Friday, 15 June 2007

Oral medicine and pathology

OS036

Limited mouth opening due to unilateral coronoid hyperplasia

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

OS037

Submasseteric abscess misdiagnosed as recurrent parotitis. A case report

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

OS038

Challenges in the management of a dentigerous cyst: case report

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

OS039

Salivary secretion after fractionated or single dose TBI M. BARR AGHOLME^{1,*}, K. GARMING-LEGERT², O. RINGDEN³ & G. DAHLLÖF¹

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

Objectives: The hypothesis to be tested was that dose fractionation of TBI will result in significantly less salivary dysfunction after SCT. **Materials and methods:** Between January 1994 and December 2005, 80 consecutive children below 12 years of age received allogeneic SCT. Thirty-seven patients, old enough to cooperate to salivary sampling and who survived more than 1 year were available for follow-up. The children, diagnosed mostly with

acute lymphoblastic leukaemia, either received cyclophosphamide (CY) in combination with 10 Gy of single-dose TBI (n = 23) or CY in combination with fractionated TBI (3 Gy x 4; n = 14) on 2 days. Unstimulated saliva was collected during 10 min and paraffin-stimulated saliva was collected during 5 min.

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

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

OS040

Gingival bleeding and diabetes mellitus in children S. LAL*, E. LALLA & I. B. LAMSTER

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Objective: To assess gingival bleeding in diabetic children during the mixed dentition period.

Methods: Three hundred and fifty five 6–13-year old diabetic (99% Type 1) and non-diabetic control children in the mixed dentition stage were evaluated from a total cohort of seven hundred 6–18 year-old children. Gingival status was assessed and data on important diabetes-related variables were collected. Analyses were performed using Poisson regression.

Results: Children with diabetes had significantly more gingival bleeding than controls for both primary and permanent teeth. The risk of gingival bleeding about primary teeth in cases was 35% more than the control group (P = 0.001); and the risk of gingival bleeding about permanent teeth in cases was 57% more than controls (P < 0.001). The number of teeth with bleeding had a very modest, but statistically significant, association with mean HbA1c, BMI-for-age percentile, and duration of diabetes.

Conclusion: These findings demonstrate that children with diabetes are at a significantly higher risk for gingival bleeding. Diabetes-related oral complications affect the primary periodontium as early as age 6 and possibly earlier. The emphasis on oral hygiene may be valuable in preventing future periodontal complications in patients with diabetes.

OS041

Oral manifestation of juvenile diabetes mellitus and its management

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

OS042

Paediatric patients treated with bisphosphonates and avascular necrosis

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Objective: The use of intravenous bisphosphonates is widely accepted in children with osteoporotic bone disorders. Adult bisphosphonate use has been linked to avascular necrosis of the maxilla or mandible. This complication has not been assessed in a pediatric population receiving bisphosphonates. Most children with osteoporotic bone disorders on bisphosphonates have been seen routinely in the Department of Dentistry at the Royal Children's Hospital in Melbourne. Therefore with the increasing awareness of the possibility of avascular necrosis in adult patients on bisphosphonates, the main objective of this clinical observational study was to determine if avascular necrosis was present in pediatric patients with osteoporotic bony disorders receiving bisphosphonate therapy.

Methods: All current patients receiving bisphosphonate therapy (zoledronic acid and/or disodium pamidronate) were assessed clinically and radiographically for any signs or symptoms of avascular necorsis. A history of any dental extractions or minor surgical procedure during bisphosphonate therapy was noted. Clinical examination for the presence of non-healing ulcers, exposed alveolar bone, periapical or periodontal infections, abnormal mobility of teeth and radiographic examination for any persistent radiolucencies were undertaken and recorded.

Results: In 42 cases assessed to date, 11 patients have had dental extractions and/or minor surgical procedures previously. None of the 11 patients assessed demonstrated signs and symptoms of avascular necrosis either currently or previously documented.

Conclusion: Avascular necrosis of the jaw has not been demonstrated in this pediatric population to date. However, until further safety data is available, any necessary dental or surgical procedures should ideally be carried out prior to bisphosphonate therapy with close coordination between the medical and dental teams.

OS043

Chronic osteomyelitis of the mandible in children K. PEARIASAMY*

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Objective: Osteomyelitis is a purulent inflammation of the medullary cavity and adjacent cortex of bone. This paper describes the clinical features and management of chronic mandibular osteomyelitis in children.

Methods: Six children diagnosed with osteomyelitis of the mandible were managed by a pre-surgical course of antibiotics followed by removal of the causative non-vital tooth, curettage or sequestrectomy of the affected bone, and then given Clindamycin orally for 4–6 weeks. The children were followed-up post-operatively from 6 months to 2 years.

Results: There were four males and two females between the ages of 3 to 12 years (mean 6.2 years). The time period from onset of symptoms until diagnosis was between 1 to 12 months (mean 3.6 months). Each child had a non-vital tooth at or near the site of © 2007 The Authors

infection and reported mild symptoms with slow increase of jaw size. Cutaneous fistulas with discharging sinuses were seen in four cases. On imaging, the affected side of mandible body, ramus and condyle showed bone sclerosis, resorption and patchy radiolucency. Cultures of pus and granulation tissue obtained during surgery showed a mixed growth, including β-haemolytic streptococci, *S. aureus, Klebsiella, E coli* and Gram-negative *cocci bacilli*. In five of the six cases, the surgical specimens were confirmed as osteomyelitis. In one case, histopathological examination was non-conclusive but postoperative antibiotic therapy was sufficient to resolve the bony swelling as revealed by CT scans. Radiographic findings showed normalization of the bone appearance at about 3 months postoperatively, but with residual loss of mandibular outline.

Conclusion: The combination of antibiotic therapy and surgical debridement was effective in the management of chronic osteo-myelitis of the mandible in children.

OS044

Idiopathic tooth loss and failure of root development E. A. ALCAINO* & A. C. CAMERON

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Background: Tooth loss in children is mostly a physiological process which takes place when primary teeth are replaced by the permanent dentition. However, trauma and pathological processes may also result in the early loss of teeth. Conditions resulting in premature exfoliation are uncommon and usually represent significant pathology. A case of unexplained tooth loss and failure of root formation is presented.

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

OS045

The oral care of children with acute lymphoblastic leukaemia

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Objectives: The primary objective was to determine the oral candida load of children with acute lymphoblastic leulaemia (ALL) during © 2007 The Authors

6 months chemotherapy and to compare it to the oral candida load of healthy children. The secondary objectives were to determine the species of candida present in both groups, to monitor the oral signs and symptoms of children undergoing chemotherapy and to identify whether a relationship existed between the degree of neutropenia and the number of oral candida present.

Methods: Monthly assessment of children in the study group over a period of 6 months and single assessment of children in the control group (matched individually for age, in years, and gender) was performed. Assessment involved scoring oral signs and symptoms using a modified Eilers (1988) Oral Assessment Guide, before each child held 5 ml of sterile water in his/her mouth for 30 seconds. The neutrophil count of children in the study group at the time of each rinse was recorded. Samples were analysed in the oral microbiology laboratory.

Results: (i) 28 children with ALL (ranging in age from 5 to 19 years) participated; (ii) only one child in the study group experienced oral mucositis; candida was not detected in the oral rinse; (iii) candida was isolated from 22% (35) children in the study group; 91% isolates were *C. albicans*; (iv) children in the control group were less likely than children in the study group to be carriers of candida; (v) a simple linear relationship between neutrophil count and candida load was not apparent

Conclusion: (i) The children undergoing chemotherapy for the treatment of ALL rarely experienced oral side effects; (ii) oral signs and symptoms did not correlate well to oral candida load; (iii) the oral care protocol used by the department was effective.

OS046

Space maintenance following a cystic challenge

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

OS047

LLL in recurrent aphtous stomatitis

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Objectives: RAS is one of the most common ulcerative lesions of the oral cavity. According to some investigations of the properties of pain relief and anti-inflammatory properties of a LLL, as well as in other experimental studies, the LLL has been effective in treating RAS. This study examined the efficiency of LLL in the treatment of RAS.

Methods: In this blind clinical trial, we selected 24 individuals with minor RAS, for which no drugs had been used, and where there was no other systemic disease, and randomly divided them into two groups (case-control). In this research, we used a low-level laser (AZOR-2K, Russian) In-Ga-Al-p, with a wavelength of 600–700 nm with 3J/Point energy, in three- to six-minute treatments. The pain intensity data, calculated by VAS, were analyzed by *t*-test, paired t test, and analyses of covariance.

Results: This study showed that remission time was 5 ± 1.41 days in the case group and 8.25 ± 0.96 days in the control group. The time of complete pain relief was 24 ± 22.04 hours in the case group and 68.33 ± 11.53 hours in the control group. Significant differences existed between the groups (P < 0.001). Pain intensity before laser treatment was 4.41 ± 2.35 in the case group and 4 ± 1.90 in the control group, and pain intensity after laser treatment 1.08 ± 1.44 in the case group and 1.87 ± 1.41 in the control group. Significant differences existed within groups (P < 0.001). By covariance analysis, we determined that differences in pain intensity in the two groups, before and after laser treatment, were significant (P < 0.05).

Conclusion: LLL can reduce remission time and to pain relief in individuals with RAS. Also, laser treatment showed greater reduction of pain intensity in the case group.

Syndromes and genetics

OS049

Prenatal development in deciduous canines of Down syndrome and CP

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

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

laid down prenatally in DS teeth than in controls and it was more highly mineralized. The results for CP teeth showed that more prenatal enamel was laid down prenatally than in controls. Mineralization in CP was poor during the first two trimesters and improved significantly during the last trimester.

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

OS051

Study on dental pulp stem cells from hypophosphatasia patients

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

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

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

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

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

OS052

Ectodermal dysplasia: case reports of affected family members

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Objective: The ectodermal dysplasias manifest in a wide range of conditions involving disturbances in tissues of ectodermal origin, © 2007 The Authors

the most common dental feature being hypodontia, often severe. The purpose of this report is to present a case of three generations of a family with ectodermal dysplasia; the manifestation and presenting complaints, management and treatment modalities.

Methods: Three brothers were referred for management of hypodontia. Detailed examination was carried out and documented, including photograph and radiographic investigations. History revealed similar oral manifestation in two sisters, their mother and a niece. Medical and dental records of the family were subsequently maintained and appropriate treatment rendered. Prostheses were provided to the family members affected, including implants for complete anodontia. The patients' initial clinical presentations, investigations, treatment modalities and prognosis are discussed.

Results: It was a non-consanguinous marriage of the parents, with 10 offsprings, five of whom were afflicted with ectordermal dysplasia. Ridge augmentation and mini implants were placed to support overdentures for the anodontia, orthodontic realignment and crowns were provided for a brother with oligodontia, partial dentures for the sisters with missing teeth and composite restorations placed to close the diastema present in the mother. No treatment was rendered to a brother with complete anodontia, who unfortunately succumbed to infection and a high fever. All the patients are on regular follow-up including a four-year-old niece with microdontia and marked spacing of the deciduous teeth.

Conclusion: Dental management allows patients with ectodermal dysplasia preventive and supportive aesthetic activity, indirectly avoiding social and psychological problems which could arise particularly in adolescents. Excellent oral hygiene is crucial for the successful treatment of these patients, the parents of young children must be made aware of the possible consequences of tooth loss and the necessity for conserving the available teeth.

OS053

Fibrodysplasia ossificans progressiva – a case report R. PRABHU*

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

OS054 Alveolar cleft repair when and how

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

Dental trauma

OS055

Pediatric dental trauma changing etiological perspectives

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

OS056

Oro-facial injuries in children attending hospital in Jeddah, Saudi M. AL-MALIK*

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Aims: To determine the occurrence, causes, types of trauma and the time elapsed until seeking dental care in children seen in a hospital in Jeddah, Saudi Arabia.

Methods and materials: Data included all cases of dental trauma for children aged 17 years and younger who presented at the emergency and dental departments of the hospital during a 12-month period.

Results: A total of 112 patients with traumatic dental injuries visited the hospital during this period. 79 were males and 33 were females. The highest frequency of injury was seen in 9–11 year old children. The most common cause of trauma was due to falls (68%). Most of the dental injuries occurred in the street (57%). The most common types of injury were luxation injuries and complicated crown fractures. Maxillary teeth were more affected than mandibular teeth. Maxillary central incisors were found to be the most affected teeth. 51 patients had soft tissue injuries and 13 patients had facial bone fractures. The largest number of injuries presented on the same day for treatment (70%) or 1 day after (36%).

Conclusions: There was no tendency for delay in presentation for dental care after injury in the sample of our study.

OS057

Child's dental emergencies

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

OS058

Root banking following cervical root fracture: a case report

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Objective: Banking of the root of an unrestorable traumatized maxillary incisor in order to preserve alveolar bone in a young child. **Methods:** A 10 years old Caucasian girl was referred for a persisting fistula in the buccal mucosa of the maxillar left central incisor 21. Due to a traumatic injury 4 years ago, tooth 21 had a composite restoration. A slightly increased mobility was seen but without discoloration or pain. X-ray revealed an immature root with apical radiolucency and an asymmetric development when compared to 11. In a first treatment session, apexification and apical healing was obtained by using MTA. Two years later, she was referred by her orthodontist complaining of a loosen tooth 21. Cervical root fracture was suspected and proven by X-ray. In consult with her orthodontist, it was decided to maintain the root in order to prevent resorption of the alveolar crest. The crown was used as a splint for aesthetic reasons.

Results: After an observation period of one year follow-up, the incisor root was successfully retained. An aesthetical as well as a functional result was achieved by splinting the original crown to the neighbouring teeth.

Conclusion: Management of crown root fractures at the level of the gingival margin is complex especially in case of an immature root with thin divergent walls. Nevertheless, retaining the tooth root

following the loss of the clinical crown is one of the most effective means of preserving alveolar bone. Root banking is a successful clinical procedure to prevent complications during osseointegration of implants to be placed at an appropriate age.

OS059

Localised periodontitis following circumferential foreign body impaction: diagnosis and management S. STEPHEN*

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

OS060

Use of implants in adolescents: 10 year follow-up H. KWEON*, N. Y. LEE & S. H. LEE

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Implants are providing a new option for oral rehabilitation, not only in adolescents with an anterior tooth loss due to trauma, but also in subjects suffering hypodontia, ranging from a single missing tooth to multiple missing teeth of ectodermal dysplasia. When considering implants as a prosthetic solution for adolescents, it is of special interest to determine when may be an acceptable time to place implants for them. However, it is not advisable for clinician to determine when to place implants in adolescents by only taking into consideration the age of patients. This is because there is a large range of timing for growth cessation among individuals. Most authors recommend that dental and skeletal maturation must be evaluated in each young individual who is a candidate for implants treatment. This includes dental age, a handwrist radiograph, growth curve of body height and superimposition of lateral cephalogram. However, any of these should not be the sole guideline for the timing of implant placement in adolescents. Two clinical cases are described in which 13, 14 year-old girls with anterior tooth loss due to dental trauma were treated using implant. It is the main purpose of this report to discuss some characteristics of implants in adolescents demonstrated by 10-year follow-up. In these cases, implants may be adequate alternative treatment to replace a missing tooth in adolescents who still have © 2007 The Authors

Dental materials

OS061

Bonding strength on dentin from primary tooth with amelogenesis imperfecta

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Objective: Dentin of many teeth with amelogenesis imperfecta (AI) is histologically altered following loss of the overlying hypoplastic enamel and exposure to the oral environment. Such dentin becomes hypermineralized and sclerotic with obliteration of the dentinal tubules, which makes bonding less predictable. This study examined the effect of etching time on the microtensile bond strength (MTBS) of an etch-and-rinse adhesive to dentin from primary tooth with AI.

Methods: Flat coronal dentin surfaces from six primary molars affected by AI were divided into two groups according to the etching time (I) 15 seconds and (II) 30 seconds. Following etching, a two-step etch-and-rinse adhesive, Prime and Bond NT (Dentsply De Trey) was applied to dentin surfaces, air-dried and light-cured. Composite build-ups were performed using Filtek Z250 (3M ESPE) for MTBS testing. Flat dentin surfaces from six extracted, non-carious human primary molars were similarly bonded and were used as controls. The bonded teeth were sectioned into beams of 0.8 mm² and stressed to failure under tension at a crosshead speed of 1 mm/min. Representative fractured beams from each group were prepared for fractographic analysis under scanning electron microscope (SEM).

Results: One-way ANOVA and Tukey's multiple comparison tests showed that MTBS of dentin from primary tooth group with AI was significantly low (15 seconds: 19.8 ± 6.6 , 30 seconds: 21.1 ± 7.7) compared to sound dentin groups (15 seconds: 31.8 ± 4.8 , 30 seconds 24.9 ± 5.1). SEM observation of the fractured surfaces revealed predominantly adhesive failure for dentin in AI groups. The low MTBS observed in AI groups could be attributed to the porous hybrid layer and short resin tags that were retained on the composite side of the fractured beams.

Conclusion: The bonding efficacy of etch-and-rinse adhesive was compromised by dentin in AI groups and could not be improved by extending the etching time to 30 seconds.

OS062

Outcomes of restorations placed under general anaesthesia by paediatric specialists

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Objective: There has been considerable controversy regarding the benefit of restoring carious primary teeth in the dental literature. Therefore, the objectives of this study were to review the outcomes of the care provided for primary teeth under general anaesthesia by Paediatric Dental Specialists.

Oral Presentations
Methods: The study was a retrospective longitudinal analysis of

Phase I: Identifications placed. It was conducted in two phases: Phase I: Identification of patients and analysis of dental records. Phase II: Recall of a proportion of the patients and assessment of restorations using a modified Cvar and Ryge Index. The study population was made up of patients who had received comprehensive care of the primary dentition by Paediatric Dental Specialists at Leeds General Infirmary and Dewsbury and District Hospital between 1st January 2001 and 31st December 2003.

Results: The population for phase I of the study consisted of 410 children, who had received comprehensive care of the primary dentition under general anaesthesia. The mean age of the children included in the study was 5.13 years at the time of treatment. The mean number of carious teeth was 8.3. The mean number of restorations placed was 3.42 with 4.88 being the mean number of primary teeth extracted per child. The mean length of follow-up was 17.2 months ranging from 1–63 months. From the records composite was found to be the most frequently used restorative material followed by stainless steel crowns. Stainless steel crowns were found to be the most successful restoration. Ninety-three percent of the restorations clinically examined in phase II of the study were deemed successful.

Conclusion: This study indicated that most of the restorative procedures used had successful medium to long-term outcomes.

OS063

Experimental evaluation of direct pulp capping with two adhesives

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Objective: To evaluate the pulp responses to direct capping with adhesives, with or without direct etching of the exposure site, and comparing their sealing against bacterial penetration into the pulp.

Methods: Deep class V cavities were prepared in 160 permanent dogs teeth under general anesthesia and aseptic conditions and the pulp intentionally exposed with small round bur.Groups I and II (control): The exposed pulps were capped with calcium hydroxide (Dycal), then cavity etched, restored with composite resin and Single Bond adhesive for GI and Prime&BondNT for GII. Groups III and IV: The cavity including the exposure site was etched (subgroups IIIA, IVA) or not including the exposure (subgroups IIIB, IVB) then restored with composite resin and Single Bond adhesive for Group III and Prime&BondNT for group IV. After 7, 30, 90 and 180 days, the animals were sacrificed. The teeth sections stained with H&E for histopathologic examination and with Taylor's modified Gram's stain for microbiological examination. The pulps sections were scored for inflammatory cell response, fibroblastic activity, reparative dentin formation and for the detection and location of microorganisms.

Results: All pulps showed initial moderate to pronounced superficial inflammatory response and fibroblastic activities that decreased throughout the follow-up periods. There was no significant difference between all groups. However the etched pulps tended to show more inflammatory reaction and less fibroblastic activity. At 90 days reparative dentin was present in all teeth except 40% of subgroups IIIA & IVA and by 180 days it was evident in all teeth. No bacterial penetration was detected inside dentinal tubules or pulp cavities in all teeth.

Conclusion: The adhesives tested provide acceptable marginal seal against bacterial penetration and seems to be promising for direct pulp capping.

OS064

Effect of corrosion environments on orthodontic wires' surface hardness

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Orthodontics is a discipline that takes up the normal structure and growth, anomalies and their treatment of tooth, jaw bone and face complex. Wires, springs and brackets used in orthodontic treatment must be produced from materials that appropriate with oral cavity and used without suffering corrosion and losing mechanical properties. In this study, wires chosen from the materials mostly aforementioned in scientific literature and used by orthodontists are put into three artificial saliva solution which are modified Fusuyama, modified Fusuyama with 1 g/l NaF addition and modified Fusuyama with 1.7% H₃PO₄ addition in a situation that is equal to oral cavity temperature and corrosion behaviors observed by using weight loss method. Changes on surface and surface hardness are investigated by looking through microstructure photographs and taking surface micro hardness measurements. Consequently, it is determined that corrosion rates of wires kept in the modified Fusuyama solutions with NaF and H₃PO₄ addition are higher and the most affected wires are nickel titanium and beta titanium alloy wires. Additionally, maximum increase on surface hardness occurs in the modified Fusuyama solutions with NaF for all types of wires. It is seen that the change of betatitaniums surface hardness is 15.68% in modified Fusuyama solution with NaF.

OS065

Bond strength of self-etch adhesives to bur-cut dentin C. K. Y. YIU*, N. HIRAISHI & N. M. KING

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

Methods: Flat deep dentin surfaces from fifty extracted human third molars were divided into five groups according to bur type and speed of rotation (I) high-speed diamond bur, (II) low-speed diamond bur, (III) high-speed tungsten carbide bur, (IV) lowspeed tungsten carbide bur. Controls were abraded with #600 grit SiC paper. A two-step self-etch adhesive, Clearfil SE Bond (SE; Kuraray) and a one-step self-etch adhesive, Clearfil S3 Bond (S3; Kuraray) were applied to dentin surfaces and lightcured. Composite build-ups were performed using Filtek Z250 (3M ESPE). For µTBS evaluation, composite-dentin beams of 0.8 mm² were stressed to failure at a crosshead speed of 1 mm/min. The µTBS data was analyzed using two-way ANOVA and Tukey's multiple comparison tests. Representative fractured beams from each group were prepared for fractographic analysis under SEM.

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

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

OS066

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

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Objective: The aim of this invitro study was to evaluate the extent of micro leakage using 5th and 6th generation bonding agents in a preventive resin restoration technique using flowable composite.

Methods: Eighty human maxillary premolar extracted for orthodontic reasons ware selected. Standard round bur of smallest size available with the Mani Company (No BR-49) was used to prepare the fissure. The depth of preparation was standardized as per the bur head. The teeth were divided into four groups of 20 each where group I -Single bond, group II - xeno bond, group III - adhese, group IV - adper prompt respectively. Group I was the control. After restoration the groups were subjected to thermo cycling and dye penetration test. The specimens were sectioned buccoligually and the degree of dye penetration in the cavity wall was assessed using a stereomicroscope. The score for microleakage were measured in mm. All the data were then transferred to SPSS soft ware and the scores were statistically analyzed using a one way analysis of variance and Tukey test.

Results: The entire test group showed some amount of dye penetration. These were statistically significant. Differences in microleakage among the different groups were, group II (xeno bond) showed highest microleakage followed by group I Single bond, group III (adhese) and group IV (adper prompt).

Conclusion: It can be conclude that the performance of adper prompt and adhese (6th generation) was better than Single bond (5th generation) and xeno bond (6th generation).

OS067

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

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Objective: The aim of this study was to evaluate and compare the effects of two proprietary self-etch adhesives (Adper Prompt L-Pop/3MEspe and iBond Gluma inside/Heraues Kulzer) on the induction of oxidative stress and production of TGF-B1 and BMP-2 by cultured human gingival fibroblasts (HGF).

Methods: HGF were cultured from healthy attached gingiva, obtained by informed consent. Following 24- and 72-hours exposure of HGF to two different elutes of the test materials, cell viability was determined using 3-(4,5-dimethyl-2-thiazolyl)-2,5diphenyl tetrazolium bromide (MTT) assay. Lipid peroxidation, a major indicator of oxidative stress, was measured by the thiobarbituric acid reactive substances (TBARS) assay. TGF-B1 and BMP-2 levels in cell-free culture media were determined by enzyme-linked immunosorbent assay (ELISA).

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

Conclusion: These results suggest that, despite the demonstration of their cytotoxic and oxidative stress-producing potential, the tested adhesive resins might be capable of eliciting a biological response in HGF by production of TGF- β 1 and BMP-2.

OS068

Biological restorations! a myth or reality N. GREWAL*

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

OS069

Glass-fibre reinforced composite resin – applications in pediatric dentistry

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

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

Methods: 1. Application as a post: study group included ten healthy children, aged 3–4 years and requiring endodontic treatment for two or more primary incisors. Each of these children received both GFRCR and omega shaped stainless steel wire posts in atleast two primary incisors. Final coronal restorations were completed with composite strip crowns. They were then evaluated for esthetics, marginal adaptation and retention at regular intervals. 2. Application as a space maintainer: experimental group consisted of thirty children, 3–8 years of age fulfilling criteria for space maintenance and requiring space © 2007 The Authors

maintainers in two quadrants. All the children received both space maintainers, viz. conventional band and loop in one quadrant and GFRCR in the other. Retention of space maintainers was evaluated periodically. The results were tabulated and subjected to statistical analysis.

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

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

OS070

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

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Objective: The objective of this in vitro study was to compare the depth of cure (DoC) of several polyacid-modified composite resins (PAM-C) as a function of their different shades.

Methods: The PAM-C's used in the study were F2000® (3M Espe), Compoglass F® (Vivadent), Glasiosite® (Voco), Dyract® and Dyract Extra® (Dentsply De Trey) with their different shades (A1, A2, A3, A4, B3, C2, D3). The DoC was determined by using a digital penetrometer test method (*J Dent* 1993; **21**, 305). The materials were cured in bulk using a conventional halogen-based unit (Elipar trilight, 450 mW/cm², 40 seconds) in split stainless steel moulds (10-mm long, 4-mm in diameter). Immediately after curing, the height (mm) of the cured material was measured and taken as the DoC.

Results: The mean depths of cure (mm) ranged from 4.66–7.37 (F2000); 3.76–4.62 (Compoglass F); 5.06–6.53 (Glasiosite); 4.18–5.22 (Dyract) and 4.96–6.21 (Dyract Extra). Statistical analysis (ANOVA) revealed significant differences (P < 0.001) between shades and materials. For a given material shade C2 exhibited the lowest value for DoC whereas shade A1 resulted in the highest value. Moreover in general the A shades showed the highest DoC values and the C shades the lowest. For F2000 however the darker shades A2 and B2 scored higher DoC values than the shade A1 from the other materials.

Conclusion: The DoC differs significantly among the different materials for a given shade. There are also significant differences between the shades for a given material. Hence the darker the shade the lower the value of the DoC. Regarding the different materials and their shades F2000 and glasiosite exhibited the highest values for DoC and Compoglass F the lowest values.

OS071

Comparison of monomer release from different composite materials

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Objective: The study was performed to determine the leaching monomer type and amount from the composite materials of different particle sizes, Filtek Flow, Filtek A110, Filtek P60 and

Filtek Supreme (3M Dental Products, St Paul, MN, USA) used in the restorations of primary and permanent teeth.

Methods: Three different sizes of sample discs (2, 4, 6 mm) prepared for each material group were polymerized by two different light curing units, LED (Elipar Freelight I) and Halogen (Visilux II) (3M Dental Products, St Paul, MN, USA) and placed in artificial saliva. The monomer release in 30 minute and 24 hours from the species was analyzed by High Performance Liquid Chromotograph (HPLC) which has been calibrated for TEGDMA, UDMA, Bis-GMA and Bis-EMA monomer extracts. The statistical analysis of the data was performed by Kruskal Wallis, Dunn's Multiple Comparison and Mann–Whitney U-tests.

Results: TEGDMA monomer release was detected in all four material groups and UDMA was detected in the group of Filtek Supreme. Significant differences in monomer release of TEGDMA and UDMA were obtained between the different sizes of discs. In some groups, high monomer release was observed as the surface area has increased. Significantly high amount of TEGDMA and UDMA monomer release was obtained in LED than Halogen group. Lower amount of monomer release was obtained in species of 30 minute than 24 hours.

Conclusion: It has been determined that all composite materials, Filtek Flow, Filtek A110, Filtek P60 and Filtek Supreme, polymerized by lower output curing light device could cause high monomer release. Therefore, clinical applications of composite materials and the type of curing units have important effects in the success of restorations and in the decrease of side potential effects.

OS073

ALP activity assessment of two endodontic materials: a preliminary study

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Objective: The aim of this *in vitro* study was to assess MG-63 human osteosarcoma cells' alkaline phosphatase (ALP) activity when in contact with calcium hydroxide powder (powder), calcium hydroxide paste (paste) and mineral trioxide aggregate (MTA).

Methods: MG-63 cells were seeded to the three selected materials at concentrations ranging from 0.5 to 25% for durations of 0.25, 0.5, 1, 24, 48 and 72 hours. The controls were modified EMEM without fetal calf serum or test materials. BCIP-NBT assay was used and ALP activity quantified using Enzyme-linked Immunosorbant Assay (ELISA) reader at 410 nm.

Results: The overall analysis for ALP activity indicated significant interaction between test materials and control. Duration was a significant factor. Subsequently, the test materials were paired and analysed for initial (0.25, 0.5, 1 hour) and delayed response (24, 48 and 72 hours). During the initial response, Powder exhibited an increased ALP activity compared to MTA. This interaction was not dependent on duration. During the delayed response, elevated ALP activity was noted with Paste when compared to MTA and powder. The interaction of paste was dependent on duration.

Conclusion: All three materials exhibited increased ALP activity.

OS074

Culture of human dental pulp cells on glass fibre

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Objective: The medical application of tissue engineering is already a reality with a range of engineered products used successfully in the clinical setting. The goal with respect to the dental tissues is to eventually regenerate the whole dental organ. Biodegradable scaffolds provide a physiological and biological three-dimensional microenvironment promoting cell adhesion, migration, growth and differentiation. Such a scaffold can effectively transport nutrients, give physical and mechanical strength, as well as the ability to gradually degrade and be replaced by regenerative tissue. The benefits of using scaffolds, thus future research is required to investigate their use in promoting regeneration of pulp tissues. The aim of this study is to investigate the use of biodegradable phosphate-based glass fibres as a potential scaffold material for the *in vitro* regeneration of pulp cells.

Methods: Pulpal tissue from 12 primary teeth and six adult teeth was removed and cultured *in vitro* to expand cell numbers. Cells from two teeth (one primary and one adult) were then seeded on phosphate-based glass fibre scaffolds, with controls seeded on tissue culture plastic. Samples were viewed under modulation contrast microscopy over a 7-day period and RNA was isolated from these cells for relative quantification PCR.

Results: Cells from one adult tooth and one primary tooth were successfully cultured. Histologically, the cultured cells appeared fibroblast-like, but differences were noted between adult and primary cells. Soluble glass fibres were shown to biocompatible with the human pulp cells.

Conclusion: Phosphate-based glass fibres have the potential to serve as a scaffold material for the *in vitro* regeneration of pulp cells. Future investigation is required to study the longer-term response to the glass fibres *in vitro*.

OS075

ART an alternative technique for complicated clinique situations part I

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

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

OS076

ART an alternative technique for complicated clinique situations II

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There are numerous difficulties associated with the dental care of children with special needs. Special care dentistry includes people

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

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