International Journal of Paediatric Dentistry, Preprint from **15**, 9–11

Research Prize

r1

Dental Trauma First-Aid (DFTA) in Casualty and schools in London

M. E. ADDO*, G. ROBERTS & S. PAREKH
Eastman Dental Institute, UCL

Following injuries to the teeth professionals other than dentists may be required to provide dental trauma first-aid. The purpose of this study was to investigate awareness and practices of Dental Trauma First-Aid (DTFA) in Casualty settings and in Primary and Secondary Schools in London.

Methods. A randomly selected sample of all Emergency/Casualty Department and Walk-in Centres providing services for five London boroughs and 100 schools from these boroughs were included. Mailed self-administered questionnaires and semi-structured interviews were employed for data collection.

Principal results. Results from schools showed an unwillingness to institute emergency action mainly due to perceived inadequacy in knowledge/skills. Casualty showed adequate knowledge in DFTA. There was a general absence of any written DFTA protocols in schools and emergency settings.

Conclusion. There is the need for further studies focused on particular barriers such as willingness to provide DTFA, issues of responsibility and acceptable levels of competence of professionals other than dentists, who are sometimes presented with injuries and may be expected to provide emergency care during the critical moments following traumatic dental injuries such as avulsions.

r2

The use of general anaesthesia for extraction of teeth in children in two UK dental hospitals

S. S. ALBADRI*[1], S. LEE[1], G. T. LEE[2], R. LLEWELYN[2], A. S. BLINKHORN[1] & I. C. MACKIE[1]
[1]*The University Dental Hospital of Manchester, UK,* [2]*Liverpool University Dental Hospital, UK*

Aim. To identify the reasons for giving children a general anaesthetic (GA), for the extraction of teeth and to compare these with the guidelines produced by the British Society of Paediatric Dentistry (BSPD).

Methods. Data were collected prospectively from children attending Liverpool Dental Hospital (LDH) and Manchester Dental Hospital (MDH) who required extractions under GA over a 2 months period in 2004. Information recorded included age, gender, date of referral, date of assessment and reason for GA.

Results. A total of 264 and 268 children required extractions under GA at LDH and MDH respectively. There was a difference in the referral pattern between the two hospitals. 254 (95%) children were seen at MDH within the Government guidelines of 17 weeks, 19·4% of these were seen within one week. However, at LDH children attended the hospital with their referral letter and are seen in the walk in emergency service. At LDH the main reason for GA in 189 (72%) children was severe pulpitis requiring immediate relief of pain. This was followed by failed extractions under local anaesthesia in 53 (20%) children. The latter reason is not listed under the current BSPD guidelines. At MDH the main reason for GA in 114 (42%) children was extraction of symptomatic teeth causing pain in more than two quadrants.

Conclusion. Considerable differences were found between children attending the two centres. Further multi centre studies are needed to determine evidence based guidelines into the use of GA for dental extractions.

r3

Child protection in dentistry

S. AL-HABSI*, G. ROBERTS, S. PAREKH & N. ATTARI
Eastman Dental Institute, UCL

Half of the children who are diagnosed with child abuse have orofacial trauma. In view of the high incidence of orofacial injuries in victims of child abuse, dentists are in a strategic position to recognize and report suspected cases.

Aims. (1) To determine the knowledge, attitudes and practice of General Dental Practitioners (GDP), Specialists and Consultants in Paediatric Dentistry towards child protection. (2)To determine the number of children attending Dental Casualty or having restorations/extraction under General Anaesthesia (GA) at the Eastman Dental Hospital (EDH), who are on the Child Protection Register.

Methods. Questionnaire administered to 200 GDPs and 28 specialists and consultants to determine knowledge etc. Children attending EDH casualty and/or GA for dental work cross-referenced with Child Protection Register for children in Camden and Islington.

Principal results. Specialists and Consultants in Paediatric Dentistry showed more willingness to participate in the study and had generally better understanding and knowledge towards child protection compared to General Dental Practitioners. The total number of children seen in Casualty and GA is 150. So far there are no children found to be in the child protection who attend both Casualty and GA.

Conclusion. Further education and training is required for all the groups but in particular GDPs.

r4

Intraligamental analgesia for pain control in children having general anaesthesia

P. ANAND*, R. WILSON & E. C. SHEEHY
Guy's, Kings & St. Thomas' Dental Institute, London

Aims. The aim of the study was to assess the effectiveness and safety of intraligamental analgesia (ILA) for post-operative pain control in children having general anaesthesia (GA). The variables affecting the effectiveness of ILA would also be investigated.

Methods. Data were collected from children having permanent molars extracted under GA. A randomised half-mouth study design was used. ILA (bupivicaine 0·5% with 1 in 200 000 adrenaline) was used on the randomly assigned experimental side prior to extraction of the teeth, and the contra-lateral control side received no ILA. Children were interviewed pre- and post-operatively by the principal investigator (PA) who was blind to the side of ILA. Pre- and post-operative anxiety levels using the Venham Picture Test (VPT), post-operative pain levels using the visual analogue scale (VAS) and presence of self-inflicted trauma were recorded.

Results. Thirty children, with a mean age of 11·3 years completed the study. None of the patients had self-inflicted soft-tissue injury. Post-operatively, pain control was found to be better on the side with ILA in 19 children (63%). Twenty-one children (70%) reported numbness of which 14 (67%) said that they preferred this. A higher percentage of boys (85%) than girls (47%) rated the ILA side 'better' ($P = 0{\cdot}034$). VPT scores were significantly higher for girls post-operatively ($P = 0{\cdot}048$).

Conclusion. ILA was a useful and safe adjunct for post-operative pain control in children having G.A. Boys reported ILA to be more effective than girls.

r5

Chlorhexidine release from glass ionomer cements: a pilot study

A. DADHE*, P. ASHLEY & G. PALMER
Eastman Dental Institute, UCL

Sustained release of chlorhexidine gluconate (CG) from glass ionomer cements (GIC) could help reduce the occurrence of caries. A previous study (Palmer G, Jones FH, Billington RW, Pearson GJ. Chlorhexidine release from an experimental glass ionomer cement. *Biomaterials* 2004; 25: 5423–5431) has suggested that chlorhexidine acetate (CHA) can be incorporated into an experimental GIC and be released over time. The aim of this study was to investigate the release of CHA from commercially available GIC and its effects on physical properties. The following materials were used; Fuji II and Fuji IX (GC Corp, Japan). Powder was weighed and replaced with 10% by weight of CHA. Six specimens of each were created. These specimens were incubated in distilled water and CHA release was measured over 2 weeks using High Performance Liquid Chromatography (HPLC). After 2 weeks, percentage of total amount CHA released was 0·21% (Fuji IX) and 0·28% (Fuji II). Previously published data looking at release from experimental GIC showed 3% to 5% release of CHA added (Palmer G, Jones FH, Billington RW, Pearson GJ. Chlorhexidine release from an experimental glass ionomer cement. *Biomaterials* 2004; 25: 5423–5431). In conclusion, this mix of CHA to GIC powder ratio was very poor in comparison to the previous studies.

r6

Acupressure to treat gag reflex during Bitewing radiographs in children

D. J. C. JOHNSON*
Community Dental Service, Cardiff and Vale NHS Trust, Wales, UK

The gag reflex is a physiological reaction that protects the airway from foreign bodies. In certain individuals this response is exaggerated and can make the provision of simple dental treatment difficult for the patient and dentist alike. The aim of this study is to review the role of acupressure as a method of controlling the gag reflex during the taking of bitewing radiographs in children.
Methods. The Gagging Severity Index (GSI) and Gagging Prevention Index (GPI) (Dickinson, 2000), which are scaled I to V, where V is the most severe gagging, were used to assess each patient. Acupressure was applied with an index finger to acupuncture point CV-24 located in the mental region. Pressure was applied firmly, but not painfully, for 60 seconds. Thereafter the X-ray was taken. 84 children (mean age 8·4 years) fulfilled the inclusion criteria with a GSI of III or more.
Results. 69 children had a GSI of III and 15 had a GSI of IV (82% and 18% respectively). 83 children (98%) were able to accept bitewing radiographs following acupressure, with 74 having a GPI of I and 9 having a GPI of II. One child was unable to have bitewings taken, GPI of IV.
Conclusions. Acupressure was successful as a quick and safe method for controlling the gag reflex of children. A controlled clinical trial is required to investigate any placebo effect.

r7

Young people's 'tips' to dentists

Z. MARSHMAN*, B. J. GIBSON, H. D. RODD & P. G. ROBINSON
University of Sheffield

Aim of the research. To obtain views from young people on how they think dental care can be improved.
Method. Acknowledging the contemporary emphasis on the importance of capturing the voice of the child, a qualitative study was conducted. Qualitative research is used to examine experiences, feelings and perceptions without imposing a framework that might distort the ideas of the participants. Thus, semi-structured interviews were conducted with a purposive sample of 25 regularly attending young people aged 10–15 years. Interviews were carried out by one investigator (ZM) in the child's own home.
Principal results. A range of views were expressed. The main topics raised by the participants were the waiting room environment and the dentist-patient relationship particularly aspects of communication. Several young people of this age group felt that, while material to occupy small children was provided, nothing suitable for young people was available to ease the time spent waiting to see the dentist. Some participants expressed a desire for dentists to talk directly to them (rather than to their parent), to have treatments explained fully and for dentists to make it easier for young patients to voice their own concerns about their teeth.
Conclusion. To ensure dental care is child-centred, services users' views, such as those found in this study, should be actively sought and taken into account by dentists providing care for young people.

r8

In-vitro culture of human dental pulp cells (partial investigation)

Y. SIVAPRAGASAM*, M. LEWIS & P. ASHLEY
Eastman Dental Institute, UCL

Non-vital permanent incisors with immature root formation are difficult to manage and their long term prognosis is poor. It would be preferable if pulpal cells could be encouraged to repopulate the root canal in order that root formation can continue and the tooth may regain vitality. The aim of this study was to determine if pulpal cells from extracted primary and permanent teeth could be cultured in vitro.
Method. Primary and permanent teeth that were extracted for orthodontic purposes were obtained. These were immediately transported to the laboratory in transport media in order to maintain cell viability. Within 2 hours, the pulp was extirpated and scissor minced under sterile conditions. This was then cultured in DMEM, 10% fetal calf serum, 1% penicillin and 1% amphotericin B in an incubator.
Results. Microscopically, fibroblast-like cells were noted. It was noted that it takes longer to obtain explants from primary teeth when compared to permanent teeth. Under similar conditions for transport, processing and culture, the growth of pulp from permanent teeth was also more robust than the primary.
Conclusion. This method of culturing pulp for extracted teeth seems more appropriate for adult teeth. Further research needs to be undertaken to determine growth conditions which are more suitable for primary teeth, as pulp obtained from exfoliating primary teeth is a good source of pulpal cells. More research on growth factors which will stimulate dentine differentiation will be needed. We could then use these agents to run clinical trials on repopulating root canals with pulpal cells.

r9

Reported rubber dam usage of United Kingdom Paediatric Dentistry Specialists

F. A. SOLDANI* & J. FOLEY
Dundee Dental Hospital and School

Aim. To assess the usage of rubber dam amongst Paediatric Dentistry Specialists within the United Kingdom.
Method. Postal questionnaire distributed to all practitioners resident and registered on the United Kingdom General Dental Council's Specialist List in Paediatric Dentistry.
Results. Data were available for 147 questionnaires, a 68% response rate and of these, 86% of Specialists were NHS-based, 4% were private practitioners and the remainder had a mixed NHS/private practice. Regarding the benefits of rubber dam, 77% and 62% of respondents quoted patient safety and moisture control respectively. Perceived difficulties of dam usage were lack of patient co-operation and the non-necessity for a particular treatment, quoted in 64% and 35% of

completed questionnaires respectively. Hospital-based dentists reported dam usage in 60% of cases compared with 40% of Community-based practitioners and the difference was statistically significant ($\chi^2 = 8{\cdot}0$, $P = 0{\cdot}005$, 1 *d.o.f.*). Concerning mode of treatment for all forms of restorative care, dam usage was reported in 47% of non-sedation, 41% of inhalation sedation and 29% of general anaesthetic cases and again, the difference was statistically significant ($\chi^2 = 0{\cdot}76$, $P = 0{\cdot}029$, 2 *d.o.f.*). For anterior teeth, the most common mode of isolation was Dry-dam® (62%) and dam placement with Wedgets® (54%); whilst posterior teeth were most commonly isolated with a clamp and dam (79%).
Conclusion. Current BSPD guidelines recommend rubber dam usage for many restorative procedures; it would appear, however, that there is wide variability in dam usage amongst Specialists in Paediatric Dentistry working within the United Kingdom.
Acknowledgement. Tattersall Scholarship, University of Dundee.

r10

Survival and root resorption of replanted avulsed incisors

M. VAIDYANATHAN*, C. MARSHALL, J. M. FEARNE & F. S. L. WONG
Barts and The London NHS Trust, E1 1BB

Aims. To investigate the survival time of replanted incisors and progression of root resorption.

Methods. 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, date replanted and date of tooth extraction were recorded. External root resorption was measured using periapical radiographs using the Andersson resorption index (*Endodont Dent Traumatol; 5:38–47*) after calibration by two of the authors.
Results. 57 patients with 74 replanted teeth have been included to date. The mean age of the child at time of injury was 10·2 (range = 5–16) years. 15 teeth were extracted with a mean survival time of 4·5 years. 49 teeth were stored wet, 22 dry. 3 were replanted immediately. Preliminary results indicate that 3 months post-replantation marked resorption (Andersson Grade 2) was found in 62% and 65% of teeth replanted ≤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). 7% had resorption in the cervical third.
Conclusion. The difference in resorption sites may be due to the structural difference of the root surface with acellular cementum in the cervical region and cellular cementum in the apical region.