Amoxicillin and Other Antibiotics May Be Reason for More Hypoplasia

Amoxicillin May Cause Molar Incisor Hypomineralization.
Laisi S, Ess A, et al:
J Dent Res; 88 (February): 132-136

Early results indicate a relationship between the frequency of amoxicillin use in childhood and enamel defects in 10-year-old children.

**Background:** Many clinicians tell me they are seeing more enamel hypoplasia in permanent first molars these days. Some have speculated as to why this may be occurring, with many differing hypotheses emerging. Recently, others have speculated that the recent increase in the use of certain antibiotics in early childhood could have a mineralization effect on permanent first molars and incisors, which are developing at this time. Several authors have used the phrase "molar incisor hypomineralization" to describe the resultant enamel malformation seen clinically in permanent molars and incisors.

**Objective:** To examine the effect of increased usage of amoxicillin on molar incisor hypomineralization.

**Participants/Methods:** 141 children were ultimately enrolled from a town in Finland; their mean age was 10.7 years. Because the fluoride content of the water in the region of the study was known to be very low, the children in the study had been appropriately supplemented with fluoride since 6 months of age. Lesions with a diameter <2 mm were not included in the findings. For a separate in vitro study, mandibular molar teeth in formative stages were dissected out of mice and placed into a culture medium. Various concentrations of amoxicillin that would correspond to blood levels if used clinically were calculated and placed into different laboratory dishes. Molars were cultured for 10 days, and the effect of the various concentrations of amoxicillin in solution was determined by examination after decalcification and sectioning of the teeth.

**Results:** The clinical results showed that the 141 children, in total, had 529 courses of antibiotics during their first 4 years of life. Only 15% of the children took no antibiotics. During the first year of life, 35% of the children had taken either amoxicillin or penicillin. Molar incisor hypomineralization was seen in 23 children. The number of doses of antibiotics given to the child in the first 4 years of life corresponded to both the presence and severity of molar incisor hypoplasia. Approximately 52% of the children with molar incisor hypomineralization had taken antibiotics during the first year, compared with 34% of the children without the condition. The laboratory results showed that after 10 days in culture, the amoxicillin significantly affected the thickness of enamel formation. The higher the concentration of amoxicillin, the greater the enamel thickness at this early stage of development.

**Reviewer’s Comments:** The results of this combined study show that amoxicillin appears to have a profound effect on enamel mineralization and may account for what we are seeing clinically. One should not interpret these early findings to suggest changing antibiotic regimens in childhood, but merely to (at this stage) be aware of the possible relationship shown.

**Additional Keywords:** Tooth Development

**print tag:** (Refer to original journal article.)
Flawed Experimental Design Limits Value of Direct Pulp Capping in Primary Molars

Efficacy of EMD Versus Calcium Hydroxide in Direct Pulp Capping of Primary Molars: A Randomized Controlled Clinical Trial.

Garrocho-Rangel A, Flores H, et al:

As dentists search for formocresol pulpotomy alternatives, investigators are reassessing outmoded therapies. This investigation assessed direct pulp capping in primary molars but methodological weaknesses limit interpretation of its results.

**Objective:** To evaluate the clinical and radiographic outcomes of direct pulp capping in primary molars using enamel matrix derivative (EMD) and calcium hydroxide.

**Design:** Split-mouth design clinical investigation.

**Methods:** Subjects who had bilateral grossly carious primary molars were included. After caries removal, identical 1-mm pulp exposures were created in each molar. Either EMD or calcium hydroxide was applied to the cleansed exposure by random allocation, and the tooth was restored with a stainless steel crown. Subjects were followed for 12 months.

**Results:** After 12 months, both the EMD and calcium hydroxide groups each had a single failure. No statistically significant difference between groups was found.

**Conclusions:** Direct pulp capping, using either EMD or calcium hydroxide techniques, could be recommended.

**Reviewer's Comments:** Direct pulp capping for primary molars is a technique that falls in and out of favor with the profession due to the unpredictable outcomes it produces. A recent upsurge of interest in direct pulp capping is likely the result of a search for formocresol alternatives. The authors concluded that direct pulp capping, using either EMD or calcium hydroxide techniques, could be recommended. Based on a review of the methodology employed in this study, which in itself was a difficult task, I found it difficult to arrive at the same recommendation. Creation of an intentional pulp exposure in molars that apparently did not have a carious exposure did not mimic a clinical situation. Dentists perform a direct pulp cap when a pulp exposure occurs at a site and is of a size not of the dentist's choosing. If an intentional exposure is required to study the technique, then it suggests that the pulps in the teeth being studied were not inflamed and, therefore, acceptable outcomes were likely to follow. One may also question the ethics of creating an intentional exposure when one is not produced in the routine course of treatment. What this investigation demonstrates is that, under ideal conditions in which the dental pulp is not inflamed, direct pulp capping can produce predictable outcomes. How direct pulp capping with EMD or calcium hydroxide will work in a clinical situation with a carious exposure is not answered in this study.

**Additional Keywords:** Calcium Hydroxide

**print tag:** () Refer to original journal article.
Conventional Pit and Fissure Sealants Reduce Orthodontic White Spot Lesions

Effectiveness of Pit and Fissure Sealants in Reducing White Spot Lesions During Orthodontic Treatment: A Pilot Study.
Benham AW, Campbell PM, Buschang PH:
Angle Orthod; 79 (March): 337-344

Conventional clear dental sealants reduce the prevalence of orthodontic white spot lesions.

**Background:** One potential side effect of fixed orthodontic treatment is the development of white spot lesions.

**Objective:** To determine whether a commonly available, clear, highly filled resin-based sealant could be used for the prevention of white spot lesions.

**Design:** Split-mouth, in vivo, prospective, clinical trial.

**Participants:** 30 male and 30 female patients treated at the Baylor College of Dentistry Orthodontic Department were included.

**Methods:** 60 patients were randomly assigned to either have the pit and fissure sealant applied to the incisors and canines on the right or left side. Sealants were placed on the designated experimental teeth 2 weeks to 3 months after initial bonding and were applied from the gingival surface of the bracket to the free gingival margin. The contralateral teeth had the same type of bracket with no sealant and served as the controls. The sealants were removed after 15 to 18 months with a finishing bur. To assess white spot lesions after sealant removal, visual assessments of the teeth from intraoral photographs (initial and final) and DIAGNOdent measurements were used.

**Results:** Only 6 of 60 evaluated patients showed visual signs of white spot lesions. Visual assessments revealed that teeth without sealants had approximately 4 times the number of white spot lesions (22) than were noted on the sealed teeth (6). The authors noted that lesions on the nonsealed teeth were much larger than those on the sealed teeth. The DIAGNOdent measured statistically significant differences between sealed and nonsealed teeth in both the maxilla and the mandible. Excluding the 28 teeth with visible white spot lesions, the DIAGNOdent measurements also showed a difference between sealed and nonsealed teeth.

**Conclusions:** Conventional resin-filled dental pit and fissure sealants provided a significant reduction in enamel demineralization during fixed orthodontic treatment. The authors recommend that dental sealants should be considered to minimize white spot lesions. They concluded that the sealant effectively sealed the enamel surfaces adjacent to orthodontic brackets, resisted mechanical abrasion, and remained well-attached; they also concluded that the DIAGNOdent is a useful tool for assessing the severity, progression, and depth of white spot lesions during orthodontic treatment.

**Reviewer's Comments:** This is a good study. The study would have been improved if all the patients had the same type of orthodontic appliance and orthodontic adhesive bonding technique. For this study, several types of orthodontic brackets (ranging from traditional to self-ligating) were bonded by means of 3 different techniques: phosphoric acid/Transbond XT primer; phosphoric acid/Ortho-Solo; and Transbond Plus L-Pop Self-Etching Primer. These variations of appliance and bonding techniques could have had an effect on the results.

**Additional Keywords:** Demineralization

**print tag:** () Refer to original journal article.
No Evidence That Systemic Antibiotics Help Avulsed Teeth Heal

An Evidence-Based Assessment of the Clinical Guidelines for Replanted Avulsed Teeth. Part II: Prescription of Systemic Antibiotics.
Hinckfuss SE, Messer LB:
Dent Traumatol; 25 (April): 158-164

The current literature neither proves nor disproves the value of systemic antibiotics in treating avulsed teeth.

Background: Systemic antibiotics are currently recommended by several clinical guidelines for the management of avulsed permanent teeth.

Objective: To use the principles of evidence-based dentistry to answer the question of whether, for a replanted avulsed permanent tooth, prescribing systemic antibiotic therapy (SAT), compared with not prescribing SAT, is associated with an increased likelihood of successful periodontal healing after tooth replantation.

Methods: The authors searched 4 Internet databases for relevant papers, sieved them using principles of evidence-based dentistry, applied inclusion criteria, and eventually identified 3 papers (326 total teeth) for meta-analysis. To be included, the paper had to be in English, deal specifically with avulsions of permanent human teeth, use SAT, and report periodontal healing outcomes. Acceptable periodontal healing was defined as an intact periodontal ligament space, normal mobility, and no root resorption.

Results: Data were pooled from 3 studies totalling 326 teeth. SAT was prescribed for 247 teeth and no SAT was prescribed for 79 teeth. Acceptable periodontal healing occurred in 73 (30%) of the SAT group and in 23 (29%) of the no-SAT group of teeth. The authors concluded that prescribing SAT is not associated with an increased likelihood of successful periodontal healing after tooth replantation. The authors note that this analysis is limited by the few studies that met the inclusion criteria for a meta-analysis. The greatest deficiency of many relevant studies that were excluded was their failure to report the use of SAT.

Conclusions: The evidence for an association between prescription of SAT and acceptable periodontal healing is inconclusive. It is recommended that clinicians follow current guidelines regarding SAT pending future research to the contrary.

Reviewer's Comments: The research that has supported recommendations for the use of SAT for tooth avulsions has been completed on animals, and those papers were excluded from this meta-analysis. While the clinician might consider antibiotics for other factors like accompanying injuries, the fact remains that evidence for the use of SAT for periodontal healing is lacking. The authors appropriately call for improved methodologies in future studies detailing type, dosage, time of administration, duration, and compliance with SAT regimens. Without such data to analyze, we simply do not know if systemic antibiotics are beneficial in treating avulsed teeth.

Additional Keywords: Systemic Antibiotics

print tag: () Refer to original journal article.
Perceptions of Consumers on Stickiness of Foods Incorrect

Lack of Correlation Between Food Retention on the Human Dentition and Consumer Perception of Food Stickiness.
Kashket S, Van Houte J, et al:
J Dent Res; 70 (October): 1314-1319

Foods perceived as being retained to the teeth may, in fact, be less sticky and clear the mouth quicker.

**Classic Article Review**

**Objective:** To determine if consumers can correctly evaluate the stickiness of foods and their retention on teeth.

**Design:** A consumer survey followed by in situ measurements of food retention and clearance.

**Participants:** Consumers in shopping malls and 5 subjects, 18 to 22 years old, for the laboratory part.

**Methods:** Consumers were shown 21 cards with 1 food item on each. They were asked to determine the stickiness of the item, using "0" as not sticky and "9" as sticky. In the second part, 5 subjects with premolars and first molars in all quadrants were prepared with a prophylaxis and randomly given the 21 foods to consume over a period of time. At designated time periods, retained foods were removed off of the targeted teeth with scalers, collected, lyophilized, and weighed. The procedures were repeated 3 times for each food item. In another experiment, saliva samples were collected at 0, 5, 10, 15, and 30 minutes after the last bolus of food was swallowed, and then centrifuged and assayed for total carbohydrates.

**Results:** 315 adults aged 18 years participated in the survey. They scored caramels, jelly beans, and filled chocolate bars as the most sticky and bananas, oat cereal (with milk), and apples as less sticky; there was no difference between males and females and minimal differences between 18- and 34-year-olds and the rest of the older subjects. In the retention studies, many of the perceived sticky foods were cleared from the teeth within 10 minutes; the more food consumed the more that was retained; the most retained foods tended to be those that were given the lower stickiness ratings. Even for the most retained foods, after 5 minutes, little was left on the selected teeth. The carbohydrate analysis of the retained foods demonstrated that their composition remained unchanged while on the teeth.

**Conclusions:** Consumers' perceptions of stickiness and clearance did not agree with the laboratory findings. Consumers feel that dentists need to provide more information on foods' potential for promoting caries, and just saying to avoid sticky foods is not enough because the selection of non-sticky foods will most likely be incorrect.

**Reviewer's Comments:** I found the results of this study very disappointing. I have similar perceptions to those of consumers on food stickiness, and I have more often had to pry off jelly beans and caramels from my teeth, while I do not remember having crackers or cereals be a problem. It was noted that if a caramel was combined with a chocolate coating it was less sticky, most likely because of the fat in the chocolates. Also, remember that all the subjects were adults, and no primary teeth were available to study. Today's products may have different ingredients than those used in this 1990 study, and the findings may not be as pertinent today.

**Additional Keywords:** Stickiness

**print tag:** (Refer to original journal article.)
Threshold for Hypodontia Lower for Blacks Than Whites

_Hypodontia: An Epidemiologic Study of American Black and White People._
Harris EF, Clark LL:
Am J Orthod Dentofacial Orthop; 134 (December): 761-767

| Studying racial differences in hypodontia may provide a new understanding of the genetic and environmental causes of this developmental anomaly. |

**Background:** The frequency of missing teeth not associated with a syndrome is commonly reported to be approximately 6%, not including third molars. In recent years, hypodontia in families has been associated with mutations in a number of different genes, including _MSX1_ and _PAX9_. Many of the studies of nonsyndromic hypodontia have been of Caucasian subjects, and data on the prevalence of hypodontia in blacks are scarce.

**Objective:** To compare the prevalence of hypodontia in black and white adolescent subjects.

**Participants:** 1700 subjects between the ages of 12 and 18 years, who did not have craniofacial anomalies or other syndromes and who had pre-treatment panoramic radiographs, were included.

**Methods:** The prevalence of hypodontia was determined by tooth type, race, and sex. Frequency distributions and odds ratios were calculated for each group.

**Results:** Of the 1700 subjects studied, 600 were black and 1100 were white. The frequency of hypodontia was significantly different between blacks and whites. While 89.2% of blacks had all 32 permanent teeth, only 78% of white subjects had all permanent teeth. In both racial groups, the third molars were the most commonly missing teeth, but the frequency was significantly greater in whites than in blacks. Whites had almost 2 times the odds of missing third molars when compared to blacks. In the second most commonly missing tooth, the maxillary lateral incisor, there was no significant difference between blacks and whites. The difference in prevalence of missing second mandibular premolars was marginally significant between the 2 racial groups, with a higher prevalence in whites and with teeth missing bilaterally more often in whites than in blacks.

**Reviewer's Comments:** Tooth development is a complex process that involves multiple genes and is tightly regulated. Previous studies have suggested that there may be a polygenic threshold model in which the most distal tooth type is at the greatest risk for agenesis. In this model, small teeth (such as peg lateral incisors) are part of the spectrum of hypodontia. The findings in this paper suggest that the threshold for hypodontia is lower for blacks than it is for whites. The authors make the observation that in general, whites have smaller teeth that are less complex morphologically and develop more slowly, all of which may indicate a greater risk for congenital absence.

/print tag: () Refer to original journal article.
Dry Socket Painful and Often Debilitating Complication of Tooth Extraction


Noroozi A-R, Philbert RF:

Presurgical risk assessment plays a major role in the prevention of dry socket following tooth extraction.

Background: Dry socket, or alveolar osteitis (AO), is a common and often debilitating complication following tooth removal, with an incidence of 1% to 4% for all extractions and 5% to 30% for impacted third molars. Its occurrence is due to the premature loss of the blood clot resulting in exposed alveolar bone and delayed healing of the extraction site with accompanying severe pain, halitosis, and foul taste.

Objective: To perform a comprehensive literature review of the etiology, pathophysiology, and current treatment recommendations for dry socket.

Methods: The authors performed a Medline database search of the literature for the term "dry socket" published in the English language from 1966 to 2007.

Results: Theories of the etiology for dry socket include, bacterial infection, surgical trauma, and biochemical agents that increase fibrinolytic activity by enhancing the release of tissue activators from the alveolar bone and the release of enzymes that activate pain receptors. Numerous investigations suggest gender, age, site of extraction, traumatic extractions, and smoking, as well as oral infections such as pericoronitis, high bacteria counts, and inadequate irrigation during surgery as predisposing risk factors for dry socket. Dry sockets are more common in the mandible, occur 5 times more often in females than in males, and occur 3 times more frequently in females taking oral contraceptives. Dry sockets are rare in children, with the highest incidence reported in the third and fourth decades. Surgical trauma due to difficult extractions and inexperienced surgeons is a risk factor for dry socket as is heavy smoking, especially during the first 24 hours after surgery, which produced a 40% increase. A significant reduction in dry socket was found when prophylactic antibiotics were prescribed for pre-existing pericoronitis and when high volume irrigation was used to remove tooth and bone fragments during the surgical procedures. Preventive measures include antibiotic preparations placed in the sockets, antiseptic rinses, and good plaque control and oral hygiene. Although systemic antibiotics, such as metronidazole, have shown effectiveness in reducing dry socket, most studies recommend their use only for immunocompromised patients or for those with an active infection. Chlorhexidine rinses used pre- and postextraction have shown a 40% to 60% reduction in incidence. Treatment options are palliative and include irrigation of the surgical site without curettage, packing the socket with zinc oxide eugenol paste on iodoform gauze, and prescribing analgesics, such as nonsteroidal anti-inflammatory drugs or narcotic-based preparations.

Conclusions: Prevention is the key in avoiding dry socket, but ultimately it is the patient's healing potential that determines the severity and duration of the condition.

Reviewer's Comments: This is a very comprehensive and detailed review of the literature. It presents both contradicting views and general agreements of investigators findings over the past 40 years. It is very informative but presents too much detail in some areas and not enough in others.

Additional Keywords: Management

print tag: () Refer to original journal article.
More Than 300,000 Have Survived Childhood Cancer in US

Long-Term Follow-Up Care for Pediatric Cancer Survivors.

AAP Section on Hematology/Oncology Children's Oncology Group: Pediatrics; 123 (March): 906-915

In support of the concept of the "medical home," exposure-based health screening guidelines have been developed by the Children's Oncology Group of the American Academy of Pediatrics.

**Background:** Cancer diagnoses are made annually for >12,000 children and adolescents <20 years of age. Due to advancements in treatments, survival rates for childhood malignancies are increasing and are approaching 80%. Currently, there are >300,000 survivors of childhood cancer in the United States. With the increasing survival rates, an increasing number of survivors are being cared for (including dental care) in primary care settings. The treatment(s) of childhood cancer may predispose survivors to excess morbidity and mortality when compared with the general pediatric population. Most organ systems are affected by the treatments required for pediatric malignancies. In addition, as discussed in an earlier review, childhood cancer treatment may also have psychosocial consequences that affect family/peer relationships, vocational and employment opportunities, and insurance and health-care access. Because current and future health risks are unique to the age at the time of treatment and the specific therapeutic modality, follow-up evaluations and health screening must be formulated on an individualized basis.

**Objective:** To facilitate comprehensive and systematic follow-up of childhood cancer survivors, the Children's Oncology Group (COG) has developed exposure-based health screening guidelines. This report provides the pediatrician with long-term follow-up guidelines developed by the COG.

**Conclusions:** Pediatricians are uniquely qualified to provide ongoing health care to childhood cancer survivors, because they are familiar with health maintenance and supervision for healthy children and adolescents and also provide care for patients with many other complex acute and chronic medical conditions. The "medical home" has been advocated by the American Academy of Pediatrics as a means for coordinating the complex health care requirements of children with special needs, such as childhood cancer survivors, to provide treatments and preventive services that are accessible, continuous, comprehensive, family centered, coordinated, compassionate, and culturally effective. Within this context, the pediatrician can view the cancer survivor in the context of the family and to assist not only the survivor, but also the parents and siblings in adapting to a future of cancer survivorship. The focus of long-term care for the childhood cancer survivor is not the cancer from which the patient has now recovered but, rather, the actual and potential sequelae of cancer and its therapy.

**Reviewer's Comments:** Although this report is primarily directed toward pediatricians and presents well-formulated guidelines for long-term follow-up care of childhood cancer survivors, many of these patients will also be seen by pediatric dentists. Just as pediatric patients need to have access to a "medical home," the provision of a "dental home" is in keeping with the goals of the American Academy of Pediatric Dentistry.

**Additional Keywords:** Survival

**print tag:** () Refer to original journal article.
Black Stuff on Their Teeth Helps Prevent Cavities

Silver Diamine Fluoride: A Caries "Silver-Fluoride Bullet".
Rosenblatt A, Stamford TCM, Niederman R:
J Dent Res; 88 (February): 116-125

We may be missing out on the great benefits of silver diamine fluoride.

**Background:** Silver is well established to be an antimicrobial element. When combined with fluoride in the form of silver diamine fluoride, decades of work have shown the potential for significant anticaries effects of this agent. In spite of such work, the use of silver diamine fluoride has been limited to a few countries, and has not gained widespread use in the United States or other countries.

**Objective:** To review the literature to examine the effectiveness of silver diamine fluoride when looking at a multitude of published studies.

**Design:** Several standard databases were searched for pertinent publications.

**Results:** Of 110 reports found in the literature, 12 were of proper design and proper statistical power and were included in the current analysis, which looked at the prevented fraction, also known as relative risk reduction. The review also assessed the "number needed to treat," which is a rough economic analysis indicating the cost-effectiveness of the therapy. Consistently, the prevented fraction easily exceeded that of fluoride varnish from many other studies, which averages around 47%. In 1 study, silver diamine fluoride's prevented fractions were 96% for caries arrest (ie, the agent halted progression of an existing caries lesion) and 76% for caries prevention overall in primary teeth. Other studies found similar results in permanent teeth. The number needed-to-treat (NNT) indicates the number of children needed to treat with the agent to prevent 1 new caries-affected surface. Similar to the difference from fluoride varnish therapy in the prevented fraction, the NNT for the primary dentition was much lower than the 1.4 observed in other studies with fluoride varnish, with a typical value of <1. Work from 2 of the studies actually showed that every child treated with silver diamine fluoride would benefit from the treatment; however, these studies had high caries-active patients enrolled. The difference from fluoride varnish in the NNT is not as great when considering the permanent dentition. There are issues in place that have prevented the agent's widespread use. The material causes some tissue irritation in some individuals. There is a blackened staining of caries lesions treated with the agent that remains in place. Fluorosis is profound when the product is used repeatedly.

**Reviewer's Comments:** On the positive side, silver diamine fluoride is produced at a very low cost. Ironically, this may be a primary reason for its low usage. There is not a profit incentive in place to market the product. Perhaps the creation of a new delivery device or application method will help implement what is an extremely valuable agent in caries prevention in children.

**Additional Keywords:** Fluoride

**print tag:** () Refer to original journal article.
Preventing Third Molar Extraction-Associated Periodontal Defects

Sammartino G, Tai M, et al:
J Periodontol; 80 (March): 389-396

Bone grafting may be beneficial in reducing periodontal defects on second molars following extraction of the adjacent third molar.

Background: Extraction of mandibular third molars may lead to a periodontal defect on the adjacent second molar. Bone grafting using bovine porous bone mineral (BPBM), both with and without a bioabsorbable collagen membrane (CM), have yielded positive results.

Design/Objective: This controlled, clinical study evaluated the long-term success of using BPBM or BPBM + CM for the prevention of lower second-molar periodontal defects after extraction of an adjacent lower third molar.

Participants: 45 nonsmoking patients, 25 males and 20 females, aged 21 to 30 years, with soft-tissue or osseous impacted bilateral lower third molar were selected for the study. Inclusion criteria were the presence of a pocket that was located distally to the mandibular second molar.

Methods: 90 third molar impactions were randomly assigned to the 3 groups: (1) BPBM alone; (2) BPBM + CM; and (3) an untreated control group. After removal of the third molar and performing 1 of the 2 experimental procedures, the patients were seen for a postprocedure evaluation. All patients had a routine orthopantomograph and a periapical radiograph using the Rinn alignment system 3, 6, 9, 12, 18, 24, 36, 48, 60, and 72 months after surgery to evaluate the long-term results.

Conclusions: The application of BPBM, with or without a CM, can be a viable treatment to alleviate the periodontal defects that are often associated with deep-impacted mandibular third molar extraction. Long-term stability (6 years) of the proposed regenerative techniques was confirmed.

Reviewer's Comments: In reviewing this article, several concerns came to mind. First, the authors did not mention whether or not the third molars included were symptomatic. In 2006, the Cochrane Collaboration published a systematic review of randomized clinical trials in order to evaluate the effect of preventive removal of asymptomatic wisdom teeth. The authors found no evidence to either support or refute this practice. Likewise, Clinical Evidence published a summary concluding that prophylactic extraction is "likely to be ineffective or harmful." While it is clear that symptomatic impacted wisdom teeth should be removed, it appears that extracting asymptomatic, disease-free wisdom teeth is not advisable. Some evidence suggests that the extraction of the asymptomatic tooth may be beneficial if caries are present in the adjacent second molar, or if periodontal pockets are present distal to the second molar. This may have been the justification for this study. A second concern is related to the number of post-treatment periapical radiographs that were part of the study. It appears that in addition to the orthopantomograph taken, the subjects had 10 periapical film exposures taken at various intervals.

Additional Keywords: Third Molar

print tag: () Refer to original journal article.
Relationship Between Sugar Consumption and Caries Oversimplified

The Cariogenicity of Snack Foods and Confections.

Bibby BG:
J Am Dent Assoc; 90 (January): 121-132

The form and frequency of sugar-containing products used is more important than the amount eaten.

Classic Article Review -

Background: Since the 18th century, it has been noted that what a patient eats has an effect on caries activity. Little was known on the specific mechanisms that make some foods more or less harmful to the teeth.

Objective: To determine whether there is a need to change the emphasis in dietary counselling based on epidemiological and laboratory studies.

Design: Review of the literature.

Results: Even though there were no sugars available to the pre-Columbian Indians, they had cavities. When the sugar trade developed in the 18th and 19th centuries, an increase in caries was noted. Then, during the World Wars when sugar was limited, caries rates decreased. Per capita sugar consumption was quite level during the period 1910 to 1970; but what was observed was that more of the sugar was being used for manufactured products and beverages. These foods are mostly the convenience foods or snacks that were more available to the consumer beginning in the late 60's. With their availability, eating habits were drastically changing from the traditional meals at home to frequent snacking at work, school, and play. Therefore, it was suggested that the form and frequency in which sugar is used is more important than the amount eaten. Some early studies showed the importance of frequency of eating and the form in which it was eaten. In 1953, the famous Hopewood House study showed that with a nutritionally superior diet with minimal sugar, the caries rate was only 6% compared to the children in the surrounding community. And in 1952, the Vipeholm study showed that the more frequent use and stickiness of the foods increased the caries rates in subjects as compared to controls. This author supports the idea that the caries increase was due to frequency of snacking and the use of manufactured foods (snacks) rather than the total amount eaten. As to in vitro studies with rodents, the belief at the time was that they had little relevance to the cariogenicity of foods in humans. Laboratory studies in human-acid production, enamel demineralization, food retention, and plaque pH studies together provide additional information, but do not suggest any single tests can determine the cariogenicity of foods. Ethical considerations limit experimental in vivo studies to produce caries in humans.

Conclusions: The author states that many dentists and researchers have been guilty of oversimplifying a 1-to-1 relationship between sugar consumption and caries, and there are many variables in foods and oral biology that must be considered.

Reviewer's Comments: Dr Bibby was one of the earliest researchers who pointed out the importance of frequency of eating and form of the food eaten. His findings remain pertinent in the 21st century as we struggle to provide relevant dietary counselling to our children and families.

Additional Keywords: Sugar Consumption

print tag: () Refer to original journal article.
Behaviors in DS Patients May Be Due to Lack of Sleep

Down Syndrome and Sleep-Disordered Breathing: The Dentist’s Role.

Waldman HB, Hasan FM, Perlman S:
J Am Dent Assoc; 140 (March): 307-312

The most effective oral appliance for OSA in Down syndrome patients is a removable mandibular advancement appliance.

Summary: >350,000 people in the United States have been diagnosed with Down syndrome (DS); 5,000 children are born with DS every year. In the past 20 years, the life expectancy of people with DS has more than doubled. Characteristic craniofacial features of people with DS include maxillary and mandibular hypoplasia (resulting often in the appearance of a larger than normal tongue), pharyngeal hypotonia, small hypopharynx, and large tonsils/adenoids. They are also prone to mouth breathing, dry mouth, and glossal fissures. People with DS also have behavioral/neurocognitive defects. Traditionally, this has been thought to be a phenotypic feature of DS, but some of the behaviors can be explained due to poor sleep habits and dysomnias, such as obstructive sleep apnea (OSA). OSA is uncommon among children, with a prevalence of 0.7% to 2% of children; however, it is found in 50% to 80% of DS children. The OSA in DS children is often related to the aforementioned anatomical features. Traditional therapy for OSA is continuous positive airway pressure (CPAP), but this can be a challenge for DS children due to behavior. OSA has severe associated morbidities such as pulmonary hypertension, delayed development, and behavior abnormalities, all typically associated with DS. Parents of children with DS rarely recognize OSA, as erratic behavior is often assumed to be part of the syndrome. Previous literature cites that only 32% of children with diagnosed OSA had suspicious sleep behavior according to their parents. Oral appliances are often seen as a potential treatment for OSA, but may be limited in children with DS due to compliance. The most effective oral appliance for DS patients with OSA is a removable mandibular advancement appliance that fits over both maxillary and mandibular teeth, but its success at reducing symptoms of OSA is still lower than CPAP.

Conclusions: Due to physiology and behavioral history, DS children need to be considered at high risk for development of OSA and should be screened with polysomnography (sleep studies) accordingly.

Reviewer’s Comments: Patients with Down syndrome have behaviors often thought to be related to a genetic disposition, but this article makes the wonderful point that many of these behaviors and associated physiologic morbidities may in fact be related to poor sleep habits/OSA. All children with DS should be referred for evaluation for OSA. This study cites other studies that relate the point that parents are often very poor judges in regard to the sleeping habits of the child with and without OSA.

Additional Keywords: Sleep Apnea

print tag: () Refer to original journal article.
Immediate Postoperative Morbidity Associated With GA for Dentistry in Children

Postoperative Complications of Pediatric Dental General Anesthesia Procedure Provided in Jeddah Hospitals, Saudi Arabia.

Farsi N, Ba'akdah R, et al: BMC Oral Health; 9 (6); available on line

Postoperative pain is the most frequent complaint at 24 hours postoperatively (99% of all subjects) in children who have undergone a dental procedure.

**Background:** General anesthesia (GA) is becoming an increasingly popular and effective way of treating children with rampant dental disease, as well as patients with special health care needs. The previous literature, which has examined the morbidities associated with GA for dentistry, has noted postoperative pain as the most common complaint. However, other complaints have been associated with GA, including crying, dysomnias, postoperative bleeding, epistaxis, and changes in ability to eat.

**Objective:** To examine “specific morbidity” for dental GA at 3 hospitals in Saudi Arabia.

**Design:** Prospective observational study.

**Methods:** A pilot questionnaire was used to identify areas to be examined. Postoperative complications from dental GA were assessed using a telephone survey to the patient's caregiver at 24 hours and 72 hours postoperatively.

**Results:** Data were collected from 90 children with a mean age of 5 years (range, 1 to 13 years). Most of the children (71%) were healthy, with the remaining 23% being classified as American Society of Anesthesiologists physical status II. The mean surgical time was 124.6 minutes, and postoperative paracetamol was prescribed to all patients at 15 mg/kg. The mean number of teeth treated was 14, with extractions being the most common procedure (5 per patient). There was a high incidence of postoperative complaints at 24 hours postoperative that included pain (99%), inability to eat (86%), sleepiness (71%), and dental pain (48%). All of these complaints were significantly reduced by the 72-hour call. Most children regained their normal physical activity by the second postoperative day. Postoperative bleeding was more common for medically compromised patients and was significantly related to length of anesthesia.

**Conclusions:** Most children in this study reported mild/moderate dental pain in the first postoperative day, but most children regained normal physical activity by 24 hours later.

**Reviewer's Comments:** This study examined a significant issue, immediate morbidity associated with dental GA. A weakness of the design was that no trained dentist examined the children, and the results were reliant upon parental report. Previous studies have demonstrated that parents are poor judges and tend to under-report children's oral pain. The authors may have attempted to attain a preoperative pain assessment to note whether the postoperative report was actually an improvement and related solely to the anesthesia. The fact that postoperative bleeding was more common among "in-patients" may have been due to a nurse/physician assessment that was related to the parents. However, at these points I am quibbling, as the design overall approached this from the parent's perspective, and they are in charge of the majority of postoperative care for these children. This study demonstrates that GA for dental procedures is not without its physical toll on the child, and families need to be made aware of this during consent procedures.

**Additional Keywords:** Postoperative Complications

**print tag:** () Refer to original journal article.
Stress in Parents of CSHCN

‘Jumping Through Hoops’: Parents’ Experiences With Seeking Respite Care for Children With Special Needs.

Doig JL, McLennan JD, Urichuk L:
Child Care Health Dev; 35 (March): 234-242

Parents of CSHCN are often close to a "breaking point" at which the care of the child consumes all of their available time.

Background: The literature has demonstrated that parenting a child with special health care needs (CSHCN) presents its own set of unique demands physically, emotionally and financially. Respite care is a means by which parents of these children can reduce fatigue and stress, as well as give more attention to themselves and their spouses. Despite the therapeutic benefits of respite care for the family of a CSHCN, there are numerous barriers to obtaining respite care, including access, finances, qualifications, and continuity of care.

Objective: To explore the "respite care experience" through the eyes of parents who seek and have obtained these services.

Design/Methods: This prospective cohort-based study employed interviews and a resulting line-by-line coding technique of interview manuscripts. The parents involved in this specific study had children diagnosed, or at risk for, fetal alcohol spectrum disorder (FASD).

Results: 20 caregivers were included in this study (7 mothers, 2 fathers and 1 grandmother). All interviewees were high school graduates and 50% were unemployed. Aside from FASD, children had comorbid attention deficit/hyperactivity disorder, Tourette's syndrome, oppositional defiant disorder (ODD), and mental retardation. Caregivers spoke of "the breaking point" at which care for the CSHCN overwhelmed them so much that routine activities (taking a bath) were neglected. Parents need to have the ability to shift attention away from the child for their own mental health. Caregivers also discussed "jumping through hoops" as a contributing factor to stress. This involves locating services, completing paperwork, and making sure the child fulfilled eligibility requirements for specific services. This last point, eligibility, encompasses finances, having a "diagnosis" (which for some children is ambiguous and often delayed), and age. Infants and young children, often the most challenging and most vulnerable to abuse as a result of parental stress, are frequently the ones most often turned away from services. Finally, many caregivers discussed transportation as an obstacle, because actually getting the child to the respite services was not always possible, particularly in a single-income family.

Reviewer’s Comments: This article, which is really a recounting of interviewees comments and relating them to concepts in respite care, is fascinating. It provides insight into a problem often overlooked, parental health in cases of CSHCN. Dentists need to understand that their medically compromised children who present with rampant caries, are often in families facing several other significant challenges, and it is the dentists' job to incorporate oral health surveillance into this, often through 'inclusion' of the physician. While the scientific organization is loose, the concepts discussed are essential in understanding why these children often need a dentist to 'lock on' to ensure continuity of care.

Additional Keywords: Health Care Needs

print tag: ( ) Refer to original journal article.
Can GA Affect a Child's Development?

_Early Exposure to Anesthesia and Learning Disabilities in a Population-Based Birth Cohort._


The risk of learning disabilities is significantly higher in children who receive multiple exposures to general anesthesia.

**Background:** General anesthesia (GA) has become an increasingly used modality of treatment for diseases in children. Certain gases/medications used in GA have been shown (in animal models) to cause histopathologic changes. Some of these agents have been demonstrated in different combinations or dosages to cause neurodegenerative changes and potentially affect learned behaviors.

**Objective:** To assess whether there is an association between exposure to anesthesia during the first 4 years of life and the development of learning disabilities (LD) in a birth cohort.

**Methods:** The birth cohort was culled from the population of Olmstead County, Minnesota, between 1976 and 1982. They were followed-up during the 1995 to 1996 school year using a Department of Health database. The Rochester Epidemiology Project provided data on all hospital encounters including medical encounters, surgeries, laboratory tests, etc. LDs were defined by the school grade groups (K to 3rd grade), (4th to 6th grade), and (7th to 12th grade) using standardized test scores. All children were <19 years of age.

**Results:** Data were presented from 5357 children who qualified, of whom 593 had a reported exposure to GA before 4 years of age. Children in the GA group had significantly lower birth weight and gestational age and were more likely to be male. The mothers in the GA group had higher levels of education. The risk for LD increased with the number of early GA exposures (3 exposures resulting in a hazard ratio 2 times >1 exposure), as well as those treated with multiple anaesthetics. There was no significant difference in the incidence of LD in the GA group versus the no GA group. Risk was increased for children who had GA duration of >120 minutes.

**Conclusions:** The risk for development of LD was significantly greater in children who received multiple exposures to GA and multiple anesthetic agents before the age of 4 years.

**Reviewer's Comments:** The title and concept of this study are provocative, particularly with the frequency of GA procedures for dentistry. A close read reveals several ‘suspect’ points such as: the anesthetic techniques used on this cohort are largely outdated, and study replication with modern agents is advised. There is very little mention as to the effect of the REASON for GA (ie, the health problem) as a potential co-factor for LD. Furthermore, the science behind standardized testing has changed, and applying potentially disparate examinations to come up with a single diagnosis of "LD" is problematic. Nonetheless, these issues raised the point of glaring weaknesses in modern pediatric literature and a lack of longitudinal studies on the effects of GA long-term on children.

**Additional Keywords:** Learning Disorders

**print tag:** () Refer to original journal article.
Malignant Hyperthermia Can Occur Outside the Operating Room

Fatal Hyperthermia Due to Dental Treatment.

Noguchi I, Ohno H, et al:
Oral Med Oral Pathol Oral Radiol Endod; 101 (March): E61-E64

Follow-up needs to be aggressive in patients at risk for MH or rhabdomyolysis

Case Report: A 12-year-old boy was treated in a dental clinic for a primary molar that required extraction. The boy's medical history included cerebral palsy, mental retardation, epilepsy, and a previous clinic dental visit using restraint followed by hemorrhagic urination and reported hyperthermia. The child had been treated with general anesthesia (GA) for 2 dental treatments uneventfully. Shortly after the dental extraction appointment, which lasted 2 hours with restraint, the child was reported to have generalized muscle spasms and altered consciousness. He had sustained hyperthermia and tachycardia and was, therefore, admitted to the hospital. While in the hospital, the child's condition progressively worsened to include disseminated intravascular coagulopathy, liver dysfunction, and gradually renal failure. On the 4th day of admission, the child demonstrated cerebral edema and eventually expired on the 13th day of admission. The autopsy results revealed renal necrosis and multiple organ failure.

Conclusions: The cause of death was reported to be malignant hyperthermia (MH). Several points retrospectively addressed the means of avoiding or lessening the resulting mortality. Hemorrhagic urine after the dental visit (during which restraints were used) are suggestive of rhabdomyolysis due to stress. In this scenario, dantrolene (the treatment for MH) was given only on the 3rd day of admission, despite an elevated core temperature. The authors suggest that dantrolene therapy should have been more aggressive and at a more therapeutic dose.

Reviewer's Comments: This article represents a potential, albeit unlikely, mortality for children with special health needs treated with restraint in a dental clinic setting for extended periods of time. MH, as demonstrated, can have horrific physiologic outcomes and practitioners who treat high-risk patients need to be clued in to potential warning signs. The authors in this paper suggest that possibly the patient's cerebral palsy may have contributed to altered muscle sensitivity, although at this point that is conjecture, as established literature does not support the claims. The authors do not suggest whether passive or active restraint was used, my assumption is that a papoose board or some variant was used. The authors also neglect to examine why the extraction of a primary molar (easily, according to this paper) on a restrained patient took 2 hours. It reinforces the notion that restraint/immobilization are best indicated for short, emergent procedures or in a diagnostic capacity on a developmentally combative patient.

Additional Keywords: Special Needs

print tag: () Refer to original journal article.
Health Care Services Often Not Available Until Dx Finalized

Parent Views on Enhancing Quality of Health Care for Their Children With Fragile X Syndrome, Autism or Down Syndrome.

Minnes P, Steiner K:
Child Care Health Devel; 35 (March): 250-256

The lack of a diagnosis of a developmental disability impacts the early quality of health care these patients receive.

Background: Patients with intellectual disability (ID) have been reported to have higher rates of conditions such as mental disorders, untreated physical disorders (eg, hypertension and vision deficits), and to suffer overall greater mortality from these conditions. Three representative conditions of ID include Down syndrome (DS), autism, and fragile X (FX). Families of these patients often face lifelong barriers to accessing primary care, and other health care-related services.

Objective: To obtain information about the quality of health care services related to DS, FX, and autism.

Design: Focus group interviews using purposeful sampling for selection of groups.

Methods: A prospective focus group-style interview was used, which lasted 2 hours. During this interview, open-ended questions sought to gain insight into general experiences with the health care system.

Results: The FX group parents discussed the difficulty in obtaining a diagnosis as a challenge to accessing services. Lack of knowledge on understanding from physicians, and resulting wait lists once a diagnosis was finally made (often not until the age of 3 years) affected the parent's perspective and the child's quality of life. These parents noted that even after a diagnosis was made, access still proved difficult. The autism group parents noted that once a diagnosis was made, services were still not readily accessible. This group felt particularly hampered by the "diagnosis" as they often went through multiple "behavioral" diagnoses before a final diagnosis of autism was made. The DS group did not feel access or diagnosis was a barrier, but rather discussed that the child's disposition often impacted the quality and continuity of care. Children who were more affectionate and pleasant had much more involved health care teams than children who were combative, noncompliant, or nonverbal. This group also discussed how few physicians had the full scope of understanding for the issues facing these patients as they grew, such as vision problems, and for females, gynecologic issues.

Conclusions: All groups understood the need for early diagnosis, yet found themselves delayed from obtaining services through the lack of a diagnosis.

Reviewer's Comments: This study highlights the issue that dentists can play a vital role in getting children identified as having some health issue and into a care pipeline as early as possible. With the 1-year dental home, dentists are in a position to report suspicious behavior and physical findings to a pediatrician. While it is true that the diagnosis process can hamper access to services, the earlier a child is identified, the better.

Additional Keywords: Quality of Life

print tag: () Refer to original journal article.
We Are Not Trained to Transition Children With Chronic Illness to Adult Care

Transition From Pediatric to Adult Care: Internists’ Perspectives.


Many internists feel unqualified to accept children with chronic illness who have transitioned to adult care.

**Background:** Currently, 90% of all children with a chronic illness survive beyond their 20th birthday. Many of these patients face significant barriers in transitioning from pediatric-centered to adult health care. The current estimate is that 18% of all children in the United States have some chronic physical, emotional, or behavioral disorder that will require >1 health service.

**Objective:** To determine barriers to health care transition from the perspective of health care providers.

**Design:** A 2-stage Delphi survey format used responses from stage 1 to formulate the survey for stage 2.

**Methods:** Random number generators were used to randomly select board-certified internists throughout the country who received stage 1 of the survey. This portion of the survey asked caregivers to identify concerns in delivering care to medically complex patients. The responses were then formatted into a 45-question stage-2 survey sent to the respondents from stage 1. These questions surveyed areas such as medical competency, system issues, maturity, transition coordination, psychosocial needs of the patient, and family involvement.

**Results:** Data were collected in both stages from 65 internists. The major areas noted were medical competency (poor training in managing children beyond childhood, the need for super-specialists, caregivers not trained at facing end-of-life issues in younger patients, and/or no training in adolescent health issues) and family involvement (parental expectations and continued familial involvement). Another area noted was difficulty in caregivers dealing with a parent who refuses to give up consent issues to a qualified patient with a chronic health issue.

**Conclusions:** Several barriers need to be addressed in transitioning children to adult care.

**Reviewer's Comments:** This study cites its major weakness, namely that the respondents may not represent the true physician population, but rather those with an interest in the subject matter. Major issues identified included training issues. Dentists face this same problem. Often our patients with special health care needs stay with us many years past "leaving childhood." As with physicians, few general dentists feel fully competent or capable of handling the medical issues and family issues involving these patients. Training from dental school and regular inclusion of these topics as continuing education are some ways to handle the issues, but there needs to be acceptance that the best care for these patients is often at odds with available services.

**Additional Keywords:** Access to Care

**print tag:** () Refer to original journal article.
Good Things in Small Packages--Minitablets for Pediatric Medication

Minitablets: New Modality to Deliver Medicines to Preschool-Aged Children.

The rate of minitablet swallowing is inversely related to the age of the patient.

Background: There are few current age-appropriate means of dispensing medications to children. Only recently has there been a push to clinically test medications (including forms and dosages) for pediatric use. Acceptability and suitability are major issues in the development of medicines for children. Due to the development of the adult swallow reflex, recommendations for tablet and capsule use are typically made at about age 5 to 6 years. Minitablets have been suggested as an efficient and safe means of pediatric drug delivery, theoretically maximizing acceptance due to their small size (2 to 5 mm in diameter) while allowing dose flexibility.

Objective: To assess the suitability and acceptability of minitablets for children 2 to 6 years old.

Methods: Children aged 2 to 6 years were included in this study. Parents were asked to participate by giving one 3-mm placebo minitablet to their child with instructions to swallow. Chewing was discouraged. Outcomes measured included whether the child swallowed, chewed, spat out, or refused to take the medication.

Results: Data from 100 subjects were collected. The majority of children were between 36 and 48 months of age. In all age groups, the majority of minitablets were swallowed, and the percentage increased with age. Correspondingly, the percentage of children who chewed or spat out medication was inversely related to age. The odds ratio of a 4-year-old child swallowing the minitablet was 3.9 times higher than that of a 2-year-old child. Parents who refused to be in the study listed the following reasons for not participating: difficulties in understanding the patient leaflet describing minitablets and the belief that participation would unduly stress the child.

Conclusions: Minitablets are an acceptable means of providing medications to children aged 2 to 6 years.

Reviewer's Comments: This study is intriguing with respect not only to medications for children, but also specifically as sedatives for dentistry. It is often noted that patient acceptance of medication has a significant effect on sedation success. The notion with a minitablet is that dose can be more controlled and better acceptance can be obtained. As noted by the authors, the subjects in this study had to swallow only 1 tablet, which had no taste. This can be different from a clinical setting in which >1 flavored minitablet may be required. Future studies would apply the findings here to clinical settings.

Additional Keywords: Minitablets

print tag: () Refer to original journal article.
How Soon Can We See Benefits of Dental Rehab Under GA?

_Dental Treatment Under General Anaesthesia: The Short-Term Change in Young Children's Oral-Health-Related Quality of Life._

Klaasen MA, Veerkamp JSJ, et al:
_Eur Arch Paediatr Dent; 9 (3): 130-137_

Oral health quality of life improves shortly after treatment of children under general anesthesia.

**Background:** Aside from studying the etiologies of dental disease in children, there has been increasing interest in examining the short- and long-term effects of interventions and therapies. Oral health-related quality of Life (OHRQoL) is a measure that combines functional abilities of the child and oral symptomatology to examine the impact on overall well-being of the child and family. Studies have examined long-term benefits of dental rehabilitation under general anesthesia (GA), such as catch-up growth and reduced complaints of pain.

**Objective:** To examine the short-term changes in a child's OHRQoL following rehabilitation under GA. Children were included if they were 8 years old. Assessments were made using the Children's Fear Survey Schedule-Dental Subscale (CFSS-DS), the Child Oral Health Quality of Life Instrument, the Parental Perceptions Questionnaire, and the Family Impact Scale. Oral health was assessed using a dmfs/dmft scale.

**Results:** Data from 49 children were collected and analyzed. Parents of 30 children completed a pretreatment questionnaire, which was compared to a posttreatment questionnaire (completed 2 weeks after treatment). The mean age of the children was 4.1 years. In the group that completed a pretreatment questionnaire, there was a significant reduction (according to parents) in oral symptoms, functional limitations, and family impact of oral disease. However, this did not, in the parents' opinions, translate into an appreciable improvement in oral health. While the quality of life was reported to be improved posttreatment, parents noted that the oral health posttreatment was rated as "fair." The overall well-being of the child was improved "a little" according to parents. There was no significant change in the CFSS-DS score of the child, suggesting that treatment did not reduce dental fear in the child.

**Conclusions:** The child's OHRQoL slightly improved post-GA. The child's dental fear was not positively affected by treatment under GA.

**Reviewer's Comments:** Assessing the short-term impact of GA can be a difficult task. One needs to account for preoperative parental perceptions of oral health and its importance in the overall context of the general health of the child. It is of interest that while areas such as oral symptoms, functional limitations, and family's impact all improved significantly, parents still noted the posttreatment oral health of their children as "fair." The inclusion of so many scales in a fairly small sample size dilutes some of the findings. Finally, an interesting result is that treatment under GA, while beneficial to the oral health, does little to change the dental fear of young children, which is an intuitive belief.

**Additional Keywords:** Morbidity

**print tag:** () Refer to original journal article.
General Anesthesia Morbidity--What Happens After Breathing Tube Comes Out?

Anesthesia Morbidity and Mortality Experience Among Massachusetts Oral and Maxillofacial Surgeons.

D'Eramo EM, Bontempi WJ, Howard JB:

Syncope is the most common finding associated with general anesthesia.

**Background:** With the increase in office-based anesthesia for oral and maxillofacial surgical procedures, the associated morbidity and mortality are of interest. Previous studies have put mortality rates at 1 in 274,000 and 1 in 480,000 procedures (1974). More recent data cited mortality rates as low as 1 in 1,000,000 anesthetic procedures.

**Objective:** To present updated morbidity and mortality rates on office-based anesthetic procedures.

**Methods:** The Massachusetts Society of Oral and Maxillofacial Surgeons (MSOMS) conducted a series of survey-based assessments of its membership. These surveys were mailed but, when mailing was insufficient, were telephone based.

**Results:** Data from 99% of the MSOMS membership were collected for analysis. In 2004, a total of 603,119 procedures were performed using general anesthesia, parenteral sedation, nitrous oxide-oxygen sedation, and local anesthesia. Most procedures were completed using local anesthesia (181,325), and the most common morbidity in this group was syncope, which occurred in <1% of patients. Syncope was also the most common morbidity associated with the general anesthesia group (0.4%), followed by laryngospasm (0.1%). It is of interest that while syncope was overall the most common morbidity, the majority of cases occurred in non-general anesthesia cases. It was reported that the rate of vomiting with aspiration following general anesthesia was 1 in 75,487. Finally of interest was the survey of medications used. Since 1989, the use of midazolam (Versed) had increased 43%, while the use of methohexital had decreased 44%. Propofol, which was not even used in 1989, was used on 58% of all patients in 2004.

**Conclusions:** Office-based anesthesia in the hands of a qualified team is a safe procedure.

**Reviewer's Comments:** This study is important in addressing the issue of general anesthesia-related morbidity; however there are several weak points in its design. First, the fact that no ages, medical histories, or co-morbidities of patients were recorded does disservice to the data. It would have been interesting to note if the patients with syncope had some type of co-morbid condition or were of a certain age cohort. Also, as mentioned, the regimens of anesthetics used were, in some cases, drastically different from previous studies, and the duration of surgeries would have been interesting to note as well. These are all mentioned by the authors as weaknesses. The best way to approach this study is as a possible springboard for future, more tightly controlled trials.

**Additional Keywords:** Morbidity

print tag: () Refer to original journal article.