Oral Presentations

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Growth and development

OS001

Oligodontia interdisciplanary treatment strategy

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

Essential decision points are:

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

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

OS002

Central incisor of a child as a face size predictor

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

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

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

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

OS003

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

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Objectives: The aims of this study were to analyze the expression of odontoclast marker genes and osteoclast-inducing cytokines in dental pulp and periodontal tissues of deciduous teeth in the absence of permanent tooth germ in Beagle dog, and to observe the effect of early pulpectomy on root resorption of those deciduous teeth.

Methods: Mandibular left and right second, third and fourth permanent premolar germs were surgically removed in a 2.5-month old male Beagle dog. During the operation, pulpectomy was performed in deciduous molars on one side of the lower jaw. Deciduous molars on the other side of the lower jaw were left untreated. Root resorption of these deciduous teeth without permanent successors was observed by taking periapical films every 2 weeks. Jaw specimens were taken when obvious root resorption was observed. The expression of odontoclast marker genes and osteoclast-inducing cytokines such as RANKL and OPG were analyzed by immunohistochemistry on tissue sections.

Results: On radiographic examination, root resorption of the deciduous teeth without permanent successors was delayed for about 6 weeks, comparing to physiological root resorption in the presence of permanent tooth germ. By pulp extirpation, the resorption was further delayed. Histochemical analysis of deciduous molars which were not treated with pulpectomy showed that during the process of root resorption, TRAP- and MMP9-positive multinucleated odontoclasts were mainly present on the pulpal surface of the root, and few were seen on the outer surface. High expression of RANKL was observed in dental pulp, while OPG was mainly expressed in periodontium.

Conclusion: In the absence of permanent tooth germ, root resorption of deciduous tooth is primarily mediated by dental pulp; early pulpectomy can significantly delay root resorption of deciduous tooth in the absence of permanent tooth germ.

Orthodontics

OS004

Early interceptive treatment for ectopic eruption of first permanent molar

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Background: Although some instances the ectopically erupting first permanent molar may correct itself and erupt into its normal position after causing only minor destruction of the primary molar, early diagnosis and treatment may prevent a more complicated malocclusion. The dentist must be alert to these problems and complicating sequelae.
Objective: To probe into a new method for the early interceptive treatment of the ectopic first permanent molar.
Materials and methods: Ten cases in the early mixed dentition with ectopic eruption of the first permanent molar were used the fixed appliance with the spring to move the permanent molar distally and make it normally erupts.
Results: The ectopic eruption of the first molar in all the cases was relieved, and at last these cases were used the Nance Arch or Lingual Arch to maintain the normal position of the first permanent molars.
Conclusion: Because of moving the first permanent molar distally, the present method prevent prematurely loss of the second primary molar, which can lead to the space loss and make the dental arch crowding. The method is different from the before-mentioned ones, and it is high efficiency and easy to operate especially in the early mixed dentition.

Endodontics

OS005

MTA and calcium hydroxyapatite pulpotomies in monkey permanent teeth

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Objective: To compare Mineral Trioxide Aggregate (Pro Root® MTA, Dentsply Tulsa Dental, USA) and calcium hydroxyapatite (CHA) as pulpotomy agents in permanent monkey teeth with inflamed pulps.
Methods: Twenty teeth in four juvenile Vervet monkeys (*Cercopithecus aethiops*) were subjected to cavity preparation, pulp exposure and placement of *Streptococcus mutans*. They were randomly divided into two groups and after 14 days a pulpotomy was performed with one of the tested materials. Ferric sulphate was applied to control haemorrhage. Cavities were restored with glass ionomer cement (Fuji II LC, GC Japan) and amalgam. Histological assessment for the presence of vital pulp, dentine bridge and periapicial inflammation was performed by light microscopy after an evaluation period of 12 months.
Results: Twelve months after treatment 18 teeth (10 MTA, 8 CHA) were available for histological assessment. Fisher's Exact test revealed that 60% of teeth treated with MTA had vital pulps with complete and thick dentine bridges compared to pulpal necrosis seen in all teeth of the CHA group ($P = 0.01282$). Inflammation in the CHA group was evident periapically, but there was no statistical difference when compared to non-vital teeth in the MTA group ($P = 0.2283$).
Conclusion: MTA was effective as a pulpotomy material and able to stimulate reparative dentine bridge formation at 12 months. Calcium hydroxyapatite is biocompatible and neutral and more research is needed in order to assess its activity at the interface of living tissues. This study showed that MTA is preferable to CHA for the treatment of inflamed pulps of permanent teeth.

OS006

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

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

OS007

Obturation of permanent molars with ZOE using endodontic pressure syringe

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Objective: With newer materials and techniques getting introduced into the field of endodontics, the need for simpler, user friendly, economical techniques with less armamentarium is the need of the hour. Hence a clinical study in which zinc oxide eugenol (ZOE) alone can be used as a sole obturating material without core material, using endodontic pressure syringe was planned and carrried out. The objective was to evaluate clinically and radiographically the success of permanent molars obturated with ZOE using endodontic pressure syringe.
Methods: Thirty first permanent molars with signs of irreversible pulpitis were chosen for the study. Pulp tissue was extirpated and biomechanical preparation was carried out with K files. The study group consisted of twenty first permanent molars, obturated with ZOE alone. The remaining ten teeth obturated with Gutta-percha points by conventional lateral condensation method, served as the control group.

Results: There was no significant difference between the clincial and radiographic success of the study and the control group after a follow up of 24 months.
Conclusion: Zinc oxide eugenol when used as the sole obturating material without any solid core material, with endodontic pressure syringe proves to be a cost effective technique for obturation of first permanent molars.

OS008

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

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Aim: (1) To assess root canal instrumentation capacity in extracted primary teeth using three different methods. (2) To assess instrumentation time in each group.
Methods: Thirty extracted intact primary teeth were assigned to one of the above three groups: group A— Er,Cr:YSGG Lasers system (EL); group B— Endo-eze rotary system (EE); group C—manual instrumentation (MIT). All primary teeth were stained by injecting India Ink into the root canals and instrumented using one of the three above methods. Thereafter, the roots were sectioned into cervical, middle and apical thirds and removal of India ink was evaluated using the Proscope HR under 200x magnification. Instrumentation time was recorded.
Results: To be reported at presentation.

Dental anxiety and behavioral management

OS009

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

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Objectives: The objectives of this study were to determine the attitude of parents/guardian toward physical restraint as a modality in managing anxious physically/mentally handicapped children for dental care and to compare the attitude between parents/guardian of those children with and without physical/mental handicap.
Methods: A descriptive study using self-completion questionnaire whereby the parents/guardian filled up relevant information and answered five questions. Parents/guardian was required to read written information on various modalities in managing anxious children prior to answering the questions. The answer to each question is in the form of analogue scale of 1–5 which ranged between totally disagree to totally agree. The data obtained were processed using SPSS statistical software. A total of 96 completed forms were analysed with 40% of it were completed by parents/guardian of children with physical/mental handicap. Half of the samples were from new referrals.
Results: It was found that 65% of parents/guardian agreed that physical restraint be applied to those children. A significantly higher number of parents/guardian who disagreed to physical restraint thought that it might cause the children to fear dental treatment in later years. There were more parents/guardian with physical/mental handicap children who would agree to physical restraint than those without but it was not statistically significant ($P > 0.05$). However, about half of them thought that physical restraint might cause the children to fear dental treatment in later years. It was also found that behaviour modification such as positive reinforcement and modelling was the most preferred modality in managing those children.
Conclusion: It can be concluded that parents/guardian largely agreed to the use of physical restraint for dental care among physically/mentally handicapped children. However there was no significant difference in agreement between parents/guardian of those children with and without physical/mental handicap.

OS010

Incidence of adverse reactions following 4% septocaine use in children

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

OS011

Hydroxyzine for sedation in the pediatric dental patient

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Aim: This study evaluated and compared the effect of two different dosages of hydroxyzine supported by 50% nitrous oxide inhalation sedation in child patient.
Subjects and methods: Thirty uncooperative healthy children with an age range of 31–120 months were included in the study. Patients were randomly assigned into two groups. The patients in group 1 were given 20 mg of Atarax 24 hours preoperatively. On the operation day, 3.7 mg/kg Atarax was administered orally for all patients. All subjects also received 50% nitrous oxide inhalation sedation. The child's behavior was evaluated every 5 min by using Houpt Sedation Rating Scale. The oxygen saturation and heart rates were also followed.

Results: The mean age of the children in the study was 62 (SD: 11.96) for group 1 and 54 months (SD: 12.86) for group 2. Evaluation of the results showed that there were no significant differences ($P < 0.05$) between behavioral attitudes and sedation degree of the patients.
Conclusion: A 20 mg of hydroxyzine administered 24 hours preoperatively has no significant benefit on sedation of the child.

OS012

Factor analysis of questionnaire assessing every day and dental pain

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Objective: The aim was to further analyse data from an epidemiological questionnaire study of dental and every day pain experiences in Swedish children, aged 7–19 years. The main purpose was to reduce and group item data of dental and everyday pain experiences and to form new, easy-to-grasp factors for use in future analyses.
Methods: The correlation matrix of 38 everyday-pain and dental treatment related pain items based on a modified CPI (Children's Pain Inventory) assessment were reduced using a common Factor Analysis, by means of the statistic program SPSS. The matrix contained 11 eigenvalues of one or higher. A first analysis of reduction was made in order to select the items most highly related to the first principal component. Reduction was performed taking gender into consideration. The quantity of items was further decomposed due to low response frequencies and low item loadings. Factor loadings greater than 0.40 were accepted.
Results: Our final model showed 29 items with 8 eigenvalues over one or more. 46.6% of the variance could be explained by this model which consisted of four factors. The factors were well separated from each other. Our preliminary labelling of the four factors is: general and accident pains, skin and mucous membrane related pains, invasive dental treatment pains and other dental treatment pains.
Conclusion: The reduction of items created a new four factor structure which will simplify further analyses of our material and guide the design of new surveys.

OS013

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

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

OS014

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

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

OS015

Cognitive ability and dental fear and anxiety in children

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The prevalence of dental fear and anxiety among children is between 5.7–6.7%. Sixteen percent of all children have an

intelligence quotient (IQ) <85, and many of these children have learning problems.

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

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

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

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

OS016

Acceptability of carisolv® for early childhood caries of anxious children

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Aims: To investigate the acceptability of atraumatic removal of dental caries with Carisolv® by children who were suffering from early childhood caries and dental anxiety, as well as by the pediatric dentists.

Methods: A total of 20 preschool children with early childhood caries who refused dental treatment because of severe dental anxiety were included in the study. The main reasons of dental fear and accept of Carisolv® as an alternative of caries removal were assessed. At the same time five pediatric dentists having experience in using Carisolv® were surveyed about their consideration of the technique and the related affecting factors.

Results: All the 20 children agreed to try the technique, and 95% of the 20 cases preferred this technique to conventional ones for further treatment, with one of them refusing all the available techniques for the removal of caries. 80% of pediatric dentists agreed the chemomechanical caries removal could effectively reduce the level of dental fear and hence prevent children from developing dental anxiety after procedure.

Conclusion: It was concluded from the study that Carisolv® could be promising as an alternative technique of caries removal without inducing dental anxiety or other behavioral problems among early childhood caries patients.

OS017

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

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Objectives: 1. To investigate the factors that affects parents' attitude towards General Anaesthesia when deciding the best options for their children's dental treatment. 2. To co-relate parent's personal, dental and general anaesthetic experience to their choice for their children's dental treatment.

Methods: Ninety-three questionnaires were completed by parents attending out patient consultation clinics at the Paediatric Dentistry department at Chelsea and Westminster hospital with their children. Children were between the age of 2–16 years old. Paediatric dentistry specialists discussed and explained options (local analgesia, sedation and General Anaesthesia) for paediatric patients' dental treatment. Seventy parents chose general anaesthesia for their children's dental treatment. A pilot study was conducted at the beginning of the audit to test the questionnaire. The questionnaire was structured to obtain information regarding parents' attitude and personal experiences of general anaesthesia for dental treatment.

Results:
- 53 (76%) parents were registered with dentists of whom 50 (71%) claimed attending regularly while only 31 (44%) parents saw their dentists within the previous 12 months.
- 61 (87%) parents chose local analgesia options for themselves if they needed dental treatment.
- There was a significant ($P < 0.05$) relationship between their choices and the children's chronological age and the complexity of the required dental treatment.
- There was a significant ($P < 0.05$) relationship between parents' personal good experience of General Anaesthesia and their choice for their children's dental treatment.

Conclusion: This audit suggests that parents' choice of management for their child is significantly influenced by their own experience, length and complexity of dental treatment and their child's age.

OS018

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

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Objectives: The aims of this study were to explore the relationships between dental phobia, intra-oral injection phobia and blood-injury phobia, and to explore to what extent these phobias are related to avoidance of dental treatment if dental injection is needed.

Methods: The subjects were a representative and randomized sample of 1385 18-year-olds attending high schools in Norway, and the data were collected by use of questionnaires completed in classroom. The survey instruments applied were Dental Fear Survey (DFS), Mutilation Questionnaire (MQ) and Injection Phobia Scale-Anxiety (IPS-A). The respondents were asked to estimate the probability of proceeding with dental treatment in a situation where they had tooth ache and when a dental injection was needed, using a six point scale (100%, 80%, 60%, 40%, 20% and 0%).

Results: There were statistically significantly correlations between all the three phobias, with the largest overlap between blood-injury phobia and injection phobia ($r = 0.65$). About 11% of subjects with dental phobia, blood-injury phobia and injection phobia, respectively, were avoiding dental treatment (≤40% probability of being willing to proceed with treatment) in a situation where a dental injection was needed. In multiple regression analysis only dental phobia contributed to this avoidance of dental treatment.
Conclusion: The results indicate that dental phobia is relatively often connected with blood-injury-injection phobia, and that subtypes of this phobia may contribute to avoidance of dental treatment due to fear of dental injections. Providers of dental care should especially pay attention to children and adolescents reporting to have fainted or nearly fainted during dental injections.

OS019

Causes of pain during dental injections: injectors or anxiety?

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Aim: The present study was designed to investigate the determinative factor in pain perception: the injection devices or the anxiety experienced.
Materials and methods: Two dental injectors, a computerized device (the Wand) and a traditional plastic syringe, were compared. Forty-five children aged 9–13 year who had registered for treatment at the School of Dentistry, Marmara University, Istanbul, Turkey, participated in the study. Both anxious and non-anxious children were included in the study group. The Children's Fear Survey Schedule – Dental Subscale (CFSS-DS), Facial Image Scale (FIS), Spielberger's State Anxiety Index for Children (SSAI-C) and heart rates (HR) were used to determine the anxiety levels. The first appointment was designed as an introductive, familiarisation session and injections were administered in the second and third sessions, with one or the other injector. The Visual Analog Scale (VAS) was used for pain measurement after injections.
Results: No significant differences of pain scores were noted between injectors for both sessions. Children reporting pain were found to be more anxious than the ones reporting no pain.
Conclusion: Anxiety plays an important role in the pain reaction of children, and was found to be more determinative in pain perception than the injection devices preferred.

Special needs patient

OS020

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

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

OS021

Dental treatment under general anaesthesia in children of special care

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

OS022

Oral findings of Down syndrome children in Chennai city India

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

OS023

Restorative needs of patients with disability referred for general anaesthesia

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

OS024

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

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Objectives: The present study was conducted to assess the oral health status of children with special health care needs, to give oral health instructions to their family or tutors and to access their dental treatment needs.
Methods: Epidemiological examination of special needs children was undertaken by a single examiner to determine dental caries (dmft/DMFT), oral lesions, occlusion and other alterations of the teeth. Age, sex, diseases and kind of limitation were evaluated.
Results: 74 outpatients from the Psychosocial Rehabilitation Center of Maputo-Mozambique was included in this study. The mean age was 7.4 ± 3.1, ranged from 2 to 13 years old. 40% were females and 60% males. 47% of them were caries free. The dmft/DMFT was 2.5/0.5. The prevalence of oral lesions were 50% been the most common gingivitis (38%), angular queilitis (5%), labial herpes simplex (2%), gingival hyperplasia (2%), median romboid glossitis (2%), parotid enlargement (2%) and seborreic dermatitis (2%). 7% presented number anomalies of the teeth, 12% general abrasion, 21% extrinsic pigmentation, 10% malocclusion and 8% traumatized tooth.
Conclusion: The children with special health care needs showed a high prevalence of dmft, oral lesions and other alterations of the teeth. These children require an oral health care of specialized nature due to the impact that oral diseases can have in their overall health.

OS025

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

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

be extracted. Subjects in the study group had significantly higher prosthetic needs than controls ($P < 0.05$).
Conclusion: 1. A relatively high proportion of first permanent molars needed prosthetics. 2. Mentally impaired subjects had a higher proportion of missing/compromised M6, indicating a higher need for more complex treatment than the control group. 3. Prevention programs could help lower the complexity and costs of treatment in both mentally impaired and normal patients.

OS026

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

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

OS027

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

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

Prevention

OS028

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

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Objective: To evaluate the efficacy of topical fluoride varnish applications on white spot lesion (WSL) formation in adolescents during treatment with fixed orthodontic appliances in a double-blinded randomised placebo-controlled trial with two parallel arms.
Methods: The material consisted of 273 consecutive 12–15 year-old children referred for maxillary treatment with fixed orthodontic appliances. The patients were randomly assigned to a test or a control group with topical applications of either a fluoride varnish (Fluor protector) or a placebo varnish every 6th week during the treatment period. The outcome measures were prevalence and incidence of WSL on the upper incisors, cuspids and premolars as scored from digital photographs by two independent examiners.
Results: The attrition rate was 5%. The mean number of varnish applications was 10 (range 4–20) in both groups. The incidence of WSL during the treatment with fixed appliances was 7.4% in the fluoride varnish compared to 25.3% placebo group ($P < 0.001$). The mean progression score was significantly lower in the fluoride varnish group than in the placebo group, 0.8 ± 2.0 v. 2.6 ± 2.8 ($P < 0.001$). The absolute risk reduction was 18% and the number needed to treat was calculated to 5.5.
Conclusion: The results from the present study strongly suggest that regular topical fluoride varnish applications during treatment with fixed appliances may reduce the development of white spot lesions adjacent to the bracket base. In conclusion application of fluoride varnish should be advocated as a routine measure in orthodontic practice.

OS029

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

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Objective: The aim of this pilot study was to assess the diagnostic value of a new chair-side test, lactic-acid production on the tongue (Clinpro Cario™ L-Pop™, 3M Espe, Seefeld), for caries-risk-assessment.

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

OS030

Community based programs for prevention of ECC after 10 years

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

OS031

Lactate formation capability test reveals unchanged caries risk over 2 years

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

OS032

Dental caries and childhood obesity

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Approximately 25% of New Zealand children are considered overweight or obese. It has been shown that this is associated with high consumption of sweetened foods and drinks which is also a risk factor for dental caries. To date there have been conflicting reports of the association of obesity and dental caries.
Objective: To compare the heights, weights and body mass indices (BMI) of children with high and low rates of dental caries.
Methods: Data including dmft, height, and weight were recorded for 200 children aged 8 years and under who were seen in an undergraduate student clinic.
Results: Fifty three percent were female and the dmft scores ranged from 0 to 15. There was no significant association of dmft severity with ethnicity in this group of children. The children's ethnicities were 70.5% European, 16.5% Maori, 6.5% Pacific Island and 6.5% Asian/other. Twenty percent of children were classified as being over weight or at being at risk of over weight using CDC 2000 data. No significant relationships between increasing BMI and high dmfts were found ($P = 0.932$). However there were significant differences between the BMIs of the different ethnic groups with 46.2 percent of the Pacific Island and 19.1 percent of European children having BMIs in the highest quartile ($P = 0.007$).

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

OS033

Implementation of an infant oral care program

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

OS034

Passport to oral health: management of patients on GA waitlists

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

OS035

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

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