Poster Presentations

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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 ($P > 0.05$).

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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 ($P > 0.05$).

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.

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.

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.

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.

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.

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.

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.

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.

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; 25 ml/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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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 orthopantomogram 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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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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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.

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.

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.

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.

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.

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.

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.

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).

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.

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.

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!

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.

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 predisposing 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.

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.

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.

PO115

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

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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 $P < 0.05$. 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-old 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.

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.

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 (±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)

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.

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).

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.

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.

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.

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.

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.

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 ± 10.67 MPa for incisal and 28.7 ± 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.

PO126

Comparison of microleakage in helioseal fissure sealant

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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 16 S 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 (χ^2 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

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

PO139

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.

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.

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.

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%).

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 unesthetic 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.

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.

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.

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.

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.

PO149

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.

PO150

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.

PO151

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.

PO152

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.

PO153

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.

PO154

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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 ~ 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 ≥ 10, and dft ≥ 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.

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.

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.

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.

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 microanalysis (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.

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.

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.

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.

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.

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.

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.

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.

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.

PO184

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

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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.

Methods: 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.

Results: 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.

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.

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.

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.

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 ± 1.85) and composite resin (31.97 ± 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.

PO190

An experimental study on fibroblasts transfected by DMP1

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Objective: To evaluate the expression of dental matrix protein 1 (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.

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®.

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.

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.