Background: In public health assessments of child caries rates, often only clinical examinations are performed without the use of bitewing radiographs.

Objective: To determine the relative contributions of bitewing radiography and clinical examination to caries estimates for a child population with high caries experience.

Design: Epidemiological survey.

Participants: 171 children aged 12 to 13 years attending schools in 5 New Zealand communities.

Methods: Examinations were conducted in dental clinics. Bitewing radiographs were taken at the time of the clinical examination. These were developed and read later, and data from those were used at the analysis stage to adjust caries diagnosis for the mesial, occlusal, and distal surfaces of the posterior teeth. Dental examinations were conducted in school dental clinics by calibrated public health dentists with caries status systematically recorded using standardized methods. Only lesions that involved dentin were used in the adjustment by radiograph status. For almost all parameters, use of radiographs resulted in higher caries experience estimates; exceptions were those involving filled surfaces or teeth.

Results/Conclusions: For whole-mouth estimates, there were statistically significant differences between the clinical-only and radiographically adjusted estimates for mean DMFT, DT, FT, DMFS, DS and FS. There was a minor difference in prevalence of caries lesions, which was not statistically significant. Estimates for teeth missing due to caries did not differ. Total number of lesions detected by clinical examination and radiography was 384, and total number of lesions detected by clinical examination alone was 226, which was 59% of the former; thus, 41% of the lesions present were missed during the clinical examination. The greatest discrepancy between the 2 was observed with teeth numbers 4, 5, 12, 13, 14, 19, 20, 29, and 30. Overall, the discrepancy was greatest for proximal surfaces, with clinical examination alone accounting for only 31% of the number of surfaces detected with clinical examination and radiography (65 of 209); for occlusal surfaces, clinical examination alone accounted for 92% of number of surfaces detected with clinical examination, and radiography only 8%.

Reviewer’s Comments: This study corroborates the findings of others which nearly mandate the use of radiographs in determining the full extent of caries lesion prevalence in public health assessments of children. Although not measured in the present study, it can be reasonably assumed that in a patient-specific clinical situation in the office, caries lesion detection, without appropriately exposed bitewing radiographs, would yield a less than accurate number of reported lesions.

Additional Keywords: None

Print Tag: Refer to original journal article
Incomplete removal of caries in primary teeth shows promise for some limited applications, but needs further study before widespread use.

**Objective:** To assess microbial counts in teeth with incomplete caries removal and complete caries removal after restoration and follow-up for up to 6 months. **Design:** Randomized clinical trial. **Methods:** Investigators treated 2 groups of 18 similarly carious teeth by random selection for the treatment they were to receive. After either partial or complete removal of carious dentin from deep carious lesions, a calcium hydroxide base was placed; teeth were then etched and restored with composite resin. Between 3 to 6 months after treatment, the children were recalled and the cavities were reopened and a microbiological sample was taken. Samples were assessed for the type and number of bacteria present in the sample. **Results:** A higher microbial count was found in the partial removal group but no difference in microbial growth between groups. **Conclusions:** The authors feel that their results supported incomplete removal of carious dentin in primary teeth when pulp exposure was a risk.

**Reviewer's Comments:** The authors interpreted their results to suggest that partial removal of carious dentin modifies bacterial growth and reduces the numbers of cariogenic bacteria and as a consequence, reopening of teeth to remove remaining decay may not be required. The mechanism proposed by the authors for reduced microbial activity despite incomplete removal of carious dentin is the separation of the bacteria from their nutrient supply. They concluded that their results supported incomplete removal of carious dentin in primary teeth when pulp exposure was a risk. Although investigators produced statistical analyses to support their conclusions, 2 outstanding issues remain for consideration before this research can influence clinical care: (1) Each tooth had a base of calcium hydroxide placed after caries removal for purposes of delineating the separation between the restorative material and the tooth to facilitate bacterial sampling. The antibacterial effect of calcium hydroxide may have inhibited bacterial growth and may have produced confounding results. (2) The short follow-up period for this investigation does not allow for the potential effect of marginal leakage in the harsh environment of the pediatric oral cavity. Would the effects of marginal microleakage be worsened when a layer of carious dentin is left under a restoration particularly if the restoration endures long periods of wear and tear? We will not know the long-term outcomes for incomplete carious dentin removal until much longer follow-up periods are assessed.

Additional Keywords: None

Print Tag: Refer to original journal article
Rapid Palatal Expansion May Prevent Maxillary Impaction

Interceptive Treatment of Palatal Impaction of Maxillary Canines With Rapid Maxillary Expansion: A Randomized Clinical Trial.


Rapid palatal expansion has a similar effectiveness rate for spontaneous eruption of palatal displaced canines to those for extraction of the canines alone or with fixed appliances.

**Background:** Impactions of maxillary permanent canines occur with a maximum frequency of about 3% and often require surgical exposure and comprehensive orthodontic treatment to correct. Because of the frequency and complexity of treatment, extensive studies of possible interceptive treatment measures aimed to prevent definitive impaction of initially palatally displaced canines are needed.

**Objective:** To assess prevalence rate of successful eruption of palatally displaced canines (PDC) diagnosed at an early developmental stage on a posteroanterior cephalogram (PA ceph) and subsequently treated by rapid palatal expansion (RPE), when compared with untreated controls with PDCs.

**Design:** Prospective randomized clinical trial.

**Participants:** 60 Caucasian subjects aged 7 to 9 years and in the early mixed dentition with either unilateral or bilateral PDC diagnosed on PA ceph and normal maxillary widths.

**Methods:** Subjects were randomly allocated to 2 groups: the rapid palatal expander treatment group (TG; n=35) or the no-treatment group (NTG; n=25). TG subjects were treated with a rapid palatal expander which was activated until the palatal cusps of the maxillary posterior teeth were in contact with the buccal cusps of the mandibular posterior teeth. After expansion, all patients were retained with the expander in place for 6 months; then the expander was removed, and patients wore a retention plate at night for 1 year. All subjects were reevaluated in the early permanent dentition for spontaneous successful eruption of the canines.

**Interventions:** There were 3 dropouts in each group during the study.

**Results:** Prevalence rates for successful spontaneous eruption of the maxillary canines were 66% (21 subjects) in the TG and 14% (3 subjects) in the NTG. The difference between groups was significant.

**Conclusions:** This study showed that RPE is an effective interceptive treatment for PDCs and has an effectiveness rate of spontaneous eruption of PDC (66%) similar to those for extraction of the deciduous canines alone (78%, according to Ericson and Kurol; 62%, according to Power and Short; and 65%, according to Baccetti et al) or combined with fixed appliances (75% according to Olive).

**Reviewer's Comments:** This is a good study providing the evidence that RPE therapy is one type of interceptive treatment for palatally displaced canines. It shows that RPE is similar in effectiveness to extraction of deciduous canines and is a good alternative choice of treatment. It also shows that intercepting the problem will result in a 66% spontaneous eruption of PDCs while just observing PDCs results in only 14% spontaneous eruption of PDCs.

Additional Keywords: None

Print Tag: Refer to original journal article
Mandibular Fractures in Children Treated Differently Than in Adults

The Management of Mandibular Body Fractures in Young Children.

Background: Mandibular body fractures in young children present treatment complications because of potential damage to growth centers and developing teeth.

Objective: To review current management of mandibular body fractures in children.

Design: Review article. Discussion: The authors note that children suffer a relatively low incidence of facial fractures because of the high elasticity of their bones and thicker adipose tissue covering them. The etiology of such fractures in young children is usually motor vehicle accidents or falls. Classic signs and symptoms include pain, disruption of occlusion, trismus, sublingual hematoma, movement limitation, and swelling. Step deformities can be detected by gentle palpation of all bony surfaces of the mandible. When mandibular fractures do occur, treatment concerns relate to minimizing collateral damage to bony growth centers and to developing tooth buds. Mandibular growth centers preserve function which influences future craniofacial growth therefore the primary treatment goal is stable, non-invasive restoration of pre-injury bony architecture. The authors claim that CT scans are the standard of care to image pediatric mandibular fractures as unerupted tooth buds, obscure fractures and greenstick fractures are difficult to visualize on plain radiographs. Treatment depends on the type of fracture and the child's skeletal and dental development. Greenstick fractures are incomplete in that they fracture one cortical plate and bend the other. These are more common in children because of the elasticity of their medullary bone. These fractures without displacement and malocclusion are managed with close observation, dietary and activity restrictions. Greenstick fractures with displacement must be reduced and conservative closed reduction is preferred. Immobilization is attained by mandibular lingual acrylic splints, circumferential wiring or arch bars. The authors admit the complications of using deciduous or partially erupted permanent teeth as anchorage for intermaxillary fixation. In severely displaced mandibular fractures, open reduction and rigid internal fixation are indicated. This involves the use of miniplates made of radiolucent, biodegradable material that provide sufficient stability to enable bone healing and then resorption and elimination from the body. The reader is cautioned that such treatment can cause growth restriction and damage to developing tissues.

Conclusions: Owing to the complexity of the developing mandible and teeth, fractures should be treated as conservatively as possible with closed reduction favored.

Reviewer's Comments: This review also covered complications like postoperative infection and malunion of fractures and provided a comprehensive discussion of the risks and benefits of treatment options. They appropriately recommend the importance of long term monitoring of facial growth.

Additional Keywords: None

Print Tag: Refer to original journal article
Applying topical xylitol syrup to erupting primary teeth may prevent dental decay in infants/toddlers.

**Background:** Xylitol has been shown to be effective as a preventive agent against tooth decay. Xylitol has selective antibacterial actions against strep mutans. It also reduces the adhesiveness of strep mutans to the tooth biofilms.

**Objective:** To determine if xylitol syrup applied to erupting primary teeth can reduce incidence of dental decay.

**Design:** Double-blind, randomized controlled trial.

**Participants:** 1008 children aged 9 to 15 months living in the Republic of the Marshall Islands.

**Methods:** Healthy infants with no congenital craniofacial malformations were recruited and divided into 2 active treatment groups and a control group. Treatment groups received the xylitol syrup (8g/d) as either 2 or 3 divided doses applied to the erupting teeth by parents. Subjects were monitored at least weekly by trained assistants who visited the home and recorded adverse events. Families received prevention education, toys for the children, and gift certificates for grocery stores. The mouth was examined by a calibrated dentist using disposable mirrors and artificial light pre- and mid-study.

**Results:** Of children, 84 completed the full study, 54 % were female, and age at randomization was 15 months. Syrup application compliance >90% for all groups. Decay was determined as follows: 2.20 decayed teeth in the control group; 0.66 teeth for the 2 application per day group; and 1.1 decayed teeth for the 3 application per day group. Prevented fraction ranged from 50% to 70%. Adverse events were 10% experiencing loose stools.

**Conclusions:** Exposing erupting primary teeth to 8g per day of a topical xylitol oral syrup could prevent up to 70% decayed teeth.

**Reviewer's Comments:** Xylitol products have been used for many years in Europe and Scandinavia for prevention of tooth decay and otitis media. Xylitol was approved in the United States in 1963 by the Food and Drug Administration for use in food. Most clinical studies involved chewing gums and lozenges; no vehicle for safe topical application in infants/toddlers has been available. Now many products including sprays, gels, and rinses are readily available; however, the use of xylitol as a preventive application for infants at high risk for early childhood caries has not been well received.

Additional Keywords: None

Print Tag: Refer to original journal article
Use of probiotics and technologies that have a probiotic effect, to modulate disease will become increasingly important due to antibiotic resistant bacterial strains.

**Discussion:** Biofilm (dental plaque) is a complex community of >700 microbial species. Since its initial isolation in the early 1920s, *Streptococcus mutans* has been known to be associated with dental caries due to its ability to convert simple sugars into acid and to thrive in an acidic environment. It is now known that *S. mutans* does not act independently in the disease process, but interacts with neighboring bacteria in the biofilm to disrupt the oral ecology and become pathogenic. It is an understanding of this complex oral ecology that has the potential to lead us to novel preventive and treatment modalities. New approaches based on an understanding of the oral ecology include probiotics, inhibition of bacterial adherence, interference with signaling mechanisms, and the use of a novel technology called specifically targeted anti-microbial peptides (STAMPS). Probiotics are live microorganisms that provide a positive health benefit to the host. In one study, kindergarten children who consumed milk containing *Lactobacillus rhamnosus*, had a reduction in dental caries. Significant reduction of *S. mutans* in saliva was seen in another study using the probiotic bacterium *Lactobacillus reuteri*. Other probiotic approaches involve the introduction of oral streptococci species that have an antagonistic effect on *S. mutans* by encouraging a shift in the oral ecology. Scientists have been developing technologies that achieve probiotic effects but without live organisms. The ability of *S. mutans* to adhere to tooth structure contributes significantly to its virulence. Synthetic agents that inhibit this attachment have been developed and could be used therapeutically as ingredients in toothpastes or mouth rinses. The signaling molecule, competence stimulating peptide, is involved in the regulation of pathogenic properties of *S. mutans*. High concentrations of this molecule interfere with this signaling and cause death of the *S. mutans* bacterium. This has potential as a tool to reduce *S. mutans* levels and therefore reduce the risk for dental caries. Current oral antimicrobial agents have a fairly broad-spectrum effect and therefore, eliminate both pathogenic and non-pathogenic bacteria, disrupting the ecologic balance. This could be avoided with a more targeted antimicrobial such as STAMPS. A STAMP contains 2 parts: 1 is a species specific binding peptide and the other is a non-specific antimicrobial peptide that kills the bacterium. In a study using a STAMP targeted against *S. mutans*, the *S. mutans* was eliminated without affecting other bacteria in a multispecies biofilm.

**Reviewer's Comments:** These technologies have the potential to change how we think about and manage dental caries in the future. It will require funding to perform controlled clinical trials as well as improved techniques to identify caries risk on an individual level.
Neonate facial nerve palsy resulting from forceps use is most often mild with a 100% recovery rate, but surgery may be considered in some infants.

**Background:** Mild to moderate facial nerve paralysis is a relatively common condition following the use of forceps during delivery and may cause a great amount of parental distress and concern.

**Objective:** To characterize the presentation, treatment, and outcome of neonates hospitalized with facial nerve palsy resulting from forceps delivery.

**Design:** Retrospective medical chart review.

**Methods:** Medical records of neonates from 2 tertiary care pediatric hospitals, Montreal Children's Hospital and Ste-Justine Hospital, hospitalized with facial nerve palsy resulting from forceps trauma from April 1, 1989, to April 1, 2005, were examined. Information including gender, severity of the facial nerve palsy, side affected, associated manifestations, treatment, and outcome were recorded. Main outcome measure was resolution of facial nerve palsy.

**Results:** 28 cases, 16 males and 12 females, who exhibited facial nerve palsy secondary to forceps delivery, were identified with 15 presenting with right side palsy and 13 on the left. Facial palsy for 68% of the sample was generally mild to moderate as depicted by an average severity grade of II to III on the visual House-Brackmann Facial Nerve Grading System measurement scale. Of cases, 4 presented with other associated conditions or complications, with 1 experiencing a skull fracture. Except for 1 case which was treated with oral corticosteroids, none of the cases received treatment for the facial nerve palsy. Sufficient long-term follow-up data regarding the outcomes was available for 21 of 28 cases with complete recovery achieved by 100% of this group with an excellent long-term prognosis. These results were consistent with previously reported studies. Complete recovery was accomplished from between 3 days to 4 months with a mean recovery period of 24 days. Of those neonates with incomplete follow-up data, the majority showed partial improvement within 5 days to 3 months.

**Conclusions:** Facial nerve palsy resulting from forceps injury is a relatively common complication and is of generally mild to moderate severity which is associated with a favorable outcome and a complete recovery without corticosteroid therapy or surgery.

**Reviewer's Comments:** This was a good retrospective study and review of the literature. There was a reasonably good sample size with sufficient long-term follow-up of 75% of participants. Controversy exists regarding the timing and need of surgical treatment for facial palsy due to birth trauma. While some advocate early surgical exploration of the facial nerve, most feel observation is the best approach involving uncomplicated cases. This approach is collaborated by most investigations to include this study, which confirm that >90% of infants recover spontaneously. Surgical intervention must be considered in infants with complete unilateral paralysis, temporal bone trauma, complete loss of facial nerve function, and absence of facial nerve improvement by 5 weeks.

Additional Keywords: None

Print Tag: Refer to original journal article
Background: Burn-related injuries are common and often result in lengthy hospitalization and surgical interventions.

Objective: To determine the burden on emergency departments (ED) as a result of burn-related injuries.

Methods: Using the National Electronic Injury Surveillance System (NEISS), data were collected on burn-related injury reports from January 1, 1990, to December 31, 2006.

Results/Conclusions: There were >2,000,000 treatments in EDs of burn-related injuries, averaging >100,000 annual episodes. These injuries were more common in boys (58.6%) and in children aged ≤6 years (57.7%). The part of the body most often involved included hands and fingers (36%) and head and face (21%). Injury site was predominately the home (92%) with schools and public property a distant second (7%). Burn-related injuries have decreased by 31% over the 17-year period from 1990 to 2006. Of note to dentists was the finding of head and face burns to children due to chemicals and cleaners, which accounted for nearly 75% of the total.

Reviewer’s Comments: Recently, I was asked to review the case of a preschool child who returned to the dental clinic with a large circumoral discoloration. The dentist reported that the child had had pulpotomies performed on the maxillary incisors, but she had been very judicious with her use of formocresol. The pediatrician who had been consulted diagnosed the discoloration as second degree burns. Upon further investigation, it was discovered that although the dentist had carefully limited the amount of formocresol by squeezing the cotton pledgets with gauze, that same gauze had been used by the dental assistant at the conclusion of the treatment session to wipe the lips and cheeks.
If dental practitioners are able to diagnose hypoplasia as the teeth are erupting, it might serve as an important "red flag" catalyst for early intervention measures, especially in at-risk young patients.

**Background:** Several cross-sectional and longitudinal studies have reported the association between enamel hypoplasia and dental caries. Defective enamel is found to have a higher acid solubility than normal enamel and is more susceptible to caries attack. But most studies have been cross-sectional in nature and have neglected to take into consideration other important factors such as fluoride exposure. Therefore, a well-designed, prospective, longitudinal study that takes multiple factors into consideration is critical for the accurate connection between enamel hypoplasia and dental caries.

**Objective:** To assess the multifactor longitudinal relationships between enamel hypoplasia and caries experience of primary second molars.

**Design:** Longitudinal study.

**Participants:** 1390 children aged birth to 9 years.

**Methods:** Relationships among fluoride exposures, biological and environmental factors, and oral health in general were examined. Participants were mostly Caucasian (98%), female (51%), and from a relatively high socioeconomic status (71% had a family income of ≥$30,000 and 46% of mothers completed 4 years of college). Of subjects, 698 received dental exams at age 5 years and 603 at age 9 years. Of subjects, 491 participated in both exams at age 5 and 9 years. Collected data focused on fluoride concentrations from a variety of sources including home, school and childcare, as well as food and beverage intake, breast-feeding patterns, general health/illnesses, and oral health. Teeth of all subjects were examined by calibrated examiners at ages 5 and 9 years for hypoplasia and caries, but only primary second molars were used for these analyses. Of primary second molars, 4 were scored for the presence of enamel hypoplasia for each participant.

**Results:** In multivariable logistic analyses, teeth of subjects with enamel hypoplasia had a significantly higher risk for caries at age 5 and 9 years after controlling for other risk factors. Study results point to the presence of enamel hypoplasia as a significant risk factor for dental caries in children.

**Conclusions:** Enamel hypoplasia should be considered in caries risk assessment.

**Reviewer's Comments:** Though the findings of this extensive study echo the connection made in previous hypoplasia/dental caries risk research, dental practitioners can now, with some degree of confidence, utilize the diagnosis of enamel hypoplasia as a possible early predictor of caries lesion development and as a proxy indicator for substandard nutrition and/or childhood infection. With more pre-term, low birthweight babies surviving longer and doing well in many cases, there are more children with a higher number of teeth with some form of enamel hypoplasia. Diligence in managing enamel hypoplasia is critical as these lesions will more likely progress into caries lesions and more quickly.

Additional Keywords: None

Print Tag: Refer to original journal article
Inactivity can lead to overweight and obesity for children with hemophilia. Participation in athletics poses little risk of a bleed or joint injury.

**Background:** The prevalence of obesity and overweight conditions among U.S. children has increased dramatically and children with hemophilia are particularly vulnerable due the perception and/or recommendation that they need to limit physical activity in order to reduce the possibility of a bleeding event. Children with hemophilia are often less physically fit than their peers.

**Objective:** To determine joint outcomes relative to the level of athletic participation among children with hemophilia, taking prophylactic factor replacement.

**Design:** Retrospective review.

**Methods:** 37 school-aged boys with hemophilia A or B from a single center were included. Of subjects, 73% participated in high-impact athletic activities while 27% were limited to only low-impact athletic activities. Baseline data were collected on joint status, body mass index (BMI), treatment regimen, bleeding episodes, type of athletic participation, and injuries.

**Results:** The prevalence of joint hemorrhages and new injuries did not appreciably differ between those participating in either high- or low-impact athletic activities. In most cases,

**Conclusions:** Athletic participation, even in high-impact sports, for school-aged boys with appropriate coaching and regular prophylaxis, was not a prognostic factor for joint injuries. Athletic participation should be encouraged for children with hemophilia and receiving prophylaxis, given the benefits of minimizing the possibility of being overweight or obese.

**Reviewer's Comments:** With the noticeable increase in overweight and obesity among U.S. children, participation in athletics, both low- and high-impact, should be encouraged. Interestingly, school-aged boys with hemophilia A and B, when receiving prophylaxis and coaching, seemed to gain the benefits of organized physical activity while incurring minimal risk for major bleeding or joint injuries.
Replacing sugar-sweetened beverages with water could result in a significant reduction in caloric intake.

**Objective:** To determine the caloric impact of replacing sugar-sweetened beverages (SSB) with other common beverages in children.

**Design:** Secondary analysis of National Health and Nutrition Examination Survey (NAHNES) cross sectional studies.

**Participants:** Children aged 2 to 19 years that completed 2 daily non-consecutive surveys for the NHANES from 2003 to 2004.

**Methods:** 2 non-consecutive, 24-hour dietary recall interviews were conducted. Foods were coded and the Department of Agriculture Food and Nutrient Database determined caloric content of each food and beverage. Surveys were categorized by race and age. Beverages were identified as SSB, diet beverages, milk, 100% fruit juice and other drinks. Consumption of water was also assessed. A standard serving was 8 oz. Consumption was divided between a “fast-food day” and weekday or weekends. Weight, height, body mass index (BMI) and income status were determined.

**Results:** Of 3098 subjects initially recruited, 2874 completed the study and the majority was males (53%). Of participants, 69% were white, 17% were black, and 14% were Hispanic. Of participants, 63% were labeled “higher income” based on 130% of the poverty level. On average, subjects reported 2118 kcal total energy intake (TEI) over a 24-hour period. Average TEI increased with age and was higher in boys. Of subjects, 91% reported at ≥1 SSB per day. With each additional serving of SSB, there was an increase of 106 kcal on that day, equal to an 8 oz cola. Whole milk was associated with an increase of 168 kcal; reduced milk 145 kcal. With 100% juice, there was an increase of 123 kcal; and on fast-food day, an increase of 149 kcal. Replacing SSB with water would produce a net reduction of 235 kcal in TEI per day in NHANES subjects. Each 1% replacement of water for SSB would result in a 6.6-kcal lower TEI. There were no statistically significant reductions in TEI when SSB was replaced with diet drinks.

**Conclusions:** Replacing SSB with water would result, on average, in a net reduction of 235 kcal per day. Choice of replacement beverages is crucial and the authors recommend water as the best choice.

**Reviewer's Comments:** The study did not take into consideration the physical activity of the subjects. Also, because surveys were based on recall, they are subject to inaccuracy and bias with underreporting of up to 25%. Even though there has been an astronomical increase in bottled water use, it is reported that we drink an annual average of >45 gallons of soda (sugar and artificially sweetened). Hopefully, by closing vending machines at school, less SSB will be consumed; but there is no way to stop older children stopping at convenience stores on the way home from school or rushing to the refrigerator for a SSB after school. Parents must set the example by limiting SSB availability.

**Additional Keywords:** None
In some cases, apical manipulation through endodontic therapy can exacerbate a sinus infection and progress to orbital cellulitis.

**Background:** Orbital cellulitis is most commonly the cause of a primary sinus infection (64% of reported cases). Lesser causes include cutaneous-based infections (16% of reported cases), and odontogenic-based cases (2%). Of note is that a disproportionate percentage (nearly 70%) of odontogenic-based orbital cellulitis is in children aged ≤14 years.

**Objective:** To present a clinically impressive course of odontogenic-based orbital cellulitis in a female aged 12 years.

**Discussion:** Patient presented to a dentist with a history of a toothache starting 8 days prior. The girl was diagnosed with a necrotic upper right first permanent molar (#3), a tooth with a previous coronal restoration. Root canal therapy was initiated. Patient was prescribed antibiotics but swelling continued progressing to exophthalmosis and visual impairment. She then presented to an oral & maxillofacial surgeon with all the classic signs of infection, rubor (redness), dolor (pain), calor (fever/heat) & functio laesia (loss of function in right eye), were observed. Patient’s temperature was 104°F (40°C). The patient was noted to have leukocytosis and elevated C-reactive protein, indicative of massive inflammatory reaction. CT revealed the optic nerve to be displaced medially. The patient was admitted to the operating room and a lateral orbital incision presented putrid drainage, which was determined to be primarily populated with *Staphylococcus aureus* and *Streptococcus epidermis*. Tooth #3 was extracted and an oroantral communication noted, and enlarged to allow drainage. The patient improved and was discharged after 3 days of admission.

**Reviewer’s Comments:** This case presents a classic presentation, progression and treatment for odontogenic-based orbital cellulitis. Practitioners need to be aware that antibiotics may take as long as 72 hours to reach a therapeutic serum level, and in the meantime, the infection can significantly worsen. Previous reports place odontogenic origin as relatively uncommon compared to primary sinus infections; however, I wonder if the reporting accuracy of procedures in emergency departments where these patients present might not distort that finding.

**Additional Keywords:** None

**Print Tag:** Refer to original journal article
ART Restoration in Young Children -- Do You Use Cavity Conditioner?

One-Year Survival of Occlusal ART Restorations in Primary Molars Placed With and Without Cavity Conditioner.


Cavity conditioner use does not enhance atraumatic restorative technique restoration retention.

**Background:** Atraumatic restorative technique (ART) has been described as a “minimally invasive” restorative technique for hand-instrument removal of affected and some infected dentin and placement of glass ionomer cement. ART is a popular treatment for very young patients, the handicapped, homebound, elderly, and third world rural populations. Success rates of Class I ART restorations have been reported to be from 63% to 100% at one year. In the original ART protocol, cavity conditioning (CC) with polyacrylic acid is included. The intent of this is to remove the smear layer and surface debris and allow for micromechanical retention.

**Objective:** To evaluate the effect of cavity conditioning on class I ART restorations placed in Mosul, Iraq.

**Methods:** Children were selected if they were aged 6 to 7 years and had occlusal caries on primary molars. A blinded examiner who was not involved in material placement was used to assess restorations at 6 and 12 months. Marginal defects, wear, and restoration replacement were assessed.

**Results:** Data were collected from 44 children at 6 months follow-up and 39 children at 12 months. Overall success rates of ART restorations was 89% (6 months with CC), 84% (6 months without CC), 74% (12 months with CC), and 67% (12 months without CC). None of these were statistically significant. The main reason for restoration failure was missing restoration.

**Reviewer's Comments:** While I appreciate the research design and the use of a blinded examiner, one addition I would have liked to have seen was some analysis as to the relationship of age and behavior to therapy success. Use of cavity conditioner, unfortunately, cannot be a surrogate measure for behavior and/or developmental age. Also, in theory, depth of restorations within the groups would have a potential impact on the retention of the restoration.

Additional Keywords: None

Print Tag: Refer to original journal article
Of children who had intraoperative regional (local) anesthesia, 75% reported a postoperative pain of zero.

**Background:** An area of pediatric health that has received much attention in the past decade is pain management. Due to the relative nascent nature of this area of study, there are few outcome-based studies, particularly with respect to postoperative pain assessment and management. It has been noted that pain is a unique, highly subjective experience influenced by past experience, family background, emotional status, and physiological variables.

**Objective:** To examine the efficacy of a quality-assurance postoperative pain management strategy.

**Design:** Prospective audit.

**Participants:** 173 patients admitted to a standard postanesthesia care unit (PACU) in July 2007 in British Columbia, Canada.

**Methods:** All data collected were part of the PACU standard monitoring and assessment of patients. Demographic data, preoperative medications, procedure, anesthesia duration, and postoperative medications were noted. Pain was assessed using the Face, Legs, Activity, Cry, Consolability (FLACC) Scale, as well as the Linear Analogue Pain Scale (LAPS).

**Results:** Patients coming from radiology following imaging under procedural sedation were excluded because these were perceived to be non-painful and non-invasive procedures. There was a significant relationship between postoperative pain and procedure performed, with orthopedic and otorhinolaryngological procedures being the most painful as reported by the FLACC and LAPS scales. Although only used in 20% of cases, 75% of children who had regional anesthesia (local anesthetic blocks) during the surgical procedure reported a pain score of zero. Pain was the most common reason for extended PACU stay of total patients (6%). There was no statistical difference in postoperative pain noted when preoperative analgesia was used.

**Reviewer’s Comments:** It was interesting to see that one fairly reliable way of reducing postoperative pain was the use of local anesthesia - although it was not often used in surgery. This article does a good job in distinguishing between pain in the awake/postoperative child and the physiologic response when a child is under general anesthesia. Pain was also shown to be a fairly significant factor in extended PACU stays.

Additional Keywords: None

Print Tag: Refer to original journal article
While not reducing the overall number of white-spot lesions, the remineralization paste used did reduce the severity of many of them.

**Background:** The white-spot lesion is an oft noted association with fixed orthodontic therapy. This is thought to occur as oral hygiene is hindered by the appliances. Most commonly, the facial surfaces of maxillary anterior teeth are affected. These lesions often remain stable, with reports citing 10% progressing to cavitated carious lesions after debonding. Current preventive measures have inconclusive evidence -- namely fluoride mouthrinses and fluoride-releasing bonding cements. Some have proposed that exposing a white-spot lesion to concentrated fluoride solutions will in fact cause a hypermineralized state, in which the white spot lesion is less likely to remineralize, causing a poor aesthetic result.

**Objective:** To evaluate white-spot regression in adolescents using a topical remineralizing cream containing casein phosphopeptide-amorphous calcium phosphate complexes (CPP-ACP), which has been shown to stabilize calcium and phosphate ions in a supersaturated solution.

**Design:** Randomized study.

**Participants/Methods:** Healthy subjects aged 12 to 18 years with at ≥2 documented white-spot lesions and scheduled for fixed appliance removal were recruited from 9 private orthodontic practices in a fluoridated part of Australia. The study group was instructed to use 1g of a 10% CPP-ACP paste morning and night for 12 consecutive weeks, after using a 1000ppm fluoridated toothpaste. Controls followed the same protocol with a placebo cream. All participants received a prophylaxis and supervised fluoride mouthrinse at recall visits (4, 8, and 12 weeks) . Severity of white-spot lesions were classified by the International Caries Detection and Assessment System II (ICDAS II).

**Results:** 45 subjects (23 study, 22 control) completed the study per the protocol allowing for evaluation of 408 white spots (207 study, 201 control). There was no statistically significant relationship noted between total number of white spots detected in either group. However, the study group had a significantly higher number of moderate to severe lesions at baseline that regressed during the 12 week therapy, although this was not noted at 8 weeks.

**Conclusions:** CPP-ACP paste significantly regressed white spots noted in subjects aged 12 to 18 years.

**Reviewer’s Comments:** I thought this was a very well designed study. Use of robust variance for clustered lesions (ie, that was >1 lesion per patient) was statistically appropriate. Use of CPP-ACP is in its infancy, but this study demonstrates promising applications, particularly for orthodontic patients.
Asthma -- A Disease of the Family

The Impact of Uncontrolled Asthma on Absenteeism and Health-Related Quality of Life.


Children with uncontrolled asthma missed more than 6 days of school.

**Background:** In 2005, there were >10 million emergency room visits and nearly 2 million hospital stays related to asthma. This chronic illness affects approximately 6 million children. Despite efforts to standardize protocols, there is a great deal of variation in asthma classification by physicians, as well as the relative “stability” of the condition. New guidelines, published in 2007, focus on the impact of asthma in terms of total disease burden on families.

**Objective:** To examine the impact of asthma on absenteeism and health-related quality of life in adult patients, adult caregivers of pediatric patients, and pediatric patients.

**Design:** Secondary analysis using data from the National Jewish Health collection, from 1996 to 2006.

**Methods:** Demographics, asthma-related utilization, medication use, missed school and work within the past 6 months were evaluated. Key components of asthma control were classified according to the National Asthma Education and Prevention Program (NAEPP). Health related quality of life (HRQOL) was measured using the Marks Asthma Quality of Life Questionnaire (AQLQ). Uncontrolled asthma was defined as patients who were on a recommended controller medication, and yet required hospitalization or emergency healthcare services for continued symptoms.

**Results:** Data were collected from >15,000 patients with either controlled or uncontrolled asthma. The majority of both groups were aged 40 to 64 years. In the uncontrolled group, caretakers missed an average of 1.9 days caring for children with asthma, adults missed 4.7 days of work, and children missed 6.4 days of school related to asthma. These were all significantly higher than controls. Caregivers also exhibited significantly lower HRQOL related to asthma, specifically emotional function and activity limitation. Adults with uncontrolled asthma had a lower quality of life, including mood and social interactions. **Conclusion:** Uncontrolled asthma contributed to increased absenteeism and lower HRQOL in both adults and children.

**Reviewer’s Comments:** This article made me think, there are nearly 30 million children with early childhood caries and the burden has just barely been addressed. The strength of this study was the massive sample size, and fairly good distribution. I would have liked to have seen within each age cohort whether the burden increased or decreased. Also, this study, by nature of its design, excluded children under 12, which would have been fascinating.

Additional Keywords: None

Print Tag: Refer to original journal article
Seizures are a common initial finding of stroke in older children, while hemiparesis is more common in younger children.

**Background:** Every year, it is estimated that >3 children per 100,000 suffer from stroke (both ischemic and hemorrhagic). Recurrence often occurs and post-stroke disability is a common feature to both types of stroke. Certain conditions have been shown to predispose children to stroke: cardiac disease, vascular abnormalities, endothelial damage, infectious diseases, prothrombotic abnormalities and antithrombin deficiency.

**Objective:** To retrospectively study pediatric stroke patients and identify thrombophilic and age-related associations.

**Design:** Retrospective study.

**Participants/Methods:** 48 patients were evaluated. Stroke diagnosis was confirmed by either CT or MRI imaging. Data included: diagnosis, sex, medical history for both family and patient, presenting signs/symptoms, treatment and outcomes.

**Results:** Patient data revealed nearly 60% to be female with a median age of 2 years. Nearly half of children presented with hemiparesis (48%), followed by seizures (31%), headache (17%), and paresthesia (4%). Seizures were noted to be more common in older children and hemiparesis the most common presenting sign in younger children aged

**Conclusions:** Stroke in children is often associated with a combination of both genetic and acquired conditions.

**Reviewer's Comments:** This is a topic of relevance to all of us, but particularly those of us who treat dental trauma. In several presented cases, it was a mild head trauma, in conjunction with genetic factors that lead to a stroke in a child. Mean age of children was 2 years (which nearly matches the peak age for dental trauma). Also of interest were conditions dentists may see (such as hyperlipidemia in obese patients and varicella infections) which may preclude a child to a stroke.

Additional Keywords: None

Print Tag: Refer to original journal article
Of responding English pediatric dentists, 80% set goals for parents to combat suspected dental neglect, but few involve social services.

**Background:** Failure to thrive and frequent injuries are examples of child neglect, which has been defined as the persistent failure to meet a child's basic physical and/or psychological needs. Long-term morbidities associated with neglect include long-term behavioral dysfunction and poor academic performance. There is a significant overlap in conditions associated with neglect and dental caries.

**Objective:** To examine pediatric dentists’ self-reported management of child neglect.

**Methods:** A self-administered questionnaire was sent to all 789 members of the British Society of Paediatric Dentistry. The questionnaire was anonymous. Questions asked included frequencies of perceived neglect and follow-up protocols. These questions were developed de novo.

**Results:** An overall response rate of 62% was noted, with 449 questionnaires being completed and valid. Of pediatric dentists (PD), 48% reported seeing neglected dentitions >1 time per day followed by an additional 21% observing it once a week. Nearly all the dentists treated the pain and infection, but far less (approximately 4% to 5%) made a referral to social services or a child protection registry inquiry. Approximately 40% of parents always set targets for parental improvement, with another 40% doing so ‘sometimes’. Dentists were more likely to make a registry inquiry if they observed neglected dentitions >1 time daily.

**Conclusions:** While dentists in England take appropriate actions when children have neglected dentitions, few involve ancillary services.

**Reviewer’s Comments:** Dental neglect is typically a nebulous beast difficult to define, but we "know when we see it", to borrow from Edwin Meese. Unfortunately, many social services and ancillary services are poorly qualified to support claims of dental neglect, if in fact they were all reported. Interestingly, in this study, the more often someone saw children with neglected dentitions, the more likely they were to report it. It would be interesting to follow-up on the resolution providers who reported cases actually had. The main focus is often to keep children with their families, and it would be interesting to know how things actually worked between dental providers and ancillary services.

Additional Keywords: None

Print Tag: Refer to original journal article
Managing Behavior of Autistic Children in the Dental Office

Behaviour Guidance in Dental Treatment of Patients With Autism Spectrum Disorder.

Loo CY, Graham RM, Hughes CV:


Age was directly related to cooperation in children with autism spectrum disorder.

**Background:** Autism spectrum disorder (ASD) is an umbrella term that encompasses autism disorder, pervasive developmental disorder-not otherwise specified (PDD-NOS), and Asperger syndrome. ASDs are a pervasive developmental disorder, a broader diagnosis which can include Rett's syndrome and childhood disintegrative disorder. Autism is typically diagnosed early (prior to age 3 years) and has social impairment, communication impairment, and stereotypical movements/patterns as hallmarks. Many of these characteristic features make cooperation in the dental setting difficult for patients.

**Objective:** To broadly determine factors associated with dental setting behaviors in patients with ASD’s.

**Design:** Retrospective chart review.

**Methods:** Included patients were age ≥3 years, had an ASD diagnosis based on parental report, and had completed patient records. Data collected included: demographics, behavior guidance techniques used, type of procedures performed, and DMFT, as well as patient behavior.

**Results:** Data were collected from 781 children (395 ASD and 386 healthy controls). The majority of ASD patients had autism (79%), and had a male:female ratio of 4:1. The ASD group was significantly older, and was classified as more likely to be uncooperative for dental treatment. A 1-year age increase was associated with an 8% decrease in likelihood of being uncooperative. General anesthesia (GA) was the most common advanced behavior guidance technique used (37%), and this was related to age; namely the older child more often required GA then their unaffected counterparts. Protective stabilization (20%) and conscious sedation (4%) were commonly used in ASD populations. An increase in DMFT correlated with an increase in use of protective stabilization.

**Reviewer’s Comments:** This paper catalogs a good amount of valuable information into clinically relevant points. It reflects that ASDs can drastically change behavior guidance techniques. It is important to note that very often it is difficult to achieve parity in ASD diagnoses. One weakness of this study is that it is based on parental recall, so tying direct value to the ASD diagnosis is questionable. It was interesting that not only age, but also DMFT correlated to use of protective stabilization in these patients.

Additional Keywords: None

Print Tag: Refer to original journal article
Emergency Physicians Prepare for Dental Trauma

Stabilization and Treatment of Dental Avulsions and Fractures by Emergency Physicians Using Just-In-Time Training.


Emergency department physicians took a mean of 9 minutes to splint a model of avulsed tooth.

**Background:** The range of reported dental trauma varies from 4% to 33% in boys and girls. The most commonly reported injuries are avulsions, luxations and fractures (uncomplicated and complicated). With the backdrop of the modern economy, more and more families are seeking care in the emergency departments, with the highest volume occurring between 6:00 pm and midnight. Emergency physicians have little training in the management of dental trauma, and very often have no access to an on-call dentist. Just-in-time training (JTT) uses videos, e-learning, and slide shows to walk physicians through the procedure as they are treating the patient.

**Objective:** To measure physician ability to follow splinting protocols after receiving JTT.

**Methods:** Specifically, 3 splinting techniques for dental avulsions and 2 bandage techniques for treatment of complicated and uncomplicated (pulp exposure) fractures. A convenience sample of 25 emergency physicians was used. Participants received JTT approximately 18 minutes before each procedure was to be demonstrated.

**Results:** Physicians took a mean of 9 minutes to complete the avulsion splinting (both wire and bondable ribbon) and less to place the periodontal pack. When asked what they preferred, 96% of dentist evaluators chose the bondable ribbon, compared to 32% of physicians. For fractured tooth stabilization, dentist evaluators were more pleased with the composite placement by physicians than the calcium hydroxide.

**Conclusions:** Emergency physicians can satisfactorily perform splinting and bandaging procedures for managing dental trauma.

**Reviewer's Comments:** The big missing piece in this paper was behavior; trying to splint on a model is different from a traumatized child in the middle of having to be anesthetized with uncontrolled heme. It was interesting that ED physicians preferred bondable ribbon, wire, and periodontal pack about the same for splinting. This does address the need for dental trauma didactics in the emergency medicine curriculum.

Additional Keywords: None

Print Tag: Refer to original journal article
Of surveyed AEGD/GPR program directors, 31% feel that physicians should apply fluoride varnish to young children.

Background: Nearly one third of children in the United States suffer from early childhood caries. The current recommendation is that all children see a dentist by age 1 year or by eruption of the first tooth. Due to the frequency with which children see them, physicians have been pushed as an ally in the early diagnosis and referral of children for oral health care. Due to the relative scarcity of pediatric dentists to children in the United States, general dentists are also seen as an integral part of early childhood oral health diagnosis and referral.

Objective: To survey General Practice Residency (GPR) and Advanced Education In General Dentistry (AEGD) program directors as to the role of physicians in early childhood oral health.

Methods: Questions based on a previous survey of pediatrician’s oral health knowledge and experience with children was used. Program features such as population served, frequency of early childhood oral experiences were asked alongside a Likert scale of what physicians should include in their routine well-child visits.

Results: Data were collected from 187 GPR/AEGD program directors, with a mean of 4.5 residents per program. Most programs were located in urban communities (64%). Residents in the program saw early childhood caries once a week, 39% of the time. Of programs, 9.2% treated children aged ≤5 years. While >90% of program directors agreed that physicians should conduct routine oral/dental assessments and provide oral health counseling, 31% felt that physicians should apply fluoride varnish, and 59% agreed that physicians should make oral healthcare referrals as part of their well-child visits.

Conclusions: While GPR/AEGD program directors agreed that physicians should participate in oral health counseling and assessment, fewer agreed on therapeutic interventions such as fluoride varnish or referrals.

Reviewer’s Comments: A major point being debated in oral health care is the utilization of physicians to be “gatekeepers” for children as an early point of referral. It is interesting that so many GPR/AEGD program directors did not feel physicians should be applying fluoride varnish during well-child visits. Perhaps it is the understanding that physicians often have a myriad of items to accomplish and adding a substantive oral health portion might be impractical. Another interesting point is that

Additional Keywords: None

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