie and to evaluate the articulation acoustically pre- and post-frenectomy.

Material and methods: Three children (5, 7 and 8 years old) with tongue-tie and normal children (5, 7 and 8 years old group consisted of six children in each group) were used. The articulation inspections were performed at pre-operation, postoperative 1 week, 1 month and 3 months. The meaningless syllable of 52 words and 22 sorts of vowel-consonant-vowel words were used for the analyses. Acoustical analyses were carried out by frequency characteristics and formant variance in F1-F2 diagram.

Results: Significant difference was found in speech intelligibility test in both (s) and (r) sounds between two groups at pre-operation. There were also differences in F1-F2 diagrams of the formant between two groups at pre-operation. Though speech intelligibility test was improved in all at post-operation, one of three was not changed in F1-F2 diagram analysis.

Conclusion: It was suggested that an acoustic evaluation was effective to examine an articulatory change by frenectomy in children.

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GROWTH AND DEVELOPMENT

PO010

Timing of permanent molar formation in children from Sabah, Malaysia

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Objective: The aim of the study was to document permanent second and third molar formation in children from Sabah, Malaysia.
Methods: This was a retrospective study of panoramic radiographs of 256 boys and 444 girls ($n = 700$) of Malay, Kadazan, Chinese and Indian children from Sabah aged 6–25 years. The radiographs were taken in the course of diagnosis and treatment at the paediatric dental and orthodontic clinics in Kota Kinabalu. Mandibular second and third molars were staged according to Moorrees *et al.* (1963) into 14 crown and root stages. Kappa values of intraobserver error showed excellent agreement. Descriptive statistics include minimum age and maximum age, and mean age of entering some stages of permanent second and third molars was calculated using probit regression for data from boys and girls combined and compared with children of European origin using a t-test.
Results: The results suggest that there were no or few differences in the mean age of second and third molar stages between the two groups, although root stage 'apex closed' for both molars tended to be slightly later in children from Sabah. The minimum age for third molar 'apex closed' stage was seen at 16 and by 23 years, all individuals had reached this stage.
Conclusion: These important results are the first documented dental maturity data for Malaysian children and will be useful to assess maturity and estimate age where this is unknown.

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GROWTH AND DEVELOPMENT

PO011

Breastfeeding and their relationship with the normal maxillary development

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Objective: The aim of this study was proved with Chilean children of 4 years old attending in state hospital in the city of Santiago, who received an exclusive breast feeding during the first 6 month of life presenting a normal maxillary development comparing with the children did not have this type of feeding.
Methods: A total of 130 children were divided into two groups: The study group was related to children who exclusively got a breast feeding the first 6 months of life and a control group for those who did not received a breast feeding the first 6 months of life. A clinical examination was performed on the children to observe the overjet, overbite, canine relationships. Mothers answered questions concerning with the use of pacifier and breastfeeding time, confirming that with clinical files. The obtained data was analyzed with chi-squared test.
Results: The overjet was the only oclusal parameters with significant result ($P = 0.052$), and the overbite and canine relationship were not significant.
Conclusion: Children who did not received exclusive breastfeeding the first 6 months have a increased overjet, compared with children who received exclusive breastfeeding the first 6 months of life.

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GROWTH AND DEVELOPMENT

PO012

Regulation of osteopontin in odontoblasts by upstream stimulatory Factor 1

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Objectives: To detect the effects of upstream stimulatory factor 1 (USF1) on the expression of osteopontin (OPN) in odontoblasts, and explore its biological functions in tooth development.
Methods: Odontoblasts MDPC-23 were cultured and stably transfected with PCMV-USF1 or A-USF expression plasmids. The mountings of odontoblast coverslips in each group were prepared and total RNA was extracted. Immunofluorescence staining was performed with specific anti-USF1 and anti-HA tag antibodies. Semi-quantitative RT-PCR was carried out to measure the expression of OPN in each group.
Results: Clones of stable PCMV-USF1 and A-USF plasmids transfection were achieved. Positive staining of HA was shown in the cytoplasm of odontoblasts in A-USF transfection group. Compared with control, PCMV-USF1 transfection group appeared stronger staining. Electrophoresis of Semi-quantitative RT-PCR showed that, compared with the control, OPN was upregulated in PCMV-USF1 transfection group, while it was downregulated in A-USF transfection group.
Conclusion: It reveals that USF1 could regulate the expression of OPN in odontblasts, which could be blocked partially by A-USF. These results provide evidence for further researches on USF1 function in the process of odontoblasts maturation and dentin formation, and indicate that transcription factor USF1 might be implicated in the dentin matrix secretion and mineralization during tooth development.

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GROWTH AND DEVELOPMENT

PO013

The eruption disturbance of lower first molar: a case report

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A 10-year-old boy was referred by local dental clinic for the unerupted lower first permanent molar. On clinical examination, it was observed that the lower left first permanent molar had not erupted while its counterpart was fully erupted and functional. Panoramic radiograph showed an embedded lower first permanent molar with well-developed roots. The molar is normally oriented in its eruption path and the most of crown was covered by bone and mucosa. The root apices were very close to the lower border of mandible and distal root is distally curved. We thought that the main etiological factor for uneruption might be a fault of the dental follicle which fails to initiate the metabolic events responsible for tooth eruption. The covered bone of the first molar was surgically removed. Five months after surgery, tooth eruption was observed on a radiograph. Periodic follow-up is needed.

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GROWTH AND DEVELOPMENT

PO014

Association between lactation and non-nutritive sucking habits

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Objectives: The purpose of this study was to asses the association between type of lactation and non-nutritive sucking behaviors in 130, 4 years old children attending in state hospital in the city of Santiago, Chile.
Methods: A total of 130 children were divided into two groups: (i) those who had mixed lactation or those who never got lactation during the first 6 months of life; (ii) those who had exclusive lactation during the first 6 months of life. A clinical examination was performed on the children to observe their hands, looking for an unusual clean finger or a callosity; because of both are demonstrative signs of the presence sucking finger habits. Mothers answered questions concerning non-nutritive sucking behaviors including use of pacifier, digit sucking and breastfeeding time, confirming that with clinical files. The obtained data was analyzed with Fisher exact test and Association test.
Results: The study found 5.4% of the children who got mixed lactation, had non-nutritive sucking habits at the age of 4 years old, and only 1.5% of the children who got exclusive lactation had one of this habits. 3.8% of the children had digit sucking habits and 3% had pacifier use.
Conclusion: Instead of results, statistical analysis showed that is no association between the type of feeding during the first 6 months of life and non-nutritive sucking habits in children of 4 years old.

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ORTHODONTICS

PO015

The relation between oral habits and posterior crossbite in Isfahan children

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Objective: To examine the relationship between oral habits and their effects on posterior crossbite.
Methods: A total of 685 children age 3–5 years from randomly selected kindergartens were diagnosed. One-hundred childern were chosen with posterior cross bite and one hundred with normal occlusion was chosen as the control group. Clinical examination were conducted by two examiner for posterior crossbite (dental or skeletal) unilateral and bilateral with or without oral habits and its period. The results were recorded.
Results: Of the 100 childeren with cross bite: 66% was found to have unilateral posterior crossbite, 34% was found to have bilateral posterior cross bite, 78% was found to have dental posterior cross bite, and 22% was found to have skeletal. 98% of both groups had oral habits. The occurance of posterior cross bite and oral habits such as milk tube, thumb sucking, and pacifier were 2.08, 3.57, and 1.9 times greater control group. The probability of having cross bite is 3.98 times higer in childeren who had three simultaneous oral habits: milk tube, thumb sucking, and pacifier, in addition the results were the same in childeren who had four oral habits.
Conclusion: The role of genetic in developing cross bite is minimum, because the results shows that most of them is dental and is preventable.

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ORTHODONTICS

PO016

In vitro adhesion of *S. mutans* to orthodontic brackets

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Objective: To examine the adhesion of *S. mutans* to stainless steel (SB), ceramic (CB) and plastic (PB) orthodontic brackets with/without an early salivary pellicle and to evaluate the effect of the presence of *S. sanguis* on its adhesion.
Methods: The bacteria used for all adhesion assays, *S. mutans* and *S. sanguis*, were always from the same isolated clinical strains. The study consisted of three parts: PART I: a clinical strain of *S. mutans* adhered to six brackets of each type (SB, CB and PB). PART II: for the formation of an early salivary pellicle, 6 brackets from each type were placed into 24-well culture plates. One millilitre of clarified and filter sterilized saliva was added to each well. After incubation for 30 min, brackets were removed and placed in new well plates for the adhesion assays. PART III: before the adhesion of *S. mutans*, *S. sanguis* bacteria were allowed to adhere to 6 brackets from each type. The bacteria were always allowed to adhere to brackets for 90 min. Adhesion was quantitated by a microbial culture technique. Initially, the brackets with adhering bacteria were treated with trypsin and then the total viable counts of bacteria recovered after cultivation were enumerated.
Results: No significant differences were found in the numbers of *S. mutans* adhered to SB, CB and PB brackets with/without saliva. In case of saliva coated brackets, the number of adhering bacteria was significantly lower than in the case of those adhered to the non-coated brackets. The presence of *S. sanguis* reduced the number of adhering *S. mutans* to all 3 types of brackets.
Conclusion: The presence of a salivary pellicle, as well as *S sanguis*, seems to have a significant effect on the adhesion of *S. mutans*, reducing their numbers. No significant differences were found among types of brackets.

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ORTHODONTICS

PO017

Surgical induced eruption and orthodontic treatment for impacted curved teeth

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Purpose: To study the effect of treating the impacted curved upper teeth which could not erupt by orthodontic traction.
Methods: Twenty-four cases with 26 impacted curved upper teeth were treated with surgical exposure and orthodontic traction.
Results: In 26 teeth, the score of 17 teeth (65.4%) is successful. The score of 6 teeth (23.1%) is normal. The score of 3 teeth (11.5%) is failed. The average eruption time of 26 impacted teeth is 7.5 months. The longest time is 13 months. The shortest time is 3 months. All the teeth passed the pulp activity test and no root absorption and conglutination were found. In three teeth labial gingival regression was 2–4 mm. In two teeth marginal bone loss was 1.0 mm and 2.5 mm. In one teeth the crown labial incline is obviously and could not move into alignment and need the follow-up treatment. In one case, the tooth erupt by traction. but the space was not enough, the children's parents refused extraction of the tooth, which resulted in malalignment of the maxillary incisors. In one cases, the curved root is severely which restricted the movement of the tooth. In one cases, the position of curved tooth is near to alveolar ridge. The tooth is no space for rotation which resulted in extraction of tooth. All the other teeth moved into alignment.
Conclusions: The suitable indication, exact location, enough space, appropriate traction force, anchorage, control of inflammation are the keys of success.

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ORTHODONTICS

PO018

Factors related to preventing relapse of deciduous anterior crossbite

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In pedodontic practice, children with deciduous anterior crossbite are frequently encountered. In treating deciduous anterior crossbite, determining the optimal time to start treatment and predicting the prognosis of treatment are very important. We investigated the pre-treatment morphological characteristics of craniofacial complex and dentition of children with deciduous anterior crossbite who showed favorable prognoses and avoided relapse even after growth and development were completed. The subjects consisted of 7 boys and 12 girls with deciduous anterior crossbite before treatment. The subjects were divided into those without relapse (n = 13) and those with relapse (n = 6) and these two groups were compared using their lateral cephalometric radiographs and study models.The following characteristics were demonstrated in the children without relapse. 1. There was no family history of anterior crossbite. 2. There were no significant differences from the standard values in the width or length of the mandibular dental arch. 3. Anterior facial height was not longer than the standard value. 4. On the angular analysis, the variable with the most conspicuous difference between the non-relapsed prognosis group and relapse group was the N-S-Ar angle (saddle angle). The value of this angle in the non-relapsed prognosis group was close to the standard value. This retrospective study indicates that early proactive treatment for deciduous anterior crossbite is considered suitable for children with the above characteristics.

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ORTHODONTICS

PO019

The clinical application of buccal acrylic appliances

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Objectives: The mandibular Hawley appliance, which has variety of utilities in pediatric dentistry, reveals many problems such as discomfort, pain and interference with tongue function followed by lack of compliance and efficiency especially in youngsters with short alveolar height. We thought these problems are structurally originated; the retentive clasp tips are located at buccal embrasures where there is little or sometimes no undercut yet and acrylic baseplate at lingual where there is abundant mobile soft tissues and tissue undercut. In order to search for the method overcoming these problems, we designed a buccal acrylic appliance with retentive clasp tips at lingual embrasures for the cases requiring space control and compared these with traditional Hawley appliances in many respects.
Methods: It was composed of three major parts; the acrylic baseplate at buccal of molar segment and attached gingiva, retentive clasps encroaching its retentive tips at lingual embrasure and its tag portion embedded at buccal acrylic, and two stranded heavy wires without acrylic at anterior segment connecting both sides. Buccal and lingual acrylic appliances were applied respectively to five children requiring space maintenance or regaining, and drew a comparison in relevance to patients' compliance, relationship with the tongue function and clinical efficiency using visual analogue scale methods.
Results: In all cases buccal appliance was proved superior to lingual appliance in terms of retention and compliance. In respect to clinical efficiency, it has shown to be similar to lingual appliances.
Conclusion: Throughout this study, it was thought that, if removable appliance is to be applied to mandible, several drawbacks related to conventional lingual appliance shall be resolved. Conclusively, the buccal acrylic appliance is thought to be a good alternative in designing a mandibular appliance in young children and recommended to clinical applications.

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ORTHODONTICS

PO020

Prevalence of malocclusion among 14–18-year old students in Shiraz, Iran

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Aim: To assess the prevalence of malocclusion, by gender, in 14–18-year-old high school students in Siraz, Iran to determine the oral health status among adolescents. Design: Cross sectional study; Setting: Shiraz city, Fars province, Iran; Subjects: A total of 1338 Shirazi adolescents (621 boys, 717 girls) aged 14–18 years, were evaluated clinically for malocclusion traits.
Subjects and methods: Using a stratified cluster sampling method in 15 high schools located in four different regions of Shiraz city. The samples were selected randomly among the students of each high school; 5% of the students of each school was included in the study. Totally 1338 students were studied. The examiners, which were all dental students, examined cases under normal room illuminating condition by using tongue blades. The *P*-value was set to 0.05 in this study.
Results: The overall prevalence of malocclusion was 23.7%. Angle's classses I, II, III malocclusion were observed in 12.78%, 9.94% and 0.97% of the sample respectively. In class II malocclusion the prevalence of division II was more than Div I malocclusion (5.16% v. 4.78%). There was no significant difference in the overall prevalence of malocclusion. Other malocclusion traits evaluated were edge-to-edge occlusion (4.7%), open bite (1.2%), and crossbite (2%). There was sex differences in these orthodontic anomalies. Anterior open bite (0.8%), posterior open bite (0.4%) and unilateral crossbite (1.6%) were more commonly occured in female group; also, bilateral crossbite was only observed in females. On the other hand, edge-to-edge occlusion was more recorded in males; however, neither of these was statistically significant. At the end the results were compared with some other ones available in the literature.

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ORTHODONTICS

PO021

Evaluation of relationship between orthodontic treatments need according Dental Aesthetic Index (DAI) and Student's Perception in 11–14 year old students in Ahwaz 2005

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Introduction: In contemporary orthodontics, the number of people who demand orthodontic treatment for improving their psychosocial problems related to facial esthetic has been increased. Even more attention has been given in treatment planning to appearance and esthetics.
Purpose: The purpose of this study was to determine the relationship between orthodontic treatment need according to the dental aesthetic index (DAI) and student's perception in 11–14 year old students in Ahwaz.
Methods and material: This descriptive cross sectional study was performed on 900 students (450 girls, 450 boys). The student's participated in the study only if they had not received any orthodontic treatment before or at the time of the study. Two questionnaires were used, the first included different DAI criteria and the second, some questions about the student's perception on the appearance of their teeth. The results analyzed by chi-square test and *T*-test.
Results: In 70.9% students DAI score was between 13 and 25, in 19.2% DAI between 26 and 30, in 7.8% DAI between 31 and 35, and in 2.1% of students the DAI score was >35. The relationship between DAI score and sex, chewing and talking were not statistically significant. ($P > 0.05$) but the relationship between DAI score and need for orthodontic treatment and satisfaction of dental appearance were significant ($P < 0.05$).
Conclusion: In comparison to other studies, the students in Ahwaz have a better dental appearance and less need for orthodontic treatment. A meaningful relationship exists between the need to orthodontic treatment and student's perception ($P < 0.05$). In regard to gender, the boys had greater need for orthodontic treatment but not statistically meaningful ($P > 0.05$).

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ENDODONTICS

PO022

An audit of MTA in immature permanent incisors

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Mineral trioxide aggregate (MTA) can be used as an alternative to calcium hydroxide treatment in non vital immature incisors. Suggested advantages include earlier completion of root canal treatment, fewer visits and lowered exposure to ionising radiation.
Objective: To determine the success rate of non-vital immature incisors obturated by MTA in Cardiff.
Method: This study is a retrospective audit of treated cases. All cases of children (under 16 years at diagnosis) treated using MTA since January 2003, when the technique was first used in children in Cardiff, were reviewed.
Results: A total of 15 children and 17 incisors treated by two clinicians were identified. The mean age of children at treatment planning was 10.9 years (range 7–15.7). The average number of visits to complete treatment was 2.6 (2–4). An increased number of visits was found in cases with infection at baseline and with repeated loss of interim dressings. The mean follow-up duration was 23.8 months (range 4–47). Two of the teeth required further surgical intervention, one of these was extracted, the other required an apicectomy.
Conclusion: The results of this audit suggest that MTA shows good clinical and radiographic success as a pulpotomy agent in immature permanent teeth (apexogenesis) and seems to be a suitable alternative to calcium hydroxide. Studies comparing the long-term outcomes of calcium hydroxide and MTA are required.

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DENTAL ANXIETY

PO023

The particularity of the sensory disabled child in pedodontic management

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Objectives: Dynamic evaluation of the degree of these sensorial disabilities, of the psycho-somatic and behavioural particularities of these children in relationship with the integrative specificity of the puberty age; optimization of the pedodontic management of sensory-disabled children (deaf and dumb) and promotion of an accessible and efficient educational programme at community and individual level.
Methods: A case control interdisciplinary pilot study was carried out in a group of 125 children, with ages between 13.6–15.5 years old (62 boys and 63 girls) from Iasi, Romania. They were structured in two groups: an active group (AG) 69 children with variable degree of deafness and affected speech and a control group (CG) – 59 children with normal acuities. For oro-dental, periodontal and somatic evaluation we used the WHO criteria. For psycho-sociological evaluation we use questionnaires, projective tests (thematic draw, tree draw, Raven's progressive matrix test). The data were analysing using 'Statistica 6.0 Stat Soft' Programme (USA), Pie Chart Type, and Microsoft Excel Office 2003. The final re-evaluation will be in November 2007, after the application of the educational programme.
Results: The addressability to dental office was differential: for control 65.7% (AG), 41.6% (CG) and for treatment 34.3% (AG), 58.4% (CG); reticence: 9.1% (AG), 11.1% (CG); reject: 22.8% (AG), 21.0% (CG); wish for relation, communication, involvement: 68.1% (AG), 67.9% (CG); reaction of fear: 25.4% (AG), 26.2% (CG); respecting of the oral hygiene rules: 75% (AG), 89% (CG).
Conclusion: The correct and contextual evaluation of the psycho-ontogenyc and behavioural dynamics of sensory disabled children offers a real support, with positive impact for a pedodontic management (behavioural, educational and therapeutical) that would be accessible, efficient and without discrimination. This study was supported by the University of Medicine and Pharmacy 'Gr.T. Popa' Iasi Romania and A.N.S.P.R.

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DENTAL ANXIETY

PO024

Prevalence of dental fear among Vilnius pupils

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The aim of this study was to evaluate the incidence of dental fear among pupils in the city of Vilnius on the basis of CDAS, DFS and DBS scales and determine factors of this phenomenon.The study involved 557 pupils aged 12–15 from nine secondary schools. The survey found that CDAS was 9.91 (SD 3.03) among pupils of Vilnius, nearly equal to the CDAS among adolescents of similar age in other countries. Girls reported higher fear coefficient compared to boys. A correlation was found between CDAS, DFS, DBS and dental experience. 50.4% of respondents indicated an unpleasant experience in dentist's office; 27.9% found dental treatment pleasant. Over 50% of respondents said they were treated at private dental clinics, the same percentage of all respondents indicated unpleasant experiences at the dentist. These factors carry not statistical significance, but a relation was found between unpleasant experience and a medical institute. In view of the fact that the length of an appointment at public clinics is strictly limited, dentist have too little time to give consideration to a young patient's anxiety, which may result in patient distrust in the dentist (correlation established at $r = 0.152^{**}$). No correlation, however, was found between dental fear and dental condition, but their was a strong relation between trust in the dentist and dental decay.

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DENTAL ANXIETY

PO025

Influence of different carious removal to children's dental fear

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Aim: To evaluate the influence of different carious removal to children's dental fear by behavioral measure.

Methods: Ninety children with carious lesions into dentin in primary molars were grouped into three in randomization: chemo-mechanical carious removal group, atraumatic restorative treatment (ART) and traditional drilling group. The whole process of the treatment was recorded with digital Sony video camera, and the dental fear of each child was evaluated by two independent co-investigator according to Frankl Scale, and the results were analyzed by SPSS 11.5, using Kruskal–Wallis test to probe the influence of different carious removal to children's dental fear.

Results: The average value of Kruskal–Wallis test for traditional group was 51.33, and that for ART and chemo-mechanical group was 48.24 and 37.03 respectively. The difference between traditional group and ART was significant ($P < 0.05$), and that between traditional and chemo-mechanical group was significant too ($P < 0.05$), while it was not between ART and chemo-mechanical group ($P > 0.05$).

Conclusion: Compared to traditional carious removal, chemo-mechanical technique and ART may decrease children's dental fear effectively.

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DENTAL ANXIETY

PO026

Treat children in welcoming environment

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The clinics environment is very important for the treatment of children. Having faced strange environment children usually feel anxiety and stress. The first visit to a dentist and the first impressions after it are of vital importance. Children usually relax and feel more courageous in an appropriately equipped clinic which caters for children's needs. Taking the above reasons into account the first specialized dental clinic for children was opened in Vilnius 2 years ago. Children find themselves in a cozy and friendly environment immediately when they enter the clinics. They may spend some time in special playroom before treatment. There they can play, read or draw and to relax before dental treatment. Children's dentist cabinet, where all treatment procedures take place is equipped in a playful manner. Vivacious pictures on the walls of the cabinet help to turn children cheerful and at the same time diminish the first impression of medical institution, which is not always pleasant. Upon entering the cabinet children find themselves in a kind of gamesome city with its inhabitants taking care of their teeth and each other. Properly concerted colors of the walls, floor and dentists chair establish an intimate environment for children. Children may view their favorite animations on a monitor, attached to the chair. This is also a successful means to turn off from treatment procedures, which not always are pleasant. Children may also see their teeth with the help of intraoral camera and many patients show surprise with the view of their decayed tooth. This in its turn often helps to generate or to strengthen a motivation for treatment. Two years of children's clinic operations proved that even children with negative experiences feel more relaxed and are better disposed for treatment procedures in a friendly and joyful environment.

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DENTAL ANXIETY

PO027

Parental attitudes to behavior management techniques in pediatric dentistry

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Objective: To evaluate the acceptance of parents to six techniques of children behavior management during dental treatment.
Method: A total of 200 children at age of 4–10 years old came to see the dentists in Hostipal of Stomotology, and their partents received the investigation after being shown several behavior management techniques (tell-show-do, voice control, physical restraint, hand-over-mouth, sedation and general anesthesia).
Results: Of several behavior management techniques, parents accepted tell-show-do best, followed by voice control. General anesthesia was accepted least by parents.
Conclusion: These behavior management techniques were shown to the parents before they were used, which can avoid possible misunderstanding, and establish the trust among children patients, parents and pediatric dentists.

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DENTAL ANXIETY

PO028

Evaluation of dental behavior of children under 8-year old

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Objective: The aims of this study were to evaluate the behavior of children under 8-year old in dental clinic in Beijing China, and to analyze relative factors.
Methods: A total of 210 children under 8-year old, who visited the Department of Pediatric Dentistry Peking University School and Hospital of Stomatology from June to August in 2004, were involved in this study. The parents were interviewed before the treatment, and a questionnaire containing background information was finished, including health status, personality factors, medical and dental experiences and the parents' predication of the child's behavior. 365 DV records were taken during their treatment. The degree of cooperativeness of these children was evaluated according to the Venham's clinic anxiety rating scale and cooperative behavior rating scale, which was translated into Chinese and modified. The percentage of each classification was calculated, and a linear regression was used to analyze the relationships between dental behavior and each factors.
Results: The percentage of rate 0 to 5 in these children was 41.5%, 25.6%, 7.1%, 3.6%, 1.9% and 20.3% respectively. Child's age, parents' expectation of child's dental reaction and child's general behavior problems were powerful predicators of child's dental behavior, the BETA values were −0.41 ($P < 0.001$), 1.27 ($P < 0.001$) and 0.31 ($P = 0.104$) respectively.
Conclusions: A total of 25.8% children showed negative behavior during their dental treatment. Child's age, parents' expectation of child's dental reaction and child's general behavior problems were useful information for dentists to predicate the child's behavior in dental clinic.

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DENTAL ANXIETY

PO029

Effects of stress on nitrous oxide-induced anxiolytic action

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Subanesthetic concentrations of nitrous oxide (N_2O) are routinely used in clinical dentistry to produce conscious sedation. Stress is a situation that has not been previously investigated with N_2O. The aim of the present study was to ascertain the influence of stress on the behaviour of mice and investigate the effect of N_2O on stressed mice. Acute stress was induced by a 2-hour restraint in a Plexiglas® cylinder immediately prior to anxiety testing. Chronic stress was induced using a similar cylinder and restraining the animals for 2-hour for a period of 7 days. The anxiety level was assessed in male NIH Swiss mice (18–25 g body weight) using the light/dark exploration test. Compared to non-stressed control animals, mice that were subjected to acute stress exhibited reduced time spent in the light compartment of the light/dark box as well as a reduced number of attempts to enter the light compartment. Compared to compressed air controls, non-stressed mice that were exposed to 30%, 50% or 70% N_2O in O_2 showed increases in both the time spent in the light compartment and the number of transitions between light and dark compartments in a generally dose-dependent manner. Exposure of the acutely-stressed mice to N_2O produced times spent in light and number of intercompartmental transitions that were comparable to the baseline levels observed in the non-stressed control mice. On the contrary, mice subjected to chronic stress had no difference with the non-stressed controls when given 50% N_2O. Acute stress appeared to induce an anxiogenic-like behavioural profile in the mouse light/dark exploration test. Exposure to N_2O normalized this behaviour to the non-stressed status but did not produce overt anxiolytic-like effects as it did in non-stressed animals. Chronic stress appeared to have no effect on the anxiolytic action of N_2O. This may be of clinical significance in the use of N_2O in patients with acute stress.

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DENTAL ANXIETY

PO030

Amnesia and sedative effect of midazolam in pediatric dentistry

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Objectives: The aims of the study were to evaluate the possibility to perform dental treatment after rectal sedation with midazolam and to evaluate the parents' experience of the sedative effect and amnesia in children during and after dental treatment following sedation.
Methods: Fifty-seven (31 M, 26 F) children with a mean age of 4.7 ± 1.4 (1.8–8.7) years and a mean body weight of 18.3 ± 3.2 (10–25) kg who were planned for their first rectal sedation with midazolam to make dental treatment possible, were included. Thirty-three of the patients were immature to cooperate in the dental treatment situation and 24 had dental fear. All patients received rectally administered midazolam 3mg/ml with a dose of 0.3 mg/kg body weight. The dentist assessed the child's acceptance to the treatment and the parents were interviewed at the clinic 1 week after the treatment.
Results: Dental treatment could be performed in all patients. Treatment was performed with severe difficulties in four (7%), with minor difficulties in eighteen (32%) and without difficulties in thirty-five children (61%). The parents estimated the sedative effect as excellent in (68%) 39 children (20 M, 9 F), good in (28%) 16 children (10 M, 6 F), and bad in (4%) two of the children (1 M, 1F). The parents estimated the duration of the sedative effect to 2.2 ± 0.8 (1.0–3.5) hours after the administration. According to the parents' evaluation, amnesia regarding the time of the treatment was present after (93%) 53 (29 M, 24 F) of the treatments, while the parents of (7%) four children (2 M, 2 F) were uncertain of their child's amnesia.
Conclusion: Rectally administered midazolam makes dental treatment possible, is well accepted by children and parents, and results in a high (93%) prevalence of amnesia.

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DENTAL ANXIETY

PO031

The revelation of the factors, forming children's stomatophobia

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Nowadays the problem of the relationships between stomatologist and patient remains unsolved. That is especially essential while working with children. The purpose: to find out the factors, influencing on children's mental health under stomatological interference.
Materials and methods: Fifty-two children were examined; 35 parents were questionnaired in the clinic FGU MNII of paediatrics and children's surgery of Roszdrav. Questioning and examination were held in dental surgery with standard tool kit and writing materials. We examined children, filled in especially developed questionnaires, talked to children and their parents, sanified children and gave them recommendations in oral hygiene.
Results: Regularity in children and parents' behaviour with preliminary psychological training during dentist visit was determined. Preliminary dentist's consultation with parents decreases the level of child's fear. Cooperation with a doctor helps relax the child. The level of education and social status of parents have an influence on child's behaviour. The opportunity of therapy with permanent dentist decreases the child's fear. It is evident that the process of communication is easier if the child is not the first in the family.
Conclusion: One of the main factors, forming children's stomatophobia is the fear of their parent related to stomatological interference. Effective solution is cooperation between parents and doctor, therapy process with the permanent dentist, preliminary consultation with parents, the decrease of the level of parents' stomatophobia.

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SPECIAL NEEDS PATIENTS

PO032

Characteristics of lower-jaw position in patients with cerebral palsy

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To clarify the effects of the applied during sedation with nitrous oxide on the ability of muscles attached to the lower jaw to sense lower-jaw position and on the sensation of muscle spindles attached to the lower jaw in patients with cerebral palsy (CP) using healthy adult subjects without functional abnormalities of the jaws and oral cavities as control subjects. Experiments were performed under the following conditions: for each subject, before the inhalation of laughing gas (LG) and oxygen and during the inhalation of LG and oxygen. Subjects in the experiments were eight CP patients and eight healthy people as controls. The ability to discriminate lower-jaw position was estimated by asking the subjects to determine whether the diameter of a test stick was larger or smaller than that of a reference stick after performing the following tasks: (i) holding a reference stick between the central teeth of their upper and lower jaws for 5 seconds; and (ii) replacing the reference stick with a test stick and holding it at the same position for 5 seconds, and the test stick was then removed. In comparing discrimination ability in the absence of LG-induced sedation and that during LG-induced sedation of healthy control subjects, the rate of mis-estimation (RME) was significantly larger during LG-induced sedation than in the absence of LG-induced sedation for a test stick diameter (10.5 mm or 11.0 mm) larger than the reference stick diameter (10.0 mm). These results indicate that neural functions are inhibited at the upper level of the central nervous system in CP patients, leading to the attenuation of sustained increase in muscle tonus that is characteristic of CP patients.

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SPECIAL NEEDS PATIENTS

PO033

Nager syndrome and its implications on dental treatment case report

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Nager acrofacial dysostosis is an oromandibular hypogenesis syndrome with associated limb abnormalities. Although it shares some phenotypic features with Treacher-Collins syndrome, it is recognized as a separate disorder. The physical features of Nager syndrome include down slanted palpebral fissures, malar hypoplasia, a high nasal bridge, atretic external auditory canals, cleft palate and micrognathia. Preaxial limb malformations include absent or hypoplastic thumbs, hypoplasia of the radius and shortened humeral bones. Of primary concern to the anaesthetist are the midface and mandibular manifestations which may complicate perioperative airway management. These problems may also manifest in the postoperative period with airway obstruction. Associated defects have included vertebral malformations with reports of cervical spine involvement, congenital cardiac defects and upper limb defects affecting the preaxial or radial side. S.N a 13 years old girl was referred to the department of pediatric dentistry at Barzilai Medical Center, Ashkelon, because of rampant carries. The medical history included Nager syndrome, with no dental treatment in the past but with many plastic and functional interventions, involving difficult intubation prior to the surgical procedures. The clinical dental examination revealed extensive carious destruction of upper and lower dentition, moderate gingival inflammation and minimal periodontal involvement. Due to dental phobia and extensive dental destruction, the dental treatment was performed under general anesthesia. This case report will describe the intubation procedure and the dental procedures that were performed in order to restore the girl's dentition. After all the fully compromised teeth were extracted, periodontal treatment was performed along with obturation of non-pulpal involved teeth, while all pulpal involved teeth were given a root canal treatment and a corono-radicular restoration using posts cores, and creating of an upper and lower total porcelain fused to metal bridges.

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SPECIAL NEEDS PATIENTS

PO034

The effects of asthma on dental health among Hungarian children

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Objectives: The aims of this research project were (i) to examine the oral health status of asthmatic children and (ii) to compare the oral heath parameters and habits of different groups of children with asthma.
Methods: Forty-nine asthmatic children between the age 4 and 17 were involved in the present study. The indices were recorded for dental caries (dmf-s/DMF-S) and dental plaque (Silness-Loe). To differentiate between asthmatic patients the following variables were used: (i) severity of the asthmatic condition; (ii) type of medication; and (iii) duration of asthma medication. Finally, the parents were asked to fill in a questionnaire referring to dietary and oral health habits.
Results: The mean dmf-s was 5.51, the mean DMF-S was 2.36. The severity of the asthmatic condition had no significant effect on the caries and plaque indices (PI). A significant correlation was found between the amount of dental plaque and the type of of asthma medication. Children receiving both inhaled cortico-steroids and beta2-agonists had significantly higher PIs than those who received only inhaled cortico-steroids ($P = 0.001$). The duration of the asthma medication had significant effect on the number of the decayed permanent tooth surfaces (D-S) after 3 years ($P = 0.003$). The regular intake of cariogenic drinks influenced the number of decayed primary tooth surfaces, regular snacking significantly influenced the D-S index ($P = 0.033$). In case of primary dentition we found significantly lower PIs than in the mixed and permanent dentitions ($P = 0.025$). The correlation between PI and D-S was significant ($P < 0.001$).
Conclusion: The exposure time to the asthma medication has a significant influence on the caries prevalence. Asthma-drugs may increase the risk of caries especially in the newly erupted permanent dentition.

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SPECIAL NEEDS PATIENTS

PO035

Dental management of a patient with Factor VIII inhibitor

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Introduction: Inherited bleeding disorders account for approximately 1 in 10 000 live male births per year. Haemophiliacs are liable to prolonged bleeding following invasive dental treatment. The management of a haemophiliac patient can be further complicated if they develop inhibitory antibodies to factor VIII or factor IX.

Case report: A severe haemophilia A patient with inhibitory antibodies to factor VIII was referred to the Dental Department at the Royal Hospital for Sick Children when he was 3 years old. He presented with rampant dental decay and a severe dental apprehension to treatment that was manifested with verbal and physical abuse including swearing, spitting, kicking and biting. Dental treatment included placement of stainless steel crowns on the primary molars after vital or non-vital pulpotomies, where necessary, and restoration of primary anterior teeth with adhesive materials under an in-patient general anaesthetic. The patient was subsequently placed on a strict maintenance and preventive regime and was kept under regular review at the dental department.

Conclusion: The aim and philosophy of treatment for haemophiliac patients is to ensure that individuals with haemophilia have as normal a life-style as possible. Dental management of patients with bleeding disorders depends on the prevention of dental disease which must begin at an early age.

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SPECIAL NEEDS PATIENTS

PO036

Scurvy in an epileptic child on a ketogenic diet

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Epilepsy is a symptom of cerebral dysfunction, there is a sudden and disorganised discharge of electrical activity from a group of neurones, producing symptoms that range from sensory absences to convulsive movements and unconsciousness. Fasting is recognised as reducing the frequency of epileptic seizures in difficult-to-control patients. The ketogenic diet is a high fat, low carbohydrate and adequate protein diet that mimics the biochemical effects of fasting. It is deficient in some essential elements that require supplementation.

Case report: A nine-year old girl with learning difficulties, developmental delay and refractory epilepsy was placed on a ketogenic diet in 2003. Prior to starting the diet she had as many as 12 tonic seizures/day, with prolonged periods of non-convulsive status epilepticus. Subsequent to being placed on the diet the frequency of her seizures reduced markedly; there were long periods during which she had none. In late 2006, the patient inhaled a mobile primary molar. This was retrieved by emergency bronchoscopy and at the same time the remaining primary teeth were extracted. Three weeks later she was admitted to hospital with low-grade fever, persistently bleeding sockets, oedema of her face and feet, a petechial rash and bruising.

Differential diagnosis included:

- Liver disease.
- Bleeding dyscrasia.
- Oncological pathology.
- Scurvy.

The most striking finding amongst a number of investigations was a vitamin C level of 0.7 μmol/l (deficiency: <11 μmol/l). A diagnosis of scurvy was made. The patient was prescribed ascorbic acid 500 mg twice/day. Three weeks later the vitamin C level was 141.5 μmol/l; the dose was therefore reduced to 250 mg once/day. At 2-month review, the signs and symptoms of scurvy had resolved.

Discussion: Inhaling a tooth and scurvy are both rare occurrences. Paediatric dentists should be aware of the possible implications of a ketogenic diet.

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SPECIAL NEEDS PATIENTS

PO037

Awareness of dental care needs for mentally handicapped among students

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Dental treatment of the handicapped, preventive as well as curative, demands additional knowledge and skills to approach to and proceed with such treatment.

Objective: In this study we evaluated the level of acquaintance with dental treatment of the handicapped people among dental students of the Faculty of Medicine in Ljubljana. In our survey, we also inquired about the motivation of those who professionally work with the handicapped or are training for such work.

Methods: Questionnaires were distributed among 33 dental students. The survey investigated primarily the level of acquaintance among the undergraduate students of dentistry with dental treatment of the handicapped people, the estimation of the needs of the handicapped for dental care and the motivation of the professionals to be (i.e. dental students) to work with the handicapped as dentists.

Results: The results point out that the majority of the questioned (90.90%) was of the opinion that it was necessary to acquaint undergraduate students with dental treatment and dental care of the handicapped. However, only 45.45% of the questioned answered that they were acquainted properly with this topic (dental care of the handicapped) during the undergraduate studies so far; and even less, 9.09%, answered affirmatively to the question whether one felt qualified to work as a dentist with the handicapped just after finishing the Faculty of Medicine

Conclusion: On the basis of those results we can see that it is important to acquaint students of dentistry with dental treatment of the handicapped during undergraduate studies more profoundly.

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SPECIAL NEEDS PATIENTS

PO038

Dental treatment of a patient with epidermolysis bullosa

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Objective: Epidermolysis bullosa (EB) is an inherited skin disease characterized by blister formation on the skin spontaneously or following minor trauma. Oral manifestations of the recessive dystrophic EB include rampant caries, crowding, microstomia, ankyloglossia, and vestibular obliteration. In this case report, we will present a case of a patient with EB who successfully received dental treatment under general anesthesia.

Method: A two-year-old girl with recessive dystrophic epidermolysis bullosa (RDEB) visited the pediatric dentistry department at Yonsei University for dental examination and treatment. Oral examination revealed microsomia, rampant caries involving almost all upper and lower teeth. Because her cooperation was very poor, comprehensive treatment under general anesthesia was performed.

Result: First, she was hospitalized for severe anemia and fever. Once her systemic status had been stabilized, dental treatment was performed under general anesthesia with nasopharyngeal intubation. Extraction of incisors and stainless steel crown restoration on the primary molars were performed. Preceding such dental treatment, we wrapped the patient's head, face, and trunk with cohesive dressing material, Pehahaft® (HATMANN, Germany). In addition, we put vaseline on almost all equipments, such as face mask, laryngoscope, and mouth gag.

Conclusion: In patients with RDEB, the gingival is fragile and even gentle tooth brushing can induce epithelial destruction accompanying bleeding. The teeth are at a high risk of developing caries. In most cases, dental treatment should be carried out under general anesthesia. Special care must be taken to avoid bullae formation during anesthetic management. Any equipment or monitoring system which will have contact with the patient should be lubricated with vaseline or steroid ointment before treatment.

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SPECIAL NEEDS PATIENTS

PO039

A retrospective study of dental treatment under outpatient general anesthesia

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The purpose of this study is to survey the status of outpatient general anesthesia for dental treatment and apply the result to build more effective multidisciplinary system for that. 645 patients who underwent general anesthesia for dental treatment at clinic for the disabled in Seoul National University Dental Hospital from 11, June, 2002 to 31, December, 2006 enrolled for chart review. We searched the pattern of dental treatment, the reason why they take the treatment under general anesthesia, and so on. Although restorative treatment was the most common procedure, root canal therapy, minor operation, extraction, scaling, etc. accounted for considerable portion of the treatment. The reason of general anesthesia included mental and physical disabilities, systemic disease, dental phobia, severe gag reflex in order of amount. This also implies many adults with developmental disability need outpatient general anesthesia for dental treatment as well as children and adolescents. Therefore, we should make an effort to build better multidisciplinary system from the point of oral examination, which could open the gate these patients for more comprehensive and effective dental treatment.

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SPECIAL NEEDS PATIENTS

PO040

Socio-cultural impact on oral paediatric HIV: two case reports

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Objective: To report on the social and cultural factors that influence the oral health of HIV positive paediatric patients.
Methods: Paediatric patients presenting with oral discomfort to the dental clinic. Oral examinations were conducted and relevant treatments prescribed. The clinical presentation, treatment, and the factors that impacted on the management for the individual patients will be presented separately.
Results: Case one was a 9-year old female in the care of her unemployed maternal aunt. Her mother died 2 years previously of tuberculosis. The girl was frail looking and underweight for her age. The oral examination revealed a severe acute necrotizing ulcerative gingivitis and areas of necrotizing ulcerative periodontitis. Treatment included strategy for improving the oral health. The constraints were the lack of adult assistance; the accommodation was an informal dwelling with no running water and overcrowded. The child's general appearance was also neglected. The appointments were often interrupted. Case two: an 8-year-old boy, well dressed was accompanied by his healthy looking mum. He presented with a localized swelling of the left mid-face area. The intra oral examination revealed an osteomyelitis. He had been on antiretroviral therapy in the past but had defaulted. The aunt in whose care he was at the time believed him to be healthy 'as the demons had left his body' and, did not see the need to continue taking him for therapy. After almost a year without treatment he became very ill again. When he presented he had been back on ARV therapy for only 2 months.
Conclusions: The two cases revealed some of the social and cultural challenges the paediatric patient face even when there is access to health care.

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SPECIAL NEEDS PATIENTS

PO041

Postnatal early management for a Down syndrome patient with cleft

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Objectives: Down's syndrome patient often has medical disorder such as heart disease and cleft lip and palate, and typically tends to delay for growth and development during the early stage of life. Furthermore, the patient tends to keep the mouth open and has a protruding tongue, resulting in respiratory and occlusal disorders in adult. In spite of these clinical and developmental problems, postnatal early dental management is not established systemically. The aim of this report was to report on the early management of Down's syndrome infant with heart disease and cleft lip and palate.
Methods: An infant boy with Down's syndrome had received nasogastric milk feeding from birth because of the serious heart disease (endocardial cushion defect). To promote the trans-oral milk feeding for development, he had been referred to our clinic and we began with a management for cleft palate with palatal plate (Hotz plate) at age of 41 postnatal days. His body weight and volume of milk supply were recorded and the milk intake was instructed during infancy. Modified Castillo-Morales palatal appliance was applied for Hotz plate, and tongue protrusion was evaluated with or without the appliance.
Results and conclusion: After 79 days of training of Hotz plate and trans-oral milk feeding, he finally received milk completely by trans-oral feeding and the nasogastric feeding tube was removed. His body weight increased, followed by the increase of trans-oral milk volume. Tongue protrusion tended to decrease with use of Modified Castillo-Morales palatal appliance. These results indicated the importance of clinical care from early infant for this Down's syndrome patient.

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SPECIAL NEEDS PATIENTS

PO042

Tactile image periodontal health instruction form for the blind

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Objective: Persons with sight impairment face special challenges in obtaining safe, effective, and patient centered oral health care. Unless given by Braille, large print or audiotape, written materials are not effective way to be realized by those patients where and how much dental plaque is adhered or remained on the tooth surface before and after the tooth brushing. At the same time, dental personnel have no good and simple way to instruct them dental health care in detail in the dental office. We present a periodontal health instruction form on which Braille and tactile dental image are printed.

Methods: Braille label and tactile image were arranged and affixed on A4 paper. Braille label was printed with label writer with automatic Braille translation function (TEPRA-PRO SR6700D, KING JIM, Tokyo, Japan). Tactile dentition image was fabricated with swell paper, on which inkjet-printing black lines were simply puff up by heating (EXLa3, Fellows, Itasca, IL, USA). On this form, patient's periodontal conditions and instructor's remarks are printed by Braille and given by a tactile sign indicating the site of dental plaque or calculus deposition with cloth surgical tape.

Results: We tried this periodontal health instruction form to two patients with sight impairment. They could understand the dental information more accurately and concretely when compared with that given orally. And the patient's opinion was useful to improve the tactile sheet. It is considered that the Braille and tactile dentition image sheet could be fabricated and used more easily than before by person with disabilities as well as medical/dental personnel because various word processor, new material or computer aided equipment have become available recently.

Conclusion: Braille and tactile dentition image sheet would be utilized effectively not only to patients with sight impairment but to those with hearing, intellectual or autistic disorder.

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SPECIAL NEEDS PATIENTS

PO043

Oral health state of handicapped children treated under general anaesthesia

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Objective: The aim of the study was to compare the oral health status of uncooperative anxious (A) and mentally retarded children (MR) treated under general anaesthesia in the period of 2002–2004 at the Stomatological Clinic, Medical Faculty in Brno.
Material and methods: The dental records of 141 children, 6–19-year-old (mean 11.16 years, SD 2.95) and 28 children 6-year old and younger (mean 3.73, SD 1.41), were used, the data gathered and evaluated. Fisher exact test was applied to evaluate the significance of results.
Results: The dental records of 162 children were assessed. Children 6–19-year-old: MR versus A: DMFT: 6.16, 4.94, DT: 5.16, 4.26, MT: 0.34, 0.19, FT: 0.61, 0.49, RI (%): 6.27, 7.52. In anxious children the number of teeth indicated for extraction was significantly higher both versus D-teeth ($P = 0.0013$) and versus erupted teeth ($P = 0.005$). Children 6-year-old and younger: MR versus A: dmft: 7.57, 5.29 ($P = 0.013$), dt: 7.29, 4.9 ($P = 0.0088$), mt: 0.0, 0.29, ft: 0.29, 0.1, ri (%): 3.17, 2.38. In MR children the number of teeth indicated for extraction was significantly higher both versus d-teeth ($P = 0.029$) and versus erupted teeth ($P = 0.00046$).
Conclusion: The results of the study have demonstrated that there are statistically significant differences in the data on the oral health state between anxious children who are healthy and mentally retarded ones. In both groups the data are substantially higher than those of common population. Preventive programs with the oral health care education should be offered for handicapped children and their parents/caregivers and especially for anxious children who refuse dental examination and treatment.The study was supported by Project 1 M0528 from the Czech Ministry of Education.

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SPECIAL NEEDS PATIENTS

PO044

Management of an autistic child with attrition and unerupted supernumerary

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Autism is characterized by a triad of limited or absent verbal communication, a lack of reciprocal social interaction or responsiveness, and restricted, stereotypical, and ritualized patterns of interest and behaviour. The aetiology of the disorder is largely unknown although different chromosomes have been implicated as has gene mutation. The prevalence ranges from 2 to 4 in 10 000 and is more common in males. Differences in caries risk of autistic children to normal children are inconclusive, according to published literature. The oral hygiene was a little worse for institutionalized children. Surprisingly, there are limited data on the dental management of children with autism. Yet it is well known that the dental management of these children is challenging and often requires general anaesthesia to manage the different behavioural problems. This report illustrates a 6 years 7 months old Chinese boy with autism who suffered from severe attrition of the teeth and an unerupted supernumerary tooth. The tooth wear was due to habitual clenching when he was nervous. Treatment began using the show-tell-do technique, as he became more cooperative and rubber-dam could be applied under local anaesthesia. His vertical height was raised 2 mm using composite resin onlays but they had worn down by the subsequent appointment. The supernumery tooth was surgically removed under local anaesthesia. Finally, stainless steel crowns were placed on the primary molars. At subsequent review appointments wear facets were evident on the stainless steel crowns and one had to be replaced 18 months after original placement. As this child can be managed in the normal dental environment it will be possible to replace any worn stainless steel crowns in the future, or to consider a more durable option such as chrome-cobalt onlays.

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PREVENTION

PO045

A simple sleep time intervention prevents early childhood caries – and otitis

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Teeth erupt during sleep just as oral cavity equals a bacterial incubator. Infant pacifier users were randomized to receive q, d. via a fall-asleep pacifier (FAP) 200 mg xylitol and NaF corresponding 0.25 mgF [test-(T)-group, $n = 27$], or topically 0.02% NaF [control-(C)-group, $n = 28$]. The FAPs were used in average for 14.7 months. At the mean age of 7 years and 5 months *mutans Streptococci* (ms) were screened from saliva, upper incisor and dd55,75 plaque. Clinical and radiographic caries was scored from susceptible 1188 respectively 1232 tooth surfaces. Distribution of ms-categories between the groups was insignificant in saliva, significant in plaque ($n = 163$), $P \leq 0.01$. In both groups incisor plague harbored significantly less ms than molar plaque, $P \leq 0.001$. T-group developed 131 and C-group 217 carious surfaces corresponding a caries incidence of 11% and 4.85 dmfs (SD 6.10), respectively 18% and 7.75 dmfs (SD 8.85). Distribution of caries between the groups was statistically significant, $P \leq 0.001$, relative risk = 0.77, 95% confidence interval 0.67–0.88. The T-group had a caries risk reduction of 33% compared with the C-group (95% CI). The Kappa for interexaminer agreement of radiographic assessments was 0.915, NNT was 6. Until the age of 2.5 years T-subjects had reduced acute otitis media incidence, 25% v. 51%; $P = 0.011$. Due to the fact that babies mostly sleep, via the FAP released prophylactics retain in lack of oral clearance long in the mouth which influenced beneficially children's health. Good tasting pacifier may attract babies more than a regular pacifier, obviously its use as an aid to fall asleep need to be balanced against risks and benefits. The use of a pacifier has been reported to reduce the risk of sudden infant death syndrome, which is the leading cause of infant mortality in the first year of life.

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PREVENTION

PO046

Maternal xylitol consumption to prevent mother-child transmission of *mutans Streptococci*

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Objectives: The aim of this study was to evaluate the effect of maternal use of xylitol chewing gum during and after pregnancy on mother-child transmission of *mutans streptococci* (MS).
Methods: After screening, 84 pregnant women with high salivary MS levels were randomly assigned into the xylitol ($n = 49$) and control ($n = 35$) groups. The participants in the xylitol group were instructed to chew one piece of the gum containing 100% xylitol as a sweetener for 5 min at least four times a day. Maternal chewing started at their 6th month of pregnancy and terminated 13 months later. The outcome measure was the presence of MS from the children's saliva and plaque at the age of 6, 9, 12 and 18 months assessed by using Dentocult SM (Orion Diagnostica, Espoo, Finland).
Results: At 6 months of age, 0% of children in the xylitol group and 5.9% in the control group showed a detectable level of MS. There was no significant difference between them ($P = 0.165$, Fisher's exact test). The children in the xylitol group, however, were significantly less likely to have a detectable MS than in the control group at and after 9 months of age (6.8% v. 37.0%; $P = 0.003$ at 9 months of age, 15.0% v. 76.9%; $P < 0.001$ at 12 months, 42.9% v. 91.7%; $P = 0.009$ at 18 months).
Conclusion: The results of this study suggest that maternal use of xylitol chewing gum during and after pregnancy can effectively reduce the probability of mother-child transmission of MS.

PREVENTION

PO047

A comparison between the effectiveness of two OHE programme

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Objective: To draw a comparison between the effectiveness of two oral health education programme among middle-school students on improvement of the oral health status.
Methods: Three middle schools randomly chosen from the urban district of Deyang were divided into three groups: teacher-based group (group T), parents-based group (group P),and the control group (group C). Oral health education sessions were conducted for teachers (group T) and parents (group P) of these children. Students obtained oral health knowledge through their teachers (group T) or their parents (group P), brushed their teeth twice daily. No oral health education session was carried out in the control group.
Results: In comparison with test group P and the control group, the OHI and GI of test group T were statistically lower ($P < 0.01$), and the difference between test group P and the control group were not significant.
Conclusion: Teacher-based oral health education had a better effect on improvement of the oral health status among 12 aged students, as compared with a parents education pattern.

PREVENTION

PO048

Caries-preventive effect of an oral health program

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The aim of this study was to evaluate the caries preventive effect of an oral health program for preschool children living in a low socio-economic multicultural area in the city of Malmö. In total, 804 2-year-old children were invited and recalled 4 times per year between 2 and 3 years of age and 2 times between 3 and 5 years of age to an out-reach facility for parent education and tooth brushing instructions. In addition, fluoride tablets were provided free of charge. A clinical examination and a questionnaire were completed at the age of 5 years. 651 children were left in the program. The results of the intervention were compared with a non-intervention Reference group of 5-year-old children ($n = 139$) from the same area. In the intervention group, the three-year attrition rate was 19% and more than 95% of the children attended at least four of their scheduled appointments and about 85% five appointments. The parent's daily assistance with tooth brushing and the use of fluoride tablets significantly was better compared to the references. Caries prevalence was significantly lower in the intervention group than in the reference group (5.4 deft v. 7.2 deft; $P < 0.001$). In conclusion, this study demonstrated that the oral health program had significant effects on various risk factors for caries development and on caries prevalence.

PREVENTION

PO049

The EST impact final method of deep pit and fissure

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Objective: To check-up the effect of enameloplasty impacting final treatment strategies related to deep pits and fissures of young permanent molars, and explore the feasibility of detecting early caries in deep pits and fissures by enameloplasty.

Method: One hundred and sixty-four permanent teeth from 64 children aged from 6 to 15 (23 boys and 41 girls) were selected. The conventional diagnoses indexes were: pit and fissure pigment; black immersed around pit and fissure; probe soften; probe block. The operators make the treatment decision via those diagnoses indexes. After enameloplasty technique, the operators determined the final treatment method:pit and fissure sealant, preventive resin restoration (PRR) and filling. The difference of treatment strategy before and after enameloplasty technique were analysed.

Results: The indexes of pit and fissure pigment, probe soften and probe block were the significant factors impacting final treatment strategies ($P = 0.000$). The treatment strategy before and after enameloplasty technique showed significant correlativity ($P = 0.897$). Early caries beneath deep pits and fissures were detected more reliable via enameloplasty technique.

Conclusion: The conventional diagnose indexes of deep pits and fissures were still credible and effective. Final treatment method was not significantly impacted by the enameloplasty technique. The enameloplasty technique showed helpful to avoid the ignorance of undetected early caries beneath deep pits and fissures.

PREVENTION

PO050

Experimental study of inhibitory effect of chelerythrine on *Streptococcus mutans*

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Objective: To study the effect of chelerythrine on growth and metabolism of *Streptococcus mutans in vitro*, lay the experimental foundation for the prevention of dental caries.

Methods: Slip diffusion method was used to measure the inhibition zone of each concentration of chelerythrine, and minimal inhibitory concentration (MIC) was determined by tube diffusion method using BHI broth medium. The ΔpH of chelerythrine supernatants of different culturing time interval of 3, 6, 12, 24 and 48 hours were measured using pH meter. Microbial Adhesion to hydrophobicity method (MATH) was used to measure the cell surface hydrophobicity of *Streptococcus mutans*, rate of hydrophobicity was calculated. Adhesion of growing *Streptococcus mutans* cell to a glass surface in test tubes also was measured as detailed in Hottorri. Anthrone method was used to measure the activity of glucosyltransferase (GTF) and detected the content of water insoluble glucan. Bradford method was used to measure the protein content of solution; specific activity of GTF was calculated. The data was statistically analyzed by ANOVA using SPSS13.0 software.

Results: Inhibition zone of *Streptococcus mutans* was appeared in concentration of chelerythrine from 6.25 mg/ml to 100 mg/ml (7∼25.8 mm), MIC of Chelerythrine on *Streptococcus mutans* was 0.78 mg/ml by tube diffusion method. ΔpH cell surface hydrophobicity adhesion of growing *Streptococcus mutans* cell to a glass surface TF and water insoluble glucan all gradually decreased with the increasing of concentration of chelerythrine, there were highly significant differences among each samples ($P < 0.01$).

Conclusions: Chelerythrine as the extract of Chinese traditional medicine *Chelidonium majus* L. could significantly inhibit *Streptococcus mutans in vitro*, and it possesses promising future in field of dental caries prevention.

PREVENTION

PO051

Acid containing candy: the effect on salivary secretion and pH

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Objective: After the observation in a pediatric dental clinic of a 9-year-old child the erosive potential of acidic candy was investigated.
Methods: In three children (4, 8, 12-year old) the flow rate and pH before, during and after consumption of several types of candy was measured.
Results: During the consumption of the acidic candy the salivary secretion increased to minimally 2 and maximally 3.5 ml/min with a concomitant decrease of the pH below 5 and even 4. The effect on the flow rate and pH disappear within 2 min.
Conclusion: The frequent use of acid containing candy may contribute to the development of dental erosion.

PREVENTION

PO052

Ultra-structure and acid etching characteristics of occlusal fissure enamel

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The purpose of this study was to compare the effectiveness of mechanical and acid treatment on enamel surfaces for the retention of pit and fissure sealants and evaluate the presence of a prismless layer. The etch pattern produced on enamel from immature and mature premolar teeth extracted with varying period of acid etching using 37% phosphoric acid was examined using a scanning electron microscope (SEM). The result of present study can be summarized as follows: 1. prismless layer was commonly observed in the fissure enamel in young and mature premolar. 2. There were no differences in micro-structure and etching pattern on fissure enamel between the young and the mature premolar. 3. The most effective etching pattern for retention of pit and fissure sealant was observed in 60 seconds of etching time and no apparent difference of etching pattern was found among 15, 30, and 45 seconds of etching time which showed non-retentive etching patterns. 4. The etching pattern by grinding enamel surface with bur followed by 60 seconds of etching was similar to that of 60 seconds of etching without any pretreatment of fissure surface. 5. Type 2 etching pattern was commonly found on fissure enamel in both young and mature premolar. 6. The calcium content and P/Ca ratio in fissure enamel between the young and the mature premolar was significantly different ($P < 0.05$). But content of calcium phosphate and P/Ca ration on various regions of fissure enamel in both young and mature premolar did not showed any difference. Based on these results, prismless layer may negatively influence the retention of pit and fissure sealants. Therefore, the mechanical removal of the prismless layer should result in an improved bonding of a pit and fissure sealant.

PREVENTION

PO053

An approach to effective treatment of severe ECC patients

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Objectives: To present a treatment method of two cases of severe ECC patients in order to consider the general treatment of ECC patients.
Materials and methods: Case 1.The patient is a 1 year 3-month-old girl who had severe caries in her upper anterior incisors. It seemed that the caries was caused by frequent bottle-feeding on demand of the patient based on dietary records. Case 2. The patient is 1 year 0-month boy who had severe caries in his upper anterior incisors. The caries activity of both patients were 2.0 as assessed by the Cariostat (Dentsply-Sankin, Tokyo), which signifies a very high caries activity in an average 1-year old patient. We treated using the following method and good results were obtained. In the clinic, the very soft carious dentin was excavated and topical fluoride was applied. Next, caries surfaces were covered with Carbo cement (Shofu Inc. Kyoto, Japan) repeatedly 1 or 2 times every 2 weeks. Light cured Fuji II LC (GC Dental, Tokyo, Japan) was used to cover the caries surfaces that became chronic after prophylactic treatment. Outside the clinic, the following regimen was introduced to the parents. 1. Brushing the child's teeth before going to bed. 2. Not to let the child sleep with a bottle containing juice but water or diluted green tea. 3. Bring bottle of water or tea for the child when going outside. 4. Eating snacks at regular schedules.
Results: After 1 year, the Cariostat result was still high but tooth surfaces became hard and clean.
Conclusion: If children with ECC can be identified during mass examination at health centers or in the clinic, early prophylactic treatment can be given as soon as possible.

PREVENTION

PO054

Salivary pH-values after intake of different beverages in children

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Objective: The aim of the study was to determine possible differences in decrease of pH-values of whole saliva, following the intake of different beverages.
Methods: Twelve boys and 13 girls (4.9 ± 0.9 years old) participated in this study. At baseline, a dental examination was performed and the dmft was recorded. Five beverages were tested: apple juice (pH = 3.3, Ca^{2+} 0.0335 mg/ml), orange juice (pH = 3.3, Ca^{2+} 0.0770 mg/ml), instant fennel tea (pH = 7.38, Ca^{2+} 0.0089 mg/ml), whole milk (pH = 6.84, Ca^{2+} 1.5500 mg/ml), mineral water (pH = 5.88, Ca^{2+} 0.1001 mg/ml). To account for circadian rhythm, all beverages were given at same time of day on subsequent days, at least 60 min after breakfast and 15 min after tooth-brushing. The salivary pH and the buffering capacities of beverages were determined with a portable pH-Meter (Novodirect, Germany). Each beverage (50 ml) was given in special cups (Nuk®, Germany). Immediately after intake of a beverage, and 5, 10, 15 and 25 min later, whole saliva was collected, and the pH-value was measured again.
Results: Fifteen children had healthy dentitions. 10 subjects had a mean dmft of 1.1 ± 2.3. The mean base value of salivary pH was 7.09 ± 0.07 without differences between children with and without dental decay. Mineral water led over the whole period of measurements to a significant rise in salivary pH ($P < 0.05$). Apple and orange juices caused a significant reduction in salivary pH during the first 15 min. After intake of instant tea or milk, significant reductions were found in the period of 5–10 min. After intake of instant tea the reduction was still significant after 15 min. During the period 5–10 min, the pH in whole saliva differed only significantly between consumption of mineral water and other beverages ($P < 0.01$).
Conclusion: With regard to dental health only uncarbonated or carbonated mineral water can be recommended for children without reservation.

PREVENTION

PO055

Remineralization depth of CPP-ACP on demineralized human enamel *in vitro*

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Objective: Casein phosphopeptides (CPP) have the ability to stabilize calcium phosphate in solution through binding amorphous calcium phosphate (ACP) with their multiple phosphoserine residues. Most of studies regarding CPP-ACP demonstrated the remineralization ability on the demineralized enamel surface. A question is remained that how deep can the CPP-ACP penetrate the enamel subsurface. The aim of this study was to measure the remineralization depth of CPP-ACP on demineralized human enamel *in vitro*.

Methods: Freshly extracted human 1st premolars without cracks or erosions were obtained from the Department of Pediatric Dent. Kyung Hee University Buccal and lingual surfaces of the 1st premolars were ground to a mirror finish. Each polished enamel surface was sawn from tooth as large slab and covered with nail varnish to from two sets of occluso-gingival windows (1×7 mm^2) separated by 1 mm. The enamel windows were demineralized by immersing each slab in 40 ml of 0.1 M lactic acid, Carbopol C907 at pH 4.8. The enamel slabs were incubated in the demineralizing solution for 8 days. Each enamel slab was sawn in half through the midline of the demineralization windows into a pair of blocks, and the cut surface was sealed with nail varnish. On the blocks, the gingival-half windows were exposed to a 10-times diluted solution of CPP-ACP paste, while on the other blocks, the occlusal-half windows were exposed to a placebo paste without CPP-ACP for 7, 14, 28, and 56 days, with a daily change of solution. The remineralization depth were measured by microradiography and also densitometric image analysis.

Result: The remineralization depth was found to increase with time for specimens stored in the demineralization solution.

Conclusion: From the result of this study, it could be concluded that CPP-ACP acted to increase remineralization depth of the enamel structure.

PREVENTION

PO056

Bubble behavior of pit and fissure sealant

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In clinical practice, air bubbles trapped in the pit and fissure may increase early loss of sealing materials for fracture, wear and microleakage. The purpose of this investigation was to examine the bubble behavior of pit and fissure sealant. The 140 replicas made of epoxy resin were used to this experiment. Following conditioning, light-polymerized sealants were applied and then exposed to the light source. After stereoscopic examination of standarized specimen by grinding, bubble behavior was analysed. The results obtained were as follows;1. Ultraseal XT® plus group irrespective of using time were higher than groups of Helioseal® with clinpro tip and metal tip in the frequency of bubble ($P < 0.05$). 2. Ultraseal XT® plus old group was more than Clinpro®, Teethmate F-1® and Helioseal® with brush tip in the number of bubble under 200 magnified cross section ($P < 0.05$). 3. The widest mean area of bubble was shown in the Teethmate F-1®. 4. No statistically significant difference of the frequency and the site of bubble between Clinpro® and Helioseal® groups ($P > 0.05$).

PREVENTION

PO057

Use of CPP-ACP with fluoride inhibits demineralization on enamel lesions

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Objectives: Casein phosphopeptide-amorphous calcium phosphate (CPP-ACP) has been known as an additive in MI Paste® (MI; GC corporation, Japan), which is one of products for caries prevention. In our previous study, under the less supply of calcium and phosphate ions, the single use of MI has not clearly shown inhibition of demineralization nor promotion of remineralization, whereas the use of MI with fluoride has suggested superior inhibitory effect on demineralized enamel lesions. The purpose of this study was to determine the additional effects by the various application time of CPP-ACP with fluoride on enamel lesions.
Methods: The enamel specimens were prepared by cutting bovine teeth into blocks and divided into six groups. The one of the groups was immersed in distilled water as control group. The other five groups were immersed in 0.02% sodium fluoride solution with MI for 30 min. After immersing, each specimen was stored in a demineralizing solution of 0.1 M lactic acid buffer solution (pH 5.3, $CaCl_2$ 1 mM, KH_2PO_4 0.6 mM). This process was performed once a day for 1, 2, 4, 7 and 10 days in the five groups, respectively. After the completion of each treatment, the enamel specimens were embedded, sectioned and examined under microradiography and polarized light photomicrography, to determine the inhibitory effect on demineralization.
Results: The demineralized area on enamel spread with the increase of the experimental time. However the stratification of inhibiting demineralization synchronized with the immersion times was observed in the same area. On the microradiographs, the radiopacity of each layer increased with the progress of the experimental period.
Conclusion: The results of this study suggest that the repetitive use of MI with fluoride reinforces inhibitory effect on carious enamel lesions under the less supply of calcium and phosphate ions.

PREVENTION

PO058

Effect of soft-start curing on contraction stress of composite resin

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The purpose of this study is to evaluate the influence of soft-start light curing on contraction stress of composite resin. Composite resin (Filtek Z-250TM) was applied using the one-step curing method with three different light sources. Curing times of LED and plasma arc are set for equal total light intensity of halogen conventional halogen light (XL3000TM) cure for 40 seconds at 400 mw/cm^2, LED light (Elipar Freelight 2TM) cure for 20 seconds at 800 mw/cm^2 and plasma arc light (FlipoTM) cure for 12 seconds at 1300 mw/cm^2. For the soft-start curing method; LED light (Elipar Freelight 2TM) cure exponential increases with 5 seconds followed by 17 seconds at 700 mw/cm^2 and plasma arc light (FlipoTM) cure 2 seconds at 650 mw/cm^2 followed by 11 seconds at 1300 mw/cm^2. According to the pilot study, the difference of hardness among the groups between exposed and the nonexposed surface were not significant. The strain gauge method was used for determination of polymerization contraction. Measurements were recorded at each 2 seconds for the total of 800 seconds including the period of light application. The data acquired from this study were analyzed statically using repeated measures ANOVA, One way ANOVA, and Tukey test. The results of this study can be summarized as follows: 1. Contraction stress in LED and plasma curing with soft-start method groups were lower than Halogen curing groups, which didn't show statistically significant ($P > 0.05$).2. Contraction stress in LED and plasma curing with one-step method groups were higher than halogen curing groups, which didn't show statistically significant.($P > 0.05$).3. LED and plasma curing with soft-start method showed lower contraction stress than the one-step method ($P < 0.05$).On the basis of above results, soft-start curing with LED and plasma light curing unit can reduce the contraction stress of composite resin restoration.

PREVENTION

PO059

Fluoride uptake after home use of different fluoride form

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The objective of this study was to compare the fluoride uptake in enamel after use of fluoride mouthrinse and self- applied fluoride gel. About 64 participants were recruited from 8–14 year-old boys in Mahamek Home for Boys, then divided into two groups according to their surface enamel fluoride concentration. An acid–etch enamel biopsy was performed on incisal part of labial surface of the caries and lesion free upper central incisors before and after use of fluoride mouthrinse and self-applied fluoride gel. The enamel samples were analysed for the amounts of fluoride and calcium by using fluoride electrode and atomic absorption spectrophotometer respectively. The results showed that enamel fluoride uptake of fluoride mouthrinse (1 746.0910 + 696.362 parts per million) was not statistically different ($P > 0.05$) from self-applied fluoride gel. (2 198.0125 + 1 066.242 parts per million). The finding of this investigation concludes that fluoride mouth rinse is as good as a self-applied fluoride gel in terms of promoting enamel fluoride uptake.

PREVENTION

PO060

Casein phosphopeptide–amorphous calcium phosphate (CPP–ACP) efficacy in preventing early childhood caries

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Early childhood caries is a significant public health problem in low-income children, with important negative consequences for the child and the family.

Objectives: The aim of this clinical study was to evaluate a preventive treatment mode for early childhood caries (ECC) and to investigate the capacity of CPP–ACP (Tooth Mousse, GC) to re-mineralize enamel subsurface lesions *in vivo*.

Methods: Subjects were selected from Marmara University, Dental School, Department of Pediatric Dentistry. A total of 6 (4 boys and 2 girls) 4 ± 1.09 year-old children were included to this study. The examinations were carried out in clinic under reflector light conditions using sterile mirrors and blunt probes and compressed air. Noncavitated caries on free smooth surfaces in primary incisors and canines were evaluated, and arrested lesions comprising brownish pigments were excluded. Six subjects were used twice a day for a month period. At the baseline and at the completion of the treatments, mineralization determined using a laser-induced infrared fluorescence (DIAGNOdent) method. The laser device was applied on each dried surface with an air syringe for 10 seconds. After 1 month, the same operator repeated evaluations. CPP–ACP produced re-mineralization.

Results: The mean DIAGNOdent results for buccal surfaces of the primary teeth before CPP–ACP application was 13.72 and after was 3.13. CPP–ACP produced an increase in mineral content of 77% ($P < 0.001$).

Conclusion: In conclusion, this study showed that the Casein phosphopeptide–amorphous calcium phosphate (CPP–ACP) nanocomplexes prevent demineralization and promote re-mineralization of enamel subsurface lesions *in vivo*. Further investigation under clinical conditions is required.

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PREVENTION

PO061

Validation of a child perception questionnaire in Chinese

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Objective: To translate the original English version of the child oral-health-related quality of life questionnaire (CPQ11–14) into Chinese and to test its psychometric properties of the Chinese version among Chinese children.
Methods: The original English version of CPQ11–14 was translated into Chinese and pretested and cross-cultural adapted. Subsequently the Chinese version with a general questionnaire was administered to 218 children aged 11–14 years. Clinical data on caries status and malocclusion was collected on 217 of them. Among them, 79 completed the questionnaire a second time. Formal psychometric properties were tested according to the standard procedure of the international quality of life assessment (IQOLA) project.
Results: Through factor analysis, the 16 items in the questionnaire can be divided into 5 domains. Expected logical relations among the items within the same domain had been found. Significant associations between oral health status/oral health's impact on quality of life and CPQ11–14 scores ($P < 0.001$) had been identified. Significant relationships had been identified between caries status and CPQ11–14 scores ($P < 0.001$), and between malocclusion and CPQ11–14 scores in middle-school-group ($P < 0.05$). Cronbach's alpha of the translated scale was 0.79 and test-retest reliability was substantial ($r = 0.83$, $P < 0.001$).
Conclusions: The translated Chinese version of CPQ11–14 demonstrates good validity and reliability. Its good psychometric properties provide the theoretical evidence for further use in Chinese population. It is available for use by researchers in oral health related quality of life studies in Chinese children.

PREVENTION

PO062

Dental flossing habits of children and adolescents in Slovenia

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Objectives: Dental flossing is supposed to be effective in reducing interproximal caries and gingivitis. The aim of the study was to describe the dental flossing habits of children and adolescents in Slovenia and to analyze these habits according to different demographic, social and behavioural variables.
Methods: Data were obtained from a recent oral health survey of children and adolescents in Slovenia, where sampling and examinations were performed in 8 out of 9 country regions according to WHO standards (WHO, 1997) with the participation of 21 trained and calibrated examiners. Short interview regarding oral health related habits and socio-demographic factors preceded oral health examination. For studying the flossing habits, the study group consisted of 4932 subjects in the age groups 5 (n = 942), 6 (n = 990), 12 (n = 1083), 15 (n = 1002) and 18 years (n = 915). A logistic regression model was used to estimate the significance of age, gender, father's and mother's education, country region, urban/rural environment and gum chewing and tooth-brushing habits for regular flossing.
Results: Taking all subjects together, 4.0% reported regular flossing (at least once per day), while 24.5% reported non-regular flossing. The frequencies of regular use of dental floss were 0.8% for 5 years-old, 1.8% for 6 years-old, 4.1% for 12 years-old, 6.5% for 15 years-old and 6.7% for 18 years-old; the frequencies of nonregular use were 7.2, 7.2, 32.6, 37.2 and 37.4%, respectively. According to the multivariate logistic regression model, age ($P < 0.001$), female gender ($P < 0.001$, OR = 2.45) and father's education ($P = 0.008$) were found significantly associated with regular dental flossing.
Conclusion: Regular use of dental floss among children and adolescents in Slovenia is rare. Girls use dental floss more frequently than boys and the frequency of flossing increases with age and with the level of father's education.

PREVENTION

PO063

Reduction of *S. mutans* using chlorine dioxide paste

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Oral hygiene adjuncts and plaque control agents are used in maintaining good oral hygiene, reducing plaque and dental caries and preventing halitosis. Brushing with toothpaste is arguably the most employed and accepted method of oral hygiene in most societies. As such, the use of toothpaste provides a potential vehicle for compounds, which could benefit the oral health of individuals who regularly comply with its use. This study experimentally tests stabilized chlorine dioxide as an antibacterial dentrifice additive. About 30 noncarious extracted permanent molars were initially autoclaved, and exposed to *S. mutans* (ATCC #35668). Culture was taken and counted as baseline. A total of 15 teeth were rotary brushed using distilled water (control) and 15 were rotary brushed with chlorine dioxide toothpaste (Durafresh). Culture after intervention and re-exposure to *S. mutans* where compared. Results indicate that *S. mutans* adherence decreases with the use of chlorine dioxide containing paste; and suggests that a less carious inducing microflora may develop with the use of the dentrifice as adjunct to plaque control.

PREVENTION

PO064

Urinary fluoride excretion in preschool children with different nutritional status

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The urinary fluoride excretion has been used for the evaluation of community preventive programs, and in Mexico City, children received supplemental fluoride through salt and dental products. Also there has been reported fluorosis at permanent teeth, so it is important to know the amount fluoride excreted by children during the odontogenesis stage.

Objective: To compare urinary fluoride excretion of preschool children with different nutritional status.

Materials and methods: Urinary multiple samples from 24 hours were collected from 90 preschool children divided in three groups according to malnutrition status. The samples were analyzed by fluoride specific electrodo. Orion.

Results: The average concentration of F was 0.87 ppm, the mean of 24 hours total fluoride excreted total was 364.98 μg. There were no differences statistically significant between the groups.

Conclusion: The study showed that urinary fluoride excretion was within the range indicated by the WHO for populations with optimal fluoridation for the prevention of caries decay.

PREVENTION

PO065

Re-mineralizing efficacy of increasing concentrations of fluoride in milk

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Objectives: The aim of this study was to test whether increasing the concentration of fluoride in milk would have similar re-mineralizing effects as increasing the total amount of fluoridated milk using a pH cycling model.

Materials and Methods: Fifty extracted third molars were painted with acid resistant nail varnish (Revlon) leaving a 1.0 mm window on the buccal and lingual sides. Artificial carious lesions were created using a de-mineralizing solution at pH 4.4. The teeth were then sectioned longitudinally through the lesions to get 110 sections that were 100–150 μm thick. After painting all the surfaces of a section except the superior margin of the lesion, the specimens were grouped according to different concentrations; 2.5, 5, 10, 20, and 250 ppm of fluoride and according to different volumes; 25ml/section and 50 ml/section of fluoridated milk. The sections were then subjected to pH cycling for 20 days; de-ionized water was used as the negative control. The sections were analyzed using PLM and MRG pre and post pH cycling for changes in lesion depth and the mineral content.

PREVENTION

PO066

Information by pediatricians to parents for prevention of dental decay

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The primary purpose of this research was to determine the knowledge regarding of prevention of the dental decay mainly parents of the usuary children of the 5 day-care centers of the Mexican Institute of Guadalajara, Jalisco provided by his pediatricians.The design of the investigation was descriptive, observacional, cross-sectional and by census. The investigation became by means of a questionnaire that contained 12 questions. A total of 556 questionnaires to 556 parents were applied, who gave to a total of 6 672 questions and answers.The number of questions totally given was of 6 672 obtaining 2 062 positive answers and 4 610 negative answers. We found a great difference statistically between good and bad information given by pediatricians to parents of their own patients according to the information given by the parents.The information given by pediatricians to promote the dental health is not good enough and it proposes to elaborate a manual including a great deal of information, regarding about mainly on the preventative field then distribute this manual among them, or propose to medical schools include in their program subject related with dentistry then it will help them to achieve knowledge of oral health and it will improve their practice exclusively at the time to advise their patients and parents on the dental field just to mention dental schools include subject as medical schools do either.

PREVENTION

PO067

Repetition of oral health education on oral health index

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Purpose: The objective of the present research was to evaluate the effectiveness of repetition of oral health education on oral health indices in 9–10 years old students in Ahwaz 2005.

Methods and Materials: A total of 364 School children at the age of 9–10 years were selected in a randomized multistage manner. In this study the effect of education of students on gingival health and OHI index was evaluated. Students were examined and filled questionnaire for them and then divided in to four equal groups, including three groups with different number of education and one control group. After the end of education period (4 months) students were examined and interviewed again.

Results: There was significant reduction in OHI and debris indices in groups that was educated ($P = 0$). But there was no significant difference between groups in regard to CI-S. Also there was significant difference between educated groups regard to gingival health ($P = 0/0074$).

Conclusion: Repetition of oral health education is very important because it affects the rate of knowledge and practice about oral hygiene, and can improve oral health in society.

PREVENTION

PO068

Oral health, self-diagnostic evaluation in Mexican school children

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Objectives: Evaluate the application of self-diagnostic in oral health in school children.
Methods: An experimental design for this investigation was used, in which a group used the handbook for learning the self diagnostic (experimental group) and a control group that did not use the handbook, both groups were obtained from the same school population in a randomized manner to conserve the same sociodemographic characteristics. The independent variable was the use or non use of the handbook of self-diagnostic, and the dependent variables were the self-diagnostic of the number of teeth with caries, and obturated and loosen dental pieces, as well as, the grade of oral hygiene and periodontal disease.
Results: In this study it was observed a statistical significant difference in the children that learned the handbook for self-diagnostic of the number of dental pieces with caries, obturated and loosen teeth, as well as, the grade of periodontal disease, when compared with the adults of control group (p .005).
Conclusion: The use of the handbook for learning the self-diagnostic of oral diseases increase in a significant way the ability of adults to detect the number of teeth with caries, obturated and loosen dental pieces, the severity of periodontal disease, as well as, oral hygiene, these facts may facilitate the development of a prevention model applied in children in which this handbook is included.

PREVENTION

PO069

The method of removing pigmented dental plaque in children

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According to our data pigmented dense dental plaque is found in each fifth child at the age of from 2 to 7. Both children and parents are worried by colored deposits.The purpose of this research is to choose the best method of removing dense pigmented dental plaque in children.We used gel «Belagel-R» and pastes «Polydent» of Joint-Stock Company «VladMiVa» (Russia) in our research. Gel «Belagel-R» partly dissolves the salts forming a firm dental plaque, creates freshness in oral cavity; this gel makes dark blue staining allowing the doctor to control the work. This agent is patented. Pastes «Polydent 1» and «Polydent 2» possess abrasive properties. They fluorinate, protect tooth enamel and make pleasant freshness in the oral cavity. «Polydent 2» is specially used in deciduous teeth. We treated 43 children with dense pigmented dental plaque at the age from 2 to 15. Teeth were isolated from saliva by cotton rolls. Gel 'Belagel R' was put on the dental plaque for 3–5 minutes then washed off by water. Under the influence of the gel the dense dental plaque was softened and easily taken off by instruments. After putting the paste on the dental surface teeth were polished by professional brushes. Then the pastes from the teeth were washed out and dried up. Good aesthetic results have been received in all cases.
Conclusions: 1) gel «Belagel-R» and pastes «Polydent» (Joint-Stock Company «VladMiVa», Russia) provide effective removal of a dense pigmented dental plaque; 2) this method of removing pigmented dental plaque can be used in daily practice of pediatric dentist.

PREVENTION

PO070

Early childhood oral health program

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Healthy teeth are important for general health and development. Early identification of children at risk of dental disease, and early detection of disease, can prevent widespread destruction of the teeth and expensive dental treatment in a hospital under general anesthesia. Generally, child health professionals have more opportunities to engage with and influence new parents about the importance of oral health, and to conduct risk assessments, than do oral health professionals. For this reason it is essential that they are aware of the nature of the disease and the associated risk factors for early childhood caries (ECC). The Centre for Oral Health Strategy NSW is developing an Early Childhood Oral Health (ECOH) Program that seeks to positively affect the oral health status of children at an early age by focusing on prompt and appropriate referrals from child health professionals, early management of dental disease by oral health professionals, and increased family focus in oral health services.The ECOH Program will concentrate on: 1. Improving oral health information for parents and child health professionals; 2. Integrating oral health risk assessments into developmental child health checks; 3. Improving oral health education and training for child health professionals; and 4. Improving training in early childhood oral health for dentists and dental therapists.This model of care will focus resources on those who are at higher risk of developing oral diseases while also taking into account the need for routine assessment throughout an individual's lifespan.

ORAL MEDICINE AND PATHOLOGY

PO071

Comparison of symptoms in young TMD patients among ages

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Objectives: The aim of this study was to assess chief complaints, subjective symptoms (pain and activity of daily living [ADL]) and diagnoses in young Temporomandibular Disorders (TMD) patients and to compare them among ages.
Methods: One hundred and fifty-six TMD patients aged 6 to 20 years (114 females, 42 males; 15.3 ± 3.4 years) at University of California San Francisco Center for Orofacial Pain and Nippon Dental University Hospital were selected. All of the patients received a comprehensive examination including the RDC/TMD and assessed by standardized examination and subjective symptom forms. A subjective symptom form consisted of 5 pain ratings in orofacial region and 6 ADL ratings (0–10 scale). Patients were divided into 4 groups according to their ages; group 1 (6–12 years), group 2 (13–15 years), group 3 (16–18 years) and group 4 (19–20 years). Chi-square test and ANOVA were used for comparisons among groups.
Results: Percentages of various chief complaints and diagnoses were not significantly different among four groups ($P = 0.523$ and 0.316, respectively). A three-way repeated-measures ANOVA (sex X group X pain and sex X group X ADL) showed a significant main effect of group ($F = 7.689$, $P < 0.001$; and $F = 4.281$, $P = 0.006$; respectively), and a significant main effect of pain and ADL ($F = 23.043$, $P < 0.001$; and $F = 27.962$, $P < 0.001$; respectively), indicating that symptoms of older patients were significantly more severe than those of younger patients, and severity was significantly different among symptoms. There was no significant difference between females and males (main effect of sex) and no other significant interactions.
Conclusions: These results suggest that subjective symptoms of TMD in a young population are not different between sexes; however, these symptoms (i.e., pain intensity and difficulty of ADL) increase with age. Further early-term management is needed for young TMD patients to prevent their symptoms from becoming worse in the future.

ORAL MEDICINE AND PATHOLOGY

PO072

Screening of periodontal pathogens in infants and children

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There is a growing body of evidence on the association of periodontal pathogens present in periodontal environment and periodontal pathologies in adults while the so far existing data on periodontal microbiology of infants and children have been limited.

Aim: The aim of this study was to identify the known periodontal pathogens in infants with ECC and children cared of by the Teaching Hospital in the city of Brno.

Methods: Altogether 37 infants aged 2–4 years and 96 children (mean age 14.57, SE = 0.84) were involved in screening periodontal pathogens in both bleeding and healthy gingival sites. Material from gingival sites was absorbed to endodontic paper points and processed in ParoCheck® kits (Greiner Bio-one GmBH, D). Bacterial species were identified by means of hybridization in situ method using 16S rRNA fragment and highly conserved primer labelled by fluorophore (Cy5). Hybridized samples were labelled by strain specific DNA-sondes and identified according to ParoCheck®Report-Software. Findings in gingival bleeding and healthy sites were compared (chi-square test; $P = 0.05$).

Results: Infants–frequency in bleeding gingival sites (%): A. actinomycetemcomitans (AA) 32.4, P. intermedia (PI) 5.4, F. nucleatum (FN) 54.1, T. denticola (TD) 10.8, T. forsythensis (TF) 2.7, P. nigrescens (PN) 5.4, all significantly more often than in healthy sites ($P < 0.05$). Children–frequency in bleeding gingival sites (%): PG 39.6, AA 74.0, PI 82.3, FN 57.3, TD 2.1, TF 8.3, PN 13.5, all but FN and TF significantly more often than in healthy sites ($P < 0.05$).

Conclusions: The high frequency of identifying periodontal pathogens in infants and children in gingivitis sites compared to those without clinical signs of inflammation has supported the hypothesis of pathogenic involvement of these bacteria in periodontal inflammation in childhood. Supported by grant IGA Min. of Health No. NR/8394-3 and by Project 1M0528 from the Ministry of Education.

ORAL MEDICINE AND PATHOLOGY

PO073

Oral complications due to treatment of leukemic children

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Leukemia is a common type of cancer often seen in children. This disease has oral and craniofacial complications due to the course of disease as well as to the treatments, including chemotherapy and radiotherapy. The treatment of leukemia can affect oral health and induce craniofacial problems. Oral and craniofacial complications may lead to a disturbance in children to undergo their cancer treatment. The management of oral and craniofacial complications is important to increase the quality of live in patients with leukemia. This paper will discuss various oral and craniofacial complications due to chemo/radiotherapy of children with leukemia along with its management and some of cases found in Hasan Sadikin Hospital, Bandung - Indonesia.

ORAL MEDICINE AND PATHOLOGY

PO074

Sialolithiasis in two children: case report

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Objective: Sialolithiasis is the formation of a calcareous concretion in the salivary ducts or gland. It may occur at any age, but it is most commom in middle-aged adults. This report presents two cases of submandibular salivary stone, occurred in a 5-year-old girl and a 2-year-old boy.
Method: Case 1. A 5-year-old girl was referred from a local clinic for evaluation and treatment of a small mass formed in the mouth floor. A yellowish stone was observed at the orifice of the submandibular duct. In a radiographic view, presence of a salivary stone was confirmed. Case 2. The parents of a 2-year-old boy complained about a mass in the mouth floor that it had increased in size for last 2 months. Through physical examination, a yellowish stone with size of 2×2 mm was observed. It appeared radiolucent in an occlusal radiographic view.
Result: Case 1. We diagnosed it as sialolithiasis in the submandibular gland. We decided to remove it by surgical meothod. Since its removal, there was no sign of recurrence. Case 2. Considering the patient‘s age and the state of the salivary stone, we decided to wait and to remove it later.
Conclusion: We review the clinical findings and etiopathogenesis of sialolithiasis in children, as well as diagnostic imaging techniques and several therapeutic approaches to stone extraction. Sialolithiasis is not commonly observed in children, but should be considered in the differential diagnosis and the pediatric dentist should consider it in the differential diagnosis and can manage it.

ORAL MEDICINE AND PATHOLOGY

PO075

Ameloblastic fibroma in mixed dentition

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Ameloblastic fibroma is a rare benign tumor, accounting for only 2.5% of odontogenic tumors. It occurs during the period of tooth formation between the ages of 5 and 20 years with the average age being about 15. There is no gender predilection. In the majority of cases, the lesion arises in the mandible, presenting the swelling of jaw and the failure of tooth eruption. In this report, the main concern of the patient was the failure of eruption of lower permanent and deciduous molars. Radiographic investigation showed a radiolucency surrounding the crown of unerupted teeth. Surgical intervention and histopathologic study revealed the lesion to be ameloblastic fibroma. After the surgery, no evidence of residual tumor or recurrency was found. These patients are scheduled for the long-term continuing evaluation of the eruption of adjacent teeth and successor with radiographic study.

ORAL MEDICINE AND PATHOLOGY

PO076

Pyknodysostosis: a case report with osteomyelitis of the mandible

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Objective: To present a rare form of generalized sclerosing bone disorder and the common oral complications that often arise from the condition.
Methods: A case report of a paediatric patient diagnosed with pyknodysostosis complicated by osteomyelitis of the mandible after tooth extraction was presented. The osteomyelitis was successfully treated by combined surgical management and sustained antibiotic therapy. The clinical presentations, mode of inheritance and radiographic appearances of the condition were also described. Other treatment modalities for osteomyelitis were discussed.
Results: Clinically, an intraoral discharging sinus with bony sequestrum was observed at the complaint site. The orthopanthomogram showed generalized sclerosis with localized area of bone loss. Surgical debridement of the area was performed followed by parenteral antiobiotic and application of gentamicin beads which were removed after 10 days. Patient was discharged with oral antibiotics and recovery was uneventful.
Conclusion: Dental procedures in patients with pyknodysostosis are often complicated by osteomyelitis. This could be attributed to the reduced vascularity of bone as a result of continuous endosteal bony deposition.

ORAL MEDICINE AND PATHOLOGY

PO077

Aggressive maxillary swelling mimicking malignancy

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Objective: The purpose of this report is to present a case of an oral pathologic lesion complicated by Idiopathic Thrombocytopenic Purpura (ITP).
Methods: A ten-year-old girl presented to us with a progressive left cheek swelling and thrombocytopenia. The patient's initial clinical presentations, investigations, differential diagnosis, treatment modalities and prognosis are discussed.
Results: CT scan revealed an enhancing solid tumour mass occupying the left maxillary sinus with infiltration and erosion down to the adjacent alveolar process inferiorly and up to the ipsilateral ethmoid sinus with suggestion of adjacent inferior rectus muscle infiltration. The tumour appeared aggressive, concerned about malignancy, a biopsy was performed. Biopsy of soft tissue revealed fibrous tissue with focal granulation tissue and hemorrhage. The platelet level was persistently low, and patient was started on a course of prednisolone but there was no response. IVIG was administered to the patient. Treatment was further complicated as patient had a right frontoparietal subdural haemorrhage for which right burhole and drainage was done. Subsequently patient underwent splenectomy and was put on long term antibiotic prophylaxis. Patient is currently asymptomatic.
Conclusion: Biopsy is important for accurate diagnosis and for the planning of treatment modalities.

ORAL MEDICINE AND PATHOLOGY

PO078

Differential diagnosis of eosinophilic granuloma with aggressive periodontitis: report of 3 cases

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Eosinophilic granuloma (EG) is the mildest and localized form of histiocytosis-x group of diseases. It is a destructive osseous lesion characterized by a vast number of eosinophils and histiocytes and has a neoplastic nature, specially the chronic forms that involve young ages. Based on the site of the lesion three types are explained: intraosseous, alveolar and mixed. In the last two types, extensive alveolar involvement and loosening of the teeth clinically may resemble aggressive periodontitis (AP). We report three cases of EG in young ages, under 20, initially diagnosed and treated as AP. The rapid progress of the neoplastic process of EG, considerable morbidity of the chronic disease and the consequences of late diagnosis and treatment specially at young ages and in severe conditions, necessitates a dentist to know diagnostic criteria and differential diagnosis of EG with AP for early diagnosis and treatment.

ORAL MEDICINE AND PATHOLOGY

PO079

A cystic lesion associated with an impacted primary mandibular molar

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A cyst has been defined as being 'a pathological cavity having fluid or semifluid content and which is not created by the accumulation of pus. It may be epithelial or nonepithelial, odontogenic or nonodontogenic, developmental or inflammatory in origin' (Killey *et al*., 1977; Kramer 1974). Shear (1992) estimated the frequency of odontogenic cysts in children to be relatively low, at 9% for dentigerous cysts and 1% for radicular cysts. Dentigerous cysts are odontogenic cysts which usually enclose the crown of the attached tooth and the attachment is in the cervical region of the unerupted tooth. The cyst is said to arise from the separation of the follicle from the crown of an unerupted tooth. Thus, a dentigerous cyst can involve any tooth, but those most frequently affected are the mandibular third molars, followed by the maxillary canines, mandibular premolars and supernumerary teeth. Generally, the result of a cyst associated with an unerupted tooth is that it fails to erupt and may even be displaced. This report presents a case of a cystic lesion associated with an unerupted primary mandibular left second molar in a 3 year old Chinese boy. As the cyst was associated with an unerupted tooth it was considered to be odontogenic origin. The treatment options were enucleation and removal of the tooth, marsupialization or a combination of both. The biopsy, however indicated that the lesion was consistent with thickening of the dental follicle. It is possible that the section of tissue taken for the biopsy was insufficient to reflect the true nature of the lesion. So after enucleation of the lesion the pathology report will confirm the true nature of the lesion which if it is a dentigerous cyst will be a very unusual finding.

ORAL MEDICINE AND PATHOLOGY

PO080

Marsupilization of an odontogenic cyst with embedded permanent tooth bud

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Objective: A 7 years old male child reported in the hospital with a complaint of painful, slowly progressing swelling of left side of mandible. Clinical examination revealed a carious exposed 75. Radiographs revealed a periapical cyst in relation to the affected tooth with the developing premolar (35) tooth bud lying inside the cystic cavity. The objective was to extract the carious primary molar and treat the cyst with marsupilization in order to protect the developing tooth bud.
Procedure: The patient was put on antibiotics and analgesics for a period of 5 days. After the acute phase subsided the patient was recalled and after appropriate local anesthesia the offending tooth (75) was gently extracted. The cyst cavity was irrigated with 5% Povidine–iodine solution. The developing premolar could be clearly visualized inside the cystic cavity. The cystic lining was then sutured with the marginal gingiva around the alveolar socket. Iodoform gauze dressing was packed in the cavity and appropriate medication prescribed. The patient was recalled on alternate days for review and for change of iodoform dressing. By the end of 3 weeks the entire socket had healed. OPG radiographs were taken at the beginning, after 1, 2 and 3 months of the surgical procedure.
Results: Following marsupilization the premolar erupted in its normal position in the alveolar arch and the cystic cavity healed by secondary intention.
Conclusion: Thus we can conclude that if any vital structure is embedded in a cyst, treatment of choice should be marsupilization so that the vital structure can be saved.

ORAL MEDICINE AND PATHOLOGY

PO081

ARV therapy benefit on oral lesions in HIV-positive children

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Oral mucosal lesions (OML)in HIV-positive children are well documented in the literature.
Objective: To compare the prevalence of oral mucosal lesions in pre and post Anti Retro Viral treatment in children who were HIV positive.
Method: A comparative analysis was carried out between children who initially were not in ARV Therapy and the same cohort of children who were under ARV treatment. About 108 HIV-positive children from two childcare centres viz Beautiful Gate (BG) and Nasreth House (NH) were examined in 2000 by three calibrated examiners. The examination was based on the consensus criteria for OML in children (Ramos–Gonzales, 1992) prior to any anti retroviral treatment. In 2003, 60 of these children who were on ARV treatment were re-examined for OMLs. A follow up examination is being conducted with the balance of the children in both child care centres.
Results: In 2000, the prevalence of OML was 70% of the children at BG and 67% at NH. In 2003, of the 60 patients on ARV therapy, the prevale of OML was 38% at BG and 13.7% at NH.
Conclusion: HIV-positive children on ARV therapy showed a reduction in the prevalence rate of OML from both childcare centres. Children at Beautiful Gates showed a reduction in prevalence of OML of 48% and 80% at Nasreth House.

ORAL MEDICINE AND PATHOLOGY

PO082

Treatment of mucosal infections of the oral cavity in Kyrgyzstan

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Objectives: The purpose of our study was to compare the efficacy of local treatment with Butadion ointment (standard therapy) versus Rapin solution and a combination of the two modalities in patients with erosive-ulcer lesions of the mucous membrane of the oral cavity.
Methods: Within a period of two years 76 patients (21 males, 55 females) with erosive ulcer lesions of MMOC were subdivided into 3 groups according to local treatment modalities. The first group B 20 patients 4 M, 16 F were treated by local application of Butadion ointment, in the second group R 24 patients 6 M, 18 F by Rapin solution and in the third group B + R 32 patients (11 M, 21 F) by combined local therapy with Butadion ointment and Rapin solution.
Results: In group B after therapy with Butadion ointment mucosal edema, burning decreased in 30% of patients. In group R hyperemia of the mucosa disappeared on day 3–4 and mucosal edema on day 4–5. Epithelisation of erosive lesions were observed on average (SD) on day 6.3 (0.1). In group B + R mucosal edema disappeared in 95% of patients with marked reduction of pain, burning and rippling. Erosions decreased in 84% of patients on day 2–3 and disappeared (diameter < 2 mm with only mild hyperemia) on day 5 in 92% of patients. Complete clinical recovery was observed on average (SD) on day 5.8 (0.1). Cytological investigations before treatment revealed a great number of nucleo-segmented neutrophils, mononuclears indicating inflammatory destructive reactions in the local lesions.
Conclusion: In this comparative clinical study good clinical results were obtained in all patients with erosive ulcer lesions of the MMOC, but best clinical results were observed by the combined treatment with Rapin solution and Butadion ointment in Kyrgyzstan.

ORAL MEDICINE AND PATHOLOGY

PO083

Features of the oral status in children with facial clefts

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The purpose of the research work was to study the dental status of children with congenital facial clefts, and character of bioelement structure of their body; to carry out treatment of teeth in children of younger age with labial and palatal clefts. We have examined 78 children (1–17 years) with various kinds of facial clefts. Prevalence of caries was found to be from 70% up to 98% (intensity from 4.3 up to 9.5), depending on the age. We have revealed: gingivitis of a various degree of gravity (85% of children); short bridles of the tongue (46.1%), those of the upper lip (35%) and of the lower lip (16.2%); abnormalities in the position of teeth (19.2%); enamel hypoplasia (7.9%). The percentage of the children who had not received required treatment before was: orthodontic–69.6%; logopedic–73%, therapeutic–86.5%. Treatment of tooth caries in 43 children (under 10 years) with clefts was carried out.In case of an inadequate reaction in the child we used ART method. The cavities were filled up with GICs of Russian manufacture 'Argecem', 'Stomalit'. The results were followed up in 30 children. All fillings were in the place. Concentrations of bioelements in the body were determined in the children. A decrease in the concentration of the most essential elements in all the examined children with clefts was observed. Correction was performed.

Conclusions: High prevalence and intensity of caries in children with clefts suggests the need of changing the level of the oral care given to them; the analysis of the bioelements in such patients will allow to arrange preventive measures aimed at restoration of biochemical and physiological functions of the body; GICs 'Argecem', 'Stomalit' can be recommended as not expensive and reliable filling materials for the treatment of caries in children with clefts.

SYNDROME AND GENETICS

PO084

Dental age assessment of Proteus syndrome: a case report

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Introduction: Proteus syndrome (OMIM #176920) is a rare condition characterized by multiple hamartomatous malformations, including asymmetric dental development such as advanced dental age of the affected side.
Objectives: A case is reported where the Dental Age (DA), and rate of growth, of the affected left and unaffected right sides are compared using a new technique of meta-analysis for Dental Age Assessment (DAA).
Materials and methods: Longitudinal DPT's were assessed; DA was calculated for the left and right sides using a modification of Demirjian's method of DAA.
Results: The difference in DA between the right and left side ranged from 0.68 ± 1.28 years. The difference in DA between the right and left mandibular quadrants ranged from 0.9 ± 2.27 years.
Conclusions: This study confirms the pattern of asymmetric dental development seen in previous reports. Interestingly, DA of the unaffected side was delayed compared to chronological age (CA). On the affected side, DA was comparable to CA, indicating that in this patient, the affected side developed normally. This is in contrast to previous studies which have reported advanced dental development.

SYNDROME AND GENETICS

PO085

Seckel Syndrome: report of a case

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Objective: The Seckel syndrome is an extremely rare autosomal recessive inherited disease. As far as we know this is the first case reported in North-East Hungary.
Clinical case: The three years old girl was referred to the University of Debrecen, Department of Pediatrics with gastrointestinal disorders and epilepsy. The girl presented the typical Seckel syndrome signs, such as bird like face, dwarfism, microcephalia, delayed mental and growth development, lowset ears, prominent eyes with mongoloid slanting and down-slanting palpepral fissures, hirsutism, limb abnormalities. Her dental history revealed that the primary teeth started to erupt at the age of 1.5 year. At the age of three due to the delayed eruption she has only 8 erupted teeth, which are abnormal both in shape and structure.
Conclusions: Although Seckel syndrome is not encountered routinely in the dental clinics, this case illustrates the importance of acquaintance with such a rare condition in dentistry. An early, correct and personal rehabilitation plan must be considered for better dental and orthodontic treatment to be performed.

SYNDROME AND GENETICS

PO086

An 11-year-old boy with 47, XYY: a case report

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Objectives: The 47, XYY males is a sex chromosomal numeral disorder. Pediatric dentists seldom report encountering 47 XYY males, probably because these males blend into the general population as normal individuals. The purpose of this report is to present clinical oral findings of a case of 47, XYY males.

Methods: An 11-year-old Japanese boy was referred to our clinic for extraction of primary teeth with prolonged retention. He had pulmonary hypertension and slight mental retardation with a 47, XYY males. Cephalometric analysis and study model measurement were performed for comparison with the standard measurements in Japanese children with clinically normal occlusion.

Results: The boy's stature and weight were normal except for his head circumference, which had been beyond the 94th percentile since 11 months of age. The cephalometric examination revealed bimaxillary protrusion, and the bimaxillary sizes were remarkably larger than the cephalometric standard in Japanese children. Study model examination revealed that the patient's erupted primary and permanent teeth were larger than standard values. Mandibular left and right second premolars were missing congenitally.

Conclusions: According to a survey of the literature, just 4 cases of oral and maxillofacial findings in 47, XYY males have been reported in the last 26 years in Japan. The present oral findings seem to be an example of rare diseases.

SYNDROME AND GENETICS

PO087

Solitary median maxillary central incisor: a case report

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Objectives: To describe the orofacial features and systemic involvement of a Thai child with Solitary Median Maxillary Central Incisor (SMMCI) syndrome.
Methods: The patient attended the Pediatric Dentistry Clinic, Faculty of Dentistry, Khon Kaen University, Thailand because of early childhood caries (ECC). The information collected from the parents, medical history, physical, oral and radiographic examinations were investigated.
Results: The patient was a 3-year-old girl. The medical history revealed that at birth she had a median submucosal cleft palate and micrognathia with hypoglossia. In addition, she has received ongoing treatment by a pediatrician, otorhinolaryngologist and speech therapist because of eating difficulty, hearing and speech problems. Her weight and height at three years of age were below the 5th percentile of the standard weight and height of Thai children. The facial profile was convex with severe mandibular retrognathism. The upper lip had an arch shape with an indistinct philtrum. Intraorally, maxillary and mandibular frenula and the incisive papilla were absent. She was in the primary dentition with the second molars erupting.The mandible was collapsed inwards, being extremely small and narrow. This, in addition to the hypoglossia, resulted in posterior crossbite and eating difficulty. She could eat only soft foods. An SMMCI and a left lateral incisor with lingual talon cusp were present in the maxilla. Radiographic examination also revealed a developing permanent solitary median maxillary central incisor. Interestingly, both mandibular central incisors and associated bone were also absent. Comprehensive dental treatment for severe ECC has been accomplished. In addition, the multidisciplinary consultation for further management has been established.

SYNDROME AND GENETICS

PO088

Cystic lymphangioma in a 17 month old female patient

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Cystic lymphangioma is a rare congenital malformation of the lymphatic system. This presentation is a case report of a 17 month old female with cystic lymphangioma of the right cervical region. The lesion in this patient is large, involving the right side of the oral cavity, neck and possibly the thymus. The patient has several clinic problems such as recurrent ear infections, loss of hearing on the right side, acid reflux, difficulty in feeding, enlarged and elevated tongue and ulceration on the dorsum of the tongue. MRI investigations have revealed vascular extensions into the lesion, which is why surgical management of the lesion has been deferred for now. The clinical pictures and aspects of dental and medical management of this patient will be presented and discussed.

SYNDROME AND GENETICS

PO089

Dental caries and salivary function in 22q11 deletion syndrome

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Objectives: The conditions known as Velocardiofacial syndrome, Conotruncal anomaly face syndrome and DiGeorge syndrome are now encompassed within 22q11 deletion syndrome. Clinical presentation and severity varies, however typical features include cardiac anomalies, velopharyngeal abnormalities, immune system deficiencies, a typical facial appearance and developmental delay. It was noted during routine dental care that a number of these children presented with high levels of caries and a clinically dry mouth. The aim of the study was to determine the level of dental caries and salivary function in a cohort of children at the Children's Hospital at Westmead.
Methods: A total of 17 children aged from 5–16 were examined for dental caries and salivary function. A questionnaire was completed by the parent regarding diet, oral hygiene, fluoride history and socioeconomic status. Unstimulated and stimulated saliva was collected over 5 minutes using a suction device and paraffin stimulation respectively. Saliva samples were weighed and flow rates calculated in ml/min. pH and buffering capacity was measured using Saliva–Check (GC).
Results: dmft/DMFT ranged from 0–10 and the average dmft/DMFT was 4.6. Unstimulated flow rates ranged from 0–0.6 ml/min. 47% had flow rates of < 0.1 ml/min, 12% had a flow rate of between 0.1 and 0.25 ml/min and 41% had flow rates of > 0.25 ml/min. Stimulated flow rates ranges from 0–0.98 ml/min. 76% had stimulated flow rates of < 0.5 ml/min and 24% had flow rates between 0.5–0.98 ml/min. Buffering capacity was very low in 56% of patients, low in 31%, and normal in 13% of patients.
Conclusions: This cohort of children appears to have increased caries prevalence compared to the mean dmft/DMFT for the region. Diagnosis of salivary hypofunction in children is difficult, however a large proportion of these children appear to have very low flow rates and/or buffering capacity. The next phase of the study will compare these children to age- and sex-matched controls.

SYNDROME AND GENETICS

PO090

A novel AMELX mutation (p.P52R) causing X-linked AI

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Objective: Amelogenesis imperfecta (AI) is a hereditary disease with abnormal dental enamel formation. We had a chance to examine a Japanese family with X-linked AI transmitted over at least four generations. We performed mutation analysis of the human amelogenin gene (AMELX) which is responsible for X-linked AI for the family, and found a novel mutation. To study the pathological basis underlying the disease in this family, we tried to characterize the mutant amelogenin protein and the mineral composition of one of the patients' teeth.
Method: Genomic DNA isolated from peripheral blood mononuclear cells from family members, as well as from control individuals, was analyzed. Coding exons of the AMELX, together with their flanking introns, were PCR-amplified and then directly sequenced. To study the pathological basis underlying the disease in this family, the mutant amelogenin protein estimated was synthesized and evaluated *in vitro*. Furthermore, differences in the chemical composition between normal and affected teeth were studied by X-ray diffraction analysis and X-ray fluorescence analysis.
Result: The affected sisters exhibited vertical ridges of enamel surfaces, whereas the affected father had thin, smooth, yellowish enamel with distinct widening of spaces between his teeth. Mutation analysis revealed a novel mutation (p.P52R) in exon 5 of the AMELX. The mutation was detected as heterozygous in the affected sisters and as hemizygous in their affected father. The mutant p.P52R amelogenin protein was successfully synthesized *in vitro*, and revealed stable as normal amelogenin. The mineral composition of the patient's tooth, evaluated by X-ray diffraction and X-ray fluorescence analyses, showed no difference from that of tooth from normal individuals.
Conclusion: We have identified the novel mutation (p.P52R) of the AMELX in a Japanese family with X-linked AI. Though a clear difference was not detected by the analyses in this study, we believe these results would greatly help us to understand the pathogenesis of X-linked AI.

SYNDROME AND GENETICS

PO091

Dental management of children with Dubowitz syndrome: a case report

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Dubowitz Syndrome (DS) is an autosomic recessive genetic condition characterized by three clinical conditions: pre and postnatal growth delay, microcephalia and characteristic facial aspect necessary for diagnosis. Other clinical manifestations of DS included: eczema affecting face, knees and elbows and delayed skeletal age. Oral manifestations include delay eruption and cleft lip and palate. This report refers to a case of a 10 year old male diagnosed with DS who was treated at the Paediatric Dentistry Department at the Central University de Venezuela Dental School with a 4 year follow up. Clinical features observed were facial dysmorphism, delayed skeletal age, attention deficit hyperactivity disorder (ADHD) and mental retardation. Oral manifestation including delayed dental eruption of primary and permanent teeth, uvula cleft, micrognatia, and persistent digit sucking habits were observed. Restorative, preventive, and orthodontic treatments with removable appliance were successfully performed.

SYNDROME AND GENETICS

PO092

Crouzon syndrome: case report

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Crouzon syndrome is a rare disease characterized by craniosynostosis or premature closing of the cranial sutures and hypertelorism, exophthalmos, external strabismus, parrot-beaked nose, short upper lip, hypoplastic maxilla and a relative mandibular prognathism. These patients display high plaque index and poor efficacy of toothbrushing. This syndrome is caused by mutations in the FGFR2 gene, which is mapped to chromosome locus 10q25–10q26. The condition occurs in about 1 of every 25 000 birth and is inherited as an autosomal dominant trait. Here we report a 9-year-old female patient of Crouzon syndrome. Her intraoral findings were anterior and posterior crossbite due to maxillary hypoplasia, highly narrow palate, delayed eruption of maxillary first molars. She presented also with poor oral hygiene. Le Fort osteotomy is planned for improvement of the facial deformity. She is being treated with expansion of upper and lower dental arch as a preoperative orthodontic therapy. Further, Observation of tooth eruption and growth of maxilla, and comprehensive treatments including orthodontic, operative, preventive treatment are required.

SYNDROME AND GENETICS

PO093

Hereditary gingival fibromatosis: a case report

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Objectives: Gingival fibromatosis is a rare disease characterized by a slowly progressive enlargement of the gingiva. The purpose of this report is to present clinical findings and dental management procedures for a Japanese boy with hereditary gingival fibromatosis.

Methods: In March 2000, a Japanese boy with gingival fibromatosis aged 6 years and 9 months came to our clinic for enlargement of the gingiva. Since then, he has received periodical examinations at our clinic.

Results: The patient exhibited no signs of hypertrichosis or mental retardation and had no history of epilepsy or intake of medication known to cause gingival overgrowth. His family history showed that not only he but his mother and his grandmother were affected, revealing a pattern of autosomal dominant inheritance. Over 6 years, the gingivae gradually enlarged. When he was 12 years old, he had aesthetic problems and difficulty closing his lips because of the severely enlarged gingival tissues. Intraoral clinical examination revealed generalized and severe gingival enlargement that affected both the maxillary and the mandibular arches. Enlarged gingival tissues were normal in color, and his oral hygiene was moderately good. Since there was no change in the gingival enlargement after tooth-brushing instructions, the patient was treated with gingivectomy under local anesthesia. One year postoperatively, there was no recurrence of the gingival enlargement. Histopathologically, the enlarged gingiva consisted of dense collagenous tissue, and the epithelium showed hyperkeratosis and acanthosis with elongated papillae.

Conclusion: We report a Japanese boy with hereditary gingival fibromatosis, which is an autosomal dominant condition. The gingivae gradually enlarged, and gingivectomy was performed. Careful follow-up is necessary because of the character of this lesion.

SYNDROME AND GENETICS

PO094

Enamel in primary teeth from patients with Ehlers–Danlos syndrome

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Objectives: The aim of this study was to examine and describe histo-morphology and chemical composition of enamel in primary teeth from patients with Ehlers–Danlos syndrome (EDS) utilizing polarized light microscopy and scanning electron microscopy.

Methods: About 50 exfoliated primary teeth were collected from 30 patients with EDS. Central sagittal longitudinal 100 μm sections were, after embedding in an epoxy resin, prepared in a low speed saw microtome and analyzed in a polarized light microscope, dry in air and after water imbibition. For the content of C, O, P and Ca, 15 representative teeth were selected for chemical analyze in a Philips SEM 515 equipped with an EDAX DX4, ECON-detector. The measurements were carried in 6 locations in the enamel and the relative amounts of C, Ca, P, and O were calculated with a computerized program (Point Electronic DISS 2).

Results: The presence of a neonatal line made it possible to distinguish the prenatal enamel from the postnatal. The morphological analysis of primary enamel in teeth from EDS patients revealed a higher frequency of hypomineralized pre and postnatal enamel and a frequent occurrence of postnatally located incremental lines than in enamel from healthy subjects. The chemical analysis showed that the concentration gradients for Ca, P, O and C appeared in the same form as in normal primary enamel. The Ca/P ratio did not differ from that in normal primary enamel, indicating normal hydroxyapatite crystals. However, the EDS-enamel had significantly lower values for Ca and P in hypomineralized areas and significantly higher values for the ratio Ca/C compared with normal primary enamel.

Conclusion: Primary enamel in teeth from EDS patients differed from normal primary enamel exhibiting higher frequencies of hypomineralized enamel and incremental lines, indicating a disturbed enamel mineralization. The chemical analysis implied some changes in the mineral composition.

SYNDROME AND GENETICS

PO095

Apert syndrome : case report

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Apert syndrome is a genetic disease that is characterized by acrocephaly which is caused by premature closing of coronal suture and syndactly of the hand. It occurs in about 1 of every 65 000˜160 000 and is caused by mutation in the fibroblast growth factor receptor 2(FGFR2) gene and is inherited as an autosomal dominant trait. Apert syndrome exhibits an acrobrachycephly, syndactly of the hands and feet, tall forehead and flattened occiput, retruded midface, ocular proptosis, visual loss, hypertelorism and downward slanting lateral palpebral fissure, Maxillary hypoplasia and mandible prognathism. Reduced nasopharynx and narrow choana lead to mouth breathing and anterior open bite, trapezoidal shaped lip. The otitis media is common condition which is occasionally leading to hearing impairment and mental retardation typically occur. Specific oral manifestation includes a cleft of soft palate or a bifid uvula, V-shape arch and crowding of teeth. Class III malocclusion typically occurs and may be associated with anterior open bite plus anterior and posterior cross bite. A 6-year-old male patient visited to the Department of Pediatric dentistry, Kang-nung National University of Dental Hospital. His chief complaint was the treatment of carious teeth. The purpose of this case report was to present a specific dental manifestation of this patient.

SYNDROME AND GENETICS

PO096

Nasal molding device: postsurgical treatment in CLP babies

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Objectives: Nasal vestibules of cleft infants often stenose after the primary surgery, possibly secondary to the scarring process.We have devised a Nasal Molding Device (NMD) to expand the nasal vestibule and to recover the width of the nasal airway.
Methods: We have treated five infants, who were sent to us from plastic surgeon for concerns with post surgical narrowing of the nasal vestibule. We took an impression of the nose at the beginning of the treatment, a cast was made and finally an acrilic device (NMD) constructed. The appliance was used for 12 hour per day for a minimum of 6 months. The patients were followed every week during the first month and then every three weeks after the first month. During each of these visits, the NMD was progresivelly enlarged by adding hard acrilic.Photos were taken at the beginning and after 3 months and 6 months of treatment.
Results: All five infants were able to use NMD without any problems.Clinically, in all of these babies, there was improvement in the width of the obstructed nose. Parents noticed improvement in their children's breathing within the first month of use of this device.
Conclusion: NMD is easy to construct and enlarge. Infants appeared comfortable wearing this aplliance. The costs are minimal and the material is easily available in dental practices. NMD is a good option for treating post surgical stenosis of the cleft lip nose.

SYNDROME AND GENETICS

PO097

Dentofacial findings in a 49,XXXXY Syndrome

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Background: The Klinefelter Syndrome is a chromosal disorder in which there is one or more X chromosomes in excess of the normal male XY pattern. The 49,XXXXY form is a rare of Klinefelter Syndrome with a birth incidence 1 per 85 000 to 100 000 male births.
Case report: A four-year Latin American boy was referred to our pediatric dentistry department with a chief complaint of decayed teeth and a confirmed diagnosis of a 49,XXXXY syndrome.Extraoral and intraoral examination including dental and craniofacial radiographs and three-dimensional facial photoimaging were performed. Oral findings included a short ramus on the left side of mandible, a moderate hemifacial microsomia, a dental agenesis affecting 6 premolars and a form of taurodontism in 6 primary molars.All carious lesions in primary molars were treated by glass ionomere restorations and stainless steel crowns.
Conclusion: This case emphasizes the importance of regular dental care and monitoring of facial growth and dental development in children presenting genetic disorder such as, in this case, a 49,XXXXY syndrome.

SYNDROME AND GENETICS

PO098

Dental features of identical twins with 48,XXYY syndrome

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Introduction: This is the first case report on the dental features of identical twin boys with 48, XXYY karyotype. They presented to the Eastman Dental Hospital with multiple carious lesions in both primary and permanent dentitions as well as behavioural management problems.

Background: The 48,XXYY is a rare chromosomal disorder, prevalence is 0.04/1000 males. Individuals with a 48,xxyy karyotype have the typical findings of Klinefelter's syndrome as well as additional features. The disorder is most likely caused by nondisjunction in both the first and second meiotic divisions during spermatogenesis.

Findings: Identical twin boys examined had general features of tall stature, disproportionately long lower extremities, gynecomastia, delinquent behaviour, and unusual dermatoglyphic patterns. The twins showed various oral and dental features including large tongue size, taurodontisim increased enamel thickness, while permanent tooth size was within normal.

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SYNDROME AND GENETICS

PO099

Case report of Rieger Syndrome

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Introduction: Rieger Syndrome is a rare, autosomal dominant disorder characterized by malformations of the eye coincident with dental abnormalities. Failure of peri-umbilical skin to involute is also an important element in the diagnosis. The frequency of occurrence in the general population had been estimated to be 1 in 200 000. There is no racial or sexual predilection was reported.
Clinical case: This presentation describes a boy with a Rieger Syndrome. Dental features of this syndrome include hypodontia, microdontia, enamel hypoplasia, cone-shaped teeth, delayed eruption, taurodontism, mis-shapen teeth and shortened roots. Hyperplastic maxillary frenum also has been noted. Hypoplastic growth of the maxilla is commonly seen. Telecanthus, hypertelorism, and a wide nasal bridge are occasionally found.
Discussion: Management of patient with Rieger Syndrome is complicated by problems associated with dento-facial aesthetics, often resulting in a psychosocial handicap and occasional functional difficulties. The patient is best managed by a multidisciplinary team in ensuring proper treatment plan and excellent long term results. Patient had an orthodontic assessment and he may require orthognathic surgery and fixed appliance with combined advanced restorative treatment in future.

DENTAL TRAUMA

PO100

Functional conservative treatment of bilateral condylar fracture: case report

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Trauma to the mandible may cause condylar fracture (CF), although the prevalence of CF in children is low. Treatment of CF in children must focus on possible long-term effects on the growing facial skeleton and soft tissue. Possible consequences include functional disturbances, facial asymmetry, mandibular retrusion, TMJ dysfunction and ankylosis. Conservative treatment is advised in most cases. Measures include: soft diet, physiotherapy, and functional appliances. Close observation of growth and function must be performed in order to detect early onset of any alteration. A case of a paediatric female patient with bilateral multiple segment condylar fracture is presented. Clinical examination, panoramic radiogram and CAT scan were performed. Vertical fracture of second primary molars, tongue and facial laceration, occlusal deviation, limited jaw movements and facial asymmetry were observed. Both condyles were fractured in multiple segments and medially displaced. Initial treatment consisted of extraction of fractured molars, soft diet and anti-inflammatory analgesics, followed by physiotherapy and functional appliances. Rigid hybrid functional appliances were used, with constructive bite that allowed repositioning the mandible forward and in a slightly open position. Satisfactory remodeling of both condyles occurred and normal occlusion and jaw movements (maximum opening, retrusive, protrusive, and lateral excursions) were obtained. Close monitoring will continue throughout completion of growth. The conservative treatment approach performed by interdisciplinary team composed of: Paediatric Dentist and Oral & Maxillofacial surgeon was successful in this case.

DENTAL TRAUMA

PO101

Surgical extrusion of crown-root-fractured teeth: a clinical study

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Objective: To evaluate the surgical extrusion method of treating crown-root-fractured teeth.
Methods: About 14 cases of crown-root-fractured teeth were surgical extracted to a required position, Stabilized by interdental suturing and periodontal dressing. Before root canal obturation, a calcium hydroxide dressing was maintained for 3 months.
Results: Follow-up examinatios, which varied between 6 and 13 (mean 10.0) months, showed that there were no radiographic and clinical signs of progressive root resorption, marginal bone loss or periapical disease in all cases.
Conclusion: The favorable results of this study demonstrate that surgical extrusion in teeth with crown-root-fractures may be an alternative treatment to orthodontic extrusion.

DENTAL TRAUMA

PO102

Surgical exposure and orthodontic extrusion of a crown root fracture

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Objectives: Crown-root fractures comprise 5% of injuries affecting the permanent dentition in children. Numerous treatment options exist, depending on the extent of the fracture and whether there is pulpal involvement. This case describes the management of two fractured central incisors, one with a crown-root fracture extending sub-gingivally and involving the pulp

Method/case report: A 14 year old male attended with a pulpally involved enamel-dentine fracture of UR1 and a pulpally involved crown-root fracture of UL1. A partial denture was being worn to replace the crown of UL1, with its root being retained. Treatment involved root canal treatment to UR1 and UL1. Electrosurgery was carried out to UL1 and a post core with hook attachment was cemented within UL1 root. A removable partial denture was used to extrude the UL1 root so that the margins were supra-gingival. Further electrosurgery was carried out, and an 'Empress' crown (heat and pressure cured leucite re-inforced ceramic) was cemented to the UL1. UR1 was finally restored with an 'Empress' veneer.

Conclusion: Crown-root fractures can be difficult and complicated to restore, and may require excellent patient compliance in order to restore them successfully. Often, a tooth as severely fractured as shown in this case, would have been extracted and replaced prosthetically. This case demonstrates that with good patient compliance and a combination of treatments, such teeth can be restored to a high aesthetic and functional result.

DENTAL TRAUMA

PO103

Evaluation of crown fractures with concomitant injury on pulp's condition

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Objective: The aim of this work was to evaluate an effect of concomitant injury with uncomplicated and complicated crown fractures to pulpal healing in permanent dentition.
Methods: The study group consists of 91 generally healthy children (23 girls and 68 boys) with posttraumatic crown fractures of 142 permanent incisors. Depending on the type of fracture, the children were divided into two groups. Group I included 59 children with 98 uncomplicated crown fractures. Group II included 32 children with 44 complicated crown fractures. The age of the patients ranged from 6 to 14 years, with the mean age 9.934 years (STD = 2 065). The research covered only those patients with after treatment follow-up observation period of at least six months (from 6 to 38 months). Control clinical and radiological examinations were performed after 1, 3, 6, 12, 24 and 36 months from completion of treatment. Statistical analysis was used to evaluate research results.
Results: In study groups in 71 teeth (50%) concomitant injury with crown fracture was observed. In I group it was: concussion (27 teeth; 19.01%), subluxation (15 teeth; 10.57%), and lateral luxation (5 teeth; 3.51%). In II group it was: concussion (22 teeth; 15.49%), subluxation (1 tooth; 0.71%), and lateral luxation (1 tooth; 0.71%). There were no statistical differences between groups I and II in frequency of presence of co-existing injury. Concomitant injury with crown fractures was more often observed in girls than boys ($P = 0.024$), and in children with anterior maxillary overjet ($P = 0.038$). Analysis of presence of concomitant injury with crown fractures and its effect on pulp's vitality revealed very high correlation ($P = 0.0002$) between concussion, subluxation and lateral luxation and pulp necrosis in uncomplicated and complicated crown fractures.

DENTAL TRAUMA

PO104

Investigation of pulpal blood flow in replanted teeth by TLP

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Objectives: Previous study demonstrated that the pulp revascularization could be expected in replanted immature teeth. The purpose of the present study was to observe the prognosis with pulpal blood flow after the tooth replantation using TLP (Transmitted Light Plethysmography) method and to examine the applicability of TLP as pulpal diagnosis.

Methods: We observed serial changes in pulpal blood flow of two replanted upper central incisors; one was a miss-extracted tooth at the tooth germ stage in a six-year old boy (case 1), and the other was an avulsed tooth in an eight-year old girl (case 2). A green LED light (525 nm) was induced by 1 mm diameter optical fiber to illuminate the tooth from the palatal surface. The transmitted light from the labial surface was then guided using another optical fiber to a CdS photosensor. FOP (Finger Optical Plethysmogram) was simultaneously recorded so as to examine synchronizing with TLP. If the tooth is vital, the TLP signal synchronous to FOP appear, while for a necrotic or nonvital tooth, pulse waves disappear.

Results: In case 1, pulpal blood flow on TLP was recovered earlier than pulpal sensitivity on EPT. However, the tooth unexpectedly became nonvital in one and a half years after replantation, despite the root had completed. In case 2, the tooth showed no response to EPT four months after injury, however a slight but clear TLP pulse waves could be observed, suggesting that the pulpal blood flow was gradually recovering. Because both teeth were replanted in good conditions with as short interval as possible after the teeth fell out, the pulpal blood flow was successfully recovered at the beginning stage.

Conclusion: TLP measurement at 525 nm wavelength (green) is suitable for clinical follow-up of replanted immature permanent teeth that are difficult to be investigated by EPT.

DENTAL TRAUMA

PO105

Outcomes of non-vital traumatised incisors managed with MTA

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Objectives: To determine the outcomes of mineral trioxide aggregate (MTA) therapy in 30 traumatised non-vital incisors with a minimum of 1 year follow-up.
Methods: A retrospective study of 30 non-vital traumatised permanent incisors treated with MTA (ProRootMTA, Dentsply) in the Department of Paediatric Dentistry at the Eastman Dental Hospital and Guys Hospital, London, UK was conducted. The root canals were either fully obturated with MTA or a combination of MTA apically and gutta purcha (GP) incisally. Teeth that had been followed up for at least 1 year were only included in the study.
Results: Sixty percent of the patients were males and 40% were females. The commonest type of injury was crown fractures which accounted for 33% of the traumatised teeth. This was followed by avulsions which accounted for 26% of the injuries. Prior to treatment with MTA, 95% of patients presented with clinical signs and 78% presented with radiographic signs of periapical pathology. Following MTA therapy, 85% of the teeth had no clinical signs of infection including pain, swelling, sinus or mobility. Radiographically only 14.8% had residual periapical radiolucency. In the subgroup that was fully obturated with MTA up to the cemento enamel junction (CEJ), 30% of the incisors presented with coronal discolouration prior to treatment. Seventy percent of these discoloured after the treatment. There was however no change in the colour of the incisors where the coronal portion of the root canal was obturated with GP.
Conclusion: MTA appears to provide highly promising clinical results. However attention is drawn to the fact that MTA may be associated with coronal discolouration if used in close proximity to the coronal portion of a tooth.

DENTAL TRAUMA

PO106

Dental trauma: to treat or not to treat

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Objectives: (1) To highlight the possible adverse sequelae of managing dental trauma; (2) to emphasise the need to follow National guidelines for dental trauma.
Presenting problem: Three dental trauma cases presenting for assessment and treatment for the sequelae of dental trauma are discussed. A 6-month-old male with an avulsed upper left primary central incisor which had been reimplanted; a 9-year-old male with lateral luxations to the upper anterior permanent teeth, degloving of the gingivae palatally and a laceration of the lower lip with herniation of the lip contents and a 4-year-old female with extrusion of the upper anterior primary teeth and associated dento-alveolar fracture.
Management: All three cases were managed inappropriately at their initial presentation. Complications developed and specialist advice and/or treatment were sought.
Conclusion: Managing a child who has sustained dental trauma can be a daunting challenge for dentists. The above cases highlight complications that can occur if dental trauma is not treated adequately. National guidelines on dental trauma are available and patients can be referred to specialist centres for advice and/or treatment. Dentist should be encouraged to attend dental trauma management update courses.

DENTAL TRAUMA

PO107

Four years follow-up of avulsed and intruded permanent incisors

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Objectives: Avulsion and intrusion of permanent teeth are the two most severe types of dental trauma. The aim of this case report is to discuss the treatment planning, the follow-up and the outcome of one avulsed and two severely intruded permanent incisors in an adolescent after 4 years.
Case report: A 13-year-old male patient, with no significant medical history, was referred to the postgraduate dental clinic 24 hours after a fall from a staircase at home. Clinical and radiographic examination revealed concussion of teeth #13, 12, 23, severe intrusion of #21, 22 and avulsion of #11. The avulsed tooth remained dry for 5 hours and then placed in milk. There were also contusions and lacerations of the lips and gingival bleeding. The treatment plan and the prognosis, especially for tooth #11, were presented to the patient and the parents who decided to maintain the tooth, despite of the poor prognosis. The avulsed tooth was reimplanted after extraoral endodontic treatment and immersion of the root in sodium fluoride. After orthodontic extrusion, endodontic treatment was performed in teeth #21, 22, 3 weeks after trauma. Follow-up examination was performed regularly up to 4 years. Clinical examination revealed an anterior openbite in the area of the incisors. Radiographic examination showed excessive resorption in teeth #11 and #22 and mild resorption in tooth #21.
Conclusions: The outcome of the treatment planning in the above case was rather expected, based on the prognosis of intruded and avulsed teeth also in this case growth pattern, chronological and skeletal age had an effect on the outcome of the treatment. In the dental profession there is still a great insecurity about treatment planning, follow-up and evaluation of the risk of complications related to selected treatment type and follow-up regimen (Andreasen, 2006).

DENTAL TRAUMA

PO108

Comparative study of dental trauma at chilean pediatric emergency unit

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The emergency unit of the Pediatric Hospital Roberto del Rio Unit works the 24 hours of a day. Patients with diverse mouth affections generally associated with pain, infection and inflammation are attended. The dent alveolar trauma has been increasing with the passing of the years.

Objective: The objective of this study was to compare the lesions in children with ages ranging from 6 to 14 years of age, who were seen in the years 1986–1996 and 2006 in Santiago de Chile.

Material and method: The bulletins of revenue were checked of each one of the patients who entered to the Dental Emergency Unit of the Hospital Roberto del Rio, the years 1986, 1996 and 2006.

Results: In 1986, a total of 24.778 children were admitted. In 1996, the total of children was 15.554. In 2006, the total was 13.620. The patients who consulted for dental trauma in the year 1986 were 258. In the year 1996 they were 902 and in the year 2006 were over 1000 patients. In 1986 the relation between boys and girls was 2.2:1. In 1996, it was 3:1 and in 2006 was 3:1.The age of bigger frequency was of 6–8 years. Taking as a mainspring the falls and the place of most occurrence the street in the year 1996 and in 2006 the reason of dental trauma in children of 6–8 years is fall in bicycle and those of the age of 12 and 14 are aggressions and the place of occurrence is in the school. The most frequent traumatic injury was the coronary fracture.

Conclusion: The analysis of the information in the time revealed an increase of dental trauma in children of 6–14 years.

DENTAL TRAUMA

PO109

Re-eruption of traumatically intruded immature permanent incisor: a case report

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Traumatic tooth injuries in children are a common occurrence during playing. In some instances the permanent teeth are involved that can create a difficult situation for the child, his parents and the dentist in saving these teeth. This clinical case describes a multidisciplinary treatment approach of an anterior-traumatized tooth along with the esthetic management. A 10 year-old male patient was seen at the Department of Pediatric Dentistry, 1 day after traumatism, which presented a complex crown fracture of the left maxillary incisor. After gingivectomy and endodontic treatment with changes of the intracanal dressing (calcium hydroxide paste) every 30 days, spontaneous re-eruption was observed. After endodontic treatment, we were used the glass-fibre reinforced composite root canal post (FRC Postec®, Ivoclar Vivadent AG,FL-9494 Schaan/Liechtenstein) to increase the retention and distribute the stress along the root. Finally, the dental restoration (Tetric Ceram, Ivoclar Vivadent AG, FL-9494 Schaan/Liechtenstein) was completed using the composite's incremental technique. We conclude that waiting for spontaneous re-eruption associated with gingivectomy and endodontic treatment is an alternative treatment for severe intrusive immature permanent teeth.

DENTAL TRAUMA

PO110

A home made orthodontic appliance-a case report

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An 8-year-old Chinese boy presented with discoloration and pus discharging from around his maxillary central incisors. The clinical examination showed that the pulps of the maxillary central incisors were non-vital and that the crowns were discolored while the pus was being discharged from the periodontal space associated with the right maxillary central incisor. There were 7–11 mm deep pockets around the central incisors. Radiographs revealed gross bone resorption around both central incisors and internal root resorption; moreover, the apex of the left maxillary incisor remained open, probably as a result of the necrotic pulp tissue. The 'ugly duckling' is a stage of normal dental development in the mixed dentition. The space will close spontaneously as part of normal physiological development. However, frequently mothers seek treatment for closure of the space between their children's maxillary central incisors. In the present case report the mother of the subject decided to close the space without consultation and the result of her intervention was severe damage to the teeth and supporting structures. The mother tried to close the space between the central incisors by applying an orthodontic elastic band around the maxillary centrals, which she had obtained from the subject's sister, who was undergoing orthodontic treatment, to achieve approximation of the teeth. Subsequently, she brought her son for consultation when he started suffering from discoloration and loosing of his central incisors. This case highlights that a little knowledge is dangerous, also that the mother had not undergone postgraduate training in orthodontics!

DENTAL TRAUMA

PO111

Treatment of traumatized anterior tooth associated with a supernumerary

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Objectives: Pediatric dentistry, over the past few years has widened its scope from a conservative restorative approach to the concept of total pediatric oral care. Thus, a pediatric dentist is expected to render all aspects of oral care including endodontic, prosthetic, surgical, periodontal and orthodontic.
Methods: Trauma to anterior teeth and presence of midline supernumeraries are common problems encountered by a pedodontist which might require a multidisciplinary approach. This poster presents a case report of an 8-year-old child with intruded central incisor featuring Ellis Class IV fracture associated with a mesiodens.
Results: The treatment modalities included orthodontic extrusion of the central incisor followed by root canal treatment and prosthetic replacement of the crown after post and core. It is followed by the closure of the midline space following extraction of mesiodens.
Conclusion: This poster highlights the multifold role, a pediatric dentist has to play and also informs about the types of devices recommended for prevention of such injuries.

DENTAL TRAUMA

PO112

Prevalence of traumatic crown fracture among 7–11-year-old children

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Objectives: Regarding to the importance of anterior permanent teeth, recognizing the prevalence of traumatic injuries and its pre-disposing factors in different societies have an important role in maintaining these teeth. The purpose of the study was to determine the prevalence of crown fracture to the permanent incisors and associated factors among 7–11-year-old school children in Rasht in 2006.

Methods: A cross-sectional study was carried out on 1042 children (521 female and 521 male) who randomly selected from 10 primary schools in Rasht in 2006. This survey was composed of clinical examination and completing a questionnaire. Upper and lower incisors were examined by two dentists using the mirror, explorer and a torch. The data was analyzed using SPSS 10 software and chi-square test.

Results and conclusion: In this study prevalence of crown fracture was 15.2%. Enamel fracture was the most common form of crown fracture (80.3%). 53.5% of crown fractures were on the maxillary central incisors. Injuries frequently occurred in summer (40.8%). Only 3.7% of the cases with crown fracture had undergone treatment. Being male, having increased over jet and overbite and lack of lip seal are risk factors for crown fracture. Owing to high prevalence, crown fracture in children aged 10 years (34.5%) constitute a public health problem.

DENTAL TRAUMA

PO113

Treatment of improper repositioning after lateral luxation corrected orthodontically

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Objectives: To emphasize the importance of a thorough clinical and radiographic evaluation after repositioning of a laterally luxated traumatized permanent incisor.
Methods (Case Report): An upper central incisor of a 9-year-old girl was laterally luxated. After 22 hours, the tooth was repositioned by a postgraduate student and splinting was carried out with a non-rigid splint. One week later, clinical and radiographic evaluation revealed that the root remained outside the alveolar bone, in a labial position. At that time, the root received proper endodontic treatment and it was decided to apply lingual torque to the root of the incisor. For that reason, a NiTi torque spring was used in a 0.016 x 0.022 stainless steel arch wire for 3 months. The new tooth position was evaluated with an intraoral x-ray and a CT Scan.
Results: The root of incisor was orthodontically moved lingually in its former position and no signs of apical root resorption were evident.
Conclusion: In cases of lateral luxation, immediately after repositioning, the tooth's position should be clinically and radiographical evaluated.

DENTAL TRAUMA

PO114

Orthodontic traction of traumatically intruded teeth: a case report

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Traumatic injury of teeth in children is commonly occurred problem, it classified into tooth injury, periodontal tissue injury, supporting bone injury, soft tissue injury by injured area and extent. Among the periodontal tissue injuries, traumatically intruded teeth are common in maxillary anterior area, though the occurrence rate is rather low, the pulp and supporting tissue injury is possible by vertical impact. The treatment method of traumatically intruded teeth is various. Observation on the spontaneous re-eruption for 3–4 weeks is recommended if the traumatized teeth are deciduous teeth or slightly intruded immature permanent anterior teeth. If this did not occur because the extent of intrusion is severe or the traumatized teeth are mature permanent anterior teeth, orthodontic traction is applied by fixed/removable appliances. At this time, light and continuous force is applied for the extrusive movement of the intruded teeth. When the above procedures are impossible, surgical repositioning & fixation is recommended. In these cases, we performed conventional endodontic therapy for pulp necrosis and orthodontic traction with fixed appliance in the patients who had traumatically intruded maxillary permanent left central incisor and obtained satisfactory results, so we will report that.

DENTAL TRAUMA

PO115

Evaluation of children's teeth trauma, factors impacting direct treatment costs

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Aim: The aim was to analyse data on traumatic dental injuries and estimate the direct treatment costs of treating children and adolescents with traumatic injuries to their incisors. Factors impacting on direct costs were also investigated.

Methods: The sample was taken from patients who attended Institute of Stomatology, Rigas Stradins University. The clinical records with diagnosis of dental traumatic injuries between 2003 to 2005 were examined according to established selection criteria and follow-up visit in 2006 were performed. The information was extracted from the selected records and the data in accordance to the following criteria: emergency x-ray, the treatment required by IADT guidelines, the full individual treatment, possibility of acquiring follow-up results and x-ray. Treatment costs were calculated in accordance with state Sickness Insurance found payments. Data analysis has been performed in the form of descriptive statistics by using linear regression model and the level of significance was set $P < 0.05$.

Results: The 323 patients were examined and treated, 161 of them fulfilled inclusion criteria. Totally were included 278 traumatized teeth - 45 primary and 223 permanent teeth. Regarding the prevalence of trauma, gender difference was presented in a ratio 2/1 for males versus females. Significantly more boys (66%) than girls (34%) had evidence of injury $P < 0.001$.The age of patients ranged from 1 to 17 years, 8-year olds being the most accident prone. The most frequent reason for dental trauma irrespective of sex was various kinds of falls 52.17% and accidents with bicycles 10.56%, however sports 2.48% and traffic accidents 1.86% were comparatively low $P < 0.002$. In the permanent dentition crown fractures are the most frequent type of traumatic dental injury 60% $P < 0.01$ and composite restoration is commonly used treatment technique. Luxations were the most common type of injury in primary dentition 77%. Direct treatment costs in permanent dentition in accordance with diagnosis per tooth were (costs set in EUR): crown fractures minimal 16.06, medium 24.27, maximal 46.23;subluxations minimal 4.65, medium 13.04, maximal 37.03;extrusive luxations minimal 13.46, medium 25.40, maximal 37.34; lateral luxations minimal 13.70, medium 39.51, maximal 54.78;intrusions minimal 93.22, medium 106.42, maximal 119.61. Males showed a higher frequency of dental trauma than females with maxillary central incisors most commonly injured. Lateral luxations, intrusions and avulsions were the most frequent injuries to primary teeth. Crown fractures, luxations and avulsions proved to be most common injuries to permanent teeth. The minor treatment costs were found for subluxations and greatest for intrusion luxations.Using linear regression model it was evaluated that predictors influencing treatment costs were degree of severity and treatment length.

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DENTAL MATERIALS

PO116

Evaluation of new caries detecting dyes for carious dentin

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Objective: Recently, new caries detecting dyes composed of polypropylene glycol (Caries Check and Caries Check Blue, Nippon Shika Yakuhin K.K.) were developed to prevent excessive dentin removal. This study evaluated the clinical efficacy of new caries detecting dyes using a laser fluorescence devise (DIAGNOdent).

Methods: Eighty two primary and seventy three permanent teeth with dentin caries were stained with Caries Check (CC), containing 1% acid red in polypropylene glycol (MW = 300), Caries Check Blue (CCB), containing 1% brilliant blue FCF in polypropylene glycol, or Caries Detector (CD, Kuraray Medical Inc.), containing 1% acid red in propylene glycol (MW = 76). Primary-CC, Primary-CCB, Primary-CD, Permanent-CC, Permanent-CCB and Permanent-CD groups were prepared. In the CC and CCB groups, stained dentin was completely removed. In the CD groups, pink-stained dentin was retained according to the manufacturer's instructions. Cavities before and after caries removal were measured with the DIAGNOdent. Data were analyzed using ANOVA and Fisher's PLSD multiple comparison test at $\alpha = 0.05$. Regression analyses were performed between DIAGNOdent readings and scores obtained from the clinical parameters.

Results: The DIAGNOdent readings after caries removal were: Primary-CC (16.0 ± 17.6), Primary-CCB (13.2 ± 10.4), Primary-CD (9.6 ± 5.2), Permanent-CC (11.0 ± 7.0), Permanent-CCB (22.7 ± 13.4) and Permanent-CD (7.3 ± 3.8). Significant differences were identified between the Permanent-CCB and all of the other groups, and Primary-CC and Permanent-CD groups. Correlation coefficients between DIAGNOdent readings and clinical parameters were low.

Conclusions: When dentin stained with CCB or CC was completely removed, the DIAGNOdent readings were higher than those recorded when palely stained pink dentin was retained in CD groups, with significant difference observed for the Permanent-CCB group. Caries Check Blue may be used clinically to avoid excessive removal of caries affected or sound dentin in permanent teeth but not in primary teeth.

DENTAL MATERIALS

PO117

Sorption and solubility of glass ionomer and compomer restorative materials

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Objectives: Glass ionomer cements (GIC) and compomers (COM) are common restorative materials used in children's dentistry. In this study, the sorption and solubility behaviour of a GIC and a COM restorative material were evaluated in two different immersion liquids.
Methods: Experimental materials were made of GIC (Fuji TRIAGE, GC Corporation, Japan) and COM (Dyract AP, Dentsply Caulk, USA). For both materials, six cylindrical test specimens (height 6 mm, diameter 4 mm) were made. Half of the test specimens were immersed in distilled water, and the other half in simulated body fluid (SBF) at 37°C. The test specimens were weighted weekly up to 60 days, the sorption and solubility values were calculated, and repeated measures ANOVA and Fisher's PLSD were used for statistical evaluation (significance level $P < 0.05$).
Results: The mean sorption and solubility values ($\pm$SD) in $\mu g/mm^3$ are shown in the table: The sorption values were significantly higher for the GIC in both immersion liquids when compared with the COM material ($P < 0.0001$). The immersion fluid affected to the solubility of the materials: GIC material was significantly more soluble to distilled water than to SBF ($P < 0.0001$).
Conclusion: Due to the different structural characteristics, the liquid sorption values of the glass ionomers are higher than that of compomers. The results are in line with previous literature.

	Fuji TRIAGE	Dyract AP
Water sorption	121.6 (±12.5)	26.3 (±1.1)
SBF sorption	89.5 (±3.6)	29.2 (±1.2)
Water solubility	29.2 (±1.3)	0 (±0.9)
SBF solubility	14.6 (±3.9)	−2.4 (±0.8)

DENTAL MATERIALS

PO118

The experimental study of compomer sealant with non-rinse conditioner

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Objective: The aim of this study was to compare the microleakage of compomer with non-rinse conditioner and resin sealant with phosphoric acid (37%) by dye test and SEM observation.
Methods: Sixteen extracted third permanent molars were divided into four groups: Group 1, non-rinse conditioner (NRC) + Prime&Bond + Dyract Seal; Group 2, phosphoric acid (37%) + Concise sealant, Group 3, phosphoric acid (37%) + Dyract seal; Group 4, NRC + Prime&Bond + Concise sealant. The teeth were then coated with nail polish, put in 50% AgNO3 dye for 18 hours, and sectioned with a diamond wheel. The scanning electron microscopic observation was performed to evaluate microleakage of these teeth.
Results: Silver nitrate penetration was found in each group. The percentage of microleakage in group 1 was higher than that in group 2, and group 4 was higher than that in group 2 ($P < 0.01$). The percentage of microleakage of resin sealant with phosphoric acid was lower than that in compomer with NRC ($P < 0.05$). On SEM observation, resin tags and few gaps were found in groups with phosphoric acid. Some gaps and voids were found on the bottom of the fissures, particularly in the narrow fissures because of the failure of sealant penetration.
Conclusion: Resin sealant used with phosphoric acid etching was better than compomer sealant with a non-rinse conditioner on microleakage.

DENTAL MATERIALS

PO119

Two minimally invasive treatments for decayed primary molars 18 month results

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Objective: To compare the success rates of atraumatic restorative treatment (ART) restorations, and silver diamine fluoride (SDF) applications in treating decayed primary molars in an outreach dental service.
Methods: Study was conducted in Guangzhou, China, in 2005. Primary molars with Class I caries lesions into dentine but not involving pulp in children aged 6–7 years, were randomly allocated into one of two treatment groups: (1) restored with glass ionomer using the ART technique, and (2) caries arrest treatment by annual topical applications of SDF solution. Treatments were provided in school using hand instruments only. The treated teeth were clinically assessed every 6 months by two calibrated examiners. ART treatment was classified as successful if the restoration was intact and had no major defects. SDF treatment was classified as successful if the treated lesion became arrested, i.e. surface hard on probing with a sharp explorer using a light force. For both treatments, failure was recorded if there was pain in the treated teeth, the tooth being non-vital, or received other treatments.
Results: At baseline, 67 and 73 Class I caries lesions in 103 children were treated with ART restoration and SDF application respectively. 97% and 96% of ART and SDF treated lesions respectively were followed for 18 months. In first year, the success rate of ART restorations was significantly higher than that of SDF treatment. At 6 months, the respective success rates were 94% and 55% (Chi-square test, $P < 0.001$). The respective 12-month success rates were 87% and 63% ($P < 0.001$). By 18 months, the difference in success rates between the two innovative treatments became insignificant (79% *vs* 77%, $P > 0.05$).
Conclusion: The 18-month success rates of ART and SDF treatments for Class I caries lesions in primary molars were similar. Funded by Research Grants Council of Hong Kong (#HKU7422/04M).

DENTAL MATERIALS

PO120

Clinical evaluation of DYRACT AP compomer for carious primary teeth

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Objectives: To evaluate the 24 month performance of Dyract AP compomer in restorations of carious placed in primary with the atraumatic restorative treatment (ART) or conventional approaches.
Methods: A total of 220 children aged 4–10 with 155 Class I and 173 Class II, whose cavitated dentin decay primary teeth were treated. The operators placed Dyract AP restorations using a Nano-technology adhesive (Prime & Bond NT, Densply) and estimated survival percentages after 24 months.
Results: There was no statistically significant difference between the survival percentages of Class I compomer restorations in primary teeth produced by the two approaches (ART: 96.2%; conventional: 98.1%). Though the success rates for the Class II restorations were 75.7% and 82.8% with the ART and conventional approaches respectively, there was no statistically significant difference. However, this study results showed a statistically significant difference in survival rates between Class I and Class II restorations with both the approaches.
Conclusion: Dyract AP compomer is an effective alternative to other materials for restorative therapy in the anterior and posterior primary teeth.

DENTAL MATERIALS

PO121

Bond strength of adhesive to irradiated and non-irradiated primary teeth

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Objectives: The aim of this study was to evaluate the shear bond strength of compomer (Compoglass F) with two adhesive systems – Clearfil tri-S Bond (CS3B) and AdheSe (ASE) to irradiated primary teeth.

Methods: Thirty extracted primary molar teeth were sectioned into mesiodistally. The prepared dentin surfaces were embedded in acrylic resin and assigned to six groups (total $n = 60$). In groups A1 and B1, radiation was fractionally applied to the dentin surfaces during 4 weeks. Cylindrical compomer (diameter 1.5 mm and height of 2 mm) were then placed on the center of dentin surfaces. At this point, groups A2 and B2 received radiation, and groups C1 and C2 remained as non-irradiated controls. Thus the test groups were: A1: R + CS3B; A2: CS3B + R; B1: R + ASE; B2: ASE + R; C1: CS3B C2: ASE. Specimens were mounted in a universal testing machine and load was applied with a crosshead speed of 1 mm/min for shear test until failure. Bond strength values were calculated as MPa and the results were evaluated statistically using Repeated Measures of Two-Way analysis of variance, with significance set at $P < 0.05$.

Results: Irradiation itself showed statistically significant influence on adhesion of compomer to dentin in-Group B1 and B2 ($P = 0.001$, $P < 0.05$). The calculated mean bond strength on irradiated dentin was 6.94 MPa for Group B1 (R + ASE) and 12.6 MPa for Group B2 (ASE + R).The mean bond strength for the corresponding control group (Group C2; AdheSe) was 17.8 MPa. There was not a statistically significant difference between the groups A1 and A2 ($P = 0.713$, $P > 0.05$). In addition, A1 and A2 showed no significant difference with the group C1.

Conclusion: Irradiation sequence can have an adverse effect on bond strength of compomer due to the adhesive system.

DENTAL MATERIALS

PO122

Evaluation of cast accuracy from rapid burnout gypsum–bonded investment

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Objective: To investigate the effects on expansion and cast accuracy related to the time from setting to heating for rapid burnout gypsum-bonded dental investment.

Methods: Conventional gypsum-bonded investment (CRISTOBALITE P (CBP)) and two kinds of rapid burnout gypsum-bonded investment (CRISTOBALITE PF (CBPF) and CRISTQUICK 20 (CQ)) were selected. According to the difference of type and time from setting to heating, investments were designed to six groups as CBP, CBPF-30, CBPF-60, CQ-20, CQ-40 and CQ-60. The setting expansion and thermal expansion of each group were measured. The hexagonal wax pattern was made as original model. After the cast had been carried out, the percentage of size change for each casting was calculated comparing with the corresponding original model.

Results: The setting expansion and the thermal expansion of CBPF-30 and CQ-20 were smaller than that of CBP. With the time from setting to heating extending, the setting expansion of CBPF and CQ increased ($P < 0.001$), while the thermal expansion decreased ($P < 0.001$). The cast shrinkage of the castings for CBPF-30 and CQ-20 was bigger than that of CBP. There was no difference on the percentage of size change for each group of CBPF and CQ respectively ($P < 0.001$).

Conclusion: The cast accuracy for the rapid burnout gypsum-bonded dental investment is not affected by the extending of the time from setting to heating in limited extent.

DENTAL MATERIALS

PO123

Sealing ability of new generation adhesive systems in primary teeth

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Objectives: To evaluate the sealing ability of different types of restorative-adhesive combinations on primary bovine teeth *in vitro*.
Methods: Facial and lingual class V cavities were prepared half in enamel and half in cementum, in 45 bovine deciduous mandibular incisors and randomly divided into three groups of $n = 15$. The tested adhesives were XP Bond (XP), Tri S Bond (S3), Xeno III single dose (XE). All cavities were restored with composite Grandio. Before and after thermocycling (2500X) and immersion in 2% methylene blue, the dye penetration was evaluated under a stereomicroscope. All data were analyzed by Kruskall–Wallis tests in order to determine the significant differences between groups. Results were considered as significant for $P < 0.05$.
Results: In enamel and in cementum: The best seals were obtained with Xeno III followed by XP Bond and S3 Bond. No significant differences were recorded in the microleakage degree between the three adhesive systems on enamel and on cementum ($P > 0.05$) before and after thermocycling.
Conclusion: In this *in vitro* model, Xeno III provided the best seals both at the enamel and the cementum margins of class V cavities on primary bovine teeth.

DENTAL MATERIALS

PO124

Sealing ability of three adhesives systems, unidose versus bottle

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Objectives: To compare the microleakage of three adhesive systems to the enamel and dentine on primary bovine teeth.
Methods: 90 bovine deciduous mandibular incisors were collected and stored in an aqueous 1% chloramine solution at room temperature for no longer than 3 months after extraction. The tested adhesives were Xeno III (XE), Futurabond (FB), S3 Bond (S3). Facial and lingual class V cavities were prepared half in enamel and half in cementum, in 90 bovine incisors and randomly divided into six of $n = 15$. All cavities were restored with composite Grandio. Before and after thermocycling (2500X) and immersion in 2% methylene blue, the dye penetration was evaluated under a stereomicroscope. All data were analyzed by Kruskall–Wallis tests in order to determine the significant differences between groups. Results were considered as significant for $P < 0.05$.
Results: In enamel and in cementum: The best seals were obtained with Xeno III unidose and Futurabond unidose followed by S3 Bond unidose. No significant differences were recorded in the microleakage degree between the three adhesive systems on enamel and on cementum between the unidose and the bottle forms ($P > 0.0.5$) before and after thermocycling.
Conclusion: In this *in vitro* model, Xeno III unidose and Futurabond unidose provided the best seals both at the enamel and the cementum margins of class V cavities on primary bovine teeth, but there is no significant differences between the unidose and the bottle form.

DENTAL MATERIALS

PO125

Regional microshear bond strength of SE bond

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Background and Aim: This study was carried out to compare the micro shear bond strength of clearfil SE. Bond between the two different regions of primary tooth; incisal and cervical.

Materials and methods: In this experimental study which was controlled *in vitro* trial, 20 extracted primary canines without any caries, fracture and structural anomalies were disinfected and stored in normal saline of a room temperature. Every tooth was hemi sectioned micro buccolingually via ground section. From the two resultant mesially and distally sections, one was chosen for the test, randomly, the composite resin material (Ap-x;A2) was placed and packed into the bore tygon tubing with the height of 1 mm and internal diameter of 0.7 mm. After application of self-etching primer (according to the manufactures instructions) over the incisal and cervical (buccal aspect) dentine, tygon tubes containing composite, were placed over these areas and cured for 40 s. Microshear bond strength was determined using the microshear machine and also mode of failure was investigated by stereomicroscope in addition. From incisal and cervical regions of primary canines, two specimens were chosen randomly to investigate the dentinal tubules orientation in these regions by SEM.

Results: SEM observation revealed that the dentinal tubules were oblique, both inicisal and cervical, so there was no difference in dentinal tubules orientation between these two regions .Mean microshear bond strength was 33.88 $\pm$ 10.67 MPa for incisal and 28.7 $\pm$ 11.72 MPa for cervical region. Adhesive failure was the most pre-dominant mode of failures being observed in both regions.

Conclusion: There was no statistically difference in microshear bond strength of Clearfil SE bond between the incisal and cervical dentine in primary teeth.

DENTAL MATERIALS

PO126

Comparison of microleakage in helioseal fissure sealant

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Purpose: Bonding systems like prompt L- pop contain acidic primers that can be used without phosphoric acid etchant, so irrigation step of etchant is omitted. The aim is to compare the microleakage of Helioseal fissure sealant with 3 methods. Materials and methods: 60 human extracted intact premolar teeth were used. After cleaning and disinfection, samples were stored in tab water and were divided in to 3 twenty teeth groups. 1/ Conventional etching with phosphoric acid jelly 37% 2/ After Conventional etching , samples were contaminated with saliva and then acidic primers (Prompt L-pop 3m/Espe- USA) were used 3/ Just using acidic primer. After sealant therapy with Helioseal (vivadent-Germany) according to manufacturer's instructions, specimens were thermocycled (5oC to 55oC for 500 cycles). Teeth were covered with 2 layers of nail varnish except F&S site and 1mm around. The apex was also sealed with sticky wax. Then samples were immersed in basic fushin for 24 hours and after irrigation were mounted in metal mold containing clear acrylic resin. Then samples were cut buccolingually and dye penetration was assessed using stereomicroscope with 4X magnification. The data was analysed by SPSS software and statistical Kruskal Wallis and Mann- Whitney tests.
Result: There was no statistically significant difference among 3 groups according to Kruskal Wallis test (pv: 0/062). Each 2 groups were compared with each other by Mann- Whitney test. Dye penetration differences between groups 3 and 1 were statistically significant (3 > 1). Conclusion: In case of cooperative patient, Conventional method is recommended. But after conventional method, if there is contamination with saliva using acidic primer is recommended.

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DENTAL MATERIALS

PO127

Bond strength of repaired hybrid ionomer and compomer restorations

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Purpose: Surface preparation has an important effect on bond strength. This *in vitro* study has done to evaluate repairability of hybrid ionomer and compomer restorations, using three preparation methods.

Materials and methods: Thirty six samples of hybrid ionomer (Vitremer-3M) and 36 samples of Compomer (Compoglass–Vivadent) were prepared according to manufacturer's instructions, in acrylic molds. All samples were cured (400 mw/cm^2) and stored in incubator containing distilled water (37°C) for 48 hours. Then thermocycled (5°C–55°C for 500 cycles). Again samples were stored in distilled water (37°C) for 3 months. Then each group ($n = 36$) were divided in to three subgroups (each of twelve) according to three methods of surface preparation: (1) Etching with 37% phosphoric acid gel + silane + margin bond + curing. (2) Silicone carbide paper (800 grit) + silane + margin bond + curing. (3) Microabrasion with Al2o3 50 + silane + margin bond + curing.Then 72 plastic cylinder (dimensions:2×2 mm) were filled with hybrid ionomer ($n = 36$) and Compomer ($n = 36$) and cured. These filled plastic cylinders were attached to Compomer and hybrid ionomer samples in acrylic molds that had been conditioned. Maximum shear bond strength was measured, using Instron machine with cross head speed of 0/5 mm/min. Data analysis was done, using SPSS software and one-way ANOVA test.

Results: Shear bond strength of Compomer group was statistically higher than hybrid Ionomer group (PV = 0/015) but in hybrid ionomer group with using silicone carbide and microabrasion, it was higher than phosphoric acid. There was no significant difference among subgroups of Compomer.

Conclusion: Reparability of Vitremer is better than Compoglass.In Compoglass restorations, conditioning with silicone carbide or microabrasion are preferred.

EPIDEMIOLOGY

PO128

Quality of dental restorations in 15–16 year old Lithuanian adolescents

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Objectives: The aims were to estimate the quality of dental restorations in Lithuanian 15–16-year-old adolescents and to relate differences in quality of restorations to gender, urbanization and residency.

Methods: A total amount of 885 adolescents in 22 randomly preselected areas were clinically examined. The California Dental Association Quality Evaluation System was used for the assessment of the quality of dental restorations.

Results: 60.35% of all restorations were not acceptable and had to be changed. 47.58 % of them must be replaced because of unacceptable anatomic form, 11.23% – because of unacceptable surface quality and 39.4% – because of unacceptable marginal integrity. Only in 8.9% of participants all their fillings were considered as satisfactory, while in 24.8% of adolescents all their fillings had to be changed. Both gender groups had similar percentage of satisfactory restorations, but girls had more filled teeth than boys.

Conclusions: The main reason for replacement of restorations in Lithuanian adolescents was unacceptable anatomic form. Regarding the reasons for the need to replace dental restorations substantial differences among different geographical regions were found, whereas in relation to gender and urbanization the differences were less pronounced.

EPIDEMIOLOGY

PO129

Caries experience and associated factors of 3-year-old Chinese children

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Objectives: To investigate caries experience in the primary dentition of 3-year-old children in rural area of Beijing, China, and to analyze the associated factors.
Methods: In three rural counties of Beijing, China, 3-year-old children in 48 kindergartens were involved in this study. A free clinical examination of the children was conducted in kindergartens by two calibrated examiners. The criteria recommended by WHO was used for clinical diagnosis of carious lesions. Parents of the children were asked to complete a questionnaire, which included the demographic status of children, information of children's oral health behavior, and oral health care knowledge and attitude of their parents.
Results: The prevalence of caries experience of the children was 30.6%, and the mean dmft and dmfs scores were 1.90 and 2.42 respectively. Analysis of Covariance (ANCOVA) showed that the socioeconomic status, the mother's education level, and children's oral health behavior were significantly associated with the dmfs score ($P < 0.05$).
Conclusion: The oral health status of 3-year-old children resident in rural area of Beijing, China was still poor. It was related to family socioeconomic status and children's oral health behavior.

EPIDEMIOLOGY

PO130

Post-katrina pediatric dental practice in the greater New Orleans area

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Purpose: The population of Louisiana is down about 220 000 people or 5%. However Orleans parish lost 278,833 or –64% of their population and Jefferson Parish has lost 37,273 or –8% of their population. Jefferson Parish public schools have 86% of their pre-Katrina enrolment. LSU School of Dentistry sustained $17 million in damages and will not reopen until July 2007. Since Katrina the greater New Orleans area has lost two full time pediatric dentists in private practice and two full time pediatric dentistry faculty.
Method: We have interviewed all the pediatric dentists practicing in the greater New Orleans area and most of the pediatric dentists in the Baton Rouge area to ask how they would characterize their practice in the 18 months since Katrina.
Results: Most of the New Orleans area practitioners reported that their practices were busy as soon as they started up after Katrina. Some of the Baton Rouge practitioners reported a reduction in appointments in their practices for a few months after Katrina.We will detail our findings and the changes in the Children's Hospital Mobile Dental Program after Katrina.

EPIDEMIOLOGY

PO131

The paediatric dentist in the cleft lip and palate team

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Objectives: Since 1997 a paediatric dentist has been a member of the cleft lip and palate team at Frenchay Hospital, Bristol. The aim of this study was to see if the presence of a paediatric dentist in the team may have resulted in a measurable improvement in the dental health of 5-year-old children with cleft lip and palate.
Methods: Five-year-old children attending audit clinics at Frenchay Hospital were entered into the study. Children with an identified syndrome or Pierre-Robin sequence were excluded. A dental examination was carried out by a single examiner calibrated to BASCD (British Association for the Study of Community Dentistry) criteria. The data was collected between January 2000 and December 2006.
Results: There were 116 children in the study. The mean dmft was 1.59 and 41% of the children had caries experience. Children with a cleft palate and a bilateral cleft lip and palate showed the highest caries incidence. The dmft and caries experience both decreased between 2000 and 2006. In 2000 the mean dmft was 2.15 and 54% of the children had caries experience. In 2006 the mean dmft was 0.93 and 21% of the children had caries experience. There has also been an upward trend in the proportion of filled teeth during this period with the care index increasing from 11% in 2000 to 23% in 2006.
Conclusion: The results show a downward trend in dmft and caries experience in 5-year-old children, with cleft lip and palate, attending Frenchay Hospital audit clinics. This may be related to the presence of a paediatric dentist increasing the awareness of dental health amongst the whole cleft lip and palate team.

EPIDEMIOLOGY

PO132

Alkaline phosphatase levels in gingival crevicular fluid in adolescent gingivitis

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Objective: In order to evaluate clinical features and levels of alkaline phosphatase (ALP) in gingival crevicular fluid of gingivitis in adolescents.
Methods: 21 healthy and 28 gingivitis subjects, age range from 10–16 were selected. The clinical parameters were examined and recorded. Within each subject, the gingival crevicular fluid (GCF) sample was collected. The value of GCF and ALP were measured by biochemical analysis instrument.
Results: The clinical parameters of gingivitis in adolescents were the plaque control record (PRC) 3%, gingival index (GI) I (25%), II (43%), III (32%) and gingival bleeding (GBI) 54%. The amount of GCF, GCF-ALP was statistic significantly higher in samples from gingivitis group than in the healthy group ($P < 0.01$).
Conclusions: The level of ALP goes upward according to the amount of GCF.

EPIDEMIOLOGY

PO133

Self-reported and clinically-diagnosed dental problems: factors affecting perception of need

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Objective: The role of demographic and socio-economic and psychological factors that influence the subjective assessment of dental needs has been the subject of contemporary dental research. The aim of the study is to determine the relationship between self-reported and clinically-diagnosed dental needs, in order to understand the factors that affect subjective assessments of dental problems.

Materials and methods: A random sample of 130 subjects, aged 25–64-years-old, was selected among the non-academic staff members of the Athens University of Economics and Business. The study consisted of a questionnaire-based interview and a clinical examination. The socio-economic characteristics and dental behaviors of all participants were noted first. In the interview, questions were addressed towards ratings of: oral health, felt need, oral functional impacts and level of satisfaction with the appearance. In the clinical examination the oral health status was noted in detail, including: caries, periodontal status, oral hygiene, prosthetic status and prosthetic needs. Recording of the findings was made according to the WHO criteria.

Results: A strong relationship was detected among presence of decay, retained roots and missing teeth and self-reported need for care. Embarrassment with one's dental health was also associated with perceived need, although satisfaction with the appearance was not. Among the oral functional impacts, difficulty in speaking and avoidance talking to someone seem to affect perception of need. Neither socio-economic status nor self-rated oral health were significantly associated with a currently perceived dental problem.

Conclusion: Perceived need for dental care is affected by parameters other than the demographic and socio-economic status of the examined persons', parameters that are strongly associated with the presence of symptoms and/or impacts on their everyday life. Therefore, although clinical indicators remain an important and essential component of dental needs estimation, alone they cannot reflect the overall impact of disease.

EPIDEMIOLOGY

PO134

The oral health status of children in Shanghai

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Objective: To investigate the oral health status of children in central and non-central districts in Shanghai, and analyze the results together with their oral health knowledge level.

Methods: Survey of oral health status survey children was conducted in Shanghai in 2005, including caries status of 3, 5, 12-year-old children and gingival health of 12-year-old children. Their oral health knowledge level was also included. The study sample was comprised of 611 3-year-old, 1861 5-year-old and 1634 12-year-old children in central districts and non-central districts of Shanghai.

Results: Caries status of 3-year-old children was severer in non-central districts than in central districts. Caries prevalence of deciduous teeth and mean dft were 52.23% and 2.07 in non-central districts, while 28.13% and 1.14 in central districts respectively. Same situation was found in 5-year-old children. Caries prevalence of deciduous teeth and mean dft of children in central district was 51.80% and 2.33, while 76.62% and 4.06 in non-central district. Caries prevalence and mean DMFT of 12-year-old children in non-central district (51.80% and 1.09) was higher than that in central district (32.16% and 0.61). Significant difference of caries status were found in all age groups between the two districts ($P < 0.001$). Gingivitis prevalence of 12-year-old children were 22.85% in central district and 41.94% in non-central district respectively, Significant difference were also found ($P < 0.001$). The oral health knowledge of children in central districts was better than that in non-central districts.

Conclusion: Oral health status of children in shanghai was severe while it was even worse in non-central districts. Oral health education work for children in Shanghai especially in non-central district should be strengthened.

EPIDEMIOLOGY

PO135

Dental caries of children and their parents from Northern Poland

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Objectives: The aim of the study was to assess and compare the dental caries of 3-years-old children and their parents aged 35–45 from different environment areas in Northern Poland. We assessed also dental caries in 6-years-old children and in pregnant women. The need for information on oral health status has increased, because of the health care system transformation in Poland.
Methods: The study was carried out in 2004 by the same calibrated dental examiner (K.E.) after a pre-survey training. The samples were selected using a three-stage random sampling procedure. Data were collected according to the WHO recommendation. The sample consisted of 140 children aged 3, 156 children aged 6, 104 parents aged 35–45 and 180 pregnant women aged 27.
Results: The overall percentage of caries free 3-year-olds was 36% and in 6-year-olds just 6%. The results showed a increase in mean dmft score from 3.6 in children aged 3 to 7.1 in 6-year-olds. Pregnant women (mean age 27) had DMFT 13.5 and in women aged 35–45 the DMFT score was 21.5. Urbanization appeared to have a considerable effect on caries experience. The lowest mean DMFT score was observed in city compared to samples from rural areas. In children 3 and 6-year-olds the decayed component dt was the major contribution to the total caries experience score, while in pregnant women it was FT component and in 35–45 olds MT component.
Conclusion: In light of the scarce public resources for oral health care and the current caries trends in Poland, a national health policy that emphasizes prevention rather then curative care should be introduce.

EPIDEMIOLOGY

PO136

A school-based dental preventive project

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Objective: The objective was to initiate a school-based project with the purpose of improving the overall dental health of children in the school system of Wuhan City P.R. China.
Methods: The method employed was to establish an adequately equipped school-based two chaired dental clinic in a primary school in Wuhan City. The treatment program includes dental examinations, providing oral health education to the pupils, parents and teachers, fluoride therapy, application of pit and fissure sealant, atraumatic restorative treatment (ART) and the placement of stainless steal crowns. All pupils from grade 1 to 6 (age range from 6 to 12-years-old) were included in this project. The baseline and the second year examination results including DMFT (dmft) and DMFS (dmfs) and prevalence of dental caries were evaluated. Caries was diagnosed by the criteria recommended by the WHO Oral Health Survey (1997).
Results: The prevalence of dental caries in primary dentition was 61.1% at baseline, and was reduced to 42.7% in 2004, which demonstrated a significant statistical difference ($P < 0.01$). The mean decayed, missing and filled teeth were 2.2 at baseline in 2003 and 1.4 in 2004. The prevalence of fissure caries was 57.3% in 2003, and reduced to 32.5% in 2004, which demonstrated a statistical difference ($P < 0.01$). The prevalence of dental caries for the permanent teeth was 33.3% in 2003, and was reduced to 19.7% in 2004 which is a significant statistical difference ($P < 0.01$). The mean DMFT of occlusal caries was 1.1 in 2003, and reduced to 0.6 in 2004.
Conclusion: The program in the school-based dental clinic significantly reduced the prevalence of dental caries in primary and permanent teeth. The data demonstrates the need for a proactive dental preventive program in this population.

EPIDEMIOLOGY

PO137

Dental caries survey of 6-year-old children in Wuhan city

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Objectives: The objectives of the present study were to analyze the caries prevalence of deciduous teeth and permanent teeth epidemic trend in longitude observation in a school in Wuhan city, China.
Method: The caries experience and prevalence of 3313 children aged six enrolled one primary school from 1987 to 2003 were observed. The WHO oral epidemiologic survey methods (the third edition) were applied to this study. The loss of canine and molar was recorded as the missing tooth with caries. Data was inputted to computer, and analyzed by SPSS10.0 software. The tooth filled rate is the proportion of the filled caries-free tooth against DMFT (decayed, missing and filled tooth).
Results: Oral health examination of the fresh pupils was carried out from 1987 to 2003. The range of primary teeth's mean DMFT was 6.47∼2.78 over the past 17 years, mean DMFS (decayed, missing and filled surface) was 14.33∼5.49, caries prevalence was 61.2%∼92.5%, filled-tooth rate was 3.55%∼16.67%. The range of caries prevalence of permanent teeth was 1.9%∼10.0%, mean DMFT and mean DMFS were 0.02∼0.19, filled-tooth rate was 0∼20.1%. In the past 17 years, the caries prevalence of 6-year-old children had declined slowly, the caries prevalence of permanent teeth was under 10%, the filled-tooth rate of permanent was 10% or so.
Conclusion: China Oral Health Target in 2010 is the caries-free rate of 5-year-old city children achieves 40%, the filled-tooth rate of primary and middle school student achieves 30%. The result suggested that the caries-free rate of primary teeth is 39.1%, which already gets close to this object, but the tooth-filled rate is still low. The school-based oral health promotion is needed to continuously improve oral health for Chinese children.

EPIDEMIOLOGY

PO138

Oral health in 6-year-old Filipino students findings of the NOHS

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Objectives: The national oral health survey (2006) was designed to assess the oral health of 6-year-old Filipino students as data base for evaluation of the existing dental care system and for future strategic planning.

Methods: A total of 2030 6-year-old public elementary students were involved in the cross-sectional survey using a stratified cluster sampling. Students were examined according to the WHO oral health survey standard (1997). Data on caries prevalence, experience and severity, dental infection, dental trauma, and fluorosis were collected. In order to assess the impact of oral health on quality of life all children were asked whether they had problems in their mouth at the moment of examination.

Results: 97.1% of 6-year-olds suffered from dental decay. Caries experience was 28.2 dmfs/8.4 dmft and 1.1 DMFS/0.7 DMFT. No teeth were filled in both dentitions. 84.7% of the students showed already symptoms of dental infection. In average 3.4 of the decayed deciduous teeth revealed pulp involvement, traumatic ulceration caused by dislocated root-fragments, fistula or abscess. 20.7% of the students reported a current oral problem in their mouth. Prevalence of dental trauma was 1.1% and dental fluorosis 0.6%, respectively.

Conclusions: The survey revealed that current dental care strategies are not effective. Given the high burden of disease and the limited resources the priority should be on disease prevention and relief of pain. The framework for future strategies should be the WHO Basic Package of Oral Care. Exposure to fluoride remains the most effective and only realistic measure to reduce the prevalence and severity of dental decay in the Philippines.

EPIDEMIOLOGY

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Oral health in 12-year-old Filipino students

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Objectives: The Philippine National Oral Health Survey was carried out to assess the oral health conditions, the nutritional status and self reported oral health problems in 12-year-old Filipino students as basis for planning, monitoring and evaluation of oral health care programs. **Methods:** A total of 2022 twelve-year-old elementary students were involved in the nationwide survey involving four randomly selected schools in all 17 regions of the country. All examinations were carried out according WHO Basic Methods (1997). Scoring was performed on caries prevalence and severity on surface level, periodontal diseases and fluorosis, trauma, prevalence and experience of dentinogenic infection. All subjects were questioned concerning recent oral problems. Water samples for analyse of Fluoride concentration were collected. **Results:** Caries prevalence is 78.4% with a mean DMFS/DMFT of 7.7/2.9, (6.6/2.7 DS/DT, 0.9/0.2 MS/MT, 0.2/0.0 FS/FT), in average one tooth with pulp involvement. Only 26% of students had a healthy gingiva, 16.3% reported to have a problem in their mouth. The prevalence of Fluorosis was 1.6% and 7.8% of students had experienced dental trauma. The mean Body Mass Index (BMI) was 16.6, indicating 23.6% of the girls and 31.1% of the boys presented a BMI below normal. Children with a Body Mass Index (BMI) categorized as below normal present a higher mean DMFS / DMFT as well as a higher number of teeth with pulp involvement compared to peers with normal BMI. Fluoride concentration in drinking water revealed out of 131 samples 130 sample below 0.6 ppm, one sample presented a value of 1.2 ppm. **Conclusions:** The survey revealed that current oral health strategies have limited effect. Priority should be given to relief of pain and exposure to fluoride within the school health system considering the very high burden of disease and the very limited resources.

EPIDEMIOLOGY

PO140

Odontology health services, the need for and utilization among students

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Objectives: The need for and utilization of the Odontology Health Services (OHS) among 12-year-old students was determined through the prevalence of disease and bucco-dento-maxillofacial alterations.
Methods: A representative sample of 12-year-old scholars in the metropolitan zone of Guadalajara Jalisco, was obtained trough a comparative intra-group transversal design, using the aleatory conglomerate method where 11 schools were selected. The variables were measured through four standardized examinations (intra and inter calibration), Kappa 0.89 and 0.90 year respectively, the treatment needs were determined, using the criteria of WHO. Utilization of the odontological health services according to their type and performing a comparative analysis according to the educational system (square ANOVA and chi-square).
Results: The most frequently needed treatment for active caries was the operative (5.89 mean); for periodontal needs was teaching brushing techniques (60.32%) and scaling (1.8%). Preventive orthodontia was needed in 40.83% of students and 21.56% required corrective orthodontia. The majority of students (80.7%) did not use any kind of odontological health services. Over half of the students (58.49%) did not have social security in any health institution and among those with social security, only 3.2% used it. There were statistically significant differences ($P < .05$) for operative treatment need between private, public, and cooperative educational systems.
Conclusions: The 12-year-old students of Guadalajara have a low utilization and high need for odontological health services.

EPIDEMIOLOGY

PO141

Dental health status among school children

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Objective: The aim of this study was to record oral health situation through the mean value of DMF-T/df-t, in school children in Istanbul (Turkey) and to determine the possible relationship between oral health behavior, caries experience and body mass index (BMI).
Methods: A cross sectional study of 301 children aged 7–12 years was randomly selected from a public school and was examined by a calibrated examiner for dental caries using WHO diagnostic criteria. A structured questionnaire was also used to obtain information from each child investigating their demographic status, oral health behavior as well as diet attitudes and consumption of cariogenic foods.
Results: 51.8 % of the school children were boys and 48.2% were girls. The mean and standard deviation for age, weight (kg), height (cm) and (BMI) of the children were 9.25 ± 1.47, 32.02 ± 7.82, 133 ± 10.14 and 17.69 ± 2.59 respectively. 46.5% of the children reported that they brush their tooth twice a day and 34.9% of them brush once a day. There was no significant difference between boys/girls about the number tooth brushing in a day ($P > 0.05$). When it is asked do you often consume the cariogenic foods such as; chips, chocolate bars and sugary drinks. 45.5 % of them declared as 'no'. The caries prevalence was 70.8%; the sample mean and standard deviation values were 2.37 ± 2.42, 0.51 ± 1.19 and 0.14 ± 0.50 for DMF-T respectively. There was no significant difference between boys/girls according to the mean value of DMF-T (> 0.05).
Conclusion: The results of this study confirm high caries prevalence in 7–12 years school children and it also indicates that educational programs and preventive oral health measures should be implemented on the younger age groups in order to control dental caries.

EPIDEMIOLOGY

PO142

Dentition abnormalities in children suffered from Chernobyl disaster

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Many territories not only in Russia, but in Byelorussia, Ukraine and Poland were polluted with radionucleids after the wreck on Chernobyl Nuclear Power Station. In some regions polluted soil level by Cs-137 is so high, that accordingly to Russian legislation population of that region has rights to migration. Most part of population is still living in that region, because of social-economical reasons.
Aim: To study dentition condition in children, who lived in hard radiation control zone.
Materials and methods: At the frame work of Federation program 'Children of Russia' in part 'Children of Chernobyl' since 1997, there was made a monitoring of children's dental status, who were born and had been living in Novozibkov town, Bryansk area, with the polluted soil by Cs-137 from 15 to 45 Ku/km^2. 256 children were clinically examined.
Results: In 1997 it was revealed that dentition condition was corresponded to aged norm, in 2.61% of cases. The frequency of teeth anomaly spreading formed 29.56%, occlusion abnormalities – 29.56%, teeth and dentition abnormalities-7.84%, concurrent occlusion abnormalities – 30.43%. In 2002 there was a repeated examination in children of the same aged group; determination of aged norm was defined in 7.84%, occlusion abnormalities – in 12.05%, teeth and dentition abnormalities – in 4.26%.
Conclusions: For 5-year monitoring of children, who had been living in hard zone of radiation control the quantity of aged norm cases increased to three times. The spread of concurrent occlusion abnormalities not even decreased, but had a growth tendency (from 30.43% – in 1997 to 31.91% – in 2002). The spread of teeth anomalies was less, and also teeth and dentition abnormalities, but spread of occlusion abnormalities was increased (from 29.56% to 43.97%).

EPIDEMIOLOGY

PO143

Survey of developmental defect of enamel in 3–5 years-old

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A changing in natural and shining properties of enamel is called as developmental defect of enamel. Enamel defect cause a negative change in aesthetics of teeth and increase the susceptibility of caries. These defects divided in two major groups such as 'local' and 'systemic'. Local cause of enamel defects are resulted from fluoride, trauma, local infection, radiation therapy and....But systemic causes included genetic factors, congenital defect, metabolic disease, insufficient nutrition and so on.
Materials and methods: The researcher selected 440 children (223 boys and 217 girls) based on multi stage cluster sampling and DDE index. More over, the researcher employed dmft index to study condition of caries in the given subjects.
Results: (1) There were 38.4% developmental defects of enamel and most of incidence occurs in labial tooth surface (tooth NO 51); (2) the mean of dmft is 2.4 in an SD = 3.09; (3) there isn't any significant difference of enamel defects and ages and sexes.

DENTAL ANOMALIES

PO144

Multidisciplinary management of multiple mesiodens: a case report

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Presenting problem: A 12-year-old boy reported with an un-esthetic smile due to four supernumerary teeth in the maxillary anterior region. Clinical and radiographic examination revealed four supernumerary teeth (Mesiodens), resulting in facial and distal migration of teeth #21 and impacted 11.

Clinical Management: Extraction of the supernumerary teeth and surgical exposure of tooth #11 was carried out, resulted in 14 mm space between central incisors. Orthodontic treatment was planned with cephalomeric analysis. Teeth were bonded with a 0.018 'Roth appliance. Initial aligning of the incisors was done with a 0.016' NiTi wire, followed by 0.016 Australian arch wire. Mild traction given on tooth #11 with ligature wire and was continued till the teeth were brought to the occlusal plane. Redistribution of the spaces was done with NiTi open coil springs. Retroclination of incisors also reduced the excess space. Remaining minor spaces between the incisors were closed by composite resin built up.

Discussion: Supernumerary teeth are categorized under disorder of odontogenesis, characterized by the excess number of teeth. The term mesiodens is used to refer to a supernumerary tooth in the central region of premaxilla between the two central incisors. Etiology of supernumerary teeth remains to be unclear. Currently environmental factors, excessive proliferation of the dental lamina and dichotomy of the tooth bud are suggested as possible etiological factors. Early diagnosis and treatment is recommended for the patients with supernumerary teeth by taking the factors in to consideration like the type of supernumerary teeth, amount of displacement of un-erupted teeth and space available within the dental arch.

DENTAL ANOMALIES

PO145

Molar-incisor-hypomineralisation (MIH) in Hong Kong Chinese children

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Objective: To investigate the prevalence and dental conditions of Hong Kong Chinese children with MIH.
Methods: The records of grade six primary school children who have attended annual check-up in a regional School Dental Clinic in 2006 were reviewed retrospectively. The records of children with well-demarcated opacities in one or more permanent first molars were selected. Cases with defects in both permanent first molars and incisors/canines were included but cases with generalized hypomineralisation or fluorosis were excluded. The demographic and dental data were pooled and studied by a paediatric dentist.
Results: A total of 2635 records were reviewed and 78 cases of MIH were identified. All cases were ethnic Chinese. The prevalence of MIH in this group of children was 3.0%. Their mean age was 12 and the male-to-female ratio was 1:1.3. A total of 193 teeth were affected. The mean DMFT of those affected was 1.4, which was higher than the DMFT (0.8) of the general Hong Kong Chinese children aged 12-year-old. The most commonly affected teeth were permanent maxillary first molars (73), followed by mandibular first molars (64), and maxillary central incisors (29). The left-to-right ratio was 1:1. Dental fillings were done in 31 permanent maxillary first molars, 27 mandibular first molars, and one maxillary lateral incisor. Fissure sealants were placed in 29 permanent maxillary and 37 mandibular first molars respectively. No permanent teeth have been extracted in this study population. Medical histories were unremarkable in 65 children whereas early childhood diseases such as measles, chickenpox, and asthma were reported in 13 cases.
Conclusion: The prevalence of MIH in permanent dentition of Hong Kong Chinese children was 3%. These children showed high caries risk and intensive preventive treatment should be provided to them following the initial diagnosis.

DENTAL ANOMALIES

PO146

Concomitant dental anomalies in children with maxillary talon cusps

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Objective: To study the prevalence of concomitant dental anomalies in children with true talon cusps in the permanent maxillary incisors.
Methods: The dental records of grade 5 and 6 Primary school children who have attended annual check-up in a regional School Dental Clinic in 2006 were reviewed retrospectively. Dental records and radiographs of children with true talon cusps (more than half crown height) in one or more permanent maxillary incisors were selected and examined by a paediatric dentist. The prevalence of various dental anomalies in this group of children was compared to those of the Hong Kong Chinese children of similar age. Differences would be considered statistically significant if $P < 0.05$ by Fisher exact test.
Results: A total of 11 574 records were reviewed and 60 children (0.5%) with true talon cusps in one or more permanent maxillary incisors were identified. All cases were ethnic Chinese with mean age of 12. The male-to-female ratio was 1:1.4. A total of 74 permanent maxillary incisors were affected: 42 right lateral, two right central, and 30 left lateral incisors. All cases had at least one radiographic record of the affected area. Leong's premolars, pre-maxillary supernumeraries, and hypodontia were found in 6(10%), 5(8.3%), and 5(8.3%) cases respectively. The corresponding prevalence figures in the general Hong Kong Chinese 12-year-old children were 4.8%, 2.7%, and 6.9% respectively. The prevalence of supernumerary teeth was significantly higher in the group of children with true talon cusps ($P < 0.01$ Fisher exact test).
Conclusion: Children with true talon cusps in the permanent maxillary incisors were more frequently affected by supernumerary teeth in the anterior maxilla. There may be a possible association of the two dental anomalies as well as a common aetiological pathway. Further study with larger sample would be desirable.

DENTAL ANOMALIES

PO147

Management of fused permanent central and supplemental permanent lateral incisor

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A 9-year-old boy was referred for management of a double permanent incisor. His medical history was non-contributory. The patient was seen on a joint Orthodontic / Paediatric Dental Consultation Clinic. Oral examination revealed a fused maxillary right permanent central incisor and palatal displacement of the right permanent lateral incisor. Radiographic examination revealed the presence of an unerupted supplemental maxillary left permanent lateral incisor between the maxillary left permanent central incisor and the erupted maxillary left permanent lateral incisor. The root morphology of the fused maxillary right permanent central incisor showed two roots connected at the cervical third which appeared to be amenable for separation surgically. The patient attended for a day-stay general anaesthetic. A labial mucoperiosteal flap was raised and the fused maxillary permanent right central incisor examined and sectioned. The distal portion which had a narrow crown and root was extracted as planned. On the distal aspect of the mesial part of the fused central incisor a 1 mm pulpal exposure was noted following tooth section. A vital partial pulpotomy was carried out with a non-setting sterile calcium hydroxide which was covered with setting calcium hydroxide. The distal aspect of this tooth was then built up with composite. The mucoperiosteal flap was sutured closed. The maxillary right central incisor was clinically and radiographically reviewed for 28 months. It remained asymptomatic with no clinical or radiological signs of pathology. Radiographically further root development was noted following surgery and partial pulpotomy. The maxillary left permanent supplemental lateral incisor was extracted under local anaesthesia following eruption. An upper fixed appliance was used to align the palatally displaced maxillary right permanent lateral incisor Once orthodontic treatment was completed the maxillary right permanent central incisor was built up with composite to resemble the adjacent incisor.

DENTAL ANOMALIES

PO148

Autotransplantation of impacted maxillary canines

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Objectives: Two patients visited our dental clinic in the late permanent dentition, complaining of unerupted maxillary canines. And the orthodontic traction was impossible because of its unfavorable impaction. Therefore autotransplantation and endodontic treatment were done and periodical recall checks have been done.Through these cases, I want to review about the proper indications of autotransplantation, considerations during procedures or factors determining prognosis.
Methods: Initially a careful pre-examination of the donor tooth and the recipient bone was made by three dimensional CT. And pre-orthodontic treatment was done to get enough space for alignment of donor tooth. The recipient site was prepared before the donor tooth extraction to shorten the extra-oral time. And then, the donor tooth was extracted with minimal injury and transferred to the prepared bone socket.Three weeks fixation was done and all canines received endodontic treatment.
Results: Bone regeneration around the root was seen in both cases after three months.And periodontal healing with new lamina dura formation was seen around 6 months. After 6 months, left canine in case one demonstrated root resorption in apical third and left canine in case 2, partial external root resorption was seen. In both cases, right canines have shown good healing during 18 months.
Conclusion: The results observed in these cases can be summarized like below.(1) The minimal trauma during graft removal is important to conserve sound cementum and periodontal ligament; (2) the splints have to be removed within three weeks and natural occlusal force should be applied to prevent the external root resorption; (3); pulp treatment should be considered in cases which the root developments completed; (4) diagnosis of impacted canine at age 10 years around can significantly reduce serious ramifications.

DENTAL ANOMALIES

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Supernumerary lower primary and succedaneous incisors accompanied by bone swelling

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Supernumerary teeth in the primary dentition are considerably less common than those in the permanent dentition. They are usually located in the upper primary lateral incisor region. We encountered a rare case of supernumerary lower primary and succedaneous teeth accompanied by bone swelling. A 1.5-year-old Japanese boy was referred to our Pediatric Dentistry Clinic because of bone swelling of the lower incisor region. The patient's medical history was unremarkable. Oral examination showed that four lower primary incisors except lower right primary central incisor erupted, and one of them existed in the median region. The median tooth was suspected to be a supernumerary primary tooth based on the shape and size. Dental arch space with lingual bone swelling was found in the lower right primary central incisor region. Radiographic examination revealed an impacted tooth adjacent to the supernumerary tooth. At the age of 2 year 5 m, the impacted tooth began to erupt spontaneously and the shape of the crown resembled the upper primary central incisor. The bone swelling persisted, but there was no tendency to increase, so he was kept under observation. At the age of 6 year 0 m, the lower left central incisor began to erupt and the lower lateral incisors erupted until the age of 6 year 11 m. A computed tomographic scan was taken to examine the bone swelling and it revealed no pathological osseous lesion. At the age of 8 year 11 m, the lower right central incisor with a shallow incisal notching and the supernumerary succedaneous tooth began to erupt lingually and the residual primary incisors were extracted. The extracted lower right primary central incisor was examined radiographically and it was revealed to have pulpal bifurcation in the root canal. Adding the particular shape and size, it was suggested to be a tooth fused with another supernumerary tooth that was accompanied by succedaneous tooth.

DENTAL ANOMALIES

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Clinical observations of prematurely erupted deciduous teeth

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New born children, referred to Paediatric Dentistry Department Medical University of Warsaw, were evaluated. In 15 of them (10 girls and five boys) eight natal and 20 neonatal teeth were presented. nine children was born with teeth (neonatal), in one child tooth was erupted in 3rd day of life, in five children teeth were erupted in first month of life. In most of children erupted teeth were central incisors in mandible. Only boy had six neonatal teeth: central and lateral incisors in maxilla and central incisors in mandible.Clinical examinations revealed in nine children tooth loosening. It was a cause of extraction in 19 teeth. Extracted teeth had very short roots, or were cyst like masses. These children in 2–3 years of age were referred to orthodontic treatment. In study group all of children were observed to a time eruption of permanent teeth. All prematurely erupted teeth showed deciduous teeth. To protect a childe from tooth aspiration, tooth extraction should be done just in 2 weeks of life consider immunological response. Extractions of prematurely erupted teeth, didn't stunt a growth of an alveolar bone, or migration of adjacent teeth.

DENTAL ANOMALIES

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Frequency and treatment of transposition

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Tooth transposition is a rare but severe disturbance of tooth eruption. The maxillary canine and the premolar are the most commonly transposed teeth. The occurrence of transposition in the mandible is very rare. The transposition may occur in combination with other anomalies. According to literature data these can be aplasia (40%), peg-shaped lateral incisor (25%), deciduous tooth retention (50%). The adjacent teeth exchange position in the dental arch for genetic or traumatic reasons. In the last 5 years orthopantomogramms of 3120 patients were analysed at the Department of Pedodontics and Orthodontics of Semmelweis University. Sixteen transposition cases (0.51%) were found: 13 in the maxillary and three in the mandibular dental arch. Only one case was bilateral transposition. Thirteen patients were treated with fixed appliance. In one of the cases the transposed tooth was extracted and two are being observed. The methods of treatment are in accordance with the international guidelines.

DENTAL ANOMALIES

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Molar-incisor hypomineralization in a group of Romanian children

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Epidemiological data on MIH in Romania is scarce.
Aim: To evaluate the prevalence of MIH as well as the distribution of lesions in a group of Romanian children living in an area with non-fluoridated water and to correlate the findings with the medical history of the subjects.
Material and method: The study group consisted of 387 children aged 7–14 years (188 males) examined for the presence of MIH and distribution of lesions. Questionnaires on the medical history of the children were answered by the parents. Medical history of the children with MIH was compared to that of controls. Data was processed using a dedicated software package.
Results: Twenty one of the examined children had MIH (prevalence index: Ip = 5.42%; Ip boys = 5.31%, Ip girls = 5.52%). Tooth prevalence of MIH in the first permanent molars was 3.3%. Hypomineralisation was located exclusively on the first permanent molars in 57.1% of the subjects with MIH and on both first permanent molars and incisors in 33.4%. In 9.5% of the MIH cases first permanent molars, incisors and other teeth were affected at the same time. 50.9% of the affected first permanent molars had lesions located on the top of the cusps, 23.5% had one demineralized cusp and 15.7% had hypomineralization on all surfaces. Questionnaires were returned for 19 (90.4%) of the MIH children. 13 of these children (68.4%) had a medical history (prolonged labor, premature birth, low birth weight, medical conditions during the first 2–3 years of age). MIH was significantly more common in prematurely born children. No significant correlations were found between MIH and the other factors mentioned in the questionnaires.
Conclusions: (i) Prevalence of MIH was within previously reported ranges; (ii) incisors are less commonly affected than first permanent molars; and (iii) children born prematurely are more likely to develop MIH.

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Dens invaginatus in mandibular incisors

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Objective: Dens invaginatus is a developmental anomaly resulting from coronal of a tooth invagination before the initiation of calcification. Coronal invaginations usually originate from an anomalous infolding of the enamel organ into the dental papilla.This malformation most commonly affects the permanent maxillary lateral incisor teeth. Presence of dens invaginatus in the mandibular permanent teeth is extremely rare.
Methods: This report describes rare two cases of dens invaginatus on the mandibular incisor. In the first case, a 6-year-old female child referred to pediatric clinic of the University of Yonsei with the chief complaint of pain on the mandibular central incisor. The mandibular central incisor with talon cusp had large radiolucent area in periapical radiograph. In the other case, a 7-year-old female child came to pediatric clinic of the University of Yonsei with the chief complaint of delayed eruption of the mandibular incisor. The radiographic exam revealed dens invaginatus in mandibular central incisor.
Results: In the first case, root canal treatment was performed on the mandibular incisor using calcium hydroxide. For the dens invaginutus in the second case, we will apply sealant after complete eruption.
Conclusions: Dental malformation includes a broad spectrum of morphologic variations. Especially invagination frequently allows the entry of irritants and microorganism, which usually lead to necrosis of the adjacent pulp tissue, causing periapical or periodontal abscess. Root canal treatment on such invaginatus tooth may present severe problems because of its complex anatomy of the teeth. Therefore, the early diagnosis of such malformation is crucial and preventive approach of treatment is strongly recommended.

DENTAL ANOMALIES

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Etiological analyzes of incisors abnormal eruption during mixed dentition

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Etiological analyzes of abnormality of central incisors eruption during mixed dentition
Objectives: To discuss the effects of exist of impacted unerupted teeth on abnormality of central incisors eruption during mixed dentition, and the clinical significance of impacted unerupted teeth extracted in due time.
Materials and methods: Through the retrospected study of the impacted unerupted teeth extracted of 278 patients, we observed the effects on alignment if operations were performed at different times.
Results: Abnormality of central incisors eruption could be regulated by itself, when impacted eruption teeth extracted at early period.
Conclusions: It was important that abnormality of central incisors eruption should be diagnosed and treated at early period.

DENTAL ANOMALIES

PO155

Dentin dysplasia type I: an eight year follow-up

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Dentin Dysplasia type I (DDI) (OMIM 125400) is a hereditary dentin disorder characterized by dental root anomaly, excessive dental mobility and early exfoliation of teeth. Radiographic analysis shows malformed and shorts roots, obliteration of pulp chambers and periapical radiolucencies. The purpose of this report is to describe the phenotype and the management of a pediatric case with DDI. A four year old female patient was referred to the Pediatric Dentistry Graduate Program, Faculty of Dentistry, Central University of Venezuela, due to excessive mobility of lower anterior teeth and early loss of primary teeth. Physical and dental examination of the case index, genetic clinical evaluation, serological, radiological, histopathological and microanalytical analyses of available teeth were performed. The physical examination and serological analysis revealed hypercalciuria and distal tubular renal acidosis was diagnosed. The patient parents are consanguineous in first degree and the dental evaluation evidenced short blunted root with numerous intrapulpal calcifications. When roots were formed they displayed a taurodontic aspect and focal areas of apical radiolucencies were observed. In addition, abnormal tooth morphology, early exfoliation of primary and permanent teeth, as well as early eruption of permanent teeth was observed. Five available teeth were used for histopathological diagnosis and for mineral content analysis under SEM. The histopathological studies showed atypical radicular dentin. The renal condition is at present, under control. Eight year clinical follow up included preventive protocols to prolong the retention of teeth and removable prosthesis were performed annually. Early diagnosis as well as a close follow up of these patients is necessary in order to delay the loss of dentition. At present, scarce evidence is available concerning the genetic basis of this condition. A multidisciplinary approach in the diagnosis and phenotypical characterization are necessary and further molecular analysis should be performed.

DENTAL ANOMALIES

PO156

Autotransplantation of mesiodens: a case report

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If a maxillary central incisor is early missed in children, it can cause not only functional problems of mastication and pronunciation, but also esthetic problems, substantially detrimental effect on social development. Generally in that case, he (or she) has to wear space maintainers until the age when fixed partial denture or dental implant is placed under dental care. But, this treatment plan have many problems such as alveolar bony resorption in missed incisor area, discomfort caused by long-term wearing of maintainers, and possibility of appliance change as growing up. Occasionally, it is possible to use a temporary restoration with fixed adhesion bridge, but it interrupts physiological tooth movement and has high possibility of fracture. Supernumerary tooth is developed from overgrowth of dental laminar and it is mainly observed in maxillary anterior area that is named 'mesiodens'. Mesiodens cause many problems such as malposition of permanent anterior tooth, diastema, formation of cyst, eruption to oral or nasal cavity. Therefore generally extraction is most recommended treatment plan. This case report describes that the patient is a boy, age 9 years 8 months, whose unilateral maxillary incisor is early missed by trauma, and he have a mesiodens. We practice autotransplantation of the mesiodens to the missed maxillary central incisor area and then restore with prosthetics, substantially keep out alveolar bony resorption and provide esthetic appearance. Mesiodens was too small to use an abutment because it is totally 14 mm. And we anticipate poor prognosis due to bad crown/root ratio. But we get acceptable result during observation period of 8 months after operation.

DENTAL ANOMALIES

PO157

SEM-morphology of enamel fractured teeth from osteogenesis imperfecta patients

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Objectives: Osteogenesis imperfecta (OI) accompanies with dentinogenesis imperfecta (DI). Enamel fractures are often observed in the teeth of DI, but the reasons for enamel fractures are still not unclear. The aim of this study was to examine the place where the enamel fractures took place in the teeth from the patients with OI using scanning electron microscopy (SEM).

Methods: Three extracted deciduous teeth from two children with OI were used. One of them was lower second deciduous molar with enamel fracture occurred one year ago. The remaining teeth were upper lateral deciduous incisors which fractured after extraction. The exposed dentine and dentine-enamel junction (DEJ) in the fractured surfaces were examined by means of SEM. Two normal deciduous teeth with artificial fracture surfaces were served as controls.

Results: The exposed dentin in the fractured second deciduous molar with DI showed smooth surface. There were few occluded tubules in the exposed dentine surface. In the lateral deciduous incisors, tuft-like structure was observed. The partly scalloped and almost smooth DEJ layer was observed at lowest part of the enamel around the exposed dentine. The piece of fractured enamel appeared some tuft-like structure attaching on the inner surface. In normal teeth, the fractured surfaces were showed regularly arranged dentine tubules. There was much regular dentine on the inner surfaces of fractured enamel pieces.

Conclusion: The fractured surfaces in DI teeth were observed almost along the DEJ and partially in the mantle dentine, the other hand the fractured surfaces in normal teeth were in the circumpulpal dentine. The phenomenon observed in DI teeth could be called shearing rather than fracture. It was suggested that there was a weak layer against sliding in the outer layer of dentine including DEJ.

DENTAL ANOMALIES

PO158

Help! I have a pink tooth!

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Objectives: To present an unusual case of a partially erupted canine with coronal internal resorption of unknown aetiology.
Methods: A healthy 13 years old young boy was urgently referred by his orthodontist to the department of Paediatric Dentistry at The Eastman Dental Hospital, London, UK for a partially erupted upper right canine (UR3) with internal resorption possibly requiring extraction. The patient was undergoing orthodontic treatment with an upper removable functional appliance. The tooth was asymptomatic. There was no history of trauma or caries affecting the primary predecessor. The patient gave a history of the UR3 erupting pink and then turning grey within two weeks time. Clinical examination revealed a partially erupted grey UR3 with loss of incisal tooth tissue and a coronal malformation. No abnormal radiographic findings were noted. The tooth responded positively to sensibility tests.
Results: The dental management of this case involved multidisciplinary approach to avoid the loss of this tooth. The aesthetics of the UR3 were restored using Enamel plus HFO composite resin restoration under local anaesthesia and inhalation sedation.
Conclusion: The case presented two major challenges for the clinician. The first one was to ascertain the aetiology of the discolouration and the second one was its management. The management of this case highlights the importance of good clinical assessment and a multidisciplinary conservative approach.

DENTAL ANOMALIES

PO159

Concomitant occurrence of hypodontia and supernumerary teeth in two children

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Concomitant occurrence of the anomalies, hypodontia and hyperdontia, is a condition of mixed numerical variation of the human dentition and its occurrence is exceedingly rare at 8 to 15 per 10 000. We report two children both of whom did not have a family history of hypodontia, hyperdontia or impacted teeth. Case 1 was a 10 -year-old Chinese girl in her late mixed dentition. The radiographic examination of the dentition revealed missing permanent mandibular lateral incisors and a supernumerary tooth in the maxillary canine region on the left side. The maxillary permanent left canine was impacted with the crown pointing towards the root of the upper left central incisor. The clinical findings of Case 2, a 6 -year-old Chinese boy in his primary dentition, revealed a pair of missing mandibular primary incisors, in combination with a supernumerary tooth in the maxillary incisor region. In addition, the radiographic examination revealed a missing permanent mandibular incisor tooth germ. The occurrence of supernumerary teeth in the maxillary canine and maxillary incisor region is uncommon, and when present in combination with hypodontia, as occurred in these children, is extremely rare. These cases highlight the importance of the routine use of panoramic radiographs for children to facilitate the early detection of this rare combination of dental anomalies.

DENTAL ANOMALIES

PO160

Congenitally missing first permanent molars: a case report

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The congenital absence of teeth is the most commonly known developmental dental anomaly in humans. It occurs either as an isolated abnormality, or in association with various syndromes and conditions. In the general population the reported incidence of permanent tooth agenesis ranges from 1.6% to 9.6% (excluding the third molars) and 0.5% to 0.9% in the primary dentition. The first permanent molars are considered by some authorities to be the most important teeth in the dentition. Agenesis of the maxillary first permanent molars is a rare finding and when present usually occurs in association with oligodontia. We report a case of a seven-year-old girl who presented with the unusual combination of missing maxillary first permanent molars and second premolars. Her medical history was unremarkable. The clinical examination showed normal development of the dentition except for the absence of the maxillary permanent first molars. Radiographic findings confirmed the agenesis of the maxillary permanent first molars, as well as the maxillary right second premolar and the two mandibular second premolars. There appeared to be a slight delay in the mineralization of the mandibular left second molar tooth germ in comparison to the remaining second molar tooth germs. Early diagnosis of patients with hypodontia is valuable because it allows the practitioner to formulate a multi-disciplinary treatment plan with both short and long-term management options, thereby possibly reducing the complexity of the later orthodontic and restorative treatment.

DENTAL ANOMALIES

PO161

Microdontic primary canines and associated supernumerary teeth in two cases

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Microdontia is the term used to describe an abnormally small tooth with mesiodistal dimension that is more than 1 mm below the norm. Localized microdontia is relatively common (1.5%–6.9%). The maxillary lateral incisors in the permanent dentition (1.1%) and the maxillary canine in the primary dentition (0.8%) are the most commonly affected teeth. A localized microdontic lateral incisor generally has short roots and is peg, cylindrical or barrel shaped. Generalized microdontia is extremely rare and may be seen commonly in conjunction with some systemic manifestations, such as pituitary dwarfism and amelogenesis imperfecta, or in syndromes like Axenfeld-Rieger syndrome and Nager syndrome. Hyperdontia refers to the presence of one or more teeth than the normal number for any given type of tooth in the dentition. A supernumerary tooth may, or may not, resemble a tooth of the normal series. The prevalence of hyperdontia in the southern Chinese population is 2.2%. Abnormalities in tooth number, size or morphology may compromise both aesthetics and function in the affected patient. We report microdontic primary canines and associated supernumerary teeth in two cases ranging in age from 6 to 11 years. Thus it can be seen that, although microdontia may be an isolated condition, it can also be associated with hyperdontia.

DENTAL ANOMALIES

PO162

Double teeth with facial and lingual talon cusps

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Double teeth and talon cusps are rare developmental dental anomalies affecting both the primary and permanent dentitions. Talon cusps normally occur on the palatal surface of permanent maxillary incisors with a prevalence of 1% to 8%. Nevertheless there have been some reports of them occurring on the labial surface of incisors. Double teeth are more common in the anterior region of the primary dentition than in the permanent dentition with a prevalence of 0.6%. Based upon the morphology of double teeth and the number of teeth in the affected dentitions, they are classified as being the product of fusion, germination or concrescence. The concurrence of facial and lingual talon cusps on a double tooth is an extremely rare finding and so for only one case is reported in the English literature. This presentation reports a 14 -year-old Chinese boy with a double tooth in the mandibular incisor region with a talon cusp on the labial and lingual surfaces. Radiographic examination of the double tooth revealed two separate root canals terminating in two apical foramina that originated from a common pulp chamber. Individual pulp horns were identified in the facial and lingual talon cusps. An understanding of these dental anomalies and their associated problems and implications are important when planning the management of affected children so as to prevent or minimize potential complications.

DENTAL ANOMALIES

PO163

Dens evaginatus and dens invaginatus in a single tooth

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Dens evaginatus (DE) and dens invaginatus (DI) are rare developmental dental anomalies affecting both the primary and permanent dentitions. DE predominantly occurs in people of Asian descent with varying estimates reported at 0.5% to 4.3%. Conversely, the prevalence of DI varies between 0.5% and 10%. Concurrence of DE and DI within the same tooth is an extremely rare finding and entails the clinician's attention in terms of detection and management. We report a case of DE and DI in a maxillary right lateral incisor tooth of a ten year old Chinese boy. The tooth exhibited well defined developmental grooves with an evagination (DE) or talon cusp (type I according to Hattab's classification, 1996), the radiographic examination of the same tooth revealed a DI (type II according to Oehlers classification, 1957) apical to the DE. Comprehensive clinical and radiographic examinations are essential to identify such defects as they encompass a higher chance of causing pulpal complications due to the close proximity of the pulp to the oral environment. Early diagnosis can result in the appropriate prophylactic treatment being performed, consequently preventing undesirable pulpal complications.

DENTAL ANOMALIES

PO164

Prevalence and inter-relationship of dental anomalies and traits

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Objectives: This study was proposed to investigate the prevalence of the various dental anomalies and traits in the primary dentition of the Southern Chinese children in Hong Kong and to determine the variation for genders and the inter-relationships among the different dental anomalies and traits.
Methods: The prevalence data are based on plaster casts and standardized panalipse radiographs of the primary dentition of 443 girls and 493 boys, which had been obtained from a randomly selected sample of 5 years old Hong Kong children.
Results: Of the eight dental anomalies examined, microdontia was the most common and occurred in 7.7% of the girls and 5.1% of the boys. Only hypodontia and hyperdontia exhibited a statistically significant difference between the girls and boys at $P > 0.05$ level. Of the 11 dental traits, shovelling, Carabelli's trait, protostylid, seventh accessory cusp, deflecting wrinkle, and metaconid ridge were observed in most of the children. There were statistically significant differences in the prevalence between the gender of shovelling ($P < 0.05$), sixth accessory cusp ($P < 0.001$), deflecting wrinkle ($P < 0.001$), distal trigonid crest ($P < 0.05$), metaconid ridge ($P < 0.01$), and triangular shape ($P < 0.001$). The most commonly occurring inter-relationship was between protostylid and seven accessory cusp ($P < 0.01$).
Conclusion: Some of the anomalies for instance, shovelling, Carabelli's cusp, protostylid and seventh accessory cuspare are characteristics (traits) and not anomalies of the southern Chinese children. Thus, if a clinician is able to appreciate the nature and implications of such anomalies and traits that are peculiar to a racial group, he/she shall be in a better position to prescribe the most appropriate course of management.

CARIOLOGY

PO165

Oral fungal flora and possible relationships with dental caries

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Objectives: *Candida albicans* is colonized on different oral surfaces. Different factors like age, sex, diet, dietary habits and oral hygiene play role in amount and severity of colonization of this microorganism. Our goal was to determine relationship between existence of *Candida albicans* in oral cavity and dental caries in dental students.
Methods: This descriptive-analytical study was performed on 121 of Babol dental students without history of any systemic disease, not using any kind of antibiotic or steroidal drugs, after explaining study goals and getting inform consent, demographic information and medical history were recorded in data sheets. Then clinical examination for determination of DMFT and plaque index was done. Salivary pH was measured. Dental plaque samples were cultured in Saburu and Chrome-Agar environments. Data were collected and analysed by SPSS 10.5 and T-Student test, Fisher Exact test, Mann–Whitney U test and chi-square test.
Results: A total of 63 (52.1%) students were male and 58 (47.9%) female. The mean age was 24.61 year. Candida cultures was positive in 53 (43.8%) salivary and 51 (42.1%) plaque samples which in 50 (94.3%) of salivary and 45 (88.3%) of plaque cultures was *Candida albicans*. 44 students (36.4%) were caries free. The positive Candida cultures was more in students with more dental caries, with less than 7 restorations, with oral pH <7 , smokers and with moderate dental plaque ($P < 0.05$). Positiveness of *Candida albicans* cultures in saliva and plaque samples with variables such as sugar intake, number of brushing and sex had no statistically significant relationship ($P > 0.05$).
Conclusion: Dental caries have significant relationship with existence of *Candida albicans* in mouth, low salivary pH, smoking, and use of both cigarette and sugar ($P < 0.05$). *Candida albicans* is the most common type of Candida in oral cavity.

CARIOLOGY

PO166

Salivary pH and buffer capacity in children with SECC

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Objectives: To compare the pH and buffer capacity of unstimulated (UWS) and stimulated (SWS) whole saliva between children with Severe Early Childhood Caries (SECC) and children without caries.
Methods: 192 children aged 42 to 54 months, from 11 urban kindergartens in Beijing, were divided into two groups. 98 children with more than 5 caries decayed teeth were experimental group and 94 children without caries were control. They were asked no eating or drinking for one hour, and then to collect respectively 3 ml UWS and 3 ml SWS by chewing 1 g paraffin (Orion Diagnostica, Finland). A pH electrode (HI1331, HANNA, Italy) was used to measure pH. The titration was performed with 2 µ1mol/L HCl from pH 7 to pH 3 to measure the buffer capacity.
Results: 3 ml SWS could be collected successfully except one child refused chewing paraffin. 3 ml UWS were collected from 71 of 97 SECC children (72.45%) and 81 of 94 caries-free children (86.17%) ($P < 0.05$). There was no significant difference in pH and buffer capacity of the saliva between boys and girls ($P > 0.05$) in each group. The pH and buffer capacity of SWS were significantly higher than those of UWS ($P < 0.01$) in each person. SWS of SECC children had significantly lower pH and buffer capacity than those of caries-free children. There was no significant difference in UWS between the two groups ($P > 0.05$). The buffer capacity of SWS from initial pH to pH 5.5; pH 7 to 5.5; pH 7 to 5; and pH 7 to 4 was significantly lower in SECC children than in caries-free children($P < 05$).
Conclusion: SWS seems suitable for investigating salivary pH and buffer capacity in young children since it is more susceptible to caries and easier to collect than UWS.

CARIOLOGY

PO167

Treatment of primary molar teeth with extensive defect using prefabricated metal crown

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Purpose: To observe the clinical effect of treatment of primary molar teeth with extensive defect using prefabricated metal crowns (PMCs). **Methods:** 66 cases, 73 primary molar teeth with extensive defect (class I–III), which can not be repaired by amalgam restoration efficiently, were treated by means of PMCs, and were followed up regularly by 18 months. chi-square test was used for statistic analysis by SPSS10.0. **Results:** Eighteen months after treatment, a total successful rate of 86.30% was achieved, with successful rates of 89.27%, 92.86%, 70.59% for class respectively. $X = 4.779$, $P = 0.092$ ($P > 0.05$), there was no significant difference in the effect among the three types using PMCs. **Conclusion:** The clinical effect on the treatment of primary molar teeth with extensive decay using PMCs is satisfactory. In order to enhance the successful rate, it is necessary to restore the decayed teeth before using PMCs, control the amount of occlusal reduction, and crimp as required to adapt to gingival margin for snug fit.

CARIOLOGY

PO168

Influence of assistants on the survival rate of ART restorations

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Introduction: With respect to the clinical results of ART restorations many influencing factors have been investigated. The influence of the operator experience varies between the different studies. It was never investigated what was the influence the assistant experience on the survival rate.
Aim: To investigate the influence of the experience of the assistant, working with more and less experienced operators, on the quality of ART-class II restorations.
Methods and materials: In a small city in Kenya 795 children in the age between 5 and 10 with one restorable proximal lesion in a primary molar were selected. The ART-class II restorations were made by three experienced (made at least 50 ART restorations prior to the start of the study) and 4 inexperienced operators. 4 experienced and 4 inexperienced assistants participated. The patients were randomly divided over the different combinations of operators/assistants. The restorations were assessed according to modified Frencken criteria immediately after restoration, after 1 week and after 1 month.
Results: Immediately after restoration there was no difference between the operators ($P = 0.107$). During the other two moments the survival rate for inexperienced operators was higher than for experienced ($P = 0.001$ and 0.028 respectively). If from the group of experienced operators the one with the least experience was excluded, the results became the opposite. Experienced assistants showed to have a significant influence on the survival rate during all moments ($P = 0.004$, 0.001 and 0.000 respectively). The best results are obtained in the combination of experienced operator and experienced assistant.
Conclusion: The experience of assistants is of influence on the survival rate.

CARIOLOGY

PO169

Longitudinal study of the carious attack pattern in permanent molars

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Objectives: To study the pattern and rate of carious attack on different surfaces of permanent molars, longitudinally, in two children cohorts with different socioeconomic (SE) backgrounds, using survival analysis.
Methods: The study cohorts were comprised of 328 children visiting a private practice (PP) in the area of Athens, and 231 visiting a municipal health center (HC) outside Athens. Longitudinal data from dental records were collected. Participated children had their initial visit before eruption of the first permanent molar and recall examinations at least annually, thereafter, with a minimum number required of 6. Children from PP had a mid to upper SE background while those from HC a lower to mid. Variables recorded included age of patient, time of: each examination, eruption of the teeth, placement of first filling due to caries on each surface, placement of first sealant and resealing. A cumulative distribution function (CDF) was estimated for each molar using the Kaplan–Meier method. CDF curves were compared using the log-rank and the Wilcoxon tests.
Results: High numbers of cumulative filling placement percentages were found for first molars 9 years after eruption (lower: 65%, upper: 55%), and second molars 4 years after eruption (lower: 50%, upper: 40%). A characteristic 10–15% of fillings were placed within the first year after eruption, followed by a phase of intense carious attack that lasted 3–4 years and a plateau phase 6–7 years after eruption. Significantly higher restoration percentages recorded at all phases for both molars in the HC group. Significantly lower percentages of sealed molars recorded in the HC group.
Conclusions: Permanent molars show a high risk for restoration due to caries at the first and the following 34 years after eruption, with second molars showing a higher risk. Children with a lower SE background present with increased numbers of restored molars, possibly due to inadequate preventive measures.

CARIOLOGY

PO170

Mechanism of aggregation of *Streptococcus mutans* by oolong tea polyphenol

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Streptococcus mutans has been implicated as a major causative agent of dental caries in humans, and the organism possesses a number of virulence factors that enable it to colonize and eventually dominate its niche in the oral cavity. The cell surface protein antigen c (PAc), one of the major surface proteins of *S. mutans*, is known to be correlated to the virulence of the organism during the development of dental caries. In our previous study, the inhibitory effects of an oolong tea polyphenol (OTF6) on the caries-inducing properties of mutans *Streptococci* were examined *in vitro*, with a reduction in cell surface hydrophobicity and induction of cellular aggregation properties found. In contrast, OTF6 did not induce aggregation of protease-treated *S. mutans* cells. Therefore, it was suggested that protein molecules on the cell surface of *S. mutans* play a significant role in the reactions induced by polymeric polyphenols. In the present study, we constructed an isogenic PAc-defective mutant strain (PD) by inserting an erythromycin resistance gene into the pac gene, which encodes PAc, of strain MT8148. Then, the effects of OTF6 on MT8148 and PD were compared using a cellular aggregation assay, in which 50 µl of each cell suspension and an equal volume of 2-fold serial dilution of OTF6 were mixed in a 96-well microtiter plate and incubated at 37°C for 2 hours. Cellular aggregation of MT8148 was shown at an OTF6 concentration of 0.1 mg/ml, whereas no aggregation occurred with the PD strain. In addition, aggregation of MT8148 induced by OTF6 was inhibited by adding the anti-rabbit PAc antibody. These results suggest that OTF6 induces cellular aggregation of *S. mutans* via its binding activity to PAc.

CARIOLOGY

PO171

Calcium ions concentration of membrane cell and caries

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Objective: (1) To measure the fluorescent intensity of calcium ions of palatine membrane cell in caries free, low caries risk and high caries risk children. (2) To determine the relationship between the fluorescent intensity and caries status.
Method: 50 children aged 4 $\sim$ 5 year old (boy 34, girl 16) were divided into three groups according to the caries status: caries free group (dft = 0, CSI = 0), low caries risk group (0 < dft < 5, and 0 < CSI < 10) and high caries risk group (CSI $\geq$ 10, and dft $\geq$ 5). The palatine membrane cells were collected and died with Fluo-3, which was the fluorescent indicator of calcium ion. The fluorescent intensity of calcium ions in the cell was measured by laser scanning confocal microscope (LSCM).
Result: (1) The fluorescent intensity of calcium ions in the caries free group was higher than that of caries free group with significant difference ($P < 0.0001$). (2) The fluorescent intensity of calcium ions in the high caries risk group was lower than that of low risk group and caries free group with significant difference ($P < 0.0001$). (3) No difference of calcium ions fluorescent intensity was found between gender and age ($P > 0.05$). (4) No correlation was found between the fluorescent intensity and dft, dfs and CSI indexes in the caries group, respectively (rdft = -0.132, $P > 0.05$; rdfs = 0.041, $P > 0.05$; rCSI = -0.088, $P > 0.05$).
Conclusion: The fluorescent intensity of calcium ions in the palatine membrane cell is related with caries status in children to some extent.

CARIOLOGY

PO172

Effect of Vitis labrusca infusum on *mutans Streptococci*

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Vitis labrusca has active substance Polyphenol compound such as anthocyanidins, cathehins, isoflavones and tannin known as antiseptic agent, which is beneficial for oral health. One of its benefits is capability to prevent dental caries.
Objectives: The objective of this research is determining the sensitivity of infusum Vitis labrusca fruit on mutans *Streptococci*, *in vitro*.
Methods: Infusum is the product of the process of steeping Vitis labrusca fruit for extraction of its medicinal principles. The effect of infusum Vitis labrusca was examined by measuring the inhibitory zone, minimum inhibitory concentration (MIC) and minimum bactericidal concentration (MBC).The microorganisms tested are composed 6 strains of mutans of *Streptococcus mutans* isolated from schoolchildren in Jakarta Indonesia. Data obtained was done in a descriptive method.
Results: Showed that infusum Vitis labrusca has effect on all of mutans of *Streptococcus mutans* 1 (inhibition zone 1.20 mm; MIC 25%/ml; MBC 50%/ml); *Streptococcus mutans* 2 (inhibition zone 2.00 mm; MIC 25%/ml; MBC 50%/ml); *Streptococcus mutans* 3 (inhibition zone 1.80 mm; MIC 25%/ml; MBC 50%/ml); *Streptococcus mutans* 4 (inhibition zone 2.10 mm; MIC 25%/ml; MBC 50%/ml); *Streptococcus mutans* 5 (inhibition zone 1.50 mm; MIC 25%/ml; MBC 50%/ml); *Streptococcus mutans* 6 (inhibition zone 1.30 mm; MIC 25%/ml; MBC 50%/ml) and their MBC value was two times bigger than MIC.
Conclusion: It can be concluded that infusum Vitis labrusca shows antimicrobial activity against on mutans *Streptococci in vitro*. Hence, it may have potential anti-caries properties.

CARIOLOGY

PO173

Comparison of two caries activity tests in relation to caries

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Dental caries is a disease generated by many causes. Different kinds of tests such as Mutans *Streptococci* count and saliva buffering ability are used as assessment tests for dental caries.

Objective: This study investigates two of these tests by comparing the results in relation to the severity of dental caries (C0–C4).

Methods: A total of 93 kindergarten pupils in Okayama Prefecture. Acid production ability of all bacteria was measured from plaque samples using the Cariostat (DENTSPLY-Sankin K.K. Tokyo), while the Oral Tester (Tokuyama Dental Corp. Tokyo) measured the number of total *S. mutans* bacteria from plaque samples based on the manufacturer's instruction. The number of dental caries, number of dental surface caries, and caries severity index (CSI) was checked using the C0, C1, C2, C3, and C4 classification.

Results: 1) Relationship between Cariostat score and dental caries: The Cariostat significantly reflected the condition of the participant's oral cavity.2) Relationship between Oral tester score and dental caries: The Oral tester also significantly reflected the condition of the participant's oral cavity. However, an oral tester score of 3 did not correlate with the participant's oral cavity condition.

Conclusion: Both the Cariostat and Oral tester significantly reflected the state of the oral cavity of the participants. However, there is a small difference between the two kinds of caries activity test. The Cariostat measures quantity and a quality of dental-caries-causing bacteria. In contrast, the Oral tester specifically detects *S.mutans* only. According to the report of D. Bratthal, mutans bacteria are classified into five kinds of serotypes. The Oral tester therefore cannot imply the actual oral state of disease since it can only detect the presence of *S. mutans* as compared with the Cariostat wherein there is a total assessment of the presence of Mutans *Streptococci*, *Lactobacilli* and other caries related bacteria.

CARIOLOGY

PO174

Assessment of chair-side caries activity test, CAT 21 Fast

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CAT 21 Fast is a recently developed caries activity test containing 10% sucrose and resazurin. A 2 ml stimulated saliva is added to this test medium which can evaluate oxidized and reduced abilities of resazurin (caries activity) based on the number of microorganisms in the sample saliva that can metabolize sucrose and transfer enzyme, invertase. Furthermore, this test contains celicin, which acts as an accelerator, so patients can get their individual caries activities after a mere 15 minute incubation.Caries is the most common life style-related disease therefore, it is significant to motivate the individual to improve his/her life style. The subjects were kindergartners in primary dentition from three to five years old. The objective of this study was to assess CAT 21 Fast for caries screening test. In results, in the case of a '0' cut off point, children who have severe caries status could be significantly screened. In the case of a '0' cut off point, children who had more decayed and filled teeth and had severe oral conditions could be significantly screened. Chair-side colorimetric caries activity test is effective and easy to understand a child's oral condition. It is also useful in motivating a child to change his/her life style for improvement of the oral conditions.

CARIOLOGY

PO175

Preliminary EPMA analysis of fluoride distribution in enamel by iontophoresis

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Objectives: The aim of this study is to observe the alterations of fluoride content and distribution in enamel of deciduous and young permanent teeth after fluoride iontophoresis by pulsed direct current, and to supply the evidence for further research of topical fluoride application technique in caries prophylaxis.

Methods: A total of 20 deciduous and 20 young permanent teeth were selected. All samples were sectioned into two equal parts longitudinally from buccal side to lingual side as two experimental and control groups. 20 samples in every experimental group were treated with pulsed current of 1 Hz 50 μA using 2% NaF solution for 20 min per day. After 10 days, the alterations of fluoride distribution in the enamel were observed by electron probe micro-analysis (EPMA) through embedding, polishing and carbon coating, and the values between every control and experimental groups were statistically analyzed by SPSS software.

Results: The fluoride distribution in normal enamel was observed in map analysis of EPMA. There was significant difference of fluoride content between deciduous and young permanent teeth. Contrast to the control deciduous teeth, fluoride contents in enamel of experimental deciduous teeth rose significantly after iontophoresis, especially within the extent of 150 μm under the enamel surface ($P < 0.05$), however, there was no difference of fluoride content between two young permanent teeth groups under the same iontophoresis condition ($P > 0.05$).

Conclusion: The fluoride contents in normal teeth have a tendency of descent by degrees inward from enamel surface. Iontophoresis technique could increase the fluoride contents in superficial enamel of deciduous teeth effectively and directly, but in relation to primary teeth, the effect of fluoride iontophoresis on enamel of young permanent teeth is not significant in this study, more detailed studies are needed to investigate relative technique parameters.

CARIOLOGY

PO176

A test of artificial cariogenic model of primary teeth

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Objectives: The incidence of primary teeth caries is always higher than that of the permanent dentition. It is necessary to set up a proper artificial cariogenic model for primary teeth caries investigation. We put forward a method of creating cariogenic environment, other than soak teeth in lactic acid gel.
Methods: Two main caries related bacteria, *Streptococcus mutans* Ingbritt c and *Streptococcus sobrinus* 715 were incubated together in the proportion of 1:1 in the MS liquid matrix. Eighty-one extracted primary teeth were randomly divided into three groups. Each teeth covered with nail oil, leaving a window of 2 mm × 2 mm, was hung into the bacteria liquor, incubated for 48 hours (Gp1), 72 hours (Gp2) and 96 hours (Gp3) respectively. The caries formation, surface layer depth, lesion depth and lesion body thickness were analysed.
Results: All the teeth developed caries during test. The mean caries surface layer depth of teeth incubated after 48, 72 and 96 hours were 14.55 ± 8.61 μm, 11.64 ± 5.58 μm, 12.91 ± 4.33 μm ($P > 0.05$). The mean lesion depth of the three groups was 36.95 ± 19.81 μm, 40.44 ± 19.09 μm and 57.64 ± 19.30 μm ($P < 0.01$). And the mean lesion body thickness was 25.90 ± 11.17 μm, 25.31 ± 15.46 μm, and 44.73 ± 19.70 μm respectively ($P < 0.01$). Post Hoc test showed that there were no significant difference between the lesion depths and lesion body thickness of Gp1 and Gp2, while Gp3 had very great significant difference between the other two.
Conclusion: Primary teeth can develop caries by means of incubated with *S. mutans* and *S. sobrinus*. Caries formed during different time has similar surface layer. Cariogenic model based on bacteria is useful and necessary in some kinds of caries research. More studies should be done to repeat and confirm the least time for primary teeth to develop caries.

CARIOLOGY

PO177

Acid production of mutans *Streptococci* in plaque biofilm model

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Objectives: Nursing caries is still the most important disease in the pediatric dentistry. From the standard theory, *mutans Streptococci* and sucrose are major etiologic factors of dental caries initiation. However, *mutans Streptococci* can not establish in pre-dentate oral cavity. The infection and colonization of *mutans Streptococci* occurs almost at 2–3 years-old children. In mother's milk and infant formula contains no sucrose. Since mother's milk contains 7% lactose, the lactose has been thought as the substrate of acid production of *mutans Streptococci* in nursing caries. The purposes of this study are to examine pathogenic role of lactose in biofilm model of mutans *Streptococci* and to reevaluate of the etiology of nursing caries.
Methods: *Streptococcus mutans* MT8148 and *Streptococcus sobrinus* 6715 were grown at 37°C in Brain Heart Infusion broth containing 1% sucrose. The culture was performed in disposable glass tube at a 30° angle to the horizontal to allow biofilm formation on the glass surface (biofilm model). The biofilm was washed with phosphate buffered saline, then various sugars, infant formula or mother's milk was added. The tube was incubated at 37°C, and acid production was measured with pH meter periodically. Furthermore, the expression of galactosidase mRNA was analyzed using a RT-PCR from both planktonic and the biofilm cells of S. mutans.
Results and conclusion: In the biofilm model of both S. mutans and *S. sobrinus*, no significant acid production was observed from 7% lactose, infant formula nor mother's milk. RT-PCR revealed that the transcription of the galactosidase gene of S. mutans is lower in biofilm cells than that of planktonic cells. These results indicated that lactose in mother's milk is not direct pathogen of nursing caries.

CARIOLOGY

PO178

The development of indwelling wireless pH telemetry of intraoral acidity

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Objective: As the increase of intraoral acidity by ingesting sweet foods and acidic beverages usually results in dental caries and erosion, the measurement of intraoral pH is the basic part in the study of oral environment regarding dental caries and erosion. The purpose of the study was to develop an indwelling intraoral pH telemetry lasting longer than 24 hours in the mouth to overcome the limits of conventional wire electrode method previously used for salivary and plaque pH measurement, and to assess its effectiveness.
Methods: We developed a wireless telemeter with flat pannel shaped unit in dimension of $15 \times 10 \times 3$ mm, which can measure and store the pH profile data during more than 24 hours. It was composed of intraoral part; pH sensor of antimony electrode, battery and microprocessor for data storage, and extraoral part; recharging/data receiver and data assessing software which was newly made for this device. After standardizing in specific pH buffer solution with electrode, it was attached to the denture-type intraoral appliance and delivered to the volunteer who was told to wear except brushing time, retrieved after 24 hours and finally the pH profile data was extracted and analyzed.
Results: When compared with conventional wire electrode telemetry, this device showed similar results and induced less discomfort to examinees. The data showed exact pH changes at same time when examinees ate various scheduled foods and beverages.
Conclusion: With this method it became possible to accurately measure pH changes at any specific site within mouth for long tome in accordance with individual's lifestyle, definitely reducing the discomfort inflicted to the examinees' life. We hope this method will contribute to widen the range of telemetric studies of oral environment, especially in relevant to the effects of foods, beverages and various preventive measures.

CARIOLOGY

PO179

Assessment of some caries activity tests in Japanese students

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Objectives: To evaluate some commercial caries activity tests in Japan for use as screening test of caries risk in children.
Subjects and methods: A total of 141 dental hygienist students participated in this study. Oral examinations were carried out using a dental mirror and an explorer. CAT 21 test, CAT 21 Buf, Dentocult SM, Dentocult LB, Mucount, RD test, Rate of Saliva Flow was used for individual Caries Activity Tests. DMFT and Caries Severity Index were calculated for individual caries indices from oral examination results. SPSS (v11.5) was used for statistical analysis.
Results: 1. There was a high correlation between CAT 21 test and Dentocult SM ($P < 0.05$), CAT 21 test and Dentocult LB ($P < 0.05$), CAT 21 test and Caries Severity Index ($P < 0.05$). Dentocult SM was highly correlated with Mucount ($P < 0.05$) and with RD test ($P < 0.05$).2. There were significant differences between the high and low group of CAT 21 test and the high and low group of Dentocult SM (chi-square test $P < 0.05$) and the high and low group of RD test (chi-square test $P < 0.01$), the high and low group of CAT 21 test with the high and low group Dentocult LB (chi-square test $P < 0.1$).
Conclusion: It is important to use more than one caries activity test to assess caries risk.

CARIOLOGY

PO180

Salivary pH after drinking frequently consumed beverages

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Objectives: The aim of this study was to evaluate variations in salivary pH after drinking frequently consumed beverages with acidic intrinsic pH.
Methods: The study population comprised 41 girls aged 10 to 16 years of low socioeconomic level boarding at a school in Buenos Aires city, not included in a preventive program or receiving dental care. The following were performed: a- unstimulated saliva samples were collected and salivary pH was determined using (a) BC-TUGUI-01-CIDCA pH-meter (resolution: 0.1 pH units, accuracy: ± 0.1; data logging in ASCII format files), calibrated at pH 4.0 and 7.0; (b) the girls were instructed to drink 100 cm^2 of the beverage; (c) saliva samples were collected 5, 10, 20, and 30 minutes after taking the drink, under the same conditions as at baseline. The girls then performed their routine oral hygiene. The following beverages were studied: 1. Tang ® (orange flavor); 2. Cepita ® (orange flavor, ready to drink), 3. freshly made orange juice; 4. Carioca ® (diluted); and 5. non carbonated water. pH of the beverages was recorded prior to the onset of the study. Beverages were tested at one-week intervals. Mean and standard error were calculated, and statistical analysis was performed using ANOVA. Significant differences were analyzed using Duncan's test.
Results: ANOVA revealed significant differences among groups at the 5 experimental times. Duncan's test showed significant differences when comparing groups 2 and 4 with groups 3 and 5 ($P < 0.05$). Results obtained at 30 minutes were significantly different when comparing group 3 with groups 1 and 2, and comparing groups 2 and 5.
Conclusion: Although significant differences were found among and within groups, further studies are necessary to analyze the clinical implication of these findings.

CARIOLOGY

PO181

Two-year study of fluoride varnish effect in preschool children

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Objective: To investigate the preventive effect of fluoride varnish on caries increment in children from different nurseries and to observe any potential adverse effects of the procedure.
Material and methods: About 228 children aging at 3 years old from two nurseries were included for the study, who were randomized allocated into fluoride varnish treated group and no treatment control group. All the baseline characteristics were balanced. Fluoride varnish was applied twice a year with the syringes provided by the company. The outcome of the two groups was evaluated independently. Lesions with loss of enamel continuity or with frank cavities were diagnosed as caries. The dmft and dmfs at the baseline and the end of 2 years from both groups were pooled. Statistical analysis was processed by SPSS software.
Results: The prevented fraction of dmfs was 0.33 and the prevented fraction of dmft was 0.30. No oral allergic reaction or tooth staining was complained of, yet 8 children vomited soon after the procedure.
Conclusion: Fluoride varnish was effective in reducing caries increment among children from nurseries. However, certain ingredient in the varnish may lead to nausea and vomiting which in turn affects the acceptability of the treatment.

CARIOLOGY

PO182

Isolation of *Candida* spp. in dental plaque of ECC affected children

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Aim: The study was undertaken in an effort to identify yeasts isolated from the dental plaque samples obtained from children affected with ECC.

Material and methods: Isolated yeast colonies obtained from smears of dental plaque cultivated on MRS agar at 37°C in 5% CO_2 atmosphere ($n = 58$) were characterized. For the quantification of yeasts further samples of dental plaque ($n = 36$) were smeared using sterile cotton swabs. The swabs were rinsed in 1 ml of saline, 100 μl of the solution were inoculated on Sabouraud dextrose agar and cultivated at 30°C. The number of colony-forming units was calculated and assessed as strongly positive (+ + +), positive (+ +), and weakly positive (+). The species identification was established using morphological characteristics, characteristic growth on CHROMagar *Candida*, assimilation and fermentation tests (kits Auxalor 2 and ID 32C). Selected samples of cultivated colonies ($n = 10$) were investigated in a scanning (SEM) electron microscope. Extracted primary teeth covered by dental plaque were investigated under SEM ($n = 20$) and a transmission (TEM) electron microscope ($n = 10$).

Results: Among isolates cultivated originally on MRS agar 58 yeast strains were identified as *C. albicans* (51 strains), *C. tropicalis* (4 strains) *Rhodotorula rubra* (1 strain) and *C. dubliniensis* (2 strains). In 36 samples evaluated quantitatively. *C. albicans* was found to be strongly positive in 5 samples, positive in 7 samples, and 2 samples were weakly positive as well as 1 sample of *Candida* sp. and 1 sample of *C. guilliermondii*. SEM and TEM investigations confirmed the presence of *C. albicans*, both budding and hyphal forms were found.

Conclusion: *Candida albicans* and further yeast strains are the constant components of the dental plaque in ECC affected children, and they can contribute with their carbohydrate fermenting ability to the destructive course of the disease.The study was supported by Project 1M0528.

CARIOLOGY

PO183

Preliminary comparison of MicroCT and nano-indentation characterisation of carious lesions

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Objectives: To use μCT and nano-indentation to qualitatively and quantitatively analyse the mineral content and micro-mechanical properties of carious dentine.
Methods: Hydroxyapatite discs with known densities were used to calibrate grey values using μCT with mineral densities. Two carious permanent molars were extracted and visualised in two and three dimensions using μCT (SkySkan-1172) and an imaging program, VG Studio Max 1.6. The software allowed for selective rotation and clipping of the images and the mineralisation gradients to be colour coded. The teeth were then set in resin, sectioned through the carious region and polished. The hardness and modulus of representative areas of carious dentine were measured using nano-indentation (UMIS) with a Berkovich indenter. Similar areas of carious dentine were located digitally using VG Studio Max 1.6 and mineral densities calculated using an analysis program (Image J.) Data were collected and analysed using Microsoft Excel.
Results: A linear relationship was found between measured grey values and known mineral densities of the hydroxyapatite discs. The mineral gradients measured with the μCT correlated well with the observed changes in hardness and modulus of elasticity as measured with the UMIS. The μCT allowed the observation of an expected zone of increased mineralization along the pulpal floor.
Conclusions: μCT can be used to qualitatively and quantitatively analyse the mineral content and gradients through carious dentine in three dimensions. Mineral densities measured with μCT correlate to hardness and elastic modulus as measured with nano-indentation.

CARIOLOGY

PO184

Cariogenic properties of glucan-binding proteins in *Streptococcus mutans*

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Streptococcus mutans has been implicated as a major causative agent of dental caries in humans. Bacterial components associated with the adhesion phase of S. mutans include glucosyltransferases (GTFs; GTFB, GTFC, GTFD), protein antigen c, and glucan binding proteins (Gbps; GbpA, GbpB, GbpC, GbpD). Gbps have been shown to mediate the binding of glucans synthesized from sucrose by the action of GTFs. In our previous study, GbpC was found to play an important role in sucrose-dependent adhesion by binding to soluble glucan synthesized by GTFD. In another study, the amount of synthesized insoluble glucan was increased in a GbpA-deficient mutant strain, whereas that of soluble glucan was reduced in a GbpC-deficient mutant strain. In the present study, we investigated the cariogenic properties of Gbps involved in the interactions between Gbps and GTFs. GbpA-, GbpB-, and GbpC-deficient mutant strains (AD1, BD1, CD1, respectively) were constructed by inserting an erythromycin, spectinomycin, and kanamycin resistant gene into the gbpA, gbpB, and gbpC genes, respectively, of S. mutans MT8148 (serotype c). The level of biofilm formation of all strains was quantified following crystal violet staining, with CD1 found to have the lowest. Further, the expression of GTF in Gbp isogenic mutants was determined using a reverse transcriptase polymerase chain reaction (RT-PCR) method. Total RNA was prepared from each of the tested strains, then reverse transcriptase was used to amplify cDNA synthesized from mRNA. Primers used to detect the transcription of each gtf gene were constructed based on its specific sequence. The expression of gtfB expression was elevated in AD1, while gtfD expression was decreased in CD1. These results suggest that Gbps have a strong relationship with cariogenicity and gtf gene expression may be altered in a Gbp protein expression manner.

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CARIOLOGY

PO185

Mother-child transmission of *Streptococcus mutans* with AP-PCR method in children

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Dental caries is a dynamic process made by organic acids which are produced by the bacteria in the dental plaque that fermantates the carbohydrates in the oral cavity. *Streptoccoccus mutans* exists in the infant's mouth temporarily for a short time or cannot be detected before the tooth eruption. A lot of microbiological and epidemiological studies show parellel results about the *Streptococcus mutans* counts and caries scores between the mother and children and increased infection risk in the early period whose have frequent saliva contact between mothers and infants. One of the preventive approaches for preventing caries is searching the ways for transmission of *Streptococcus mutans*. Furthermore preventing the colonization of deciduous teeth with *Streptococcus mutans* will prevent the dental caries process. In our study 42 mothers and 51 children ages between 11 and 41 months old are evaluated quantitatively about *Streptococcus mutans* levels. And in 37 *Streptococococcus mutans* isolated children had examined about the transmission from mothers with Arbitrarirly Primed PCR (AP-PCR) method with using the OPA-5 primer. At the result, 15 of the mothers shared the similar genotypes within their children. There was a statistically significant relationship between mother salivary MS level and transmisson to children. ($P = 0.0001$) The transmission patterns showed that the proportion of mothers whose genotypes of *S. mutans* matched their children in the mothers with high level of SM. We conclude that mothers were probably the main source of infection with *S. mutans* and all mothers should improve their oral health and reduce salivary *S. mutans* colonization.

CARIOLOGY

PO186

Choice criteria of preparation methods at caries treatment at children

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Purpose: The purpose of the given work was research and a clinical substantiation of three techniques:1. Atraumatic Restorative Treatment; 2. Preparation with "Carisolv"; 3. Traditional preparation.
Methods: In the given work the direct and remote results of treatment were considered. During the present research treatment of 53 children 3–5 years old, for which in 67 teeth average caries has been diagnosed is lead. Also opinions of patients on an applied technique before manipulation, by questioning parents and children were studied.
Results: A total of 38% of children have stated the positive attitude to treatment; 56% of parents were glad to an opportunity to lead treatment of a tooth without use of a drill; 50% of parents have stated an uncooperative altitude to procedure of traditional preparation. The most constructive behaviour at children was at ART-technique. Later 6 months the estimation of a condition of the restorations by GIC. It was found out, that results of treatment on the given term of supervision do not depend on the chosen method of preparation under condition of observance of all rules of a method. At all other criteria of an estimation in a children's practice is important also time spent for manipulation which also has been considered and has made: at "Carisolv"-method – 652.3 + 89.25 seconds; at ART-technique – 40.5 + 8.97 seconds; at traditional preparation – 14.8 + 1.98 seconds.
Conclusions: 1. At observance of rules of a method of preparation it is not revealed authentic distinctions between the remote results of treatment. 2. Psychological features of the child are important criteria at a choice of a method of preparation caries cavities at children of early age. 3. Minimization of unpleasant sensations at processing 'Carisolv' and ART methods promotes adaptation of children to stomatologic manipulations.

CARIOLOGY

PO187

Measurement and analysis of optical density in primary dental dentine

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Objective: To study the optical density (OD) of primary dental dentine and provide data for fundamental research.
Methods: The Digora system of dental digital radiography was used to acquire digital radiographic images of cross sections from 32 retentioned deciduous maxillary central incisors, and to measure the OD values of different depth (outer, middle and inner layers) and four sides (mesial, distal, labial and palatal sides)in dentine. The difference was analysed with statistics.
Results: OD of inner layer dentine is lower than that of outer and middle layers ($P = 0.0021$), there is no statistical difference among four sides of dentine ($P = 0.0997$).
Conclusion: OD value is an indirect physical quantity of dental mineralization, it provides a convenient digital indicator for the research of dental hard tissues.

CARIOLOGY

PO188

Influence of xydiphone on the fermented content of saliva

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One of the etiologies of dental caries is decreased in mineralizing ions in the saliva.150 children in the age group of 3–12 years with multiple caries were selected for the study. 60 children were selected as the control group. To increase the effectiveness of treatment in children with multiple caries, xydiphone was used in complex treatment to regulate the calcium exchange in oral cavity. The results were checked by the activity of different enzymes in saliva, which showed the pharmakokinesy of xydiphone. Tablets were used as 2% solution orally or as application on the skin below the neck. The second method was more effective in the group where xydiphone was used the prevalence of decay was less. The pathological changes of enzymes in the saliva decreased under the influence of xydiphone. Activity of alkaline phosphotase and kreatinkinase increased 1.5–2 times, which decreased gradually and then stabilized. Lactodehydrogenase activity also increased two times, but then decreased and stabilized. Lactic acid plays the main role in the enamel dissolution. So the stabilization of the procedure of exchange of substances in the mixed but not stimulated saliva in the patients with dental caries is the main aim of pedodontics. Therefore the use of xydiphone bisphosphosnates decreases the prevalence of dental caries and provides more stable physiological conditions in the oral cavity.

MISCELLANEOUS

PO189

A comparative study of shear strength of five restorative materials

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Aim: This study was carried out to compare the shear bond strength of five restorative materials.
Method and materials: Fifty freshly extracted sound premolar teeth were used. The teeth were randomly divided in to five equal groups of 10 teeth each. Then, in each tooth on buccal area a cavity was prepared until sound clean dentin was detected. The cavity was restored by one of following restorative materials GC glass ionomer, 3M modified glass ionomer, Vivadent composite flow, 3M compomer and P60 composite 3M. Dentin surface was treated according to manufacturer instructions. Afterward the restorative materials were perpendicularly placed on prepared dentin by a nylon cylinder. Then, shear bond strength were determined by universal testing machine. SBS data were analyzed by Kruskal Wallis and ANOVA tests.
Results: Statistical analysis showed that compomer groups (18.94 $\pm$ 1.85) and composite resin (31.97 $\pm$ 3.89) had the lowest and highest mean shear bonds strength among five groups, respectively. Resin composite (P60) showed statistically significant different with compomer and conventional glass ionomer ($P < 0.05$).However, there was no statistically significant difference among other groups.
Conclusion: Resin composite P60 had more shear bond strength SBS in comparison with other testing materials.

MISCELLANEOUS

PO190

An experimental study on fibroblasts transfected by DMP1

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Objective: To evaluate the expression of dental matrix protein l (DMP1) in porcine oral mucosa fibroblasts (POMFs) transfected by DMP1 and the influences of the transfection.
Methods: The full length of porcine DMP1 cDNA was linked into an eukaryotic expression vector pEGFP-C1. POMFs and mesenchymal stem cells (MSCs)were transfected with the pEGFP-DMP1. The expression of DMP1, dental sialoprotein (DSP), amelin and ameloblastin (Ambn) gene of transfected POMFs and MSCs were detected by RT-PCR. The expression of DMP1 and DSP protein was examined by immunocytochemical staining. The formation ratio of mineralized nodules of transfected cells was compared with untransfected ones after mineralized induction. The formation of mineralized nodules of three-dimensional pellet transfected cells was compared with untransfected ones after hematoxylin and eosin staining.
Results: The constructed pEGFP-DMP1 could produce 4.7 kb and 1.5 kb fragments. DMP1 gene, DSP gene, Ambn gene was expressed by POMFs after transfection. Immunohistochemical staining and the quantitative analysis of protein showed that DMP1 and DSP protein was positive in transfected POMFs and MSCs. The formation ratio of mineralized nodules of transfected POMFs and MSCs was higher than that of untransfected ones ($P < 0.05$).
Conclusions: The expression of porcine DMP1 in POMEs after gene transfection can induce the expression of tooth development associated gene Ambn and gene DSP and enhance the formation of mineralized nodules.

MISCELLANEOUS

PO191

Remineralizing potential of two dentifrices available in Asia

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Purpose: To evaluate the remineralizing potential of two dentifrices (Perioe Cavity Care® by LG Care, Korea and Colgate Total® by Colgate Palmolive, Thailand) using artificial carious lesions *in vitro*.
Materials and methods: Sound extracted human molars had artificial lesions created in them before being longitudinally sectioned. Seventy five sections were then divided into three treatment groups: the control was treated with Vicco® (India) without fluoride; while the two test groups involved Perioe Cavity Care® (Korea) and Colgate Total® (Thailand). Sections were exposed to a demineralizing and remineralizing regimen along with the respective dentifrice treatment for 10 days. The carious lesions were studied using polarized light microscopy and microradiography to evaluate lesion depth and mineral content, before and after the experiment.
Results: The control group showed an increase in lesion depth where as there was a decrease in the lesion depth for the two test dentifrices. The decrease in the lesion depth was greater for Colgate Total® than Perioe Cavity Care®.
Conclusion: This *in vitro* study substantiates the remineralizing efficacy of the two dentifrices (Perioe Cavity Care® and Colgate Total®) which are available in Asia. Additionally, the results indicate a higher remineralizing potential for Colgate Total® than Perioe Cavity Care®.

MISCELLANEOUS

PO192

Analysis on the concentrations of histadine-rich proteins in children's saliva

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Objective: Determine concentrations of three main histadine-rich proteins (HRPs), i.e. HRP-1, HRP-3 and HRP-5, in 3˜5-year children's saliva, and calculate the total HRPs concentration (summation of the three HRPs), to provide basic data and determination method for investigation on children's sialoprotein.
Methods: Randomly select 45 3˜5-year-old children , using a high performance liquid chromatograph, separate and determine concentrations of HRP-1, HRP-3 and HRP-5 in whole saliva, resting salivary secretion and chewing stimulus induced, calculate the total HRPs concentration.
Results: (1) The high performance liquid chromatograph can accurately separate and determine concentrations of the 3 main histadine-rich proteins in children's saliva. (2) In the composition of three main histadine-rich proteins, the concentration of HRP-3 is the most, accounts for 46.7%, the concentration of HRP-1 accounts for approximately 24.6%, and the concentration of HRP-5 accounts for 28.7%. The concentration of HRPs of saliva, chewing-stimulus induced, was higher than that of HRPs of saliva, resting salivary secretion. The difference of the concentrations of them is significant ($P < 0.05$). (3) The difference of HRPs concentrations in saliva of children of different genders is of no significance.
Conclusion: High Performance Liquid Chromatography (HPLC) was a good method of separating histadine-rich polypeptide proteins. Chewing stimulus was able to increase concentration of histadine-rich polypeptide proteins of saliva.

MISCELLANEOUS

PO193

Study of the relationship between oral malodor and caries in children—the application of the Shi's caries activity test (SCAT)

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Objective: The aim of this study was to determine the level of volatile sulfur compounds and the caries activity of children, analyze the relation between the VSC's level and caries activity, caries status, age, sex. Provide data for fundamental study of children's oral malodor.
Methods: This study selected 173 children aged 3˜5 years. Children's VSCs level measured with halimeter. The Shi's caries activity test (SCAT) examined the caries activity. The correlation between the VSC's level and caries activity, caries status, age, sex was analyzed with statistics.
Results: No difference of the VSC's level was found between SCAT low risk group and high risk group. The difference of the VSC's level didn't have statistical meaning between caries-free group, high-caries-risk group and low-caries-risk group. The children's VSC's level was not associated with caries activity, caries status, but was weakly associated with age ($r = 0.161$, $P < 0.05$).
Conclusions: There is no correlation between the children's VSC's level and the individuals' caries activity, and caries may not be a risk factor to influence the generation of oral malodor. A positive correlation could be found between the level of VSC's and age. The children's VSC's level increases with age.

THURSDAY, 14 JUNE 2007

PREVENTION

OS034

Passport to oral health: management of patients on GA waitlists

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Objective: Australia has one of the lowest dmft and DMFT rates in the world. However, a slight increase in caries rates have been observed in certain age groups and a disproportionate amount of Australian children carry a significant percentage of the disease. This paper will present and discuss the preventive protocol currently practiced by the Department of Paediatric Dentistry at the Sydney Dental Hospital for the management of patients on the waiting list for treatment under general anaethesia.
Methods: Children with early childhood caries (ECC) are referred from private dentists and different community dental clinics to the Department of Paediatric Dentistry at the Sydney Dental Hospital. Patients who require treatment under general anesthesia (GA) are placed on a GA waitlist. While on the waitlist, patients are referred to our dietician for dietary counseling, and dental therapist for oral hygiene instructions and caries stabilisation. During the post GA appointment, restorations are checked, oral hygiene status is reviewed, and the clinician determines the patient's need for regular dental recall visits. Patients <5 years old are recalled in the dental hospital and patients >5 years of age are referred to their local community dental clinic. The recall interval is dependent upon the individual caries risk of the patients.
Conclusion: Because of the considerable number of patients at the Department of Paediatric Dentistry, there is a significant waiting period for treatment under general anaesthesia. In response to the need for a preventive protocol for patients waiting for dental treatment, the Pathway to oral health program was developed a few years ago. The program aims to prevent the progression of the disease while the patients are waiting for dental treatment, prevent recurrence of the disease after completion of the dental treatment and promote long-term maintenance of oral health.

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PREVENTION

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Influence of apple juices on demineralisation of enamel *in vitro*

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Objectives: Dental erosion caused by acidic beverages is common and occurs with increasing tendency. The aim of this *in-vitro* study was to analyse the erosive potential of apple juice on human enamel samples from the first and second dentition.
Methods: Apple-juice-containing beverages ($n = 25$) were selected, and pH and buffering capacity were determined. Enamel samples were prepared from impacted, surgically removed wisdom teeth and from deciduous teeth. Prepared enamel slices were incubated with a selected apple juice for up to 24 hours; the amounts of released calcium were determined colorimetrically, and surface roughness (Ra) of the enamel was measured using an optical profilometric device (perthometer, Mahr, Göttingen). Controls were incubated with a 0.9% sodium chloride solution. The quantitative analysis of Ca, P, O in the enamel samples (incubation: 6 hours) in various depths ranging from 5–50 μm was carried out using an electron probe micro-analyser (Jeol JXA). The surfaces of the enamel samples were also visually examined by CLSM (Leica TCS SP2).
Results: The pH-values of the apple juices ranged from 3.4 to 4.2. Incubating the enamel slices (from both dentitions) with apple juice caused a time dependant release of calcium. After 24 hours, the primary dentition showed Ca-release values of 0.61 mg/20 mm^2 and the second dentition of 0.41 mg/20 mm^2; the surface roughness for the primary teeth was 6.8 μm and for the second dentition 6.2 μm. A loss of minerals (Ca, P, O) down to a depth of 30 μm could be observed. CLSM show structural changes on all surfaces when compared to the controls.
Conclusion: In this *in-vitro* study the erosive potential of different apple juices could be demonstrated. However, it must be considered that numerous modifying factors influence the enamel surface *in vivo*, therefore a direct translation to *in-vitro* conditions can only be performed with caution.