Research Prize Presentations

R1

Effect of brushing on dental erosion

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Objectives: To compare the effect of brushing versus dipping using three different concentrations of fluoridated toothpastes on enamel erosion in vitro using surface profilometry.
Methods: In a randomised, blinded experiment six groups of seven enamel slabs each were cut and mounted into resin blocks, ground and checked for surface flatness using a scanning profilometer (Scantron Proscan 2000). Each slabs' surface was covered with nail varnish except for a small window (1 x 2 mm). Each group was immersed under static conditions for 2 minutes, five times daily in fresh 200 ml aliquots of citric acid 0.3% (pH = 3.6). In addition, three groups were immersed in three different fluoridated toothpastes (0 ppm F, 1100 ppm F, or 1450 ppm F) twice daily morning and evening for 2 minutes each time. The other three groups were brushed using the same toothpastes twice daily for 2 minutes each time. The total cycling period lasted 16 days during which the slabs were incubated overnight and between erosive challenges in artificial saliva at 37°C. A 60-minute gap was left between daytime immersions. Before and after dipping in the erosive solutions the slabs were rinsed with de-ionised water. After the cycling period, the slabs were analysed with the scanning profilometer to measure the amount of surface loss at day 4, 8, 12, and 16.
Results: Surface loss ± SD of enamel at day 16 caused by citric acid combined with dipping using non-fluoridated toothpaste was 61.19 ± 8.50 μm, 1100 ppm F was 43.44 ± 10.94 μm or 1450 ppm F was 34.98 ± 4.29 μm. Surface Loss ± SD of enamel at day 16 caused by citric acid combined with brushing using 0 ppm F, 1100 ppm F, or 1450 ppm F toothpastes was 75.62 ± 10.64, 63.51 ± 5.27 and 48.94 ± 13.67 μm, respectively.
Conclusion: Enamel erosion was increased significantly (CI 95%) using brushing with toothpastes compared to dipping. In addition, enamel erosion showed a dose-response to fluoridated toothpastes.
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R2

The pattern of extraction of first permanent molars: results from three dental hospitals

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Objective: To determine and compare the reasons and pattern of extraction of first permanent molars (FPM) in 3 UK dental hospitals.
Design: Data were collected prospectively from 300 children attending Manchester Dental Hospital (MDH), Liverpool Dental Hospital (LDH) and Charles Clifford Dental Hospital, Sheffield (CCDH) who required extractions of at least one FPM. Information recorded included age, FPM extracted, reason for extractions, previous treatment, method of extraction, and whether patients had previous extractions.
Result: The mean age in months was 129 (Std 22.7), 139 (Std 29.4), and 133 (Std 26.8) for MDH, LDH, CCDH respectively. 45% and 48% of children had four FPM extracted at MDH & CCDH, respectively, compared to 25% in LDH. The main reason for extraction (70%) was caries with poor prognosis, followed by caries and compensating extraction (14%). Molar Incisal Hypoplasia was the reason for extraction in 11% of cases. General anaesthesia was the main anaesthetic method used with 77%, 55%, and 47% in MDH, LDH and CCDH, respectively. Local anaesthesia was used in 43% of cases in LDH in comparison to 12% and 22% in MDH and CCDH, respectively. 68% of children had received no previous treatment to the FPM and only 5% had fissure sealants placed. 40% of children had previous extractions.
Conclusion: The children who are attending our hospitals for extractions of FPM tend to be older than the recommended age for achieving maximum space closure. This study highlights the need for extensive prevention programs targeted at those children with high caries risk.

R3

Increasing the awareness of the role of the dental team in child protection

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Aims: Construction and delivery of a multiagency child protection (CP) course for the dental team in five health board areas; increase knowledge of the signs of physical child abuse (CA); increase likelihood of referral when concerned; aid development of individual practice protocols; increase familiarity with local referral protocols and procedures.
Method: A 3-hour course was designed and delivered in five health board areas by two paediatric dentists and a member of the local CP team. The course content included: orofacial signs of CA; role of the dental team in CP; and local referral procedures and protocols. Questionnaires concerning the above topics were distributed to the course participants immediately prior to the start, and 1 month after the course.
Results: A total of 117 members of the dental team completed the first questionnaire and 65 the second. Knowledge of the signs and symptoms of CA improved from 68.5% to 81%. Prior to and following the course: 58.9% and 40.6% reported that a fear of consequences to the child would influence the decision to report ($P = 0.019$); 79.5% and 38.5% were concerned that their lack of knowledge would negatively influence the decision to report ($P < 0.001$); 19.4% and 38.9% had a practice protocol ($P < 0.001$); 17.3% and 48.4% had seen their local guidelines ($P < 0.001$).
Conclusions: The course achieved increased: knowledge of the signs of CA; likelihood to refer due to reduction in fear of consequences to child and increased knowledge of both indicators of CA and referral procedures; dental practice protocols; familiarity with local procedures and protocols.