Oral presentations

Thursday, 3 November

Growth and development

OS001

Effect of breastfeeding on timing of tooth eruption

M. UKPONG*, M. FOLAYAN, E. ADEJUYIGBE, F. J. OWOTADE, K. C. NDUKWE & O. D. OTUYEMI
Obafemi Awolowo University, Ile-Ife, Nigeria

This study examines the possible effects of exclusive breastfeeding on the eruption of the deciduous teeth by the age of 12 months. The study was designed as a cross sectional case control study. Two hundred and sixty six children were matched for age, gender and socioeconomic status. The variable examined was the effect of exclusive breast-feeding on the timing of eruption between the ages of 4–12 months. Results show that the age of the child is the most significant factor that affects the timing of tooth eruption. However, it appears that comparatively, children exclusive breast-fed erupt teeth earlier below the age of six months. Boys also appear to erupt the central and lateral incisors earlier than girls; the lower central incisor erupts before the upper central incisor; the timing of eruption of the upper and lower lateral incisors appear not to be significantly different; and delayed tooth eruption occur in children from the low socio-economic class who are not exclusively breastfed. It was concluded that exclusive breastfeeding tend to affect the timing of eruption of the tooth before the age of 6 months. Thereafter, this effect could not be established.

OS002

A longitudinal study of salivary and serum cholesterol concentrations in 6-, 9- and 12-year-old children

S. KARJALAINEN[1,*], E. SÖDERLING[1], B. LARSSON[2], I. JOHANSSON[3] & O. SIMELL[4]
[1]*Institute of Dentistry, University of Turku, Turku, Finland,* [2]*Public Dental Health Care, County Council of Västerbotten, Sweden,* [3]*Institute of Dentistry, University of Umeå, Umeå, Sweden,* [4]*Department of Paediatrics, University Hospital of Turku, Turku, Finland*

Objectives: No previous information is available about possible changes in of salivary cholesterol concentration in children during normal growth.
Methods: A subsample of healthy children (n = 145) participating in an infancy-onset, prospective, randomized intervention trial (the STRIP study) formed the subjects of this study. Paraffin-stimulated salivary samples (10 ml) were collected at 6, 9 and 12 years of age. Total lipids were extracted (Larsson *et al*., 1996) and analysed by thin-layer chromatography (Bitman *et al.,* 1981). The stained lipids were quantified by a scanning densitometer and the results were expressed as μmol/L. Fasting venous blood samples were used for the analysis of serum total, HDL and LDL cholesterol.
Results: The level of salivary cholesterol concentration correlated inversely with the salivary flow-rate consistently at all three age-points (at 6 years r = −0.354, P = 0.015; at 9 years r = −0.371, P = 0.001; and at 12 years r = −0.409, P = 0.000). The concentration of salivary cholesterol (μmol/L, mean ± SD at 6 years: 0.073 ± 0.043; at 9 years: 0.223 ± 0.170 and at 12 years: 0.442 ± 0.242), and the salivary flow-rate (ml/min, mean ± SD at 6 years: 0.567 ± 0.420; at 9 years: 0.919 ± 0.438, and at 12 years 1.264 ± 0.565) increased with age. Correlation between salivary and serum cholesterol was weak at 6 and at 9 years of age (r6:−0.094, r9:0.034, r12:0.181), but became stronger in boys at 12 years of age (r = 0.317, P = 0.025).
Conclusions: Salivary flow rate and the concentration of salivary cholesterol showed inverse correlation at all ages studied, although both variables increased with age. Serum and salivary cholesterol concentration showed positive correlation in 12-year-old boys.

OS003

Psychological assessment of adolescents with ectodermal dysplasia, cleft lip and palate and severe dentoalveolar trauma treated with dental implants at Royal Children's Hospital Melbourne

J. O. LUCAS[1,*], I. P. SWEENEY[1], J. W. FERGUSON[2] & N. MCMURRAY[3]
[1]*Royal Children's Hospital,* [2]*Department of OMFS, Royal Dental Hospital,* [3]*Department of Psychology, University of Melbourne, Melbourne, Australia*

Aim: Evaluation of the psychological effect on patients treated with dental implants at The Royal Children's Hospital Melbourne.
Method: A face-to-face survey using a quality of life questionnaire and the Cooper–Smith Self-Esteem Inventory was conducted on three groups of consecutive patients who had received dental implants for treatment of Ectodermal Dysplasia (ED), Cleft Lip and Palate (CLP) and tooth loss due to severe dentoalveolar trauma at the Royal Children's Hospital Melbourne.
Results: The mean values of self-esteem, suggest Trauma patients have higher SE (M = 83.67, SD = 11.63) than both the CLP patients (M = 64.5, SD = 13.68) and ED patients (M = 67.6, SD = 12.29). One-way ANOVA performed on the discrepancy scores suggest no group difference in smile, teeth, colour, shape, position or speech (P > 0.05). Patients show little worry about the colour, shape, position, or function of their teeth and have little worry over their speech or their smile. Most CLP patients 86.7%, 66.7% of trauma and 55.6% of ED patients perceive missing teeth as a bad problem. CLP patients were up to 30 times more likely to report teasing than the other groups. Functional difficulties were greatest in the ED group, while the trauma group felt most vulnerable. Parents perceive greater functional problems than the children and feel they hide their teeth by not smiling more often than do the patients themselves, t (25) = −6.018, P = 0.001. Self-confidence increased in all groups.
Conclusions: Self-esteem was lowest in the CLP and ED groups. Patients perception that implants had a positive impact on social interaction, function, self-image and confidence, was not supported statistically.

OS004

The timing of third molar formation

H. LIVERSIDGE[1,*], G. TOWNSEND[2], C. NORTJE[3] & K. PEARIASAMY[4]
[1]*Barts & The London School of Medicine & Dentistry, UK,* [2]*Dental School, Adelaide, Australia,* [3]*Dental School, University of the Western Cape, South Africa,* [4]*Queen Elizabeth Hospital, Kota Kinablu, Sabah, Malaysia*

The evidence for population differences in the timing of tooth formation is not robust. The aim of this study was to document third

molar formation in children from London, UK, South Africa, Australia and Malaysia. The sample consisted of 601 radiographs of 185 Aboriginal children from Yuendumu, Northern Australia (5–24 year), 484 African children from Johannesburg, South Africa (3–25 year), 92 radiographs of 75 children from Sabah, Malaysia (8–20 year), 659 Caucasian and 462 Bangladeshi children from London, UK (2–25 year) and 729 children from Cape Town (mixed, Cape Coloured) aged 3 to 21 years. The stages of mandibular third molars were assessed from radiographs using stages according to Moorrees *et al*. (1963). Mean age of attainment for stages Ci, Cc, R1/2, Rc and Ac were calculated using logistic regression for girls and boys combined. The 95% confidence interval of the mean was compared between groups. The earliest average timing of initial mineralization of the third molar was seen in the African children followed by Aborigines (7.64 and 8.53 year respectively). The average timing of Ci in other groups ranged between 9 and 9.7 year. The duration of crown formation was longest in Aboriginal children. The average timing of most stages in African children was earlier compared to other groups. There was a tendency toward earlier crown stages in Bangladeshi children from London compared to the Caucasian group. These results suggest that significant differences in third molar growth are apparent in both African and Aboriginal children compared to other groups.

Fluoride

OS005

Abstract withdrawn.

OS006

Reflection on changes in a fluoridated community 1963–1988

P. D. BARNARD
University of Sydney, Australia

Tamworth in New South Wales, Australia began fluoridation of its water supply in 1963. Prior to fluoridation all school children were examined by a University of Sydney dental survey team. Follow up surveys were then carried out annually to 1973, in 1979, and in 1988. The same team carried out 63 000 examinations over 24 years of fluoridation. This paper presents the findings on the oral health of the schoolchildren for selected age groups 5, 6, 9, 12 and 15 years at three to nine year intervals. The data showed a considerable decrease in dental caries accompanied by a decrease in teeth missing due to dental caries, fewer fillings having been placed and fewer teeth requiring restoration. Changes in primary dentition at 6yr from 1963 to 1988 were: dmft 7.2–1.4; mt 1.2–0.0; dt 4.9-0.7; (ds 8.9-1.2); ft 1.1-0.6; and ft/dmft 15%–46%. Changes in permanent dentition at 12 year from 1963 to1988 were: DMFT 8.4-0.9; DMFS 15.6-1.2; MT 0.7-0.0; DT 4.3-0.4; (DS 5.7-0.4); FT 3.4-0.5; and FT/DMFT 40%–54%. The comprehensive change in oral health status with reduction in dental caries of about 90% and the resultant reduction of dental treatment need were more than expected due to fluoridation alone. School dental service data from 1976 showed a continuing reduction in dental caries as more areas were fluoridated and use of fluoride toothpaste became widespread.

OS007

Water fluoridation successes in New South Wales, Australia

S. SIVANESWARAN[1,*] & P. HILL[2]
[1]*Centre for Oral Health Strategy, New South Wales,* [2]*Justice Health, Australia*

In New South Wales (NSW) in contrast to metropolitan Sydney where 100 per cent of the population have access to fluoridated water, only 59 per cent of the population living outside Sydney have access to fluoridated water. Under the Fluoridation of Public Water Supplies Act 1957 the responsibility to implement fluoridation rest with local government authorities who manage water supplies. Adoption in currently non-fluoridated communities is hindered due to organised community opposition to water fluoridation resulting in a high 'no vote' in fluoridation plebiscites. However, a proactive approach to water fluoridation by NSW Health since 2003 has resulted in many rural towns about to enjoy the benefits of water fluoridation. Fluoridation was implemented in Deniliquin in January 2005 after a successful fluoride plebiscite in March 2004 with 57 per cent of the population voting for fluoridation. Understanding the legislation governing fluoridation and looking at options to the usual referendum pathway in towns where historically there was a powerful active anti fluoride movement resulted in many rural towns being directed to fluoridate by the Director General of Health. In the townships of Mudgee and Gulgong after an information program as prelude to a fluoride phone poll, 54 per cent of their residents voted to have fluoridation. This presentation will provide a brief overview of the fluoridation initiatives in NSW with a focus on the health promotion strategies that led to a successful fluoride plebiscite and implementation of fluoridation in Deniliquin.

OS008

In situ evaluation of de-remineralization effects of two different fluoride agents using a laser fluorescence device and microhardness testing

A. MENTES* & Y. AYDIN
Marmara University, Turkey

The aims of this study were to study the de-remineralisation effects of a fluoride varnish (Duraphat) and an APF gel (Sultan) on caries-like lesions imbedded in intra-oral appliances; and to evaluate the efficacy of laser fluorescence device (LF, DIAGNOdent) in this procedure by comparing it with the microhardness test (MH). Fifty-four sound enamel samples (2×3 mm^2) were prepared and MH measurements were done to produce standard samples. Half the samples were demineralised to form caries-like lesions. Impressions from 9 volunteers were taken to prepare intra-oral appliances with each having three sound specimens on one side and three demineralised specimens on the other side. In each side one sample had APF gel applied, one sample had varnish and one sample was the control. Volunteers wore the appliances for 4 weeks. LF and MH measurements were done in the beginning and the end of the study. Our results showed that the prevention of demineralization effect of the varnish application was more effective than APF gel in sound enamel ($P < 0.05$), whereas for the remineralisation effect of the fluoride there were no differences between the demineralised groups ($P > 0.05$). Even though LF results seemed to be unpro-

ductive in determining the remineralisation when compared with MH results, LF and MH showed high negative correlation (r: −0.91) when all samples were pooled together.

Cariology

OS009

The relationship between tooth-cleaning habits and dental visit experiences of preschool children

S. J. LUNG[1,*], S. Y. HSIAO[2], S. T. HUANG[3], H. S. CHEN[1] & P. M. CHIU

[1]*Graduate Institute of Dental Sciences, College of Dental Medicine,* [2]*Department of Pediatric Dentistry, Chung-Ho Memorial Hospital,* [3]*Graduate Institute of Oral Health Sciences, College of Dental Medicine, Kaohsiung Medical University, Kaohsiung, Taiwan*

Objectives: To assess the relationship between tooth-cleaning habits and dental visit experiences of Taiwanese children aged from 0–6 years, and to analyze the risk factors associated with caries prevalence.
Material and method: A cross-sectional study was based on 616 preschool children randomly selected in Taiwan. Oral examinations were conducted by calibrated dentists using WHO criteria (1997) and questionnaires were completed by parents or main caregivers.
Results: In this study, the caries prevalence of primary teeth was 77.76%, and the deft index was 6.17. Using statistical analysis, the risk factors such as the tooth cleaning schedule of the children, children's attitudes toward the first dental visit and the caregiver's awareness of the oral condition of the children was significantly associated with the deft index ($P < 0.05$). In addition, the use of fluoridated mouthwash once a week had contributed to the decrease of deft index ($P < 0.05$).
Conclusions: This study revealed that increased frequency and timing of tooth cleaning and the use of fluoridated mouthwash once per week had contributed to the decrease of the deft index.

OS010

Complete oral rehabilitation of pediatric cardiac patients under general anesthesia

A. AL SHEDUKHY[1,*] & A. WYNE[2]

[1]*Riyadh Armed Forces Hospital,* [2]*King Saud University, College of Dentistry, Riyadh, Saudi Arabia*

The purpose of the investigation was to determine the characteristics of paediatric cardiac patients treated under general anaesthesia for complete oral rehabilitation, and describe the dental procedures performed during the treatment. A total of 99 paediatric cardiac patients treated for complete oral rehabilitation in Prince Sultan Cardiac Center were selected for the study. The required information was obtained through a form especially designed for the study. The gender distribution was (50 male and 49 female) with mean age of 8.4 years. A majority (54.5%) of children were from central province of Saudi Arabia. All most all (99.0%) children had congenital cardiac defects and were high risk for subacute bacterial endocarditis. Very few (9.1%) had previous dental treatment and the majority (8.1%) were treated under local anaesthesia. The mean dmft/DMFT of the sample was very high (12.66 SD 4.14) with decay as its major component (12.19 SD 4.12). More than two-third (69.7%) of the children had poor oral hygiene, and about one third (30.3%) had fair oral hygiene OH. The mean dmft/DMFT of children with poor OH was significantly higher than those with fair OH ($P < 0.05$). The most common dental procedure was extraction (6.36 SD 4.66), followed by preventive resin restoration (2.01 SD 2.53) and class III composite restorations (1.3 SD 1.75). It was concluded that great majority of paediatric cardiac patients had congenital cardiac defects. The dmft/DMFT was very high and, that extraction was the most common dental procedure performed in paediatric cardiac patients under general anaesthesia.

OS011

Abstract withdrawn.

OS012

Effect of host matrix metalloproteinase on the degradation of dentine collagen

D. YANG*, Y. SU & Y. LI

Faculty of Stomatology, Capital University of Medical Sciences, Beijing, PR China

Objective: To evaluate the effect of dentine matrix metalloproteinases (MMPs) on the degradation of dentine collagen.
Methods: Dentine powder was demineralised with acetic acid (pH4.0) at 4°C for 14 days, then dialysed and centrifuged. The supernatant was buffered in a neutral buffer. 5.0 mg Type I collagen was added to the 1 ml supernatant buffer 37°C for 4 hours, and supernatant buffer was taken as control. An hydroxyproline assay kit was used to determine collagenic degradation. Six replicates were made in each group. Equipotent precipitation was divided into four groups. Buffer containing any of 2 mM APMA, 200 mM EDTA, 0.2% CHX and buffer alone were added into each group respectively. Six replicates were made in each group. Collagenic degradation of each group was assayed. Scanning electron microscopy was employed to study the morphological and structural changes of dentine that had been demineralised and then put into neutral buffer.
Results: There was significantly more collagenic degradation in the supernatant buffer with collagen type-I than without ($P < 0.01$). Collagenic degradation could be detected in all precipitation groups. The most was in the APMA group (MMPs activator), while the least in CHX and EDTA groups (MMPs inhibitor). There were significant differences between the all groups and the blank ($P < 0.5$). SEM showed the destruction of collagen of the dentine sample when compared with the demineralised alone, the collagenous fibril layer still left at the latter.
Conclusion: Organic acid can activate host MMPs to degrade dentine collagen, which suggests that host MMPs may play an important role in the process of dentine caries formation.

Oral medicine and pathology

OS013

Papillon–Lefevre syndrome. Seven year report on a management protocol

R. WIDMER* & M. WONG
Childrens Hospital at Westmead, Australia

PLS is a rare autosomal recessive condition characterised by palmar-plantar hyperkeratosis and severe aggressive periodontal destruction, which involves both dentitions. The genetic basis of the condition was reported in 1999 with identification of mutations in the cathepsin C gene. The characterisation of the qualitative defects of polymorphonuclear leukocytes continues, with impairment of phagocytosis, chemotaxis and intra cellular killing all being reported. Previous presentations reported on the progress of five children who have been managed according to a protocol that draws together not only clinical and microbiological examination but also immunological investigation and drug therapy. Clinically, the removal of all primary teeth prior to the eruption of the permanent dentition, bacterial culturing for Aa, reinforcement of oral hygiene measures, delineation of neutrophil function abnormalities and the use of long term anti-microbials which enhance neutrophil activity have all been incorporated in the care of these children. The treatment outcomes over varying periods of follow-up for these five children with PLS, will be presented with particular reference to the status of the developing permanent dentition.

OS014

The clinical and gene mutation study on Chinese patients with Papillon–Lefevre syndrome

L. GE*, Y. YANG & C. CAO
Peking University School of Stomatology, Beijing, China

Objective: The purpose of the present study was to summarize the clinical and genetic features of Papillon-Lefevre syndrome (PLS) in Chinese, and to investigate the gene mutations of this disease to see if any ethnic differences exist.
Methods: Histomorphology analysis of the root surfaces and root resorptions of the teeth from PLS patients was carried out using light microscopy. Polymerase chain reaction (PCR), DNA sequencing, restriction enzyme reaction and single strand conformational polymorphism (SSCP) were performed to investigate the CTSC gene mutations in three Chinese PLS pedigrees and explore the pathogenesis of PLS.
Results: The extent of skin lesions in our patients was different, and hyperkeratosis worsened in later years. Light microscopy revealed evident irregular resorption lacunae and active repair on the root surfaces. Reduced cemental thickness was seen on molars. We have found compound heterozygous gene mutations of CTSC gene in the three Chinese PLS pedigrees, and their asymptomatic parents were the carriers of the mutations, which is consisted with the characteristics of autosomal recessive hereditary disease. The mutation types included deletion of four base pairs, missense mutation and nonsense mutation.

OS015

Cyclic neutropenia: case report

W. CHEUNG & S. GUE
University of Adelaide, Australia

Cyclic neutropenia is a rare blood dyscrasia that usually manifests in infancy or childhood. It is characterised haematologically by regular oscillations of the number of both peripheral and bone marrow neutrophilic granulocytes from normal to neutropenic levels. The oral manifestations include gingivitis, stomatitis with oral ulcerations, gingival hypertrophy and mild to severe alveolar bone loss with premature loss of primary teeth and possible loss of permanent teeth. A 12-year-old girl who presented with gingivitis and mobile permanent teeth will be presented. The case highlights the need for haematological investigations to confirm a diagnosis, and the need to consider the possibility of systemic diseases when children present with unusual oral manifestations.

OS016

Diagnosis and treatment of aggressive periodontitis

J. RINCON
University of Queensland Dental School, Australia

It is essential to be aware of the variety of clinical features in aggressive periodontitis, the importance of periodontal probing, early diagnosis and treatment. These cases are commonly not diagnosed or misjudged due to the absence of gingival inflammation, reduced presence of bacterial plaque, and minimal amounts of calculus and minimal carious lesions. Features of this unusual condition are highlighted in the following case series of 'aggressive periodontitis'. Five patients aged between 13 and 30 years old were diagnosed with different clinical manifestations of aggressive periodontal disease. Diagnosis was based on the following clinical considerations: severity of periodontal destruction, radiographic appearance of bone loss, amount of bacterial plaque, presence of calculus, age, degree of gingival inflammation. All patients were treated with systemic antibiotics (Doxycycline 200 mg 1st day and 100 mg day for 15 days), open flap surgical access and debridement for areas with deep periodontal pockets, and topical application of HCl tetracycline (diluted in distilled water at a concentration of 250 mg/ml) at the time of surgery. The rationale for such therapy was based on a scanning electron microscopy (SEM) study using topical HCl tetracycline on periodontally affected root surfaces at different concentrations. A substantivity effect was demonstrated after topical application of HCl tetracycline at concentrations of 200 mg/ml and 250 mg/ml. The efficacy of the treatment approach was demonstrated in two of the patients who could be followed and maintained with supportive periodontal therapy for more than two years. Clinical and radiological evidence demonstrated significant improvement in their periodontal condition.

OS017

Abstract withdrawn.

Dental anomalies

OS018

Developmental defects of enamel in three dimensions

J. FEARNE[1,*], R. WHATLING[1], P. ANDERSON[2] & G. DACIS[2]
[1]*Barts & The London NHS Trust,* [2]*Institute of Dentistry QMUL, UK*

Aim: The aim of this study was to investigate the three dimensional distribution of hypomineralisation in teeth with developmental enamel defects.

Method: A novel high definition X-ray microtomography (XMT) scanner was used to scan permanent molar teeth with a range of developmental enamel defects at a resolution of 15 x 15 x 15 μm^3 . For each whole tooth stacks of XMT slices were obtained from which surface rendered images were reconstructed. The VG Studio Max 1.2 visualisation software package was used to make normal enamel appear semi transparent allowing visualization of the distribution of the hypomineralised enamel in three dimensions throughout the tooth. A video film of the rendered three-dimensional images rotating through 360° was produced and can be found at www.smd.qmul.ac.uk/dental/oralgrowdev/biophysics/xmt/gallery.
Results: The distribution of hypomineralisation (< 2.6 g/cm^3) did not follow an incremental pattern. Variations in position and depth of mineralisation may reflect the maturation process of enamel.
Conclusion: Three-dimensional mapping of hypomineralised enamel associated with developmental defects will contribute to the understanding of the pattern of progressive mineralisation that occurs during the normal maturation process of enamel.

OS019

A descriptive study upon severe manifestation of oligodontia

H. GJOERUP[1,*] & S. POULSEN[2]
[1]*Resource Centre for Oral Health in Rare Medical Conditions, Aarhus University Hospital,* [2]*Department of Community Oral Health and Paediatric Dentistry, School of Dentistry, University of Aarhus, Denmark*

Aim: 1) To describe the distribution of agenesis in a group of individuals with severe manifestation of non-syndromic oligodontia; 2) to describe other dental anomalies in this group of patients, and 3) to compare this group of patients with patients suffering from syndromes typically characterized by oligodontia.
Material: During the last 2½ years, 32 individuals with severe non-syndromic oligodontia (agenesis of 9 or more permanent teeth) have been referred to the Resource Centre for Oral Health in Rare Medical Conditions, University Hospital of Aarhus, Denmark. The group ranged from 6–65 years of age, with 25 being below 20 years. The dentitions were investigated clinically and radiographically.
Results: According to the distribution of the dental agenesis in the individuals, various patterns of congenitally missing teeth were described. Agenesis of mandibular canines and maxillary incisors was extremely rare. A few cases had a very asymmetric distribution of the dental agenesis in a number of cases the primary teeth function well and the prognosis is fairly good. In other cases the primary dentition is characterized by early infraocclusion and root resorption. Occurrence of a number of other dental anomalies (abnormalities in size and form of teeth) was described. For several of these patients the pattern of agenesis did not correspond to that found in patients with syndromes characterized by oligodontia, e.g. hypohidrotic ectodermal dysplasia.

OS020

Infraoccluded primary molars with permanent successors. A report of two cases and literature review

R. NICHOL*, S. A. FAYLE & R. C. BALMER
Leeds Dental Institute, Leeds, UK

Introduction: There is controversy in the literature with regards to the management of infraoccluded primary molars with permanent successors.
Method: We present a review of the literature and two cases in which infraoccluded second primary molars with developing predecessors were monitored and subsequently surgically removed.
Results: Patient 1 was seven years old when he presented with an infraoccluded lower left second primary molar. Patient 2 was six-years-old when he presented with an infraoccluded upper left maxillary primary molar. As both patients had a permanent successor a conservative approach was adopted. However, after a period of five years for patient 1 and two years for patient 2 the infraoccluded primary molars were surgically removed. The infraoccluded second primary molar in patient 1 resulted in a centre line shift and tipping of the adjacent first permanent molar. The infraocclusion in patient 2 resulted in a lack of space for the second premolar due to the forward movement of the upper first permanent molar. Both patients are now undergoing orthodontic treatment.
Conclusion: Although there is evidence in the literature to support conservative management, we elected to surgically remove both infraoccluded primary molars. Should we have done this sooner or has this patient been over treated?

OS021

A maxillary first primary molar impacted by the first premolar: A clinical report

J. M. SU
Show-Chwan Memorial Hospital, Taiwan

Impaction of primary teeth, caused by primary failure of eruption, is quite rare with a prevalence of about 1:10000. However, inversion of the intra-osseous position of the primary tooth and its succedaneous permanent tooth is even more unusual. Only five cases have been reported in the past 25 years. This report is a clinical case of a six-year-old boy who presented with the unusual finding of an impacted maxillary deciduous first molar situated apical to the first premolar. Clinical examination showed normal development of dentition except for the absence of the maxillary right first primary molar. Periapical and panoramic radiographs showed this tooth to be adjacent and apical to the first premolar. The patient's medical history was unremarkable. The objectives of treatment were to prevent impaction of the maxillary first premolar and its consequent space loss. Thus, extraction of the impacted primary first molar was indicated. A surgical procedure removing both teeth and replanting the first premolar was performed cautiously. A band-and-loop space maintainer was cemented later. The patient returned at three-month intervals. Care was and will be taken to maintain the integrity of the premolar to allow normal root formation and eruption. Primary tooth impaction is a true rarity. In the management of primary dentition eruption disturbances, early recognition and accurate diagnosis as well as proper sequential treatment and careful follow-up are imperative.

OS022

The occurrence of central diastema and impacted premaxillary supernumerary teeth

J. LIU
Taichung Veterans General Hospital, Taiwan

Purpose: The purpose of this study was to evaluate the relationship between central diastema and impacted premaxillary supernumerary teeth.
Material and Method: A total of 97 patients with impacted supernumerary teeth were evaluated. The impacted supernumerary teeth were diagnosed from periapical X-ray, and the space between the two upper central incisors was measured. Central diastema was defined as the space between the two central incisors larger than 0.6 mm. These 97 patients were divided into two groups, canine

erupted, and canine unerupted. The canine erupted normal populations (without impacted supernumerary teeth) were served as control group.
Results: The results showed that the incidence of diastema of the canine unerupted group was 39%. For the canine erupted group the incidence was only 11.8%. The incidence of central diastema for the control group was 11.3%. The high incidence of central diastema for the canine unerupted group was mostly due to what is known as the 'ugly duck stage'.
Conclusion: Impacted premaxillary supernumerary teeth are not likely to cause central diastema.

OS023

An aetiological and descriptive study of molar incisor hypomineralisation (MIH)

R. WHATLING* & J. FEARNE
Barts & The London NHS Trust, UK

Methods: A total of 57 children with MIH were compared to 52 controls. Their mothers completed a medical history interview. Teeth were scored for defects using a new index.
Results: No associations were found with MIH and: delivery and birth complications; breastfeeding; immunisation history and other illnesses. MIH was significantly more common amongst: those who had chicken pox between the ages of 3 and 3.99 ($P = 0.047$); and those for whom amoxycillin was the only antibiotic they'd received ($P = 0.028$). 580 teeth were examined. First permanent molars were the most frequently affected (91.5%) and the upper lateral incisors (28.2%) the least. 76.5% of children had all four molars affected. As the number of molars affected increased so did the number of affected incisors ($P = 0.014$). No differences were found between left and right sides of the mouth or between the maxilla and mandible, except for upper central incisors, which were more affected than lowers ($P = 0.030$). Occlusal surfaces of molars and buccal-incisal halves of incisors were most likely to be affected. Lingual/palatal surfaces and gingival halves of incisors were less susceptible. Molars were more likely to have yellow-brown opacities whereas incisors had white-cream. Tissue loss most often occurred on the occlusal surface of the molars. A significant relationship was found between yellow-brown opacities and tissue loss on molar occlusal surfaces ($P < 0.001$ to 0.016).
Conclusions: The aetiology of MIH remains unclear and this study recommends further research looking at the links with chicken pox and amoxycillin. It is suggested that occlusal yellow–brown opacities on molars are electively restored.

Traumatology

OS024

Diagnosis of ankylosis in permanent incisors

K. CAMPBELL[1,2,*], M. J. CASAS[1,2,3], D. J. KENNY[1,2,3] & T. CHAU[3,4,5]
[1]*Faculty of Dentistry, University Of Toronto, Canada,* [2]*Department of Dentistry,* [3]*Department of Research, Bloorview MacMillan Children's Centre,* [4]*Faculty of Medicine,* [5]*Faculty of Applied Science and Engineering, University of Toronto, Canada*

Objectives: The objectives of this investigation were to 1) assess the reliability of expert raters to detect ankylosis from recorded percussion sounds, 2) compare Periotest® values (PTV) between ankylosed and non-ankylosed incisors and 3) identify differences between ankylosed and non-ankylosed percussion sound signals using digital sound wave analysis.
Methods: A convenience sample of healthy children, age range 7 to 18 years included Ankylosis group children that had one or more documented ankylosed maxillary incisors and Control group children with intact, non-ankylosed incisors. For each incisor of interest, Periotest® values (PTV) were acquired and percussion sounds were digitally recorded. Four paediatric dentists rated randomized ankylosed/non-ankylosed percussion sound pairs. Measures of inter- and intra-rater reliability were calculated for expert ratings. PTV for ankylosed and non-ankylosed incisors were compared using ANOVA. Percussion sound recordings were subjected to digital sound wave analysis.
Results: Expert raters demonstrated 'substantial' overall agreement ($K = 0.70$). Intra-rater agreement was 'substantial' to 'almost perfect' ($K = 0.62$–0.90). Diagnosis of ankylosis demonstrated sensitivity of 0.85 and specificity of 0.91. Mean PTV from ankylosed incisors were statistically lower ($P < 0.001$, weighted ANOVA). Ankylosed incisors exhibited significantly more percussion signal energy in high frequency bands.
Implications: Subjective assessment of percussion sound can reliably detect ankylosis. The Periotest® can confirm ankylosis in a relative manner but a low PTV is not exclusively diagnostic for ankylosis. Digital sound analysis supports the contention that percussed ankylosed incisors have a characteristic 'high' percussion sound.
Acknowledgements: This investigation was funded by Bloorview MacMillan Children's Centre, Toronto, Canada.

OS025

In vitro evaluation of three techniques for reattachment of fractured incisal fragment using two adhesives

I. H. EL KALLA[1,*], G. M. YAKOUT, M. KAMAL & R. AL AGAMY
[1]*Faculty of Dentistry,* [2]*Faculty of Science, Mansoura University, Egypt*

Purpose: The purpose is to evaluate reattachment bond strength and the esthetic quality of three reattachment techniques for fractured incisal segment using two adhesives.
Methods: The crowns of 200 extracted upper central incisors were fractured at a definite distance. 150 incisors with acceptable fracture pattern were selected and divided into three groups according to fracture surface preparation: G(1) without any tooth fractured surface preparation; G(2) the outer enamel of fractured surfaces in both the fractured segment and the tooth received a chamfer preparation; G(3) both fractured surfaces received V shaped preparation at DEJ. Each group was subdivided for Single Bond and Prime and Bond 2:1 adhesives. Then the fractured fragments were reattached to their incisors using composite and adhesive, finished and photographed for color prints and slides. The esthetic quality of repaired incisors were assessed according to the visibility of the fracture line. The reattached fractured segments were re-fractured using Instron machine and the data were statistically analyzed. The sites of reattachment failure were examined with stereomicroscope and SEM.
Results: F test showed no significant difference in reattachment bond strength between different groups or subgroups. The esthetic quality for group I was better than group 2 followed by group 3. The failure pattern was mainly cohesive within the adhesives for group 1 and within adhesives and composite for groups 2 and 3.
Conclusion: The reattachment of fractured segment without any mechanical tooth preparation may be the proper approach using either one of the two adhesives tested.

OS026

Reinforcement of traumatized immature teeth with a hydraulic calcium phosphate cement: an *in vitro* study

R. CAUWELS[1,*], I. PIETERS[2], L. C. MARTENS[1] & R. M. H. VERBEECK[2]
[1]*Department of Paediatric Dentistry and Special Care, Paecamed Research,* [2]*Department of Dental Biomaterials Science, Ghent University, Belgium*

Introduction: Endodontic treatment after trauma in immature teeth is often complicated because of the open apex and a flaring root canal resulting in thinned dentin walls. Long-term prognosis is surprisingly low not because of the treatment itself but because of cervical root fractures occurring following an impact of weak forces. Efforts should be directed towards strengthening the immature root.
Aim: This study aims to investigate the potential of a one-visit apexification while simultaneously reinforcing the root with a hydraulic calcium phosphate cement.
Material and methods: Bone cylinders (D 7 mm, H 10.5 mm) from bovine femurs were used as standardised samples. The samples received a central canal of 3.5 mm diameter imitating a root canal in an immature tooth and were divided into four groups: unfilled (G1; $n = 173$), obturated with gutta-percha (G2; $n = 159$), with thermoplasticized injectable gutta percha (G3; $n = 142$) or with a TTCP-based calcium phosphate cement (G4; $n = 167$). Fracture resistance was analysed using indirect tensile strength.
Results: One-way ANOVA ($P < 0.001$) and Bonferroni's test (á = 0.05) demonstrate that the tensile strength (MPa) increases according to: G1 (3.99 ± 0.07) < G3 (5.91 ± 0.08) < G2 (6.59 ± 0.09) < < G4 (11.83 ± 0.12).
Conclusion: The present alternative treatment procedure for a root filling in standardised samples resulted in a dimensional and structural reinforcement. Further investigation needs to define the best biocompatible materials having the opportunity to perform a one-visit apexification and to increase the mechanical properties of the traumatized tooth.

OS027

The outcome of intruded permanent incisors in paediatric patients

A. O'CONNELL*, C. E. HOWLEY & M. T. GARVEY
Dublin Dental School & Hospital, Ireland

Intrusive injuries occur rarely in the permanent dentition with a reported incidence of 3% and usually involve the maxillary teeth. The records of all paediatric patients with intrusive injuries to their permanent teeth who were referred to the trauma clinic were reviewed over a two-year period. Twenty-two patients were referred, however only patients who were reviewed at 1, 3, and 6 months and at 1 and 2 years post injury were included in the study. A total of 12 patients with intrusive injuries to 16 maxillary anterior teeth, (15 central and one lateral incisor) fulfilled our criteria. Eight patients were female; four patients were male. The age range was 6.3–15.4 years, with a mean age of 10.3 years. The cause of trauma was a fall in all cases with the exception of two patients who were involved in road traffic accidents. One patient presented with a mild intrusion injury, eight patients with moderate intrusion injuries to a total of 11 maxillary anterior teeth and three patients with severe intrusion. The teeth were repositioned orthodontically in eight patients and surgically in two patients. Endodontic treatment was performed once pulp necrosis became evident (range 12 days–6 months post trauma). At 2 year review, two teeth require extraction, and two teeth require decoronation to allow aesthetic replacement. External root resorption was evident in 75% patients. The prognosis for intruded teeth is guarded however, teeth replaced surgically did not differ from teeth repositioned by orthodontic forces in outcome.

OS028

Glass fibre reinforced composite post – a novel technique for treating severely traumatised incisors

F. S. WONG
Barts & The London, Queen Mary, University of London, UK

Aim: To present a novel glass fibre reinforced post system as an alternative to metal posts for restoring severely traumatised incisors in children.
Background: Traumatised incisors with subgingival fracture often require post retention to restore the fractured crowns. In children, the pulpal canals are usually wide and the radicular dentine walls are thin. Hence, the stress induced by conventional metal post systems frequently results in root fracture. Fibre-based post systems cause less stress to root dentine because of a small degree of flexibility. This advantage and their better aesthetic potential have increased their popularity of use.
Case Report: A 9-years old boy presented with a subgingival fracture of his upper left lateral incisor (UL2). This tooth was root treated and the apical portion was sealed with Mineral Trioxide Aggregate (ProRoot™). Novel unidirectional glass fibres, pre-impregnated with BIS-GMA and PMMA (everStick®, were inserted into the root canal, mould to conform to the canal shape, and light-cured. The fibre-post was then cemented with a dual cured self-adhesive resin cemented (RelyX™ Unicem). The core and crown was then built up with composite. The treatment was completed in one visit.
Conclusion: This novel post system has the advantages of having a high tensile strength, easy manipulation, better aesthetics and being slightly flexible. In addition, unlike silica/quartz-fibre posts, the everStick® post has chemical bonding to the luting cement and does not require extensive canal preparation. Therefore, it has the potential of being the preferred post-crown system to avoid root fracture in young children.

OS029

Progression of root resorption in replanted incisors and associated influencing factors

M. VAIDYANATHAN & F. WONG
Barts & The London NHS Trust, UK

Aims: To investigate the progression and pattern of root resorption in replanted incisors and influencing factors.
Method: Replanted avulsed incisors in patients treated at the Royal London Hospital from 1996–2005 were selected. Cause of trauma, patient's age at time of trauma, extra-alveolar time and storage, dates of replantation and extraction date were recorded. External root resorption was measured using periapical radiographs using the Andersson resorption index (*Endodont Dent Traumatol*; 5: 38–47). Resorption scores were plotted against time to show progression of resorption.
Results: A total of 57 patients with 74 replanted teeth have been included to date. Mean age of the child at time of injury was 10.2 years (range = 5̈C16). 15 teeth were extracted with mean survival time of 4.5 years. 51 teeth were stored wet, 20 dry and three were replanted immediately. Preliminary results indicate that after 3 months post-replantation, marked resorption (Andersson Grade 2) was found in 62% and 65% of teeth replanted within 1 hour and

>1 hour respectively, and in 56% and 85% of teeth stored wet and dry respectively. Resorption mainly occurred in the apical and middle thirds of the root (56% and 46% respectively). Only 7% had resorption in the cervical third. Resorption tended to increase rapidly in the first year after injury, but stabilises thereafter.
Conclusion: Aggressive resorption occurs in the first year post-implantation. Differences in resorption sites may be due to structural differences of the root surface with acellular cementum at the cervical region and cellular in the apical region.

Medically compromised

OS030

Health care professionals look on oral health needs in children with disabilities – a grounded theory study

G. KLINGBERG[1,*] & U. HALLBERG[2]
[1]*Mun-H-Center,* [2]*Nordic School of Public Health, Göteborg, Sweden*

Children with disabilities have been reported to have more oral health problems like dental caries, gingivitis and calculus compared with healthy children. Therefore, good collaboration between medical and dental care is essential in order to provide not only good oral health care, but also more holistic care for children with disabilities. The aims of this study were to explore and describe health care professionals' assessments and considerations of orofacial health and treatment needs in children with disabilities.
Materials and methods: In-depth interviews focusing on orofacial function and oral health were carried out with 12 health care employees. Interviews were transcribed verbatim and analysed in open, and focused (selective) coding processes according to grounded theory.
Results: A core category was identified and named 'exclusion of oral health', showing that oral health care assessment was not on the agenda of health care professionals when treating children with disabilities. This was instead regarded as being a responsibility of parents or dentists. This study shows that oral health issues are not integrated in medical care of children with disabilities.
Conclusions: The exclusion of oral health issues from the medical agenda implies a risk of oral health problems in children with disabilities.

OS031

Early diagnosis and intervention for a child with macroglossia: the role of oral motor function therapy

S. MALHI[1,*], M. SERAFIN[1], K. TOMITA[2], E. JAY[1] & L. MUGAYAR[1]
[1]*Sydney West Area Health Service, Westmead Centre for Oral Health, Australia,* [2]*Showa University, Tokyo, Japan*

A caucasian girl aged 2 and half years presented to our Oral Motor Function Therapy (OMFT) clinic with constant drooling and a protuberant tongue. The latter had been noted at birth (3 weeks preterm) along with extensive facial naevi, and for the first three days of her life had necessitated the insertion of a naso-gastric tube. Subsequently she was breast-fed with difficulty and suffered from eczema. Closure of her fontanelles was significantly delayed and in addition to having an increased weight-length ratio for her age she was found to have a diminished attention span. However, she remained an active child and no formal diagnosis was made. Assessment in the OMFT clinic revealed deciduous dentition and a thick hypotonic tongue. She spoke using single unintelligible words and was hypersensitive to oral-facial touch. She experienced marked thirst, ingested all types of food and was able to briefly close her mouth upon stimulation in the chin region. Considering the possibility of Beckwith–Wiedemann syndrome we sought a second opinion from a paediatrician. The latter confirmed our diagnosis as a 'definite mild case of Beckwith–Wiedemann syndrome' and initiated close monitoring for emergent abdominal tumours, using regular ultrasounds and serum Feto-Protein assays. Oral motor therapy comprising lip exercises, bilabial sound practice, drinking from a straw and spoon, and the use of an oral screen was instituted immediately and three treatment sessions over the past three months have significantly reduced sialorrhea, improved articulation of sounds and reduced tongue protrusion.

OS032

Survival analysis of dental health in medically compromised subjects

M. LARMAS
Institute of Dentistry, University of Oulu, Finland

Introduction: In the 1950's a network of institutes for mentally retarded subjects was established in Finland and all the treatment (educational, medical, dental) was centralised. Although the system later was scattered, dental treatment still continued in these central institutes.
Material and methods: Kårkulla Institute has provided dental treatment for compromised subjects since 1960. The intelligent and social levels of the subjects are generally under 7 years of age. Altogether four dentists have provided dental treatment during the follow-up of forty years. The first caries attacks leading to restorations in individual teeth for subjects born in the 1950's (n = 159), 1960's (n = 150), 1970's (n = 82), and in the 1980's (n = 35) were determined from the dental records and Kaplan–Meier estimates for caries onsets were drawn for each tooth as a function of the age of the subject.
Results: By the age of 20 years half of the first molars were restored due to caries whereas maxillary central incisors were restored in less than 20 %; the level of 40%–50% was observed in maxillary incisors around 40 years. Variation between the different age cohorts was relatively small.
Discussion: Tooth specific dental health of the indicator teeth was much better in mentally compromised subjects compared to normal population in Finland when both groups received regular dental treatment. No decline in caries prevalence in these age cohorts could be seen in the compromised subjects, whereas caries reduction in the normal population was highly significant in Finland.

OS033

Effectiveness of a school based oral health program for the mentally disabled

K. KAVVADIA[1], D. TAOUFIC[2] & A. POLYCHRONOPOULOU[1]
[1]*Athens Dental School* [2]*Private practice, Greece*

Aim: To test on a school based program for mentally retarded-MR young adults when trained weekly for three months, their plaque removing efficacy while self-brushing under supervision and their food matching capacity in cariogenic foods identification.
Methods and materials: A total of 57 M.R. young adults, mean IQ = 45 and mean age 21-year old, participated in this study. Participants weekly watched a brief oral health presentation, were taught a modification of the Bass technique, practiced brushing on a model's teeth using, had their plaque disclosed and recorded with the OHI-S and then self brushed under supervision. They were also

trained in identifying cariogenic foods and a dietary quiz was performed. Results were analyzed using paired *t*-test for plaque removal and signed rank test for the dietary quiz.

Results: The mean plaque improvement after training was 1.6 surfaces and this was influenced by sex, IQ, continuity and number of sessions attained. Males and individuals with moderate mental retardation improved statistically significantly but they needed at least three consecutive training sessions. The best improvement in plaque removal was found for those that attained more than 6 weekly sessions. Regarding their food matching capacity these individuals could not be trained in identifying cariogenic foods.

Conclusion: Moderately retarded young adults could improve their plaque removal efficacy with this weekly three-month school based program, with brushing under supervision, but attending minimum three consecutive weekly sessions.

OS034

Self perceived reporting of the side effects of medication in paediatric cardiac transplant patients

V. SRINIVASAN*, P. P. J. WATERHOUSE &
L. L. Y. LOWRY
Newcastle Dental Hospital, Newcastle upon Tyne, UK

Aim: To investigate parent and patient's perception of the occurrence of gingival overgrowth, hypertrichosis and eczema and to ascertain possible relationships between them in a group of paediatric cardiac transplant patients.

Method: A validated, self-completed questionnaire study was undertaken after subjects were invited to participate. Information was given on a standard instruction sheet and informed consent obtained.

Result: From 56 paediatric cardiac transplant patients 49 questionnaires were available for analysis, giving a response rate of 87.5%. The mean age at transplant was 5.19 years (range 0.08–15 years) and the mean time post transplant was 5.5 years (range 0.33–14.50 years). Out of the 49 patients, 21 patients who were using Tacrolimus had previously taken Cyclosporin A (Group 1), 20 patients were on Cyclosporin A (Group 2) and five patients were on Tacrolimus (Group 3) from the time of transplant until the time of this study. Three patients who were on Cyclosporin A were previously on Tacrolimus (Group 4). 71% of the respondents reported hypertrichosis, 65.3% gingival overgrowth, and 30.6% eczema post transplant. Chi Square tests were carried out to analyse pair wise association between gingival overgrowth and the other two side effects in patients from Groups 1 and 2.

Conclusion: Hypertrichosis and gingival overgrowth were perceived to be occurring more commonly than eczema post transplant. There was no statistical difference in the association between the occurrence of gingival overgrowth, hypertrichosis and eczema in Groups 1 and 2.

OS035

Effectiveness of oral hygiene products containing lactoperoxidase in the treatment of xerostomia in pediatric oncology patients: a pilot study

B. ALTÝNOK*& Y. TANBOGA
Paediatric Dentistry, Dental School, Marmara University, Turkey

Xerostomia or dry mouth is a condition that is frequently encountered in cancer treatments related to chemotherapy and radiotherapy. While radiotherapy related changes usually occur due to direct effects of radiotherapy to oral mucosa, chemotherapy related oral complications are the results of using certain systemic medications. The consequences of untreated dry mouth are severe limitations of masticatory function and speech, and increased risk of developing caries, periodontal diseases and fungal infections. Also, xerostomia is highly uncomfortable as making the patient constantly in need of coughing and moistening the mouth. All of these result in poor oral hygiene and malnutrition. There is no definitely effective treatment for this condition. This study evaluates the effects of two oral hygiene products containing lactoperoxidase- system on subjective oral symptoms in pediatric patients with xerostomia in the neutropenic period. Twenty patients used lactoperoxidase-system-containing toothpaste (Biotene, Laclede, Inc.) combined with the use of a mouthrinse (Biotene, Laclede, Inc.), chewing gum (Biotene, Laclede, Inc.) and Oralbalance gel for 4 weeks. Saliva samples were collected at base line and after 1 month of use of the products. Samples were analyzed for selected biochemical factors and subjective symptoms; intra-oral dryness (xerostomia), eating ability, oral discomfort were reconsidered. The results of this study suggest that the use of Biotene (mouthwash, toothpaste, chewing gum) and oral balance gel relieved subjective oral symptoms in most xerostomic pediatric patients.

Friday, 4 November

Dental anxiety and sedation 1

OS036

Recognition of toothache in very young children

J. VEERKAMP & V. JUDITH
ACTA, Netherlands

Introduction: Dental caries in young children can be associated with a reduced quality of life. Recognition of toothache in young children is difficult. Young children do not necessarily verbally complain of oral pain or toothache. For this reason the dental discomfort questionnaire (DDQ) was developed.
Aim: To assess the effect of dental treatment on pain related behaviour and to further explore validity, test and retest reliability.
Material and methods: The DDQ is a 9-question (e.g. does your child put away something nice to eat?) instrument to assess pain in preverbal children. This randomized longitudinal study included 146 children (47% girls, aged between 30–56 months, mean 46.8) who were referred for dental treatment. A non-treatment control group was also selected.
Results: The retest after two months before treatment resulted in satisfactory correlations (0.71). Regression analysis showed the questionnaire explained 43% of the variance in toothache. 'Putting away something nice to eat', 'Chewing at one side' and 'Reaching for the cheek while eating' proved to be significant predictors for toothache. The mean amount of pain related behaviour decreased significantly after treatment.
Conclusion: The DDQ showed satisfactory test-retest reliability. These results support the quality of the DDQ as a tool to indicate the occurrence of behaviour related to toothache thereby underlining the importance of a behavioural approach in young children. The DDQ could be helpful for both parents and researchers to identify toothache in young children. It seems useful to inform parents which behaviour to look for so they can recognize when toothache occurs.

OS037

Tips for taming tiny terrors

M. SILVA
Private practice, University of Melbourne, Melbourne, Australia

Communication between the child, parent and clinician is the name of the game. Practical behaviour management techniques will improve the child's confidence and yours in difficult dental appointments. Discussion for handling disruptive 'well meaning' parents will guide you to handle complex emotional situations, with minimum distress and happy outcomes. Clinical strategies with potential legal implications will be reviewed. The decision to utilize complex behaviour modification techniques must involve the parent (or legal guardian) and the clinician (and when appropriate the child). Informed consent is required in these cases and written documentation is essential. Consideration must be given to treatment strategies and potential risks. Ultimately, it is important to build a trusting relationship between the dentist and the child, and to promote the child's positive attitude towards dental health.

OS038

Hypno-analgesia in paediatric dentistry

H. GALON
Israel

Methods of sedation and analgesia have been advocated for the anxious or fearful dental child patient. Of these, inhalation sedation, more commonly called 'relative analgesia', is the one, which has the greatest inbuilt flexibility and has by far the widest application, especially in pediatric dentistry. The aim of this technique is the creation within the child of a tranquil state of mind and improving patient cooperation. The technique depends significantly for its efficacy on the interaction between the pharmacological effects of the oxygen/nitrous gas mixtures and the semi-hypnotic suggestion of modern behavior management techniques. In hypno-analgesia most children experience the symptoms at low concentrations of nitrous oxide, between 20% and 45%. This is connected with a mental and physical relaxation by giving hypnotic suggestions. A Child can maintain his/her own protective reflexes, respond to suggestions, keep his/her mouth open and is cooperative during the whole treatment. In the next years the use of Hypno-Analgesia will be an integral part of any modern dental clinic for children. The acceptance of an electronic apparatus (centurion MATRX), which provides digital audible and visual accurate signals will become our future machine in providing Hypno-Analgesia.

OS039

Dental fear in 8–19-year olds as rated by themselves and their parents – more similarities than differences?

A. GUSTAFSSON*, K. ARNRUP, A. G. BROBERG & U. BERGGREN
[1]*Department of Paediatric Dentistry, Motala,* [2]*Center for Orthodontics and Pedodontics, Östergötland,* [3]*Postgraduate Dental Education Centre, Örebro,* [4]*Department of Psychology,* [5]*Faculty of Odontology, Göteborg University, Sweden*

Objectives: This methodological study aimed to evaluate the reliability of dental fear ratings by assessing the agreement between self-ratings and parental ratings of child and adolescent dental fear in two groups of dental patients.
Methods: Two hundred 8–19 year-old dental patients referred for specialized paediatric dentistry because of dental behaviour management problems constituted the study group. Two hundred ordinary dental patients in the same age span served as a control group. Patients and their accompanying parents (mainly mothers) in both groups were, as part of a questionnaire, independently requested to fill in (self- versus parental ratings) versions of the Dental Subscale of Children's Fear Survey Schedule. The patient-parent agreement was evaluated using ordinal scale sum-scores and cross tabulations of fear level categories.
Results: Both patient and parent fear ratings were significantly higher in the study group as compared to the reference group. The patient-parent agreement decreased with increasing fear levels, showing substantial disagreement in single cases, mainly in the study group.
Conclusion: The reliability of parental ratings of child or adolescent dental fear should bequestioned, in particular in high fear populations. Self-ratings should, as far as possible, complement parental ratings.

Oral medicine and pathology

OS040

A case of severe facial infection – a dental cause?

J. M. SCOTT* & R. P. WIDMER
Children's Hospital at Westmead, Australia

Introduction: Head and neck infections in children are common. Early diagnosis and treatment are essential as children may become

systemically ill within a short period of time. Children with facial swelling, pain and fever are often first seen by a medical practitioner, and may undergo a number of investigations before being seen by the dental team. This case describes the management of a child with a severe orofacial infection (osteomyelitis) originating from a non-vital permanent molar that was initially diagnosed as a viral infection.

Clinical Findings: A nine-year old girl presented to the Children's Hospital at Westmead with a 14 day history of right sided facial swelling. At presentation she was febrile and in pain, with bilateral submandibular swelling, limitation of mouth opening, and a chronic dento-alveolar abscess associated with a non-vital lower permanent molar. The tooth was extracted under general anaesthesia, and an external drain placed. The patient remained intubated for two days in the paediatric intensive care unit with intravenous antibiotics. Long-term recovery and healing was uneventful.

Discussion: Maxillofacial infections may result in a number of complications. Aggressive management is essential to produce rapid resolution of the infection with minimal morbidity. A 9-year old girl suffered a severe orofacial infection originating from a non-vital permanent molar, resulting in emergency intubation and 4 days in intensive care. Successful treatment was achieved through multi-disciplinary management.

Conclusion: Dental causation should always be investigated in cases of facial infection.

OS041

Management of apical pathology and endodontic therapy in children with Sturge–Weber syndrome – a case report

S. STEPHEN
Department of Paediatric Dentistry, Sydney Dental Hospital, Australia

Sturge–Weber syndrome (or disease) is a congenital vascular malformation affecting the head, face, and brain. Typically the patient presents at birth with a 'Port Wine Nevus' – reddish–brown or pink discoloration of the face and the facial distribution involves the upper two-thirds of the face sometimes involving the choroid of the eye and extending supra-ocularly. This presentation is sharply demarcated and rarely crosses the midline and remains unchanged through life. Intra orally the mucosa, the cheek and the lip will be affected by vascular hyperplasia. The changes may include alveolar enlargement, bony expansion, macrodontia, premature eruption and accelerated apical root closure. Successful endodontic management of teeth with apical pathology in the affected area involves careful planning and a multidisciplinary approach.

OS042

Oral biopsies in children at a regional hospital in Malaysia

A. VENKITESWARAN* & K. PEARIASAMY
Queen Elizabeth Hospital, Malaysia

Aim: This study presents a review of oral biopsies performed on children attending a paediatric dental surgery hospital clinic in Malaysia.

Methods: Details of all oral biopsies carried out between 2002 and 2004 were classified according to the source of referral, type of specimen, anaesthesia used, and histopathological diagnosis. Data were recorded and analysed using Excel software.

Results: Over a three-year period, a total of 122 biopsies were recorded in children (birth to 16 years). Sixty-eight percent of referrals were by dental officers in government clinics. The most common oral biopsies were soft tissue cysts and inflammatory lesions. There was one malignancy reported. According to site, the lip was the most predominant (26%), followed by the maxilla (22%) and mandible (17%). Most lesions occurred in the mixed dentition stage (61%) as compared to permanent dentition (26%) or primary dentition (13%). Sixty-four percent of children had their biopsies under local anaesthesia while thirty-six percent of children required general anaesthesic.

Conclusions: Most oral lesions in children were benign. The findings would be useful for the diagnosis and management of oral lesions in children.

OS043

Oral pathology in children – a 25-year population perspective

T. GREGG[1,*], G. COWAN[2] & S. NAPIER[2]
[1]*Royal Belfast Hospital For Sick Children,* [2]*Royal Group Hospitals, UK*

Introduction: Examination of the entire oral cavity for disease, so called opportunistic screening, is a routine procedure for dentists. This is well established for adults but to date there has been little emphasis on children.

Aim: To determine the range of disease presenting in children compared to adults, it's most common clinical presentation and significance as reflected by tissue biopsies submitted for histopathological diagnosis.

Method: Range and relative frequencies of oral diseases arising in children under 14 years; (24% of the N. Ireland population) were determined in a retrospective analysis of pathology records (1975–1999). Data was analysed by diagnosis, age, gender and tissue of origin.

Results: There were 1397 paediatric biopsies (7% of total). Male 51%, female 49%, pre-school children, less than 5 years (8%). There were 79 different diagnoses 12 of which accounted for 77% of the sample. Tissue of origin: Mucosa 31%, (n = 386) – 91 polyps 76 papillomas 27 granulomatous inflammation. Sub-mucosa 37% (n = 473) – 402 mucous cysts, 14 neoplasms (4 malignant). Odontogenic 28% (n = 354) – 172 cysts, 12 odontogenic tumours. Bone 4% (n = 53) 24 giant cell lesions, one malignant tumour.

Conclusion: Children have fewer biopsies and fewer diagnoses than adults. Serious lesions are rarer and have a different clinical presentation. The frequency and range of soft tissue lesions (68%) and the fact that neoplasms (excluding odontogenic tumours) presented as sub-mucosal swellings and not ulcers suggests a different awareness than that in adults.

Endodontics

OS044

Effectiveness of four pulpotomy techniques – randomised controlled trial

K. C. HUTH[1,*], E. PASCHOS[2], N. HAJEK-AL-KHATAR[1], A. CRISPIN[3], R. HICKEL[1] & M. FOLWACZNY[1]
[1]*Department of Restorative Dentistry & Periodontology,* [2]*Department of Orthodontics,* [3]*Department of Medical Informatics, Biometry & Epidemiology, University of Munich, Germany*

Pulpotomy is the accepted therapy for the management of cariously-exposed pulps in symptom-free primary molars, however evidence is lacking about the most appropriate technique. The aim of this study was to compare the relative effectiveness of the Er:YAG laser, calcium hydroxide and ferric sulphate techniques with dilute formocresol in retaining such molars symptom-free. 200 primary molars in 107 healthy children were included and

randomly allocated to one technique. The treated teeth were blindly reevaluated after 6, 12, 18 and 24 months, accounting for the dependence of more than one pulpotomy per patient statistically. After 24 months, the following total (clinical and radiographic) and clinical (without radiographic evaluation) success rates were determined (%): Formocresol 85.4(93.0), laser 77.0(90.5), calcium hydroxide 52.3(88.4), ferric sulphate 88.7(100). Only calcium hydroxide performed significantly worse than formocresol (weighted Fisher's exact test with Bonferroni correction, $P = 0.011$) with a six-fold higher failure risk.
Conclusion: In conclusion, calcium hydroxide is less appropriate for pulpotomies than formocresol.

OS045

A comparative study on pulpotomy using Ferosulfate in primary molar

M. ESKANDARI & K. TAGHAVI
Faculty of Dentistry, Guilan University of Medical Sciences, Iran

Statement of problem: Formocresol is frequently used in primary molar pulpotomies. A search for an appropriate and safe material as a proper substituted for formocresol is necessary.
Purpose: The goal of the present study was to compare clinical and radiographic changes of pulpotomy using ferosulfate and formocresol in primary molars among 3–8 years old children. None of the subjects showed any systemic disease and all had at least two primary molar teeth that were clinically and radiographically appropriate for the pulpotomy technique. A total of forty-three teeth were studied. For each patient both materials were used. Following treatment, patients were investigated, clinically and radiographically at 3, 7 and 11 months. Treatment success was analysed using the chi-square and Fisher's exact tests based on clinical as well as radiographic findings.
Results: At all follow-up periods (3, 7 and 11 months), the formocresol pulpotomy was more successful (75.2%) compared to those with ferosulfate (69.8%), although the difference was not statistically significant ($P > 0.05$). Statistical tests revealed no significant difference between two different treatment techniques with respect to pain, external and internal resorption, calcified metamorphosis, abcess, apical root resorption, apical and interradicular radiolucency.
Conclusion: Although ferosulfate, due to its less toxicity, may be considered as a proper substitute for formocresol in primary molars pulpotomy, more studies with longer-term follow up and larger sample size are required to determine its long-term effects.

OS046

Clinical, radiological and histological evaluation of mineral trioxide aggregate and calcium hydroxide in direct pulp capping of human immature permanent teeth

K. EMERICH[1,*], L. SAWICKI[1], B. ADAMOWICZ-KLEPALSKA[1] & C. H. PAMEIJER[2]
[1]*Medical University of Gdañsk, Poland,* [2]*University of Connecticut School of Dental Medicine, Farmington, CT, USA*

The purpose of this study was a comparison of clinical, radiological and histological data of mineral trioxide aggregate (MTA) and calcium hydroxide (CH) used as pulp capping agents in human immature permanent teeth. Patients requiring extraction of premolars for orthodontic reasons were selected. In 45 caries free premolars, class I cavities were prepared and their pulps intentionally exposed. MTA or CH was placed over the exposure site followed by a flowable resin composite. Using acid etch/bonding agent/resin composite technique the cavities were restored. Patients were evaluated clinically after 7 and 30 days and prior to tooth extraction. Radiographs were made after 30 days and prior to tooth extraction. Extractions were performed after from 27–608 days. All teeth were processed for routine histological examination. 27 MTA and 12 CH treated teeth were evaluated clinically and histologically. All teeth responded normal to clinical tests. Radiographically the premolars showed normal immature root formation without pathology. Histologically dentin bridges were either solid, porous, had dentin chip inclusions or were absent. The MTA group had three teeth unsuitable for interpretation, 21 teeth with bridge formation, three without, two of which had necrotic pulps. The mean inflammatory response was 0.6 degrees. In the control group 1 tooth was unsuitable for interpretation, the other 11 had three teeth that were necrotic and seven had a dentin bridge. A mean inflammatory response of 0.8 degrees was observed. Pulp capping of human immature teeth with MTA generally produce the same or slightly more favorable results when compared with CH.

OS047

An innovative root canal filling material for primary teeth – *in vivo* evaluation in 25 children

H. S. CHAWLA*, S. SETIA, N. GUPTA, K. GAUBA & A. GOYAL
Oral Health Sciences Centre, India

Endodontic treatment was performed on twenty five pulpally involved mandibular primary molars in 4 to 9-year-old children; the root canals were obturated with a new root canal filling material consisting of a mixture of Calcium hydroxide, Zinc oxide and 10% Sodium fluoride solution using hand operated lentulospirals. All cases were evaluated clinically every 3 months and radiographically every 6 months. Assessment included overall clinical success, resorption of the root canal filling material and the status of excessive material extruded from the apices with the passage of time as the tooth resorbed. After six months, two teeth out of 25 had failed and one had exfoliated, while the remaining 22 were without any signs or symptoms. At the end of 2 years 14 children could be evaluated of these 12 had lost their teeth due to physiological exfoliation. It was observed that the resorption of this root canal obturating mixture was similar to that of the physiologic root resorption of the primary teeth. In three cases, where there was an apical extrusion of the mixture, a slow but gradual partial resorption was noted.

Cariology

OS048

The Hall technique: a randomised controlled clinical trial of a novel method of managing carious primary molars in general dental practice. One-year results

N. INNES*, D. J. P. EVANS & D. R. STIRRUPS
Dundee Dental Hospital & School, Dundee, UK

Introduction: The concept of sealing in dental caries to arrest the disease has been investigated for over 30 years. A recent review of the literature found favourable outcomes for teeth treated with incomplete caries removal (Kidd 2004). The Hall technique is a novel method of sealing in caries by cementing preformed metal crowns (PMCs) onto carious primary molar teeth without any local analgesia, tooth preparation or caries removal.

Aim: To compare the efficacy of the Hall technique with conventional restorative techniques for carious primary molars in general dental practice (GDP).
Material and Methods: GDP based, split mouth, randomised controlled clinical trial (132 children, aged 3–10), comparing the Hall technique with conventional restorative techniques, in carious lesions matched clinically and radiographically. Dentists used their conventional restorative technique on the control tooth, and placed a PMC using the Hall technique, cemented with glass-ionomer cement (Aquacem,3M), on the study tooth. The teeth were followed up clinically and radiographically.
Results: After 1 year, the Hall technique outperformed the conventional fillings in terms of a) minor failure (filling loss/fracture/loose/worn/secondary caries); 44 control: 3 Hall b) major failure (loss of vitality/ abscess formation); 5 control: 1 Hall, and c) pain; 6 control: 1 Hall.
Conclusion: Sealing caries into primary molars using PMCs cemented with glass-ionomer would appear to significantly slow progress of the caries, and show a more favourable outcome than the standard restorative techniques being carried out in GDP in Scotland. Supported by CSO Scottish Executive, and 3M/ESPE.

OS049

Histological validation of a laser fluorescence device in the detection of occlusal caries in primary molars

K. GAUBA*, A. GUPTA, H. S. CHAWLA, A. GOYAL & R. NADA
Oral Health Sciences Centre, India

The problems with conventional methods of occlusal caries diagnosis have lead to intense research in developing new and more accurate techniques that would be able to measure the small changes seen in dental caries and would allow for earlier preventive interventions aiming at shifting the emphasis in clinical dentistry away from the restorations to conservation of tooth structure. Published evidence suggests that laser fluorescence devices have the ability to detect early occlusal caries in permanent teeth with great accuracy and repeatability. There is very little available data reporting their effectiveness on primary teeth. This investigation involved a total of 84 first and second primary molars, which were indicated for extraction and had either sound occlusal surfaces or early carious lesions. The selected teeth were subjected to radiographic evaluation for carious lesions using bitewing radiographs, followed by visual examination and tactile evaluations. Thereafter, the teeth were evaluated using the DIAGNOdent laser based device. Subsequently, the teeth were extracted and sectioned using a hard tissue microtome. Histological examination under light microscope served as a gold standard for comparing above mentioned caries diagnostic techniques. The findings of the present investigation revealed that both visual and tactile methods had a tendency to underscore enamel carious lesions while the laser fluorescence device showed significantly less false negative findings in detection of enamel as well as dental caries. The sensitivity of the technique was found to be the highest when compared with conventional methods.

OS050

The Hall technique: a randomised control trial of a novel method of managing carious primary molars in general dental practice: acceptability of the technique

D. EVANS*, N. INNES & D. STIRRUPS
Dundee Dental Hospital & School, Dundee, UK

Introduction: Scotland has a high caries rate; 55% of 5 year-olds have decay, 16% have extractions and only 9% of cavities are restored. The Hall technique is a simplified method of managing carious primary molars, using preformed metal crowns (PMCs), cemented with no local analgesia, caries removal or tooth preparation.
Aims: To compare the acceptability of the Hall technique to children, parents and dentists with conventional restorations.
Methods: General practice-based, split mouth, randomised control trial involving 132 children (aged 3–10). Contralateral, clinically and radiographically matched carious primary molars were treated with the Hall technique or conventional restorations. Dentists ranked the degree of discomfort they felt the child experienced for each procedure; then children, parents and dentists stated which technique they preferred.
Results: Using a five-point scale, 118 (89%) of Hall technique procedures were rated as no apparent discomfort up to mild, not significant; the similar figure for conventional restorations was 103 (78%). Significant and unacceptable discomfort was recorded for 2 (1.5%) of Hall techniques, and 6 (4.5%) of conventional restorations. Where a preference was expressed, 77% of the children, 83% of the parents and 81% of the dentists preferred the Hall technique, and this preference was significant (Chi-square test, $P < 0.0001$).
Conclusion: The Hall technique was more acceptable to children, their parents and dentists than conventional restorations. In addition, children were gauged by their dentist as experiencing less discomfort with the Hall technique.Supported by CSO Scottish Executive, and 3M/ESPE.

OS051

Study of the horizontal transmission of oral mutans streptococci in children

J. ZOU[1,*], R. SHANG[2], J. LING[1] & X. ZHOU[2]
[1]*Guanghua College of Stomatology, Zhongshan University,* [2]*West China College Of Stomatology, Sichuan University, PR China*

Objective: To find out horizontal transmission of oral mutans streptococci (MS) in nursery children through analysing the similarity of MS genotypes.
Material and methods: The study group included 24 nursery children between 3 and 4 years of age. Dental plaque samples were collected with sterile toothpicks and cultured on MSB plates for 48 hour. Individual MS colonies representative of the colonial morphologies were subcultured on TPY plates. These strains were identified to species level biochemically. AP-PCR fingerprinting was preformed after identification. MS isolates from different children with very similar fingerprinting profiles were examined by chromosomal DNA fingerprinting analysis.
Results: MS was isolated in oral cavities of 66.7% of the children, 58.3% in caries-free and 75.0% in caries children. A total of 46 MS isolates from 24 subjects were analysed by AP-PCR, and 29 different amplitypes were identified. There were nine children with the same genotype of *S. mutans*.
Conclusion: The presence of matching genotypes of MS among nursery children suggests horizontal transmission.

Dental anxiety and sedation

OS052

A review of a intravenous sedation technique in paediatric dentistry

P. D. WONG
Australia

The management of restorative needs in children is both challenging and extremely difficult. Various techniques to manage apprehensive and difficult children have been used in the past. These range from typical behavioural management techniques including the 'show-

tell-do' technique, followed by more invasive sedation techniques. These involve the use of oral sedatives, relative analgesia and general anaesthesia. Recently the use of intravenous sedation techniques have been utilised and this is well documented within the literature. Intravenous uses of propofol and midazolam have been recommended for various paediatric procedures. They are well-recognized techniques within major tertiary hospitals. Over the past five years an intravenous sedation technique using midazolam, alfentanil, and propofol has been successfully utilised in a private paediatric practice. Over a five year period, over two and half thousand patients have had treatment performed using this technique. Intravenous medication has been administrated by a specialist paediatric anaesthetist for short procedures such as simple restorations and/or extractions. This report provides a five-year review of the use of intravenous sedation techniques for the management of children in a private practice setting. The majority of the procedures completed have involved extractions and restorations. The children have come back for 3 month reviews and they have all been quite happy to return for follow up treatment and very little dissatisfaction has been reported. This report provides details on a very safe and efficient technique for the management of restorative and extraction needs in paediatric patients.

OS053

Intravenous procedural sedation for dental treatment in autistic spectrum disorder – a case–control study

A. MILNES* & G. MAUPOME
Private practice, Canada

Autistic Spectrum Disorder (ASD) is a chronic, non-progressive developmental disability with a classic triad of impairment in social interaction, communication and behaviour. Providing outpatient dental treatment for children with ASD is difficult. This study extends previous investigations of Intravenous Procedural Sedation (IVPS) for pediatric dental treatment and compares the outcome of IVPS between children with ASD (experimental) and healthy, uncooperative children (control), each of whom required dental treatment. Thirty-six children were recruited; 18 children with ASD were matched for treatment required, procedure length and age to 18 healthy, uncooperative children. A time-based sedation record was used to gather physiologic, behavioural, treatment delivered and drug dosage data for each child. Each child's responsible caregiver gave informed consent. IVPS was administered according to the American Academy of Pediatric Dentistry sedation guidelines. Descriptive statistics were calculated for each group. Results were compared using unpaired *t*-tests and one-way ANOVA. All treatment required was completed for each child. Minor and/or moderate sedation levels were achieved for each subject. There were no sedation failures and no adverse sedation events during or after treatment. There were no statistically significant differences between groups in body weight, treatment or recovery time, behavioural or physiologic responses and dosages of midazolam, droperidol or lidocaine. A significantly higher nalbuphine dose was administered to children in the control group ($P = 0.042$). Parental acceptance of IVPS was high. We conclude that IVPS for dental treatment to children with ASD is a safe and predictable method for providing comprehensive dental treatment and has high parental acceptance.

OS054

Paediatric sedation in a Centre of Special Dental Care

H. HUIJBOOM-TAN* & D. M. VAN LUNSEN
Centre of Special Dental Care Amsterdam, Netherlands

In the Centre of Special Dental Care (SBT) Amsterdam, routine paediatric dental procedures in young and uncooperative children are carried out with intravenous propofol, a technique using target controlled infusion administered by an anaesthesiologist. The purpose of this study is to evaluate the future risk of Early Childhood Caries patients who received dental treatment with this technique. A total of 197 children were included in 2003 (mean age 50 months) and 102 in 2004 (mean age 42 months). These were children who showed up at the recall appointment one year after receiving treatment. In the 2003 group, 30% of the children showed new cavities after one year. In the 2004 group, a decrease in new cavities (15.7%) was seen after new measures were implemented, such as an intensive preventive program and changing the nature of the treatment provided. Despite these measures, ECC such as Nursing Bottle Caries still remain a problem in certain communities. The demand for dental treatment with intravenous propofol technique has increased over the past decade with caries remaining the main reason for use of this service.

OS055

The use of conscious sedation in children with special needs

M. WOOD*
Leagrave Dental Anaesthetic Clinic, UK

This oral presentation will demonstrate a range of different sedation techniques, drugs and routes of administration, which may be used in children ranging from 1 year of age upwards. Most of the patients treated were medically compromised, either with physical or intellectual impairments. All children included in this study were treated at a specialist referral centre in the primary care setting, where the person administering the sedation also provided the treatment.

OS056

Is oral midazolam effective for paediatric dental care? A comparison of use in two specialist centres

P. DAY[1,*], A. POWER[1], S. HIBBERT[2] & S. PATTERSON[1]
[1]*Leeds Dental Institute, UK,* [2]*Westmead Dental Hospital, Australia*

Aim: To retrospectively analyse the outcome of children undergoing oral care under conscious sedation with oral midazolam and local anaesthetic at Leeds Dental Institute, UK and Westmead Dental Hospital, Australia.

Methods: All children were included in the study who had been treated between September 2000 to August 2004, where full records were available. The dental records were examined using a standard pro forma. The following data were collected: age, previous behaviour using Frankl–Wright scale, units of work planned and achieved, midazolam dosage and treatment outcome using the Houpt scale.

Results: The study population consisted of 100 children aged between 1–11 years with a mean age of 4.6 years (SD + 2.01). Between Leeds (56 children) and Westmead (44 children) there were significant difference with respect to age (5.0 v. 2.9), number of treatment visits (1.7 v. 1.1), sedation dose (0.5–0.7 mg/kg compared to 0.3), type and amount of treatment planned (using a modified O'Sullivan scale BDJ 1991, 8.3 v. 3.3) and achieved (5.5 v. 2.4) and overall success rates of rendering the children dentally fit (75% v. 91%).

Conclusion: Oral midazolam is a promising drug for the management of young children with behaviour problems. It is not, however, effective in all cases and for the provision of all paediatric dentistry. By analysing its use in the two centres we give some guidance on where it is beneficial.

Syndrome and genetics

OS058

Clinical diagnostics of autosomal dominant aplasia of lacrimal and salivary glands (ALSG) associated with mutations in the fibroblast growth factor 10 gene

B. BERGENDAL[1,*], B. FALAHAT[2], L. OLSON[3], M. WYON[4], M. ENTESARIAN[5] & N. DAHL[5]
[1]*National Oral Disability Centre,* [2]*Department of Dentomaxillofacial Radiology,* [3]*Department of Paediatric Dentistry,* [4]*Department of Ophthalmology, Ryhov County Hospital, Jönköping,* [5]*Department of Genetics and Pathology, Uppsala University, Uppsala, Sweden*

Background: Two families in four and three generations were identified with irritable eyes and dry mouth. Mutations in the gene encoding fibroblast growth factor 10 were shown to be associated with aplasia of lacrimal and salivary glands, ALSG, (*Nat Genet*. 2005; 37: 125–7). The disorder is rare with variable expressivity.
Materials and methods: Signs and symptoms according to clinical criteria for keratoconjunctivitis sicca and hyposalivation were registered. Magnetic resonance imaging (MRI) was used to confirm the diagnosis.
Results: Clinical routine ophthalmological and oral examinations of 22 individuals did not clearly distinguish affected from non-affected individuals. The diagnosis of ALSG was set by MRI in 16 individuals and was the basis for the genetic analysis. Dryness of the mouth was not perceived as abnormal by all affected individuals. A few individuals 15–25 years of age showed signs of extensive dental erosion. Four affected individuals born 1937–1948 had become edentulous at 18–22 years. Difficulties when speaking, chewing, and swallowing were common.
Conclusions: Clinical criteria for keratoconjunctivitis sicca and dryness of the mouth were not discriminative enough to identify individuals affected by ALSG. Congenital dryness of the mouth may not be perceived as a problem by the individual. MRI is a non-invasive method which has a high discriminative capacity for identification of ALSG. Agenesis and dysplasia of the major salivary glands can have detrimental effects on the teeth and cause problems when speaking, chewing, and swallowing. Oral examinations can be crucial in the diagnosis of rare disorders.

OS059

A clinical and molecular genetic study of oligodontia in three families

M. MALANDRIS[1,*], A. CAMERON[2], B. BENNETTS[3], M. WILSON[3], R. WIDMER[4] & J. CHRISTODOULOU[3]
[1]*Department of Paediatric Dentistry, Women's & Children's Hospital Adelaide,* [2]*Department of Paediatric Dentistry, Westmead Centre for Oral Health,* [3]*Western Sydney Genetics Program,* [4]*Department of Paediatric Dentistry, Children's Hospital at Westmead, Australia*

Background: Oligodontia is a rare, severe form of tooth agenesis that may occur alone or as an associated feature of a number of syndromes and in particular the ectodermal dysplasias.
Objectives: To characterise the dental and non-dental features of families presenting with autosomal dominant oligodontia trait and then explore the molecular genetic basis of these oligodontia conditions.
Methods: All subjects underwent a full medical and dental history and examination. DNA extracted from collected blood samples was used to conduct linkage analysis. Microsatellite markers were initially selected based on their proximity to the potential candidate genes MSX1, PAX9 or EDAR.
Results: Two pedigrees were clinically diagnosed with non-syndromic oligodontia (NSO) and one with autosomal dominant hypohidrotic ectodermal dysplasia (HED). Affected individuals in the NSO pedigrees had an average of 10 teeth congenitally missing (range 5–20). Individuals in the HED pedigree had moderate to severe hypohidrosis and dysphagia, mild hair, skin and nail anomalies and an average of 11 teeth (range 10–12) congenitally missing. The potential candidate genes were found not to be causative based on linkage analysis in two pedigrees. A genome-wide linkage analysis in the HED pedigree indicated linkage to the D17S784 marker at locus 17q25.3, with a maximum LOD score of 3.32 at è = 0.
Summary: The study showed that not all cases of NSO and HED are a result of mutation in the most commonly reported genes. Further investigations are underway to determine whether a major susceptibility locus for autosomal dominant HED exists on chromosome 17.

OS060

Treatment outcomes of adolescents with ectodermal dysplasia, cleft lip and palate and severe dentoalveolar trauma, treated with dental implants at the Royal Children's Hospital Melbourne

I. SWEENEY[1,*], J. O. LUCAS[1], J. W. FERGUSON[2] & A. A. HEGGIE[1]
[1]*Royal Children's Hospital,* [2]*Royal Dental Hospital, Melbourne, Australia*

Aim: To evaluate the clinical outcomes of dental implants used to restore incomplete dental arches in adolescents at The Royal Children's Hospital Melbourne.
Method: A retrospective evaluation of dental implants placed into 41 patients, fifteen with cleft lip and palate (CLP), fourteen with ectodermal dysplasia (ED) and twelve (severe dentoalveolar) trauma patients, referred to the children's hospital was performed.
Results: Fourteen ED patients (9 male, 5 female) fifteen CLP patients (9 male, six female), and 12 trauma patients (6 male, 6 female), with age ranges of ED = 12 years 4 months–26 years 6 months, CLP = 18 years 8 months–24 years 4 months and trauma 17 years 0 months–21 years 8 months received a total of 106 endosseous implants. ED patients received 61 implants (15 anterior maxilla, 43 anterior mandible and 3 posterior mandible). Fifty-four successfully integrated (88.5%), to support 15 fixed and two removable appliances. CLP patients received 21 implants placed into grafted alveolar bone. All 21 (100%) integrated to support 20 fixed appliances. The trauma group received 24 implants, all of which integrated to support 12 appliances. At the twelve months review appointments, 91% of all implants placed were classed as successful, 3% surviving and 6% as failures. All original prostheses continue to function in situ, with 95% classed as successful, 2% surviving while 2% were classed as re-treatment (repaired). 100 %of CLP and trauma patients report their implant supported teeth feel like part of themselves, while 40% of ED patients describe them as foreign.
Conclusions: The results support the continued use of endosseous dental implants in ED, CLP and patients who suffered severe dentoalveolar trauma for optimal clinical outcomes.

OS061

Dental care for children with hyper-IgE syndrome (HIES)

G. SCAGNET[1]*, S. KRASOVEC[2], M. ARMADA[1] & M. OLEASTRO[2]
[1]*Special Patients Service, Quinquela Martin Hospital of Paediatric Dentistry,* [2]*J. P. Garrahan National Paediatrics Hospital, Buenos Aires, Argentina*

Hyper IgE-syndrome (HIES) is a primary immunodeficiency characterised by elevated levels IgE in serum, recurrent infections, skeletal malformations and several alterations of the dentition. Treating this illness is based on supportive therapy and focuses on preventing oral infection. Dental care is an essential part. There are 36 Argentinian cases, who have been reported to the Latin American Group of Immunodeficiency (LAGID) Registry as of September 2003. Sixteen were treated in the Immunology Service of the Pediatric Hospital Garrahan, all were diagnosed with buccal candidiasis. Since June 2003, dental care has been provided for 10 of the 16 patients and this experience has resulted in the design of a dental care protocol for patients with HIES. Treating systemic and oral malformations by attaining and maintaining oral health included preventing and/or treating infections to avoid systemic disease.

Protocol description: 1) Working with immunologists. 2) Completing clinical and radiographic diagnostic assessment. 3) Working with the patient and families to reduce anxiety. 4) Creating a dental rehabilitation plan that emphasized prevention. 5) Treating oral candidiasis. 6) Using antibiotic prophylaxis during procedures that could result in bacteremia. 7) Avoiding drug interactions with medical prescriptions. 8) Use of oral prostheses to prevent dental malformations. Our conclusion from developing this interdisciplinary protocol was that is important to correctly treat patients with HIES and avoid systemic complications caused by dental procedures. It will also be feasible to document the incidence of dental disorders in the Argentinian population of patients with HIES.

OS062

Cleidocranial dysplasia – clinical presentation and treatment

K. M. CHAN[1,*], R. K. HALL[1,2,3], N. KILPATRICK[1,3] & R. SAVARIRAYAN[1,2]
[1]*Department of Dentistry, Royal Children's Hospital, Melbourne, Australia;* [2]*Victorian Clinical Genetics Service,* [3]*University of Melbourne, Australia*

Cleidocranial dysplasia (CCD) is an autosomal dominant osteochondrodysplasia with significant and characteristic dental abnormalities. The disease gene has been mapped to chromosome 6p21 and mutations were found in CBFA1, a transcription factor that activates osteoblast differentiation. The phenotype is characterized by delayed ossification of cranial fontanelles and sutures, aplasia of the clavicles and delayed closure of the pubic symphysis. The most striking oral abnormalities are the delayed eruption of the primary dentition, delayed eruption of the permanent incisors and first molars and failure of the primary cuspids and molars to resorb and their permanent successors to erupt. This presentation summarises the current understanding of the phenotype of CCD and emphasises the significance of the dental features. Management strategies for children and adolescents with CCD will be discussed.

OS063

Multiple unusual dental anomalies associated with cleft palate. A previously unreported syndrome?

S. A. HIBBERT[1,*], R. P. WIDMER[2] & L. C. ADES[3]
[1]*Department of Paediatric Dentistry, Westmead Centre For Oral Health, Westmead Hospital,* [2]*Dental Department, The Children's Hospital,* [3]*Department of Clinical Genetics, The Children's Hospital Westmead, Australia*

An 8-year-old girl was referred for a dental consultation regarding crowding and micrognathia. The girl was the younger of 2 children of non-consanguineous parents. She had moderate global developmental delay with limited language, a complete cleft of the palate, left convergent strabismus and left conductive deafness. On clinical examination she was noted to be in the primary dentition, with severe crowding, macrodontia; particularly 73 and 83, and congenital absence of teeth 71 and 81. An OPG radiograph revealed a total failure of root development of all four first permanent molars. Teeth 15, 25, 35, 31, 41 and 45 were noted to be congenitally absent and 17 and 27 were of anomalous morphology. Multiple denticles were noted in the lower left quadrant and a supernumerary tooth was evident in the anterior maxillary segment. On eruption 36 and 46 were noted to have large accessory cusps. She was seen by a genetics service at 2 years of age when a number of investigations were arranged. Chromosome karyotype and DNA testing for Fragile X(A) and FISH 22q11 all gave normal results. We referred the child for a further genetic consultation. Additional tests were arranged, including a urine metabolic screen and repeat high-resolution banded karyotype. It is hoped to perform comparative genomic hybridisation (CGH) as the technology becomes available. At present it has not been possible to ascribe a specific genetic syndrome to explain this constellation of features. It is possible she may have a unique condition that has not previously been described in the literature.

Prevention

OS064

Caries in 4-year-old children after maternal exposure to chewing gums containing xylitol, sorbitol, chlorhexidine and fluoride

S. TWETMAN[1,*], I. THORILD[2] & B. LINDAU[2]
[1]*Umeå University, Umeå,* [2]*Public Dental Clinic, Varberg, Sweden*

The aim was to evaluate the effect of maternal use of chewing gums containing combinations of xylitol (X), sorbitol (S), chlorhexidine (CHX) and fluoride (F) on caries prevalence in the mothers' 4-year-old children. After screening 416 women with newborn babies, 173 mothers with high counts of salivary mutans streptococci (MS) were randomly assigned into three experimental chewing gum groups containing A) X (n = 61), B) CHX/X/S (n = 55), and C) F/X/S (n = 57). Mothers with low or medium MS counts formed a reference group (D) without any intervention (n = 232). The participants in the experimental groups were instructed to chew one piece of the gum for 5 minutes, three times a day. The chewing regime started when the child was 6 months old and was terminated 1 year later. The outcome measure was caries prevalence at the age of 4 years as scored by clinical examination. The attrition rate was 17% in the intervention groups and 9% in the reference group. The mean defs (SD) was 0.4 (1.0) in group A, 0.7 (1.6) in group B, and 1.4 (3.0) in group C. The corresponding caries

prevalence in the low risk reference group was 0.5 (1.8) defs. The differences between groups A-C and D-C were statistically significant ($P < 0.05$). In conclusion, significantly less decay was observed in 4-year-old children of mothers who used high-content xylitol gums compared with those who used lower amounts of xylitol. Thus, previous findings from mother-child studies with xylitol intervention are reinforced.

OS065

Sem study of human enamel surfaces treated with a novel substance: a pilot study

B. KARGÜL[1,*], S. PEKER[1], M. ÖZCAN[2], T. NAKAMOTO[3], W. B. SIMMONS[4] & A. U. FALSTER[4]
[1]*Marmara University, Dental School, Department of Paediatric Dentistry,* [2]*University of Groningen, Faculty of Medical Sciences, Department of Dentistry and Dental Hygiene,* [3]*LSU Health Sciences Center,* [4]*University of New Orleans, New Orleans*

Theobromine is a bitter alkaloid of the methylxanthine family, which is similar to theophylline and caffeine found in cocoa and chocolate (Theobroma cacao). Theobromine is a chemical stimulant frequently confused with caffeine, but has very different effects on the human body. Our studies indicated that theobromine enhanced crystallinity, mechanical strength and dissolution resistance of apatite. The crystallite size is increased in animals exposed to theobromine, making the apatite less easily dissolved. The aim of this in-vitro study was to investigate the effect of theobromine on surface topography using SEM. Freshly extracted human third molars were collected and stored in deionized water until they were used. Twenty four enamel blocks of 3 x 3 were sectioned from the labial surfaces of the teeth, and were divided into three groups: theobromine (100 mg/l of water or, 200 mg/l) and control (without theobromine). Teeth were treated with theobromine for 5 minutes. Representative SEM micrographs at a magnification of 1000X, showing enamel surface of the untreated control group were generally smooth and slightly hummocky with small lines of pits. In the samples treated with theobromine, there was a variable amount of deposits for both concentrations. The group that was treated with 200 mg/l solution for 5 minutes had the largest quantity of globules on enamel. Using the product, we observed a consistent and remarkable protection of the enamel surface. Further studies in human subjects are indicated.

OS066

Influence of different fluoride supplement on caries-susceptible sites of the first permanent molar in children

S. LI*, M. LIU & Q. XU
West China College of Stomatology, Sichuan University, PR China

Objective: To compare the influence of using different fluoride supplements during the early childhood period on caries-susceptible sites on the first permanent molars in children.
Material and Methods: 129 children aged between 5 and 7 years were included for the study. One third was treated with fluoride drops, one third with fluoride ion infiltration and the final third was included as the negative control. KaVo DIAGNOdent was used to evaluate the demineralization of 989 different sites of the first permanent molars. Statistical analysis was processed by SPSS software.
Results: The early demineralization of the first permanent molars in children supplemented with fluoride drops was less severe than that of children supplemented with fluoride ion infiltration ($P < 0.05$), and even less severe than that of control group ($P < 0.01$).
Conclusions: Fluoride supplement drops during the early childhood period may decrease the early demineralization of the caries-susceptible sites on the first permanent molars more significantly than fluoride ion infiltration.

OS067

Paediatric dentistry for children from birth to age three and using lasers on children

L. KOTLOW*
USA

The discussion will include the diagnosis and treatment of oral problems in children from birth to age three. The second part of the discussion will involve using the Erbium and Diode lasers on children. Topics discussed will include diagnosis and treatment of ankyloglossia, Maxillary frenum attachments, aphthous ulcers, and operative dentistry using lasers. Over 15 Soft tissue procedures and all classes of restorative dentistry treatments using the laser will be discussed.

OS068

Resistance of *Capnocytophaga* strains to beta-lactams in French cancer children is associated with beta-lactamase CFXA3

J. L. SIXOU[1,*], A. AUBRY-LEULIETTE[1,2], Z. SHACOORI[1], A. JOLIVET-GOUGEON[1,2], V. GANDEMER[2] & M. BONNAURE-MALLET
[1]*Université De Rennes 1, France;* [2]*CHU Rennes, France*

Bacteria of the *Capnocytophaga* genus are members of the commensal flora of the oral cavity. They can cause serious infections in immunocompromised individuals, especially neutropenic patients. In the last decades, an increasing number of strains have been shown to be multidrug-resistant, especially to beta-lactams, making treatment of *Capnocytophaga* infections more difficult. Resistance of *Capnocytophaga* to beta-lactams is mainly due to group 2e beta-lactamases according to Bush *et al*'s classification (1995). One hundred and twenty seven strains isolated from the dental plaque of 11 cancer children undergoing a first course of immunosuppressive chemotherapy were assessed for resistance to beta-lactams and production of beta-lactamase. A total of 95 strains were resistant to beta-lactams. All these strains were beta-lactamase producers. Gene cfxA3 coding for a Group 2e beta-lactamase was detected by PCR analysis in 96.9% of the strains.

Cariology

OS069

Effect of lasers and APF on the acid resistance of human enamel with initial caries

C. C. CHEN[1,*], S. T. HUANG[2], C. M. FU[3], H. S. CHEN[1] & S. Y. HSIAO[1]
[1]*Graduate Institute of Dental Sciences,* [2]*Graduate Institute of Oral Health Sciences, College of Dental Medicine, Kaohsiung Medical University, Kaohsiung,* [3]*National Kaohsiung Normal University, Taiwan*

Objectives: We proposed to use different lasers combined with APF application instead of traditional cavity preparation with initial enamel caries to preserve the most amount of tooth structure and increase the acid resistance of the lesions.
Materials and Methods: Samples were immersed in pH-cycling solution for initial caries formation and treated by APF before or

after laser irradiation. After various treatments, all samples were immersed in pH-cycling solution again and the concentration of Ca^{2+} dissolving from the enamel surface was analyzed. SEM and EDS were used to assay the surface structures and components. Then, polarized light microscopy was used to evaluate the optical changes of lesions.
Results: The Ca 2+ concentrations of Er:YAG laser and no-treated groups were higher than the others showing statistic significance ($P < 0.05$). Otherwise, there was no statistically significant difference among the groups of APF application before or after irradiation with any of the three lasers. From SEM, we found melting and re-crystallization surfaces and crater holes in the CO2 and Nd:YAG laser groups. Meanwhile, there were type I and type II etching patterns in the Er:YAG laser group. From EDS analysis, there was no evidence that new components appeared on the enamel surfaces after lasers and APF treatment. Finally, we found a positive birefringence change in the laser-treated lesions.
Conclusions: Using CO2 and Nd:YAG lasers before or after APF application on the decalcified enamel surface would increase its acid resistance by changing the physical properties.

OS070

Caries prevalence and treatment needs of six- to seven-year-old children in Berlin (Germany) in the years 1995, 1997, 2000 and 2004

E. KOERPERICH[1,*], R. R. MIETHKE[1] & K. PIEPER[2]
[1]*CharitéCenter For Dental And Craniofacial Sciences, Department of Orthodontics and Paediatric Dentistry,* [2]*Philipps University of Marburg, Germany*

In the last 10 years more prophylactic treatment for preschool children was given. In this context, the aim of the present study was to assess the prevalence of dental caries and treatment needs of six to seven year-old children living in Berlin.
Materials and Methods: Clinical examinations recording dmf-t- and DMF-T-indices according to WHO Guidelines for caries diagnosis were performed in representative samples. The samples were selected by a two-stage random procedure and consisted of 1800 children in 1995, 1806 in 1997, 1599 in 2000 and 1466 in 2004. All examinations were performed by dentists who were specifically trained for this study. For statistical analysis a special programme for dental surveys (GPRZ) was used.
Results: The mean dmf-t values were: 2.9 (1995), 2.64 (1997), 2.33 (2000) and 2.74 (2004). The d-t component amounted to 1.5 (1995), 1.47 (1997), 1.24 (2000) and 1.38 (2004). Both indices decreased between 1995 and 2000, whereas in 2004 an increase was noted for both indices. The mean DMF-T values were in 1995 (0.2), in 1997 (0.18), in 2000 (0.13) and in 2004 (0.18).
Discussion and Conclusions: Studies have shown that in recent years an increase of children with behavioural management problems (BMP) has occurred in this age group. Therefore, it may be speculated that the lack of specialists for paediatric dentistry in Germany may have led to a situation in which the treatment needs of these children cannot be covered adequately by the public health system.

OS071

Caries distribution within the dentition and significant caries index in Swedish 4-year-old children 1980–2002

C. STECKSÉN-BLICKS[1,*], H. STENLUND[2] & S. TWETMAN[1] [1]*Department of Odontology, Paediatric Dentistry,* [2]*Public Health and Clinical Medicine, Epidemiology and Public Health Sciences, Umeå University, Umeå, Sweden*

Aim: To analyse possible changes in the severity and distribution of dental caries within the dentition in five cohorts of 4-year-old children examined with the same methods and criteria between 1980 and 2002.
Materials and Methods: The material consisted of retrospective caries recordings from cross-sectional studies performed 1980, 1987, 1992, 1997 and 2002 in Umeå, Sweden. The distribution of dmfs within the dentition was analysed in the entire cohorts and in 30% of each cohort with the highest dmfs-values (modified SiC-index).
Results: When comparing the whole cohorts, there was a significant increase in dmfs-values in incisors between 1980 and 1987, while a similar reduction was observed between 1987 and 1992 ($P < 0.05$). When comparing subgroups with the highest dmfs-values for all teeth in each cohort, the mean and median values of dmfs for all teeth were higher in 2002 than in 1997 but the difference was non-significant ($P > 0.05$). There was however a statistically significant increase in the dmfs-values for molars and canines between 1997 and 2002 ($P < 0.05$). Between 1987 and 1992, a statistically significant decrease in dmfs-values in incisors ($P < 0.05$) was disclosed, while the opposite event took place between 1992 and 1997 ($P < 0.01$).
Conclusion: By analysing caries distribution within the dentition and in subgroups, time trends can be detected that otherwise are obscured. The findings should be considered in future epidemiological series as it seems obvious that even significant changes can be overlooked and disregarded.

OS072

Caries decline in Hassia (Germany) among 6–7-year-old children in the period 1994–2004

A. MOMENI* & K. PIEPER
Philipps University of Marburg Dental School, Germany

Aim: The aim of the present study was to assess the prevalence of dental caries and treatment needs of 6 to 7-year-old children living in Hassia (Germany).
Methods: The study was carried out in 1994, 1997, 2000 and 2004. 5% samples were selected using a two-stage random sampling procedure. According to WHO-criteria dmf-t-values were assessed. During a pre-survey training period all examiners were calibrated by an experienced dental examiner (K. P.) including theoretical information, preliminary diagnostic training with slides and examination of patients. The findings were coded on special survey sheets and were later transferred to a computer and processed using a special analysis program. The statistical evaluation was performed by means of the software package SPSS. Non-parametric tests were performed (Mann-Whitney *U*-Test). The level of significance was set to be $P < 0.05$.
Results: The numbers of children examined were: 2472 (1994), 2773 (1997), 2702 (2000) and 1938 (2004). In 1994 42% of the children had sound deciduous teeth, the corresponding figures were: 48.3% (1997), 51.6% (2000) and 50.8% (2004). The mean dmf-t values were in 1994 (2.8), in 1997 (2.22), 2000 (1.98) and in 2004 (2.06). A caries reduction of 29.3% was achieved between 1994 and 2000. Between 2000 and 2004 the caries decline has come to a halt.
Conclusions: These results indicate that in Hassia special efforts are necessary to achieve the WHO global oral health goals for 2010.

OS073

The phenomenon of caries bilaterality in primary dentition

A. WYNE*
King Saud University College of Dentistry, Saudi Arabia

Information about caries patterns in a population assists in prevention, diagnosis and management of dental caries. The

objective of this study was to determine bilateral occurrence of dental caries in primary teeth of preschool children. A sample of preschool children was randomly selected from kindergartens in Riyadh, the capital city of Saudi Arabia. A total of 1016 preschool children with a mean age of 54.2 (SD 10.5) months, were examined for dental caries utilizing WHO criteria for diagnosis of dental caries. The mean dmft score of the sample was 6.9 (SD 4.3). Among the maxillary teeth, central incisors (83.6%) and, among the mandibular teeth, second molars (78.5%) showed the highest ($P < .05$; one-tail Z test) caries bilaterally. The conditional (given that right side tooth was carious) probability of bilateral caries occurrence was highest in mandibular second molars (87.7%) followed by mandibular first molars (82.2%) and maxillary second molars (79.0%). A high bilateral occurrence of dental caries has multiple clinical implications. The study made an attempt to determine the true bilateral caries occurrence by computing actual bilateral caries cases rather than that based on similar caries prevalence or dmft scores on both sides of the mouth. In conclusion, caries bilaterally and conditional probability for bilateral caries occurrence were high in primary teeth of the study population.

OS074

Caries risk analysis of nursing mothers and their children's caries status at 36-months-old

S. MATSUMURA*, N. KARIYA, O. RODIS, S. OGATA, Y. JI, Y. NAKAI, M. NISHIMURA & T. SHIMONO
Okayama University Graduate School Behavioural Paediatric Dentistry, Japan

Motivation for decreasing the caries activity of the nursing mother is important to reduce early caries initiation in their children.

Objective: Introduction of the Cariostat during a regular dental health check up system in the local community centre to estimate the caries risk of the nursing mother and examine if this method can be useful to predict future caries initiation in young children.

Materials and Methods: Caries risk assessment using the Cariostat (Sankin,Co.Tokyo) was done initially on 846 pairs of mothers and children when the child was 10-months-old, at a community center in the southern part of Okayama prefecture. The dental check ups were done by one dentist for all children. The second examination was when the children were 18-months-old, and the caries activity was measured and dental check up was done by regional dentists. The third examination was when the children were 36-months old and dental check ups were done by regional dentists.

Results: Mothers' caries activity was significantly correlated with the caries activity of their 10-month-old children ($P < 0.05$) but not correlated with the 18-month-old children. Mothers' caries activity was significantly correlated with the df of 36-month-old children ($P < 0.05$).

Conclusion: The Cariostat is a simple and convenient method to measure the caries activity of nursing mothers and children in public fieldwork, and motivate mothers to reduce the caries risk factors during the nursing period.

Saturday, 5 November

Dental anxiety and sedation

OS075

Swedish children's experiences of everyday and dental treatment pain – an explorative epidemiological study

L. KREKMANOVA*, M. BERGIUS, A. ROBERTSON, C. HAFSTRÖM, C. SABEL & U. BERGGREN
[1]*Department Of Pediatric Dentistry, Faculty Of Odontology,* [2]*Department Of Orthodontics, Faculty Of Odontology,* [3]*National Dental Service Clinic Hjällbo, Angered,* [4]*Department Of Dental Behavioural Sciences, Faculty Of Odontology*

Previous pain experiences serve as a reference for a child's perception of new pain. In paediatric dentistry, many treatments may be interpreted as painful and previous pain experiences are important for the planning of dental care. While studies have reported pain related to medical conditions/care, there is a lack of knowledge about children's everyday and dental treatment pain experiences. The aim was therefore to 1) investigate children's (aged 7–19 years) pain experiences from everyday events/dental treatments and 2) to determine the impact of gender, age, and dental anxiety on children's pain reports.

Methods: Patients were recruited at three general dental clinics and 322 children were included in the study. All children answered a modification/expansion of McGrath's CPI including ratings of 28 everyday pains and pain related to 10 dental treatment situations. If having experienced an event the patients rated the pain intensity on a VAS-scale between 0 and 100. The participants were 158 girls (mean age 13.9) and 164 boys (mean age 13.4).

Results: The most frequently reported everyday pains were: 'headache pain' (N = 303; VAS = 42), 'biting your tongue' (N = 303; VAS = 42). The highest pain estimates were given to: 'having an accident' (N = 119; VAS = 52), 'burn your hand' (N = 233; VAS = 53). The highest dental treatment pain ratings were 'having a tooth pulled' (N = 153; VAS = 40) and 'dental injection' (N = 230; VAS = 37).

Conclusion: Invasive dental treatments were rated clearly higher than non-invasive. However, while many children had experienced the most common everyday pains, fewer had painful dental treatment experiences.

OS076

Dental treatment of children referred to general anaesthesia – impact of ethnic background and general health status

S. POULSEN[1,*], D. HAUBEK[1,2], M. FUGLSANG[1,3] & I RØLLING[1]
[1]*School Of Dentistry, University of Aarhus,* [2]*Department of Oral and Maxillofacial Surgery, Aarhus University Hospital,* [3]*The Municipal Dental Service of Aarhus, Denmark*

Background: A small proportion of children and adolescents need dental treatment under general anaesthesia (DGA). The aim of this study was to analyse how ethnic origin and general health status affect age at the time of referral, waiting times, and dental treatment provided under DGA.

Methods: During the period 1990 to 2001 a total of 786 patients received DGA at the University Hospital of Aarhus, Denmark. Information on date of referral, date of examination, date of treatment, ethnic background (Danish or non-Danish), general health status (healthy or special need) and dental treatment performed was collected from patient records.

Results: More boys than girls were treated in DGA regardless of ethnic background and general health status. The number of patients with non-Danish ethnic background referred to DGA varied considerably over the study period. Patients with special needs were older when treated than healthy patients, while patients with non-Danish ethnic background were younger than patients with Danish ethnic background. Patients with non-Danish ethnic background waited longer from examination to treatment than patients with Danish ethnic background. Patients with special needs had fewer teeth treated than healthy patients, while patients with non-Danish ethnic background had more teeth treated than patients with Danish ethnic background.

Conclusion: Age at referral, waiting times in the system, and treatment received under DGA varies according to general health status, and ethnic background. These findings should be reflected in the organisation and the funding of this type of service.

OS077

Clinical outcomes of restorative treatment for children under general anaesthesia

R. P. ANTHONAPPA*, K. T. LAW, N. M. KING & Y. M. CHEUNG
Prince Philip Dental Hospital, Hong Kong

Introduction: Providing dental treatment under general anaesthesia is costly in terms of manpower, facilities, morbidity and emotional stress; however, it is sometimes unavoidable for children who have management problems, are medically compromised, or require extensive dental treatment.

Objectives: To evaluate the failure characteristics of different restorative techniques under general anesthesia and re-treatment patterns for primary teeth.

Methods: This study utilized the clinical records of 656 children who had received restorative treatment under general anaesthesia. 498 children who were reviewed post-operatively for a minimum period of 18 months were included in the final analysis. The treatment procedures were classified as (i) restorative (ii) pulp therapy (iii) simple extraction (iv) tooth disking. Data were collected according to tooth types. Students 't' test and Chi square test with a 95% level of significance were used to compare descriptive statistics.

Results: A mean follow-up period was 35 months, 214 children (42.9%) required some form of subsequent treatment (re-treatment group). The mean time interval between initial and first re-treatment was approximately 19.6 months. The overall failure rates were; GIC 39.9%, composite resin 27.6%, amalgam 22.7% and stainless steel crowns 11.7%. Pulp infection occurred in 45.6% (26) of the teeth restored with stainless steel crowns; which was a false failure.

Conclusions: The highest failure rate was for restorations in the anterior teeth with glass ionomer cement being the least successful material; while stainless steel crowns exhibited a high success rate in primary molars.

OS078

The comparison of the dental treatment under conscious sedation for children with disabilities

N. C. CHI[1,*], H. S. CHEN[2], S. T. HUANG[3], S. Y. HSIAO[1], S. LEE[1], H. Y. HU[1] & C. H. WU[1]
[1]*Department of Paediatric Dentistry, Chung-Ho Memorial Hospital,* [2]*Graduate Institute of Dental Sciences,* [3]*Graduate Institute of Oral Health Sciences, College of Dental Medicine, Kaohsiung Medical University, Kaohsiung, Taiwan*

Introduction: For more than 10 years the Kaohsiung Medical University Hospital has provided dental treatment for disabled children under conscious sedation. The number of patients receiving such treatment has increased rapidly in the last five years. This study was designed to evaluate the type of dental treatment provided for children with disabilities under conscious sedation.
Material and Methods: All patients received treatment under conscious sedation at the department of dentistry for children in the above mentioned centre. Patients from the year 2000 to 2004 were included in this study. Out of total number of 750 patients, 510 were healthy patients and 240 were disabled. Data related to consultation, informed consent, routine physical examination, diagnosis and dental treatment under sedation were collected. All data was extracted from hospital records and subsequently analyzed.
Results: The average age of patients with disabilities was 12.92 years, and 4.66 years for healthy children. The actual number of operative procedures, endodontic treatments, crowns and mesiodens in healthy children was higher than in the disabled group. However, the number of extracted teeth was higher for the disabled children.
Conclusions: The disabled group presented with more severe dental disease compared to the healthy group. However, for children of preschool age (either healthy or disabled), there was no significant difference for the number (and severity) of decayed teeth.

OS079

Abstract withdrawn.

OS080

Anxiety and fear in the year one dental visit

H. C. CASARETTO*, M. CESETTI, D. DRICAS & K. MAYOCCHI
AAON Argentina Association of Dentistry for Children, Argentina

Previous authors recommend the infant's first dental visit should take place when first primary tooth emerges and no later than 12 months of age. During the past 15 years, this team have trained 400 dentist in infant-mother care by using protocols to clinically register risk- assessment and educative counselling. The aim of this paper was to investigate the type of emotions dentists and parents had during the year - one dental visit.
Method: The study was carried out at the Mother-Child Clinic. Post-graduate course Argentina Ass. of Dentistry for Children. Sample: 150 mothers or fathers and 150 post-graduate training dentists. Strategy: questionnaire and personal interviews were used.
Results: Among parents, 20% expressed anxiety, 80% expressed fear of child behaviours, that infants would be hurt, or not knowing how the dentist would control the situation. Among the dentists, 82% expressed anxiety and 18% expressed fear of parents' observations and opinions, having lack of control when facing a hyperactive child or that they would cause hurt in mouth exploration.
Conclusions: Dentists and parents felt anxiety or fear at the year-one dental visit Dentist should know the parents' emotions and manage his/her own feelings. Good training and clinical experience are required besides the knowledge of infants' behaviours in order to achieve successful outcomes.

OS081

The statistical base for safe sedation

T. PORCELIJN[1,2,*] & J. S. VEERKAMP[2]
[1]*Centre for Special Dental Care (SBT),* [2]*Secondary Care Dental Clinic Milletstraat, Amsterdam, Netherlands*

Though easy in concept, sedation appears to be difficult in practice. The problem lies in the correct dosage: if too low, the patient will be insufficiently sedated and therefore cannot be treated. But worse, if too high, the patient will be over-sedated and may develop respiratory depression. In statistical terms, the effect of sedation has a broad scatter: the same dose has a different and unpredictable effect in the individual patient. Combining different drugs makes things even worse: if the effect of one drug cannot be predicted, then let alone the combination of different drugs - not only as result of the sum of individual risks, but also because drugs influence each others' action in an unpredictable way. If a problem arises, it becomes difficult to determine which drug is responsible. This can all be easily explained by statistics. By using a worse case scenario and starting with a low, safe dose of only one short acting intravenous drug, the right depth of sedation can easily be titrated without the risk of respiratory depression. Over the last 10 years we have successfully treated over 3500 children, spontaneously breathing through a flexible laryngeal airway mask (LMA), while under sedation with target controlled infusion (TCI) of just propofol alone. Analgesia was obtained with local anaesthesia. This proved to be a reliable, safe solution for office based sedation.

Prevention

OS082

Dental health knowledge, beliefs and practices of a group of parents of children aged 1–2 years living in rural Victoria

M. GUSSY[1,*], N. KILPATRICK[2], E. WATERS[3] & E. RIGGS[3]
[1]*School of Dental Science, University of Melbourne,* [2]*Department of Dentistry, Royal Childrens Hospital, Melbourne,* [3]*School of Health and Social Development, Deakin University, Australia*

Aim: To examine and report the dental health knowledge, beliefs, attitudes and behaviours of parents of children aged 12–24 months in rural areas of Victoria.
Method: Baseline data was collected in 2004 at the commencement of a controlled community intervention trial in three non-fluoridated local government areas. Parents completed a self reported questionnaire prior to examination of their child's teeth.
Results: 295 parents participated (47% response rate) 55.4% reported their child's teeth had been examined by a health professional, 87% conducted by a maternal and child health nurse (MCHN) and 8% by a dentist. 75% reported brushing their child's teeth regularly however only 42% of these felt confident doing so. Confidence in brushing was significantly related to frequency of brushing ($P = 0.003$). Knowledge regarding causes of dental decay varied. 79% of parents identified diet and dental hygiene as the primary cause however only 8% believed bacterial infection played a major role. 72% of parents believed fluoride helped to prevent decay; 63% believed their water supply was fluoridated (29%) or were unsure (34%).
Conclusions: In these rural areas most dental examinations for toddlers were conducted by MCHNs. Contemporary concepts of

the aetiology of dental caries have not diffused into general knowledge. We observed a significant gap between expectation and reality of water fluoridation. This study highlights the need for increased community information, skills training and confidence in oral health care for children.

OS083

Infants' dental health improvement following community development-based programmes in Glasgow, Scotland

Y. I. BLAIR[1,*], L. M. D. MACPHERSON[2], D. R. MCCALL[1] & A. D. MCMAHON[3]
[1]*NHS Greater Glasgow,* [2]*University of Glasgow Dental School,* [3]*Robertson Centre for Biostatistics, University of Glasgow, UK*

NHS Greater Glasgow's (NHS GG) traditional Dental Practice- and Dental Health Education-based approaches failed to improve infant's dental health in poor communities. New strategy piloted targeted Community Development aimed to decrease mean dmft and increase %dmft = 0 of 5-year-olds at greatest caries-risk. Ottawa Charter-based activities at community level educated, empowered and supported local parents, opinion formers and workers/professionals from health, education, Local Authorities and the voluntary sector to develop and sustain dental harm-reduction interventions in many settings. Resulting mini-programmes adopted 'common-risk factor' approaches to health promotion via: Nursery Snack and Meal Policies, School Breakfast Clubs, 'Ask for Sugar-Free Medicine' & 'Friendly Dentist' campaigns, Free Fruit, Free 1000 ppm Fluoride dentifrice and toothbrush distribution, group and home daily toothbrushing programmes, 'Baby Club'-parenting classes, 'Get Cooking' and Community Health Fairs etc. In two severely deprived pilot communities n = 26,000 & n = 46,000, respectively, decreases in 5-year-olds' mean dmft since 1997/98 from 5.5 to 3.6(P = 0.012*) and 6.0 to 3.6(P < 0.001*) and in prevalence of dmft > 0 from 89% to 71%(OR 0.25, P = 0.010**) and 90% to 68%(OR 0.30, P = 0.006**) were evident in routine data by 2003/04. From 2000, newly created Oral Health Action Teams (OHATs) extended interventions into all NHS GG's deprived communities, n = 287,600, based on need. By 2003/04, deprived NHS GG 5-year-olds' mean dmft had decreased from 5.3 to 4.1(P < 0.001*) and %dmft > 0 had reduced from 85% to 68%(OR 0.35, P < 0.001**). There was no evidence of dental health improvements prior to the initiation of targeted Community Development. (*Wilcoxon Tests, **Logistic regression, adjusted for age & DEPCAT).

OS084

Risk behaviours and their association with caries activity and dental caries in Japanese children

Y. JI[1,*], M. HORI[2], Y. MORI[1], X. DU[1], O. RODIS[1], S. MATSUMURA[1] & T. SHIMONO[1]
[1]*Department of Behavioural Paediatric Dentistry, Graduate School of Medicine, Dentistry and Pharmaceutical Sciences,* [2]*Dental Hospital, Okayama University, Okayama City, Japan*

Objective: To assess risk behaviours and their association with caries activity and dental caries in Japanese children.
Materials and Methods: The subjects were 392 young Japanese children who underwent dental health check-ups at 18, 30 and 42 months of age. Oral examinations, Cariostat tests and dental health questionnaires were carried out at each time.
Results: The caries prevalence of children was 1.5% at 18 months, 9.9% at 30 months and 28.1% at 42 months. Caries activity based on the Cariostat scores of children was correlated with caries status (caries-free/carious) at 42 months. In children with caries during each examination period at 42 months, eating snacks while playing was ranked as the most important behavioural risk (P < 0.001), followed by breast-feeding (P < 0.01), non setting of time for snacks (P < 0.05) and frequency of snacks (P < 0.05) at 18 months old; non brushing by mother (P < 0.05) and eating snacks while playing (P < 0.05) were ranked highest at 30 months old. In addition, eating snacks while playing (P < 0.001) at 42 months old was the only significant factor for children with caries.
Conclusion: Caries activity and risk behaviours were associated with caries experience at different age periods of childhood.

OS085

Paediatric liquid medicaments – do they erode tooth surfaces? An *in-vitro* study

A. HEGDE*
AB Shetty Memorial Institute of Dental Sciences, India

Children take medicines for multiple reasons, which might be for common cold, body ache or serious problems like heart diseases or blood cancer. They prefer syrups over tablets or capsules as these are more palatable. But the safety of the additives that are added to make the paediatric medicaments more palatable, is questionable on the enamel surface. Hence an *in-vitro* study was conducted to assess the erosive potential of some of the commercially available paediatric liquid medicaments on the primary enamel surface. Scanning Electron Microscopy (SEM) was utilized to assess the surface changes on the primary enamel and Atomic Absorption Spectrometry (AAS) was employed to estimate the calcium dissolution from the primary enamel. Etch pattern, crater formation and sporadic rod ends of different degrees were observed when teeth were immersed in these medicaments for different intervals of 1 minutes, 10 minutes or 8 minutes respectively. Calcium dissolution of various degrees was observed from primary enamel irrespective of the pH. This was statistically significant. In conclusion all the paediatric liquid medicaments used in this study were erosive on the primary enamel surface with varying amounts of calcium dissolution under experimental conditions.

OS086

Oral health promotion to handicapped children: parents' opinions

L. DE BARROS CORREIA FONTES[1,*], V. IANER MACÊDO DOS SANTOS, S. D. BENEVIDES, L. P. COSTA, Y. F. DUARTE[1], A. B. PINHO, F. COSTA, E. NASCIMENTO, G. FERRO & L. P. CÂMARA
[1]*State University of Paraiba, Brazil;* [2]*Universidade de Pernambuco, Brazil;* [3]*Fundação de Ensino Superior de Olinda, Brazil;* [4]*Universidade Federal de Pernambuco, Brazil*

The aim of this study was to investigate parents' opinions about oral health services for handicapped children. With this purpose a qualitative study was developed to interview 100 parents of handicapped children, who were under health treatment in the cities of Campina Grande, João Pessoa, Olinda e Recife, States of Paraíba and Pernambuco in the Northeast of Brazil. The data was collected from individual interviews. Descriptive techniques were adopted.
Results: The lack of specialized services, communication with the dentist, information on oral health promotion and qualification of the professional represented the main complaints of these parents.

Prevention

OS087

Teeth for life project – good news for kids' teeth and health

J. IRVING* & J. HORNIBROOK
North Coast Area Health Service, Australia; Northern Oral Health Network, Australia

The Northern Oral Health Network (NOHN) includes the NSW Mid North Coast where half the LGAs are unfluoridated. SOKS (NSW Oral Health Branch child services data) and hospital GA extractions data indicate more caries in children from unfluoridated areas. Rural fluoridation campaigns in country areas have traditionally been difficult. Independent surveys repeatedly indicate majority support for water fluoridation, especially for children's benefit. A population oral model was developed by the (then) NSW Oral Health Branch This model was piloted in the four rural Health Areas comprising the Northern NSW Oral Health Network and became known as the Teeth for Life project. It emphasises prevention - through early and health activities, focusing on water fluoridation. The Project Manager is supported by a Steering Committee, and works closely with Local Government health professionals and the media. The paper will describe details of the current strategy and the support from NSW Health, Oral Health Branch, and the NOHN that has resulted in Hastings, Kempsey, Bellingen, Coffs Harbour and Moree being gazetted to fluoridate and positive interest from Tenterfield, Guyra, Kyogle, and others. It will highlight lessons learnt from the project such as the value of support from key influential groups; value of independent surveys and the need for concurrent prevention strategies. An effective campaign to fluoridate country water supplies is well on the way to improving the oral health of thousands of kids now and in the future.

OS088

Approaches toward oral health care in the rapidly developing field of paediatric dentistry

L. LEVIN[1,*] & M. MOSKOVITZ[2]
[1]*AAON;* [2]*The Hebrew University, Hadassah, Argentina*

Significant changes over the past few decades influenced paediatric dentistry to alter the wayprofessional services are provided. Diagnostic tools, dental materials and caries-removal instruments and techniques are an advancement in operative dentistry. At the same time, because dental decay is considered a social illness associated with low socio economic income, there has been only a little improvement in methods and attitudes toward helping the needy children around the world. The purpose of the present lecture is to call for a new approach toward achieving better oral health for underprivileged children. Dental Volunteers for Israel (DVI) is located in Jerusalem. The clinic is based on volunteer dentists to provide free comprehensive oral health care to children from under-privileged families. The clinic emphasizes oral health education as a mean to improve health and quality of life in the lower socio economic class in Jerusalem. In developed countries dental decay is in decline because of preventive measures and Public Health programs. In Israel like in the Republic of Argentina, the government does not finance dental services or provide satisfactory solutions for children in need. Even though dental decay is an avoidable illness, it appears that because of economical considerations, the technology and availability of dental services is not accessible to under-privileged children. Since public health is an ethical topic, we believe that this is the moment for reassessment of public health policy for the underprivileged population and to finance oral health programs centred on equity for all users of those services.

OS089

The babies are coming – do you have a home for them?

D. VEDRENNE-RANGEL*
Nova Southeastern University, USA

The babies are coming, it is a fact. They are searching for a dental home. Would this home be provided by the paediatric dentist or by the paediatrician? The American Academy of Paediatric Dentistry and the American Academy of Paediatrics are holding meetings to decide the best way to approach this issue. Although infant and toddler dentistry has been taught in some Dental Schools in the United States, the learning experiences have been primarily academic with very little or no clinical experience. Therefore, new graduates do not feel competent to provide oral health services for this population. The Paediatrician is the best suited professional to provide oral preventive procedures since they provide several well-baby check-ups during the first year of life and are trusted by the parents (Tsamtouris, JPed 1990). Regardless of whether or not Paediatricians become our best allies in baby Oral Health, it is of paramount importance to be prepared to provide comprehensive treatment to this population. This presentation will provide the paediatric dentist with the necessary means to provide a dental home for the infant and toddler population. Evidenced based concepts and state of the art clinical technology will be discussed, encompasing anticipatory guidance (Nowak, DentClinNorthAm 2000), motivational interviewing (Weinstein, JADA 2004), clinical protocols (Figureido, JDentRes 1996). These approaches have been integrated in order to optimize treatment compliance and delivery in the private office setting. Ready to go packages will be available for the practitioner to take home and apply the learned concepts and techniques.

OS090

Using interesting cartoons as oral health education programs via video and Internet

H. C. WANG[2,*], S. T. HUANG[3], S. Y. HSIAO[1], L. C. HUNG[4] & J. SU[4]
[1]*Department of Paediatric Dentistry, Chung-Ho Memorial Hospital,* [2]*Graduate Institute of Dental Sciences,* [3]*Graduate Institute of Oral Health Sciences, College of Dental Medicine,* [4]*Hsiung-Chang Dental Clinic, Kaohsiung Medical University, Kaohsiung, Taiwan*

Many school authorities are incapable of promoting effective oral health programs due to limited teaching resources, shortage of expertise and didactic teaching material to interest the children. Promoting an effective oral health program with the help of entertaining yet educational teaching material has becoming an expectation of most health educators.

Objective: A series of cartoonised oral health educational programs were constructed for the upper school children to improve their oral hygiene habits.

Material and Method: A series of interesting cartoonised teaching materials regarding oral health education were constructed by many devoted pedodontists and animators. The cartoon was designed to catch the attention of the elementary school students as well as the public. In Taiwan, most elementary school students and their parents have great access to obtain information on oral hygiene care through the internet. Therefore, we designed several animations with different themes with each animation running more than 5 minutes. There are designated characters teaching oral hygiene instruction, concepts of preventive dentistry and early treatment.

Conclusion: This teaching material was welcomed by many teachers and elementary school children. They all agree that 2D teaching aids combined with cartoons are a very vivid, impressive way of learning.

OS091

Abstract withdrawn.

OS092

Family structure and severe early childhood caries

K. PLUTZE* & J. SPENCER
ARCPOH, University of Adelaide Dental School, Australia

Severe Early Childhood Caries (S-ECC) affects up to 17% of 2–3 year old children, some of whom require hospitalisation and invasive treatment. Factors associated with the efficacy of interventions need exploring so as to ensure at risk parents are targeted for oral health promotion.

Objective: The purpose of this study was to investigate whether family structure (single / both parents) was associated with the incidence of S-ECC and the efficacy of an oral health promotion intervention.

Methods: Some 649 primiparous women during their regular antennal visit in Adelaide's metropolitan hospitals were enrolled in a randomised clinical trial. Mothers were randomised to test and control groups. Test group mothers received multiple waves of anticipatory guidance. At 18 months all children were orally examined. Using a case definition of any demineralisation of upper anterior teeth, S-ECC incidence was compared between test and control groups of children and within single or both parent families.

Results: Some 441 children were examined at age of 20 ± 2.5 months. 20.4% of them were from a single parent family. The incidence of S-ECC was 1.7% in the test group children, 4.5% in single and 1.1% in both parent families, with an odds ratio of 4.21 for the incidence of S-ECC if the child came from one parent family. The incidence of S-ECC in the control group was 9.6%, however this was 16.3% in single and 8.2% in both parent families, with an odds ratio 2.2 of for the incidence of S-ECC, if the child was from single parent family. Multivariable logistic regression of the incidence of the S-ECC showed that the children from both parent families had lower 0.3 the odds for developing S-ECC.

Conclusion: The intervention decreased the incidence of S-ECC in the test group however the odds for developing of S-ECC are still higher if the child is from one parent family. Further support should be given to single mothers and their children to prevent the development of S-ECC.

Orthodontics

OS093

Presurgical nasoalveolar molding for the cleft lip/palate infant

T. HENSON*
University Of Texas Health Science Center at San Antonio, USA

With an incidence of 1 in 700 live births, cleft lip and palate is the most common craniofacial birth defect. Surgical repair alone has not adequately addressed the myriad of aesthetic and functional issues encountered in these special patients. To improve the aesthetic and functional outcome for cleft lip and palate patients, an innovative approach to pre-surgical infant orthopaedics, termed pre-surgical nasoalveolar moulding (PNAM) has been developed. The goal of this method is to streamline the surgical repair process, as well as reduce the total number of surgeries required. This technique utilizes the malleability of the immature alar cartilage and its ability to maintain its corrected form. An acrylic appliance is fabricated chair-side, and light orthopaedic forces are applied to mould the alveolus to normal contour. Additionally, the nasal alar cartilages can be moulded to normal form, allowing the definitive nasal repair to be accomplished concomitantly with the initial lip closure and gingivo-perioste-oplasty.

Objectives: To quantify 1) the average amount of alveolar cleft closure accomplished using PNAM, and 2) the effectiveness of the nasal moulding.

Methods: Twenty-two infants with unilateral cleft lip and palate were included in the study. All were treated with PNAM and were followed at least through the age of 16 weeks when initial lip closure was performed.

Results: The average alveolar closure was 8.5 mm. In all 22 cases, nasal moulding allowed rhinoplasty at the initial surgery and columellar reconstruction was eliminated.

Conclusions: PNAM allows definitive early nasal repair, controlled reduction of the alveolar cleft, and fewer surgeries required overall.

OS094

The ABC of early management of Class III malocclusion

A. SAADIA* & E. TORRES
Mexican Academy of Paediatric Dentistry, Mexico

The management of class III malocclusion is still one of the most challenging problems confronted by the practicing dentist. Treatments in the permanent dentition can be relatively easy when the problem is confined to the alveolar bone. However, when the deformity affects basal bones such as a deficient maxilla, an overgrowth of the mandible, or a combination of both, then treatment options are greatly reduced. This presentation will guide you, through the facial, dental and cephalometric guidelines on early class III diagnosis and management. We will present the sagittal, vertical, facial and dental response of class III patients in the primary, mixed and late mixed dentition phases fitted with a protraction mask. The before and after cephalometric records of 112 patients divided by sex will be analysed at ages 3 to 6, 6 to 9 and 9 to 12 years. Even if correction can be achieved in all age groups we recommend to start as soon as the diagnosis is made and cooperation allows. Young patients show greater and faster results in less time. Esthetics are greatly enhanced. Compliance is improved and the possible psycho-social scars can be greatly reduced. Clinicians who recommend to start later under the pretext ...' class III correction is doomed to failure, ... it will lengthen treatment period, ...I will burn out my patient, ...it is not cost effective, ...it will relapse, ...growth and development will modify it with no treatment ' ar using unfounded arguments.

OS095

Orthodontic treatment needs of 12–15 year old children attending special schools in Fiji

S. LAL[1,*], N. N. KUMAR[2] & S. SCOLA[1]
[1]*Fiji School of Medicine, Fiji;* [2]*Ministry of Health, Fiji*

Background: There is a need for investigation into the orthodontic problems of special needs children in Fiji. This research identifies

the orthodontic treatment needs of 12–15 year old children attending special schools in Fiji. The Dental Health Component of this index has been used to categorize the treatment of malocclusion into groups according to priority or need for treatment.
Methodology: A calibrated IOTN Manchester ruler was used to identify scoring traits for 46 special needs and 46 non-special needs children. The dental health component of IOTN placed each 12–15 year old into the appropriate grade of treatment as no need, little need, moderate need, great and very great need for treatment.
Results: 80% of the special needs children had some form of malocclusion and out of these 73% fell under grade four and five of the IOTN indicating a great and very great need for treatment in these groups. 81% of children with a medical condition had some form of malocclusion requiring orthodontic treatment (χ^2 test $P < 0.001$).
Conclusion: Children attending special schools appear to have a greater need for orthodontic treatment than children attending non-special schools. Orthodontic treatment need is also high amongst children with an underlying medical condition.

OS096

Interceptive orthodontic treatment for the paediatric dentist

D. MAHONY*
Private Practice, Australia

If you ever wanted to start an argument or brawl at a meeting of orthodontists, bring up the subject of early treatment. There are extremists on both sides of the argument - for and against. Early treatment fanatics have been known to make claims about their abilities to 'redirect' growth and prevent everything from extraction treatment to Syndromes Class III problems. On the other side of the argument, some doctors refuse to acknowledge that growth modification is possible at all. These clinicians maintain that true orthodontics consists of extractions in the permanent dentition. As with most arguments that have advocates at both poles, the truth lies somewhere in the middle. This series of lectures takes an intelligently moderate and practical approach to such a controversial subject. This lecture will approach the subject of early treatment from the perspective of the jaws and the way they grow.

OS097

Masticatory muscle thickness, bite force and facial morphology in children

M. B. GAVIÃO* & P. M. CASTELO
Piracicaba Dental School, State University of Campinas, Brazil

Objective: The aim was to evaluate the thickness of masseter and anterior portion of temporal muscles, the maximal bite force, and the facial morphology in children with posterior crossbite, in primary and early mixed dentitions.
Methods: Forty-nine children, aged 5.5 to 635, were distributed in four groups: primary dentition/normal occlusion ($n = 10$, control group I), primary dentition/crossbite ($n = 15$), mixed dentition/normal occlusion ($n = 13$, control||group II) and mixed dentition/crossbite ($n = 11$). The thickness was evaluated by ultrasound imaging (Just-Vision 200; 56 mm/10 MHz Linear Transducer, Toshiba, Japan), at rest and during maximal intercuspal position. Bite force was determined with a pressurized tube connected to a sensor (MPX 5700 Motorola SPS, USA). The anterior facial height (AFH), bizigomatic and intergonial widths (BW and IW), reasons AFH/BW and AFH/IW were evaluated through facial photographs. Descriptive statistical, Pearson's coefficient, Anova, Student's and Mann-Whitney tests analyzed the data.
Results: In the mixed dentition/crossbite group the thickness of anterior temporalis at rest showed statistical difference between the normal and crossbite sides ($P < 0.05$). Significant difference of the bite force was observed between the groups with mixed dentition. The masseter thickness presented positive correlations with bite force, whereas there was no correlation with temporalis in the crossbite groups. Masseter thickness was correlated positively with the BW and IW and negatively with a narrower facial pattern.
Conclusion: A thicker masseter was related to a large face and to an increase in bite force. Moreover, functional and anatomical variables were affected in the early mixed dentition with the presence of malocclusion. FAPESP 01/10442–3.

OS098

Enamel roughness after air rotor stripping

T. MATTHEWS-BRZOZOWSKA* & M. MIKULEWICZ
Wroclaw Medical University, Poland

Air Rotor Stripping (ARS) is a common procedure applied in orthodontics to resolve crowding. Procedure – introduced by Sheridan in 1985 – is based on reduction of approximal enamel surfaces from canines to molars – but the most common treated group of teeth are premolars. The question arrives how ARS can affect topography of the surfaces and what kind of implications it can provide. The aim of this study was to evaluate enamel roughness after ARS. The biological material used was 20 interproximal surfaces of human premolars. Research was conducted using contact profilometer (3D). ARS procedure was accomplished using dental burs advocated by Sheridan. Sets of 3D parameters and topographical roughness maps of enamel surface before and after ARS were obtained to define roughness of surfaces. Values of Sa - arithmetic mean of the deviation from the mean surface, Sq - quadratic mean of the deviation from the mean surface were reached. Arithmetic mean before and after ARS procedure: Sa = 1,05, Sq = 1,37,||Sa = 1,17, Sq = 1,47. The student *t*- and Wilcoxon test revealed statistically significant difference for Sa, Sq. In conclusion, comparison of the mean values of the measured parameters of ARS treated enamel surfaces indicated that a roughness of the enamel arises after ARS, but have it must be emphasized that on every evaluated surface well polished areas were also present. Improve of oral hygiene and contact fluoridation after ARS should be necessary because of the presence of areas of increased roughness on evaluated surfaces.

OS099

Orthodontic implications of early loss of first permanent molars

E. ALCAINO*, S. VASUDAVAN & M. A. DARENDELILER
Paediatric Dentist, Australia

Introduction: Hypoplastic or grossly carious first permanent molars present a dilemma in treating the paediatric dental patient. They can be a difficult tooth to restore or extract in young patient and possibly complicate orthodontic treatment. The aim of this study is two-fold. Firstly, to review the parameters dictating the timing of extractions, such as age, malocclusion and indications for extraction. Secondly, to investigate the effects on positioning and angulation of second molars when the first molars are extracted.
Material and Methods: A retrospective review of 100 child patients was performed. Patients that had first permanent molars extracted, crowned or heavily restored were included in this study. All records considered had sequential panographic radiographs recorded. The following information was recorded: Age, malocclusion, indications for extraction, need for orthodontic intervention, positioning of second molars; and long term effects of early loss of first molars.

Results: This preliminary study revealed that the positioning of the second molars was favourable if the timing of extractions was correct. Class II and III malocclusions posed greater difficulties when first permanent molars were lost early. No evidence of temporomandibular pathology was found.
Conclusion: Review of the current literature shows that timely extractions can provide an excellent alternative in cases were the first molars are removed and 'replaced' by a mesially placed second molar. The results from this study are comparable to that of previous studies, and recommendations for the management of compromised first permanent molars are given.

Dental materials

OS100

Change in mechanical properties of carious dentine with restoration

E. MAHONEY[1,*], N. KILPATRICK[2] & M. SWAIN[3]
[1]*Westmead Centre for Oral Health, Australia;* [2]*Royal Children's Hospital, Victoria, Australia;* [3]*Biomaterials, University of Otago, New Zealand*

The aim of this preliminary investigation is to examine the change in mechanical properties of carious dentine in hypoplastic permanent and primary molar teeth after isolation from the oral cavity with standard restorative materials. Three to 6 months prior to extraction, carious primary molar teeth and carious hypomineralised first permanent molar teeth had glass-ionomer cement (GIC) with or without calcium hydroxide or a composite resin restoration placed directly over a carious lesion. There was no attempt at the time of restoration to remove any of the carious lesions. After extraction each tooth was set in resin, sectioned and polished. A series of indentations were conducted in the fully hydrated sound and carious dentine using the UMIS. There was a large inter-tooth variation in the hardness and modulus of elasticity of the treated and untreated carious lesions. The average values for the mechanical properties of the carious lesion were independent of the treatment provided. All arrays conducted in carious dentine showed a decrease in hardness and modulus of elasticity from the unaffected dentine adjacent to the pulp towards the lesion surface. Although it is speculated that the progression of carious lesions can be halted with sealing, the restoration itself in the short term does not appear to cause an alteration of the mechanical properties of carious dentine.

OS101

Durability of four restorative materials placed in primary and mixed dentition: a 24 month randomised controlled clinical trial

D. MUSTAFA[1,*], G. ROBERTS[1] & G. PEARSON[2]
[1]*Eastman Dental Hospital,* [2]*Queen Mary Westfeild, UK*

Aim: To evaluate the 2 year survival rate of restorations ('Dispersalloy', 'Dyract AP', 'Fuji II LC', and 'Vitremer') placed in occlusal and approximal cavities of primary molars and occlusal cavities in first permanent molars and premolars.
Methods: A total of 288 restorations were placed in 152 children and adolescents from the UK (Eastman Dental Hospital, London) and United Arab Emirates (Primary School Dental Clinic, Abu-Dhabi). Mean age at baseline was 7.8 years. Teeth with gross multi-surface caries/developmental defects were excluded. Materials were randomly allocated. Restorations were placed with or without local anaesthesia, rubber dam was used where possible and cavity design followed minimal intervention technique. Success was evaluated directly (in vivo) using Modified Ryge Criteria and indirectly (in vitro) using stone replicas and the Vivadent Rank Ordering Method at baseline, 6, 12 and 24 months. Data was analysed using Life tables and Kruskal-Wallis statistical tests.
Results: There was no significant difference ($P = 0.32$) in survival rates between the four materials using direct assessment. Restoration failure (bulk fracture, recurrent caries) was recorded in 10% of the 288 restorations with more failures seen in the UAE children ($P = 0.001$). There was no significant difference in median marginal wear of restorations between the four materials ($P = 0.12$). Median wear changes ranged between 75 μm – 125 μm during the 24 months.
Conclusions: Over the 24 month study period, there were no significant differences in survival rates between all four restorative materials tested.

OS102

Flexural fatigue behavior of colored compomers

K. NORBERT*, L. ULRICH & F. ROLAND
Policlinic For Operative Dentistry, Germany

Colored compomers have been introduced as restorative materials for primary teeth. However, compared to conventional compomers, almost no data exist regarding the suitability of these materials for large defects in primary molars. The aim of this study was to evaluate the mechanical properties of colored compomers under quasi-static and cyclic loading. Four-point-bending bars of three different compomers (Magic Fil [MF], Magic Fil two-component [MT], Twinky Star [TS]) and one tooth-colored compomer (Dyract AP [DA]) were made according ISO standards and stored for two weeks in distilled water. Fracture strength (FS) was measured with a four-point bending test in an universal testing machine. The flexural fatigue limits (FFL) were determined for 10,000 cycles. All specimens were tested and fatigued under water at 37 °C. The data were analyzed using ANOVA, Weibull statistics of FS and staircase approach of FFL. The resulting data were: FS in MPa (SD); FFL in MPa (SD): MF: 74,7(12,2); 36,2(4,3); MT: 43,0(3,5); 22,8(1,4); TS: 91,1(10,1); 41,7(8,3); DA: 88,1(10,1); 38,8(5,2). Between MF, TS and DA no significant difference was computed for FS (ANOVA; $P > 0.05$). MT exhibited the significantly lowest FS (ANOVA; $P < 0.05$) and the lowest FFL. Facing the weak outcome in FFL, the use of the low-filled material MT may be critical compared to Dyract AP in Class II cavities in the primary dentition.

OS103

Acetal versus stainless-steel crowns: *in-vitro* assessment of marginal adaptation

U. ZILBERMAN[1,*], G. HOLAN[2] & A. FUKS[2]
[1]*Barzilai Medical Center,* [2]*Department of Paediatric Dentistry, Hadassah School of Dental Medicine, The Hebrew University, Jerusalem, Israel*

Stainless-steel crowns (SSC) have until now been the treatment of choice for badly broken primary molars. Their clinical success is based mainly on their retention and sealing ability, resulting from their marginal adaptation. Acetal crowns were developed to solve the main problem of SSC – their esthetic appearance. The present study was designed to compare the marginal adaptation of the new Acetal crown to that of the conventional SSCs. Extracted maxillary second primary molars were embedded in perfect models, fit into a phantom-head and prepared for stainless steel crowns. Each model had one Acetal and one SSC cemented. A total of 18-paired models were prepared. The teeth were thermocycled, embedded in methylene blue for 24 hours and sectioned. Digital images of each

sectioned slice were evaluated on a computer screen. Dye penetration was evaluated between the crown and the cement and between the cement and the tooth. In addition, the horizontal gap between the tooth and margin of the crown was measured. The results were compared using two-tailed Students' *t*-test. Penetration of dye was considerably high for both types of crowns. Dye penetration between the crown and the cement was similar on both Acetal and SSC, while penetration of dye between the cement and the tooth was higher in the SSCs ($P = 0.0122$). The gap between the crowns margins and the tooth showed similar results. The marginal adaptation of the Acetal crowns was similar to the contoured and crimped SSC, showing promising results towards launching the new product for clinical use.

OS104

The use of onlay restorations

A. JOHNSON*, J. KOK & P. ASHLEY
Eastman Dental Hospital, United Kingdom

Onlay restorations for permanent molars and premolars are an established method of treatment for posterior teeth where there is tooth tissue loss. The aim of this study was to determine the outcome of onlay restorations placed in a Paediatric Dentistry department (Eastman Dental Hospital, EDH). Data was recorded respectively from clinical and lab records (1996 – 2004) from sixty two patients (249 teeth). Fifty eight percent were male and the mean age at onlay placement 13.7 (SD = 3.28). The majority of patients had been referred by their General Dental Practitioner (69%). The reasons for tooth tissue loss were erosion (39% of cases), amelogenesis imperfecta (24%), dentinogenesis imperfecta (23%) with the remainder unrecorded. Molars were the main tooth type (74.3%) and nickel-chromium was the onlay material in 93% of cases. Onlays were predominantly placed by specialist registrars (38.6%) or postgraduate students (36.1%) and rubber dam was used for isolation in 53% of cases. Panavia was the most commonly used cement (93% of restorations). Mean time for follow up was 2.8 years and the majority of onlays were still in place. Of the 8.4% that failed, mean time for failure was 4.9 years and this was due to reasons such as caries, loss of the restoration.

OS105

Tooth wear in children with Down syndrome

E. BELL*, J. KAIDONIS, G. TOWNSEND & L. RICHARDS
Department of Dentistry, University of Adelaide, Australia

Background: Several studies have described the impact that dental caries and periodontitis may have on the dentitions of individuals with Down syndrome, but there are few reports about the effects of tooth wear. This investigation aimed to compare the aetiology, prevalence and severity of tooth wear in 49 cytogenetically confirmed Down syndrome children with 49 non-Down syndrome controls.
Methods: This study involved three aspects: an oral examination, including obtaining dental impressions; a dietary analysis spanning three days; and a questionnaire seeking information about habits, medical problems and medications. Tooth wear severity was scored on a 4-grade scale (none-to-little; moderate; severe; very severe), while aetiology was classified as being due to attrition mainly, erosion mainly, or a combination of both. Double determinations established scoring method reliability and chi-square tests assessed associations between samples.
Results: Tooth wear was significantly more frequent ($P < 0.01$) in the Down syndrome than the non-Down syndrome sample (67.4% cf 34.7%), with more of the Down syndrome children showing severe to very severe wear (59.2% cf 8.2%). Significantly more Down syndrome children ($P < 0.05$) displayed a multifactorial aetiology of tooth wear, i.e., both attrition and erosion (46.7% cf 28.6%), although no particular dietary link was established. Gastric reflux and vomiting were reported in over 20% of the Down syndrome sample.
Conclusions: Given the potential consequences of high levels of tooth wear, associated with tooth grinding and an acidic oral environment in Down syndrome children, educational programmes aimed at increasing awareness of carers and health professionals are needed urgently.

OS106

Restorative management of children with amelogenesis imperfecta

S. GUE*
University of Adelaide, Australia

Amelogenesis Imperfecta is a diverse group of hereditary conditions that primarily affect the quality and/or quantity of dental enamel, resulting in poor development and/or the complete absence of the enamel in both the primary and permanent dentitions. The conditions carries high morbidity, including tooth sensitivity, poor aesthetics, anterior open bite, advanced dental age and/or failure of dental eruption, pre-eruptive tooth resorption, and the loss of occlusal vertical dimension. The restoration of aesthetics and the function of the dentition in patients with Amelogenesis Imperfecta often presents the dentist with a major challenge. For a young child or adolescent the long-term aim of treatment is to maintain the maximum amount of dental hard tissue until the patient reaches the age at which advanced restorative techniques can be employed to rehabilitate the dentition. However, in the short-term, it is frequently necessary to intervene to improve aesthetics, maintain, or increase occlusal vertical dimension, to relieve the symptoms of tooth sensitivity and to protect existing tooth structure. Thirteen patients (twelve with Amelogenesis Imperfecta and one with Dentinogenesis Imperfecta) aged between 10 and 17 years were treated using adhesive cast restorations, and indirect resin onlays, veneers and crowns. A total of 88 cast restorations and 160 indirect restorations were placed. The restorations have been placed for intervals between 24 and 60 months. The methods, materials, advantages, disadvantages, success and failures of these techniques will be presented.

Oral medicine and pathology

OS107

Nevoid basal cell carcinoma syndrome: early detection and multidisciplinary management.

U. GARAGIOLA[1,*], F. SPADARI[1], F. SANTORO[1] & G. SZABÒ[2]
[1]*University of Milan, School of Dentistry I, Dental Clinic, ICP, Italy;* [2]*Semmelweis University, Budapest, Hungary*

Aim: The aim of this work is to underline the importance of the paediatric dentist in the contribution to the early diagnosis of nevoid basal cell carcionoma syndrome (NBCCS) or Gorlin-Goltz Syndrome (GGS), avoiding and preventing so the orofacial and systemic complications, and to determine a proper dental and surgical protocol.
Methods: 21 GGS patients, 5–14 years of age, (mean age of 8.2 years) 12 females, nine males, had undergone to a multidisciplinary treatment. In eight cases the GGS has been detected by orthodontists, seven by paediatric dentists, six by oral surgeons.

The GGS or NBCCS Syndrome is a generalized disorder with autosomal dominant inheritance and variable expressivity. The main symptoms are: recurrent multiple jaw keratocysts and basal cell naevi of the skin. Other characteristic signs are: paget-like cranial appearance, wide flat nose, craniofacial asymmetry, hypertelorism, prognatism, costo-vertebral deformities, falx-cerebri calcificated, hyphoscoliosis, palmo-plantar hyperkeratosis.

Results: Diagnosis of the syndrome in childhood has been of great importance, because the early treatment contributed to avoid and reduce destruction of the jawbones and prevented severe complications in other organs.

Conclusion: The dentists have a great responsibility to detect GGS, finding signs through the radiographs used in dentistry. The approach must be multidisciplinary between different specialists of Dentistry and Medicine, for prevention of severe malocclusions, craniofacial and systemic tumors.

OS108

Unicystic ameloblastoma (histologic pattern of mural invasion) mimicking a 'dentigerous' cyst. A case report in a 9-year-old

T. PALANY*
Ipoh Hospital, Malaysia

Unicystic ameloblastoma refers to those cystic lesions that show clinical and radiographic features of a jaw cyst but on histologic examination show typical ameloblastomatous epithelium lining the cyst cavity with or without luminal and or mural growth. This report describes a case of a 9-year-old boy who presented with a painless swelling in the right mandible. Radiographs revealed a large unilocular radioluscency extending from the lower first molar to the coronoid notch; associated with the crown of the unerupted lower second molar. Clinically and radiographically the lesion was indistinguisable from a dentigerous cyst. An incisional biopsy confirmed the diagnosis of a unicystic ameloblastoma with a histologic pattern of mural invasion. The lesion was enucleated combined with peripheral ostectomy of the bone bed. A 6 year follow up showed good bony healing with no clinical or radiological evidence of recurrence. This case illustrates that potentially aggressive lesions like the unicystic ameloblastoma may present as dentigerous cyst. In the literature, unicystic ameloblastoma with mural extension, treated by enucleation alone leads to a high recurrence rate. Raising the index of suspicion and undertaking a biopsy of every radioluscent lesion larger than 1 cm in diameter may be helpful in establishing a preoperative diagnosis. Such a protocol would enable appropriate treatment to be rendered at the first instance thereby reducing unnecessary recurrences.

OS109

Infantile osteomyelitis of the maxilla resulting in subperiosteal orbital abscess: a case report

G. SOCKALINGAM*
Ministry of Health, Malaysia

Osteomyelitis is an infection of the bone marrow resulting in the spread of infected exudate through out the marrow spaces producing thrombosis of the nutrient vessels resulting in ischaemia, infarction and sequestrum formation. The incidence of osteomyelitis has declined in modern society since the introduction of antibiotics. When it now occurs, the possibility of predisposing immunosuppresive conditions or underlying bony disease should be considered. Newborns derive passive immunity from their mothers. As such they have not developed sufficient resistance to overcome infections that do occur. Infantile osteomyelitis of the maxilla is a rare infective condition of the maxilla. If not recognised and treated appropriately, it can spread to involve the nose and eye resulting in severe morbidity. A case of infantile osteomyelitis of the maxilla in a one-month-old female neonate is reported. Infection arose from the upper right alveolus and spread to involve the lateral aspect of the nose. At presentation there was subperiosteal periorbital abscess. Early recognition of the condition by the opthalmologist resulted in appropriate referrals to the ENT and dental departments. The child underwent incision and drainage under general anaesthetic and was started on intravenous antibiotics. The source of the infection was determined to be from the oral cavity. No attempt was made to carry out aggressive sequestrectomy. The acute stage resolved uneventfully over one week. A 3 year follow up of the child revealed that she had only suffered minimal morbidity. All deciduous teeth except the upper right first deciduous molar had developed normally. There was no evidence of hypoplasia of the affected maxilla.

OS110

Melanotic neuroectodermal tumour of infancy in the mandible: a case report

K. PEARIASAMY*
Queen Elizabeth Hospital, Sabah, Malaysia

The melanotic neuroectodermal tumour of infancy (MNTI) is a rare tumour of neural crest origin that occurs most frequently in the maxilla of infants. It usually appears as a slow growing pigmented swelling but sometimes may expand rapidly and cause feeding difficulties. The case of a six-week old infant with MNTI manifesting as an aggressive tumour of the mandible is presented. Clinically, the infant's mouth was entirely obliterated by a firm bluish tumour approximately 5.5 cm in diameter arising in the anterior part of the mandible. The tumour displaced the tongue posteriorly and deterred breast-feeding. Plain radiographs revealed a large expansile radiolucent lesion with spiculated areas and displacement of tooth germs. A computed tomography scan showed destruction of the anterior mandible and expansion of the tumour from the left canine to the right molar region. The tumour was completely excised together with the displaced tooth germs that were included within the tumour. The bony bed of the mandible was curetted and the surgical area closed primarily by a buccal advancement flap. Histological examination of the surgical specimen confirmed MNTI with characteristic biphasic tumour cell population of neuroblast-like cells and pigmented epithelium in a fibrous stroma. Post-operatively, mandibular growth was satisfactory except for some residual alveolar bone deficiency on the anterior part of the mandible. The tumour has not recurred in the last 20 months of follow-up.

OS111

A rare presentation of the inferior alveolar nerve in relation to a dentigerous cyst from an impacted canine

R. JOHN* & J. COWPE
Bristol Dental Hospital, Bristol, UK

Presenting problem. A 21-year-old male presented to the Emergency Department of Bristol Dental Hospital complaining of pain and swelling on the left side of the mandible. Clinically the lower left first molar was non-vital, radiographically a large radiolucent lesion appeared to involve the roots of the carious first and second permanent molars, extending towards the lower border of the mandible involving the impacted lower right canine. The differential diagnosis included a radicular or dentigerous cyst. Treatment-Surgical exploration revealed a large cystic lesion extending from the lower left premolar to the carious left third molar regions.

The inferior alveolar bundle was displaced superiorly by the cystic lesion. Following cyst enucleation it was intact 'swinging' across the cyst cavity. The impacted canine was decoronated and the roots retained to avoid mental nerve damage. Histological examination confirmed the diagnosis of a dentigerous cyst. Follow up was uneventful with progressive return of sensation.

Discussion: A dentigerous cyst is one of the common developmental cysts, is usually asymptomatic and surrounds the crown of an unerupted tooth. This cyst, related to an impacted canine, caused significant superior rather than inferior displacement of the inferior alveolar nerve. The main lesson to be learnt from this case is the importance of early investigation when encountering clinical situations of non-vital molars and missing lower canines in adolescents and young adults.

OS112

Dental findings in Burkitt's lymphoma: a report of a case

L. RAMALINGAM*
Royal Children's Hospital, Melbourne, Australia

The timely diagnosis and management of Burkitt's lymphoma is important as it is an aggressive malignancy. In some cases, oral lesions may be the first sign of the disease (about 70% for endemic Burkitt's lymphoma and about 12% with sporadic Burkitt's lymphoma). This case presentation describes a five and a half year old boy who was referred to the casualty department of the Royal Children's Hospital, Melbourne with extra oral and intra oral swelling plus mobility of teeth which was present 7 days previously and was managed as pericoronitis following eruption of his first permanent molars. Intraorally, his gingiva was hyperplastic around his first molars in all four quadrants and both his second primary and first permanent molars were mobile. He had an anterior open bite due to the hyperplastic soft tissues and supra-eruption of his first permanent molars. Radiographically, the follicles of the unerupted permanent second molars were displaced, the first permanent molars and second primary molars appeared supra-erupted and there were ill-defined radiolucencies around the permanent molars. Diagnosis was made following incisional biopsies of the intraoral soft tissues and the patient was managed by the oncology team immediately with chemotherapy. Dentists should be aware of the possible intraoral presentation of this aggressive malignancy and its differential diagnosis.