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Abstracts from other journals

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The effect of fluorides and caries in primary teeth on permanent tooth emergence. Leroy R, Bogaerts K, Lesaffre E, Declerck D. *Community Dentistry and Oral Epidemiology* 2003; **31**: 463–470.

The aims of the study were to determine if there an effect of exposure to fluorides on the timing of emergence of permanent teeth and can a difference in timing of tooth emergence be explained by the impact of fluorides on the caries experience of the predecessors? Data were obtained from a long-term follow-up study of the oral health condition in a sample of 4468 Flemish children. Survival analyses with log-logistic distribution were performed to calculate median emergence ages and 95% confidence intervals; four fluoride exposure parameters (fluorosis, use of systemic fluoride supplements, age at which tooth brushing started and frequency of tooth brushing) and caries experience were taken as covariates in the model. The present study indicates that the impact of any of the four fluoride exposure parameters on permanent tooth emergence was relatively minimal. Caries experience in the primary molars had a more pronounced impact on the timing of emergence of the successors than exposure to any of the four fluoride parameters.

Caries-preventive effect of fluoride toothpaste: a systematic review. Twetman S, Axelsson S, Dahlgren H, *et al*. *Acta Odontologia Scandinavia* 2003; **61**: 347–355.

The Swedish Council on Technology Assessment in Health Care launched a project group in 1999 to systematically review and evaluate the existing literature on various caries preventive methods. The aim of this article was to report findings concerning the caries preventive effect of fluoride toothpastes in various age groups, with special emphasis on fluoride concentration and supervised versus non-supervised brushing. A systematic search in electronic databases for articles published between 1966 and April 2003 was conducted with the inclusion criteria of a randomized or controlled clinical trial, at least 2 years follow-up and caries increment in the permanent (deltaDMFS/T) or primary (deltadmfs/t) dentition as endpoint. Out of 905 articles originally identified, 54 met the inclusion criteria. These studies were assessed independently by at least two reviewers and scored A–C according to predetermined criteria for methodology and performance. The measure of effect was the prevented fraction (PF), expressed as percent. The results revealed strong evidence (level 1) (i) for the caries preventive effect of daily use of fluoride toothpaste compared to placebo in the young permanent dentition (PF 24·9%), (ii) that toothpastes with 1500 ppm of fluoride had a superior preventive effect compared with standard dentifrices with 1000 ppm F in the young permanent dentition (PF 9·7%), and (iii) that higher caries reductions were recorded in studies with supervised toothbrushing compared with non-supervised (PF 23·3%). However, incomplete evidence (level 4) was found regarding the effect of fluoride toothpaste in the primary dentition. In conclusion, this review reinforced the importance of daily toothbrushing with fluoridated toothpastes for preventing dental caries, although long-term studies in age groups other than children and adolescents are still lacking.

An assessment of the cost effectiveness of a postal toothpaste programme to prevent caries among five-year-old children in the North West of England. Davies GM, Worthington HV, Ellwood RP, *et al*. *Community Dental Health* 2003; **20**: 207–210.

The aim was to assess the cost effectiveness of a postal toothpaste programme to prevent caries in 5-year-old children in the north west of England. Birth cohorts of children aged 12 months were recruited from high caries risk populations in nine health districts. The results of a randomised controlled trial to measure the effects of a postal toothpaste programme were used and related to the costs of running a similar programme. Children in the trial received free toothpaste on four occasions a year and a toothbrush once a year for four years from age 12 months to 5 years. At 5–6 years-of-age the children were examined by trained, calibrated examiners using BASCD standards. Those who received toothpaste containing 1450 ppm F were found to have a significantly lower mean dmft than those who had not. The estimated cost per tooth saved from carious attack was pounds sterling 80·83 and the cost per child of preventing caries experience was pounds sterling 424·38 and avoiding any extractions was pounds sterling 679·01. Analysis resulted in an overestimation of costs and underestimation of benefits. The programme achieved a significant caries reduction in children who received the 1450 ppm F toothpaste and the costs are now available to those considering provision of treatment services in areas where children are at high caries risk.

Primary tooth enamel surface topography with in vitro argon laser irradiation alone and combined fluoride and argon laser treatment: scanning electron microscopic study. Hicks J, Flaitz C, Ellis R, *et al*. *Pediatric Dentistry* 2003; **25**: 491–496.

The aim of this descriptive scanning electron microscopic study was to characterize surface alterations in primary tooth enamel after in vitro argon laser irradiation alone and combined with topical fluoride treatment either before or after argon laser irradiation. Twenty extracted or exfoliated primary teeth underwent soft tissue debridement and a fluoride-free prophylaxis. Buccal and lingual surfaces were determined to be caries-free by macroscopic examination (stereo-zoom binocular microscope, × 16). Treatment groups were: (1) no-treatment control; (2) argon laser irradiation (ALI); (3) 1·23% acidulated phosphate fluoride (APF before ALI); and (4) ALI before APF. Both buccal and lingual surfaces were evaluated following standard scanning electron microscopic preparation techniques. In the controls, enamel surfaces were relatively smooth with occasional enamel prism ends present on their surfaces. There were no areas with cavitations or surface defects. With ALI, the lased surfaces were roughened mildly to moderately irregular without cavitation of the enamel or exposure of enamel prism ends. The surfaces possessed adherent granules to globules, with most being < 3 microm in greatest dimension. Only occasional fine cracks and porosities in the surface coatings were noted and these were typically less than 1 microm in width or diameter. With APF before ALI, the surfaces possessed an irregular contour, with numerous granules to globules varying in size from 1 to 3 microm in greatest dimension. With ALI before APF, a homogenous confluent surface was present that masked typical enamel surface markings. The previously noted adherent granules and globules with argon laser treatment alone or APF before ALI were not seen. The argon laser effects on the enamel surfaces were masked by the uniformity of these surface coatings. Argon laser irradiation and combined APF and argon laser treatment of primary tooth enamel created surfaces that may provide a protective barrier against a cariogenic attack. The surface coatings associated with combined APF and argon laser treatment may contain fluoride-rich calcium and phosphate mineral phases that could act as reservoirs for fluoride, calcium, and phosphate and provide a certain degree of protection from a caries lesion challenge.

Morphological and microleakage studies of the cavities prepared by Er:YAG laser irradiation in primary teeth. Kohara EK, Hossain M, Kimura Y, *et al*. *J Clinical Laser Medicine and Surgery* 2002; **20**: 141–147.

The aims of this study were to investigate cavity surfaces morphologically, and compare microleakage at cavities prepared by Er:YAG laser after composite resin restoration versus conventional mechanical treatment in human primary teeth in vitro. There have been few reports on microleakage

at cavities prepared by Er:YAG laser irradiation. A total of 30 cavities (class V) in human primary teeth were used. Half of the cavities were prepared by an Er:YAG laser system at 300 mJ pulse energy and 4 Hz, and the other half were prepared with a high-speed diamond bur. Five cavities from each group were investigated by scanning electron microscopy (SEM) and histopathological examination. Remaining cavities were filled with a composite resin without an acid-etching technique and then subjected to microleakage test in 0·6% rhodamine B solution under thermocycling. Microleakage (score: 2·45 ± 1·07) at cavities prepared by laser was significantly less than that by bur (score: 1·30 ± 0·95; $p < 0·05$). SEM observation showed that, compared with the relatively flat appearance of cavities prepared by bur, cavity margins prepared by laser were irregular but there was almost no smear layer at the cavity walls. It can be concluded that cavity surfaces prepared by Er:YAG laser are irregular, but microleakage at cavities prepared by the laser after filling with composite resin is less than that by mechanical bur.

Predicting dental anxiety. The clinical value of anxiety questionnaires: an explorative study. Klaassen M, Veerkamp J, Hoogstraten J. *European Journal of Paediatric Dentistry* 2003; **4**: 171–176.

The aim was to explore the usefulness of the Dental Subscale of the Children's Fear Survey Schedule (CFSS-DS) and the Child Behaviour Checklist (CBCL), used prior to treatment, in relation to the actual behaviour displayed during treatment. The study group was 26 children, referred to a special dental care clinic for behaviour management problems, mostly caused by dental fear. Questionnaires used were the parent versions of the Dental Subscale of the Children's Fear Survey Schedule (CFSS-DS) and the Child Behaviour Checklist (CBCL). Behaviour was registered on videotape and scored by independent observers using the modified Venham scale. Treatment consisted of a familiarization visit and two restorative sessions. There was a significant reduction in fear, based on pre and post treatment CFSS-DS scores. The child's fearful behaviour during the two restorative sessions appeared to be related. No correlation was found between the CFSS-DS and the CBCL, nor between the CFSS-DS and the behaviour displayed during the treatment sessions. The child's anxious behaviour during actual restorative dental treatment is not so much related to its own anticipatory dental anxiety or the anxiety of the mother. Results support the role of a multifactorial model.

Outcomes of vital primary incisor ferric sulfate pulpotomy and root canal therapy. Casas MJ, Kenny DJ, Johnston DH, *et al*. *Journal of the Canadian Dental Association* 2004; **70**: 34–38.

The aim was to compare ferric sulfate (FS) pulpotomy and primary tooth root canal therapy (RCT) in cariously exposed vital pulps of primary incisors. A total of 133 incisors in 50 children were randomly selected to be treated by FS pulpotomy (64) or RCT (69). Two years after treatment, 77 incisors (41 FS pulpotomy, 36 RCT) were available for clinical and radiographic examination. There was no clinical evidence of pathosis in 78% of FS pulpotomy-treated and 100% of RCT-treated incisors. Two independent pediatric dentists evaluated periapical radiographs of the treated incisors. Incisors were classified into 1 of 4 treatment outcomes: N, normal treated incisor; H, nonpathologic radiographic change present; PO, pathologic change present, but not requiring immediate extraction; PX, pathologic change present, extract immediately. Survival analysis was applied. No difference was demonstrated in the proportion of FS pulpotomy- and RCT-treated incisors rated PX at the 2-year recall. RCT incisors demonstrated a significantly higher survival rate than FS pulpotomy incisors at 2 years ($p = 0·04$). Treatment outcomes for RCT incisors were not significantly different from FS pulpotomy-treated incisors at 2 years; however, at 2 years the survival rate of RCT incisors was statistically greater than that of FS pulpotomy-treated incisors.

A systematic review concerning early orthodontic treatment of unilateral posterior crossbite. Petren S, Bondemark L, Soderfeldt B. *Angle Orthodontist* 2003; **73**: 588–596.

The aim of this study was to assess the orthodontic treatment effects on unilateral posterior crossbite in the primary and early mixed dentition by systematically reviewing the literature. A literature search was performed by applying the Medline database (Entrez PubMed) and covering the period from

January 1966 to October 2002. The inclusion criteria were primary and early mixed dentition with unilateral posterior crossbite, randomized controlled trials (RCT), prospective and retrospective studies with concurrent untreated as well as normal controls, and clinical trials comparing at least two treatment strategies without any untreated or normal group involved. The search strategy resulted in 1001 articles, and 12 met the inclusion criteria. Two RCTs of early treatment of crossbite have been performed, and these two studies support grinding as treatment in the primary dentition. There is no scientific evidence available to show which of the treatment modalities, grinding, Quad-helix, expansion plates, or rapid maxillary expansion, is the most effective. Most of the studies have serious problems of lack of power because of small sample size, bias and confounding variables, lack of method error analysis, blinding in measurements, and deficient or lack of statistical methods. To obtain reliable scientific evidence, better-controlled RCTs with sufficient sample sizes are needed to determine which treatment is the most effective for early correction of unilateral posterior crossbite. Future studies should also include assessments of long-term stability as well as analysis of costs and side effects of the interventions.