2004 BSPD Young Researchers Prize Entrants, sponsored by 3M ESPE

Abstracts submitted for the BSPD Prize for Young Researchers were not submitted to the usual IJPD review process, but were scrutinised by the BSPD President, the IJPD Journal Editor-in-Chief, and members of the BSPD Committee for Belfast, 2004, prior to publication

1

Exposure to nitrous oxide in a paediatric dental unit

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Objectives. To evaluate the time-weighted average (TWA) exposure to nitrous oxide of dentists working in a paediatric dental unit.
Basic research design. Monitoring of nitrous oxide levels using sensors worn by the operator on the lapel together with recording of patient's age, treatment carried out, active scavenging system used, use of extractor fan, treatment duration, categorical rating scale, use of aspiration, use of rubber dam, flow rate of nitrous oxide/oxygen mix, percentage of nitrous oxide: oxygen used and rating of nasal mask fit.
Participants. Three operators administering nitrous oxide/oxygen for inhalational sedation to paediatric dental patients.
Results. Data was collected from 17 treatment sessions with a total of 34 patients. Patients ranged in age from 4 to 16 years. Active scavenging was used in all cases. The mean (range) TWA over eight hours was 151 parts per million (16–374 parts per million).
Conclusion. It is difficult to achieve the recommended levels in this environment even with active scavenging.

2

Repeat general anaesthesia in Leeds, a 6-year follow-up

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Aim of the research. To investigate:

- the subsequent dental treatment needs of children who have had dental extractions under General Anaesthesia in 1997 in a Day Case Unit at Leeds Dental Institute (LDI);
- the reasons for repeat Dental General Anaesthesias (DGAs).

Methods. A retrospective longitudinal analysis. Information recorded from hospital records over the six-year period following the first DGA was as follows:

- reasons for the DGA in 1997 and teeth extracted;
- number of subsequent DGAs, reasons & treatment;
- episodes & reasons of toothache or swelling after 1997.

Results. The study population consisted of 492 children (mean age 6·37 years, SD ± 2·79, range 1–16 years) who received chair GA exodontia at LDI. Most common reason for extractions was caries and mean number of extractions was 4·22, SD ± 2·13. There was a repeat rate of DGA of around 10%; 9·9% of children had one repeat and 0·8% two repeats. In 90% of the cases the reason for the repeat DGA was caries. In 44·2% (23/52) of the cases, the subsequently extracted teeth were caries free or unerupted at the time of the first DGA. At least one incident of toothache was recorded in 61% (32/52) of children who had a repeat DGA during the 6-year follow up.
Conclusions. The initial analysis of the data reveals that the majority of repeat DGAs were to treat new carious lesions. Caries was diagnosed at the date of first DGA in 40·6% (120/295) of teeth treated or extracted under the repeat DGAs.

3

Early extraction of the first permanent molar: a retrospective study

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The first permanent molar (FPM) is the first to erupt at the age of six years. They are frequently affected by caries or developmental defects. The unplanned extraction of these teeth can lead to problems with occlusion. The aim of the present study is to identify criteria for the ideal timing of the extraction of the FPM to ensure favourable eruption of the adjacent teeth and space closure. A longitudinal retrospective study was carried out. Ethical approval was

*Italics demote presenting author.

sought. A total of 161 patients (male/female ratio 1 : 1·3) were identified from the general anaesthetic day-case records. These were 8–11 years old at time of extraction and had one or more first permanent molars removed at the Royal London Dental Institute 1999–2001. Each patient was reviewed aged 12–16 years. A pilot study of 10 patients was carried out. Pre-extraction data included chronological and radiographic age determination and axial inclination of the second permanent premolar and molar measured from radiographs. The postextraction data collected included age and axial inclination of the second permanent premolar and molar measured from radiographs and intra/interarch occlusal relations measured from study models. This study will provide evidence-based data to assist in treatment planning for the early loss of first permanent molars.

4

A clinical evaluation of mineral trioxide aggregate for root-end closure of nonvital immature permanent incisors in children – a pilot study

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Aim of the research. To evaluate the clinical efficacy of MTA as an apexification material when used in nonvital immature permanent incisors in children.
Methods. The investigation was completed in two phases: an *in vitro* evaluation of the handling properties of MTA on five extracted human premolars and an *in vivo* determination of the clinical procedures on four subjects. The main clinical study consisted of 16 children and 18 nonvital permanent incisors. An apical plug of 3–4 mm was created using MTA and final obturation was completed using thermoplastisized gutta-percha. Clinical and radiographic follow-up was performed 3-monthly for 1 year.
Results. The 1-year follow-up will be completed end of April 2004. From preliminary data on 16 teeth MTA placement was considered to be adequate in 12 teeth (75%). Only 11 cases were reviewed clinically and among these, clinical success was 81·3%. Radiographic success was found to be 68.8% and in 5 cases (31·2%) the outcome was considered to be uncertain.
Conclusions. MTA appears to produce good clinical results when used as an apexification material. However, more controlled clinical studies are required to evaluate the long-term success of this procedure.

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1

Papillon–LeFevre Syndrome in a young boy: a clinical case presentation

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Presenting problem. Papillon Le–Fevre Syndrome (PLS) is characterised by Palmo plantar keratosis and a rapidly progressing periodontitis, which leads to early loss of both deciduous and permanent dentitions. Inheritance is though to be autosomal recessive and the incidence has been estimated at 1 in 4 million. PLS patients have a mutation in the Cathepsin C gene. This case focuses on the genetic, clinical, immunological and radiographic characteristics and their Dental Management.
Clinical Case Presentation. A 3-year-old boy, originally seen by a Specialist Practitioner for receding gums was referred to the Department of Periodontology of Birmingham Dental Hospital where a diagnosis of PLS was made from the clinical signs alone. Later he was seen in the