Anaesthetic efficacy of articaine versus lidocaine in children's dentistry: a systematic review and meta-analysis. [Review]

Source

BACKGROUND: Over the last few years, numerous reviews and studies have awarded articaine hydrochloride local anaesthetic (LA) a superior reputation, with outcomes of different studies demonstrating a general tendency for articaine hydrochloride to outperform lidocaine hydrochloride for dental treatment. Nevertheless, there seems to be no clear agreement on which LA solution is more efficacious in dental treatment for children. There is no previous publication systematically reviewing and summarising the current best evidence with respect to the success rates of LA solutions in children.

AIMS: To evaluate the available evidence on the efficacy of lidocaine and articaine, used in paediatric dentistry.

DESIGN: A systematic search was conducted on Cochrane CENTRAL Register of Controlled Trials, MEDLINE (OVID; 1950 to June 2017), Cumulative Index to Nursing and Allied Health Literature (CINAHL; EBSCOhost; 1982 to June 2017), EMBASE (OVID; 1980 to June 2017), SCI-EXPANDED (ISI Web of Knowledge; 1900 to June 2017), key journals, and previous review bibliographies through June 2017. Original research studies that compared articaine with lidocaine for dental treatment in children were included. Methodological quality assessment and assessment of risk of bias were carried out for each of the included studies.

RESULTS: Electronic searching identified 525 publications. Following the primary and secondary assessment process, six randomised controlled trials (RCT) were included in the final analysis. There was no difference between patient self-reported pain between articaine and lidocaine during treatment procedures (SMD = 0.06, P-value = 0.614), and no difference in the occurrence of adverse events between articaine and lidocaine injections following treatment in paediatric patients (RR = 1.10, P-value = 0.863). Yet, patients reported significantly less pain post-procedure following articaine injections (SMD = 0.37, P-value = 0.013). Substantial heterogeneity was noted in the reporting of outcomes among studies, with the overall quality of majority of studies being at high risk of bias.
CONCLUSIONS: There is low quality evidence suggesting that both articaine as infiltration and lidocaine IAD nerve blocks presented the same efficacy when used for routine dental treatments, with no difference between patient self-reported pain between articaine and lidocaine during treatment procedures. Yet, significantly less pain post-procedure was reported following articaine injections. There was no difference in the occurrence of adverse events between articaine and lidocaine injections following treatment in paediatric patients.

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Title
Does audiovisual distraction reduce dental anxiety in children under local anesthesia? A systematic review and meta-analysis.

Source
Oral Diseases. 2018 Mar 02.

Abstract
OBJECTIVES: To perform a systematic review and meta-analysis on the effects of audiovisual distraction on reducing dental anxiety in children during dental treatment under local anesthesia.

METHODS: The authors identified eligible reports published through August 2017 by searching PubMed, EMBASE, and Cochrane Central Register of Controlled Trials. Clinical trials that reported the effects of audiovisual distraction on children's physiological measures, self-reports and behavior rating scales during dental treatment met the minimum inclusion requirements. The authors extracted data and performed a meta-analysis of appropriate articles.

RESULTS: Nine eligible trials were included and qualitatively analyzed; some of these trials were also quantitatively analyzed. Among the physiological measures, heart rate or pulse rate was significantly lower (p=0.01) in children subjected to audiovisual distraction during dental treatment under local anesthesia than in those who were not; a significant difference in oxygen saturation was not observed. The majority of the studies using self-reports and behavior rating scales suggested that audiovisual distraction was beneficial in reducing anxiety perception and improving children's cooperation during dental treatment.

CONCLUSION: The audiovisual distraction approach effectively reduces dental anxiety among children. Therefore, we suggest the use of audiovisual distraction when children need dental treatment under local anesthesia. This article is protected by copyright. All rights reserved.

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2018

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OBJECTIVE: To conduct a meta-analysis of studies that have employed the Early Childhood Oral Health Impact Scale (ECOHIS) and Child Oral Health-Related Quality of Life (COHRQoL) instruments, to evaluate the oral health-related quality of life (OHRQoL) changes in children following dental treatment under general anaesthesia (DGA).

METHOD: A systematic search of 5 databases was conducted in accordance with the PRISMA guidelines. The inclusion criteria were use of ECOHIS and COHRQoL, pre- and post-operative assessments, patients aged between 0 and 16 years, no restrictions...
on the follow-up period and DGA. The primary outcome measure was changes in quality of life for both the children, which was based on mean difference (MD). Twenty-two articles were included in the meta-analysis.

RESULTS: A favourable outcome in OHRQoL was identified in all studies. The combined MD for ECOHIS and COHRQoL were 1.62 [95% CI 1.52-1.71; P<0.00001; I²=0%] and 0.86 [95% CI 0.74-0.99; P<0.00001; I²=0%], respectively, both with no evidence of heterogeneity.

CONCLUSION: There is evidence to support that the OHRQoL of children was improved, with large effect size, in the short-term following DGA.

CLINICAL RELEVANCE: Dental treatment under GA significantly improved the OHRQoL of children.

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Journal Article.
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Anaesthesia. 73(5):612-618, 2018 May.

Robert RC; Patel CM.
Robert, Richard C; Patel, Chirag M.

Robert, Richard C; Patel, Chirag M.
Anesthetic Pump Techniques Versus the Intermittent Bolus: What the Oral Surgeon Needs to Know. [Review]

Source

Abstract
The most popular agents in use for office-based anesthesia are propofol, ketamine, and remifentanil, which have the desirable properties of rapid onset and short duration of action. A useful parameter in assessing these agents is the context-sensitive half-time. These anesthetic agents demonstrate relatively low, flat plots compared with older agents. For delivery of intravenous anesthetics, oral and maxillofacial surgeons have relied small incremental boluses with great success. However, relatively simple syringe infusion pumps can provide an even "smoother" anesthetic. This article familiarizes oral and maxillofacial surgeons with the advantages of infusion pumps and provides examples of their use.


Source

Abstract
An effective office emergency preparedness plan for the oral and maxillofacial surgery office can be developed through the use of well-designed checklists, cognitive aids, and regularly scheduled in situ simulations with debriefings. In order to achieve this goal, the hierarchal culture of medicine and dentistry must be overcome, and an inclusive team concept embraced by all members of the staff. Technologic advancements in office automation now make it possible to create interactive cognitive aids. These enhance office emergency training and provide a means for more rapid retrieval of essential information and guidance during both simulations and a real crisis.
Preoperative Evaluation and Patient Selection for Office-Based Oral Surgery Anesthesia. [Review]
Source
Local Messages
THIS JOURNAL IS AVAILABLE IN THE BDA LIBRARY, BDA MEMBERS CAN ALSO ACCESS THIS JOURNAL ONLINE FROM 2002 TO DATE. Go to www.bda.org/ejournals
Abstract
Provision of an outpatient anesthetic requires careful review of the patient's medical history along with salient aspects of the physical examination. The oral and maxillofacial surgeon may need to consult with the patient's medical providers to gain an understanding of the patient's potential risks for an adverse event. This article reviews key aspects of the patient evaluation so that an informed determination of suitability for an office anesthetic can be made.
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Title
Volume of Anesthetic Agents and IANB Success: A Systematic Review.
Source
Local Messages
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Abstract
The aim of this study was to provide an evidence-based answer to the question: "Is 3.6-nL volume of an anesthetic agent more effective than 1.8-nL volume in providing anesthesia for mandibular molars?" Following formulation of research question and keyword selection, a comprehensive search of the following databases was conducted: Cochrane library, PubMed, Scopus, Google Scholar, ProQuest, and Clinicaltrials.gov. Three-phase eligibility appraisal and quality assessment of the studies were carried out by 2 independent reviewers. To reduce clinical heterogeneity, the included studies were divided into 2 groups: studies on healthy teeth and studies on teeth with pulpitis. The data of included studies were statistically combined through meta-analysis using a fixed-effects model. A total of 20,778 records were initially retrieved from the search. Following screening and eligibility assessment, 8 studies met the eligibility criteria and were included for qualitative synthesis. Of those, 5 studies were qualified for meta-analysis. In the irreversible pulpitis group, increasing the volume of anesthetic agent from 1.8 to 3.6 mL significantly increased the success rate of inferior alveolar nerve block (risk ratio = 2.45, 95% CI: 1.67-3.59, p < .001). However, there was insufficient evidence to draw a conclusion regarding healthy teeth.
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Effectiveness and safety of oral sedation in adult patients undergoing dental procedures: protocol for a systematic review.

**Source**

**Abstract**
INTRODUCTION: The management of anxious patients undergoing dental procedures is still a challenge in clinical practice. Despite a wide variety of drugs for oral sedation in adult patients, there are relatively few systematic reviews that compare the effectiveness and safety of different drugs administered via this route. Thus, this study will evaluate the effectiveness and safety of oral sedation with benzodiazepines and other agents to patients undergoing dental surgical procedures.

METHOD/DESIGN: We will conduct a systematic review and, if appropriate, a meta-analysis of randomised controlled clinical trials that will evaluate the use of conscious sedation administered orally to adult patients undergoing oral surgery. The search will be conducted using electronic databases, such as the Cochrane Central Register of Controlled Trials (CENTRAL), MEDLINE (via Ovid), EMBASE (via Ovid), CINAHL (via Ovid), Lilacs (SciELO) and Capes database, without restriction of languages or date of publication. Primary outcomes include anxiety, sedation, treatment satisfaction, pain and adverse effects. Secondary outcomes include vital parameters (heart rate, respiratory rate and blood pressure) and patient cooperation during intervention. A team of reviewers will independently assess each citation for eligibility and in duplicates. For eligible studies, the same reviewers will perform data extraction, risk of bias assessment and determination of the overall quality of evidence using the Grading of Recommendations Assessment, Development and Evaluation classification system.

ETHICS AND DISSEMINATION: The evidence gathered from this study should provide dental surgeons with knowledge on the effectiveness and safety of oral sedation in adults requiring dental surgical procedures. This in turn should contribute towards the decision-making process in dental practice, minimising the risks of anxiety and ineffective pain control in clinical procedures, as well as possible side effects. Ethics approval is not required in protocols for systematic reviews. The systematic review will be published in a peer-reviewed journal and presented at conferences.

**PROSPERO REGISTRATION NUMBER:** CRD42017057142.

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**BACKGROUND:** Patient safety is a priority in dentistry. Evaluating the benefits and harms associated with the addition of capnography to standard monitoring during moderate sedation for adult patients in the dental practice setting is needed.
RECENT REVIEWS RELATED TO DENTAL ANAESTHESIA/SEDATION

TYPES OF STUDIES REVIEWED: The authors used rapid review methodology to identify relevant systematic reviews, which they updated through a systematic search by using the same search strategy as the identified reviews. The authors searched PubMed and Google Scholar and through the references of the identified systematic reviews, which yielded 2,892 studies. Inclusion criteria were that the article was available in English, was original research in adult humans who had undergone moderate procedural sedation, and involved comparing standard monitoring with the addition of capnography.

RESULTS: Sixteen studies were eligible, involving 3,866 adults undergoing procedural sedation. The authors used the Grading of Recommendations Assessment, Development and Evaluation approach to evaluate the evidence and rate it as being of moderate to low quality because of high risk of bias and heterogeneous effects for the outcomes of hypoxemia and adverse respiratory events. Capnography had higher sensitivity to detect adverse respiratory events than did standard monitoring alone (0.92; 95% confidence interval, 0.65 to 0.99) and may reduce the risk of developing hypoxemia by 31% (risk ratio, 0.69; 95% confidence interval, 0.57 to 0.82). Capnography did not affect the risk of developing serious adverse events, procedure time, sedation quality, or patient satisfaction.

CONCLUSIONS AND PRACTICAL IMPLICATIONS: Adding capnography to standard monitoring of adults during moderate sedation may reduce the risk of developing hypoxemia, increase detection of adverse respiratory events, and is not associated with additional harms. These findings suggest routine use of capnography during moderate sedation has the potential to reduce adverse anesthetic outcomes in dental practice.

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Title
Effect of clonidine on the efficacy of lignocaine local anesthesia in dentistry: A systematic review and meta-analysis of randomized, controlled trials. [Review]
Source
Abstract
Alternatives to adrenaline with lignocaine local anesthesia, such as clonidine, have been trialed in various randomized, controlled trials. Therefore, the aim of the present systematic review was to compile the available evidence on using clonidine with lignocaine for dental anesthesia. Electronic databases were searched for eligible studies. A data-extraction form was created, extracted data were analyzed using non-Cochrane mode in RevMan 5.3 software. Heterogeneity between the studies were assessed using the forest plot, I^2 statistics (where >50% was considered to have moderate-to-severe heterogeneity), and chi^2-test. Random-effects models were used because of moderate heterogeneity. Five studies were included for the final review. While clonidine was found to significantly shorten the onset of local anesthesia when measured subjectively, no significant difference was observed objectively. No significant difference was observed in the duration and postoperative analgesia. Stable hemodynamic parameters within the safe range were observed postoperatively when clonidine was used. Clonidine could be considered as an alternative to adrenaline in cases of contraindications to adrenaline, such as like cardiac abnormalities, hypertension, and diabetes.

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Title
A Review of the use of Flumazenil for the Reversal of Midazolam Conscious Sedation in Dentistry.

Source

Local Messages
THIS JOURNAL IS AVAILABLE IN THE BDA LIBRARY. TO REQUEST THIS ARTICLE FROM THE LIBRARY GO TO:

Abstract
The practice of midazolam conscious sedation is well established in dentistry. The drug flumazenil is a specific benzodiazepine antagonist and is an essential requirement in settings where midazolam is used. A literature review has been carried out, examining the available information regarding flumazenil's safety, administration, potential complications and the regulatory documentation which governs its use. Flumazenil is a safe drug to use for the reversal of midazolam induced conscious sedation although the evidence surrounding its use is limited.

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Title
What's new in... Capnography Monitoring for Dental Conscious Sedation: A Clinical Review.

Source
SAAD Digest. 33:3-6, 2017 Jan.

Local Messages
THIS JOURNAL IS AVAILABLE IN THE BDA LIBRARY. TO REQUEST THIS ARTICLE FROM THE LIBRARY GO TO:

Abstract
Capnography monitoring during conscious sedation is not currently required for dentistry in Britain and Ireland. Other countries have introduced guidelines and standards requiring capnography monitoring for procedural sedation. This review highlights the variability of procedural sedation including the setting, the position on the sedation continuum, and the routine use of supplemental oxygen. Specific research is required for conscious sedation in a dental setting to support standards and guidelines with regard to capnography monitoring. The Academy of Medical Royal Colleges and their Faculties emphasise that each specialty must produce its own guidance for the use of sedative techniques.1 Clinical practice guidelines for the monitoring and safe practice of sedation vary by specialty and institution. Standards are generally set from the best available evidence based research. There is a growing body of literature that recognises the potential additional value of capnography (ETCO2) monitoring during procedural sedation in different settings and for different sedation techniques.2-5 In these studies, capnography reduced the incidence of hypoxaemia during procedural sedation. A meta-analysis published by Waugh et al. (2010) concluded that end-tidal carbon dioxide monitoring is an important addition in detecting respiratory depression during procedural sedation.6 A more recent systematic review by Conway et al. (2016) concluded that patients monitored with capnography in addition to standard monitoring had a reduced risk of hypoxaemia compared to those with only standard monitoring.7 However, it has to be noted that both the Waugh and Conway reviews contained substantial statistical heterogenicity which is likely to affect the quality of the evidence. As research evidence for capnography monitoring from the medical settings studied became available, new standards for capnography monitoring were introduced in several countries (Table 1).

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Title
Comparison of the effect of intravenous anesthetics used for anesthesia during electroconvulsive therapy on the hemodynamic safety and the course of ECT. [Review]

Source
**Recent Reviews Related to Dental Anaesthesia/Sedation**

**Abstract**

Electroconvulsive therapy (ECT) is the treatment method widely used in psychiatric disorders such as depression, bipolar disorder, schizophrenia and schizoaffective disorder. The advantage of ECT is therapeutic response that occurs significantly earlier than during pharmacotherapy. Initially ECT was used without anesthesia. Then, in the 1950s procedures with general anesthesia were introduced to reduce the complications that may occur during a seizure caused by ECT, such as broken bones, teeth, tendon rupture, muscle damage. Currently, in general anesthesia for ECT several medications are used interchangeably: thiopental, propofol, etomidate and ketamine. In different resorts and different countries different anesthetics are used, the choice is determined mainly by the experience of each resort and a kind of tradition. The authors provide an overview of objective data showing how various anesthetics affect the quality of ECT and the presence of any hemodynamic complications after ECT. Selection of articles included in this paper was made by searching Medline and PubMed databases using specific keywords: electroconvulsive therapy, general anesthesia, the risks and benefits of thiopental, ketamine, propofol and etomidate. The results of this review are inconclusive when it comes to the effect of intravenous anesthetics on the quality of the ECT treatment and side effects relating to respiratory and cardiovascular system. On this basis it is impossible to determine which of intravenous anesthetics is most advantageous from the point of view of the patient. To develop the optimum scheme of anesthesia for ECT, it is necessary to conduct further, methodologically correct studies.

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**Title**

Muscle power during intravenous sedation. [Review]

**Source**


**Abstract**

Intravenous sedation is effective to reduce fear and anxiety in dental treatment. It also has been used for behavior modification technique in dental patients with special needs. Midazolam and propofol are commonly used for intravenous sedation. Although there have been many researches on the effects of midazolam and propofol on vital function and the recovery profile, little is known about muscle power. This review discusses the effects of intravenous sedation using midazolam and propofol on both grip strength and bite force. During light propofol sedation, grip strength increases slightly and bite force increases in a dose-dependent manner. Grip strength decreases while bite force increases during light midazolam sedation, and also during light sedation using a combination of midazolam and propofol. Flumazenil did not antagonise the increase in bite force by midazolam. These results may suggest following possibilities; (1) Activation of peripheral benzodiazepine receptors located within the temporomandibular joint region and masticatory muscles may be the cause of increasing bite force. (2) Propofol limited the long-latency exteroceptive suppression (ES2) period during jaw-opening reflex. Thus, control of masticatory muscle contraction, which is thought to have a negative feedback effect on excessive bite force, may be depressed by propofol.

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**Authors**

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Andrade, Natalia Karol de. Department of Pharmacology, Anesthesiology and Therapeutics, Sao Leopoldo Mandic Dental School and Research Center, Campinas, Brazil.
Nitrous oxide and midazolam have been used as sedative agents to decrease fear and anxiety associated with dental procedures. Although these agents have been widely used individually, the combination of the two is also commonly used. Four clinical trials were identified that compared the combination technique with the individual use of the drugs. The standardized mean difference (SMD) for each outcome measure was considered for final analysis. Three studies with 534 participants were included in the final meta-analysis, and the SMD [95% CI] was obtained as -0.15 [-0.32, 0.03] and was not statistically significant for cooperation scores. Two studies reported the dose of midazolam required for inducing sedation in 450 participants, and the pooled estimate of SMD [95% CI] was obtained as -0.29 [-0.48, -0.10] and was significant. Two studies with 450 participants reported the time taken to recover from sedation, and the pooled estimate of SMD [95% CI] was obtained as -0.20 [-0.39, -0.01] and favored the combination technique. To conclude, the combination technique combines the pros and cons of both drugs in causing fewer adverse effects due to midazolam by reducing the total dose and also helps to provide better acceptance of nitrous oxide inhalation.
BDA LIBRARY MEDLINE SEARCH

RECENT REVIEWS RELATED TO DENTAL ANAESTHESIA/SEDATION

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Authors
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Title
Videolaryngoscopy vs. direct laryngoscopy use by experienced anaesthetists in patients with known difficult airways: a systematic review and meta-analysis. [Review]
Source
Abstract
Experienced anaesthetists can be confronted with difficult or failed tracheal intubations. We performed a systematic review and meta-analysis to ascertain if the literature indicated if videolaryngoscopy conferred an advantage when used by experienced anaesthetists managing patients with a known difficult airway. We searched PubMed, MEDLINE, Embase and the Cochrane central register of controlled trials up to 1 January 2017. Outcome parameters extracted from studies were: first-attempt success of tracheal intubation; time to successful intubation; number of intubation attempts; Cormack and Lehane grade; use of airway adjuncts (e.g. stylet, gum elastic bougie); and complications (e.g. mucosal and dental trauma). Nine studies, including 1329 patients, fulfilled the inclusion criteria. First-attempt success was greater for all videolaryngoscopes (OR 0.34 (95%CI 0.18-0.66); p = 0.001). Use of videolaryngoscopy was associated with a significantly better view of the glottis (Cormack and Lehane grades 1 and 2 vs. 3-4, OR 0.04 (95%CI 0.01-0.15); p < 0.00001). Mucosal trauma occurred less with the use of videolaryngoscopy (OR 0.16 (95%CI 0.04-0.75); p = 0.02). Videolaryngoscopy has added value for the experienced anaesthetist, improving first-time success, the view of the glottis and reducing mucosal trauma.

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Title
The use of general anesthesia to facilitate dental treatment in adult patients with special needs. [Review]
Source
Abstract
General anesthesia is commonly used to facilitate dental treatment in patients with anxiety or challenging behavior, many of whom are children or patients with special needs. When performing procedures under general anesthesia, dental surgeons must perform a thorough pre-operative assessment, as well as ensure that the patients are aware of the potential risks and that informed consent has been obtained. Such precautions ensure optimal patient management and reduce the frequency of morbidities associated with this form of sedation. Most guidelines address the management of pediatric patients under general...
anesthesia. However, little has been published regarding this method in patients with special needs. This article constitutes a review of the current literature regarding management of patients with special needs under general anesthesia.

**Title**
Use of local anesthetics for dental treatment during pregnancy; safety for parturient. [Review]

**Source**

**Abstract**
Pregnancy induces significant anatomical and physiological changes in the mother. Many pregnant women need dental treatment due to poor oral hygiene related to pregnancy. However, most dentists are reluctant to provide, and most pregnant women are reluctant to receive, dental treatment during pregnancy. Theoretically, maternally administered drugs are transferred to the fetus. Depending on the types of drugs and the stage of pregnancy, the effects of drugs on the mother, as well as the fetus, may vary. Local anesthetics are the most widely used in dental treatment. It is, therefore, important to understand the potential effects of local anesthetics during pregnancy. In this review, we will focus on the maternal and fetal effects of local anesthetics widely used in dental treatment with consideration of the use of local anesthetics during pregnancy.
Conscious Sedation: Emerging Trends in Pediatric Dentistry. [Review]

Dental fear and anxiety is a common problem in pediatric patients. There is considerable variation in techniques used to manage them. Various sedation techniques using many different anesthetic agents have gained considerable popularity over the past few years. Children are not little adults; they differ physically, psychologically, and emotionally. The purpose of this review is to survey recent trends and concerning issues in the rapidly changing field of pediatric sedation. We will study the topic from the perspective of an anesthesiologist. It will also provide information to practitioners on the practice of conscious sedation in dentistry and will also outline the route of administration, pharmacokinetics, and pharmacodynamics of various drugs used.
Abstract
A patient's pain during mandibular third molar extraction often creates problems for a dental surgeon and can also cause immense patient discomfort, such as decreased quality of life, serious complications, or even danger to the patients' lives. Effective pain management is therefore of great importance. Conventional block anesthesia method often fails to control such pain completely during an operation. Therefore, two available alternatives, Gow-Gates (G-G) and Vazirani-Akinosi (V-A) methods, have been developed. However, the results of current studies regarding their effectiveness and safety are somewhat ambiguous. The use of G-G and V-A techniques is therefore restricted. This study did a comprehensive review of the relevant research and finally 7 RCTs were included. The results of this meta-analysis indicate that both G-G and V-A techniques have a lower risk of positive aspiration. G-G technique also evidenced a higher success rate than the conventional method. V-A was faster while the G-G technique in contrast had a slower onset time than the conventional technique. In terms of the measurement of analgesic success, however, the V-A method was statistically indistinguishable from conventional techniques. These findings will hopefully endow clinicians with the knowledge required to make appropriate choices for effective anesthesia during lower third molar extraction.

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Journal Article.
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2017
Outpatient Anesthetic Safety Considerations for Obstructive Sleep Apnea. [Review]

Source

Abstract
Most patients with obstructive sleep apnea (OSA) are not diagnosed preoperatively. The STOP-Bang questionnaire may identify patients at risk of OSA, especially those with severe OSA. Patients with mild to moderate OSA, with optimized comorbidities, can usually safely undergo outpatient surgery. Patients with severe OSA, who are not optimized medically, should avoid outpatient surgery.

Simulation Training for the Office-Based Anesthesia Team. [Review]

Source

Abstract
An OMS office is a complex environment. Within such an environment, a diverse scope of complex surgical procedures is performed with different levels of anesthesia, ranging from local anesthesia to general anesthesia, on patients with varying comorbidities. Optimal patient outcomes require a functional surgical and anesthetic team, who are familiar with both standard operational principles and emergency recognition and management. Offices with high volume and time pressure add further stress and potential risk to the office environment. Creating and maintaining a functional surgical and anesthetic team that is competent with a culture of patient safety and risk reduction is a significant challenge that requires time, commitment, planning, and dedication. This article focuses on the role of simulation training in office training and preparation.
Preoperative oral ibuprofen and oxicam analgesics increase the rate of successful anesthesia of mandibular molars with irreversible pulpitis. [Review]


Source

Title
Effect of preoperative oral analgesics on pulpal anesthesia in patients with irreversible pulpitis-a systematic review and meta-analysis. [Review]

Source

Abstract
OBJECTIVES: The objectives of this study were to assess the efficacy of preemptive oral administration of single dose of non-steroidal anti-inflammatory drugs (NSAIDs) and acetaminophen on the local anesthetic success in adults with irreversible pulpitis and to find the possible covariates that could predict treatment effect.

MATERIALS AND METHODS: A systematic search using electronic databases up to March 2015 was conducted. Odds ratio (OR) and 95% confidence intervals (CIs) were estimated using random and fixed-effect inverse variance method. Subgroup and meta-regression analyses were conducted to assess the potential source of heterogeneity.

RESULTS: Results showed that preemptive analgesics are more effective than placebo in increasing anesthetic success (OR = 0.30, CI% 0.24-0.39, p = 0.000) [Q = 55.860 (p = 0.000)]. In the subgroup analysis, administration of NSAIDs as monotherapy, ibuprofen as mono- vs. combination therapy, oxicam type drugs as monotherapy, and acetaminophen as combination therapy were significantly more effective in increasing anesthetic success OR = 0.25, CI% 0.16-0.38, p = 0.00, Q = 40.539 (p = 0.003); OR = 0.44, CI% 0.26-0.75, p = 0.00, Q = 12.833 (p = 0.011); OR = 0.48, CI% 0.30-0.74, p = 0.002, Q = 15.898 (p = 0.14); OR = 0.30, CI% 0.16-0.38, p = 0.001, Q = 7.506 (p = 0.02); OR = 0.10, CI% 0.06-0.18, p = 0.001, Q = 5.075 (p = 0.07), respectively. However, there was no significant difference in increasing anesthetic success between treatment and placebo arms when acetaminophen was administrated alone. In meta-regression analysis, an association between different types of NSAIDs (indomethacin, diclofenac potassium, and oxicam-type drugs) and articaine with treatment effect was observed.

CONCLUSIONS: The administration of preemptive analgesics can induce superior intraoperative analgesia for patients with irreversible pulpitis. However, strategies such as co-administration of certain types of analgesics and anesthetic solution might be predictors of treatment effect. Additionally, there was no association between different timing and dosage of analgesics and treatment effect.

CLINICAL RELEVANCE: When compared to placebo, preemptive oral analgesics are superior in achieving anesthetic success in inflamed pulp.

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Effect of preoperative oral analgesics on pulpal anesthesia in patients with irreversible pulpitis—a systematic review and meta-analysis. [Review]

OBJECTIVES: The objectives of this study were to assess the efficacy of preemptive oral administration of single dose of non-steroidal anti-inflammatory drugs (NSAIDs) and acetaminophen on the local anesthetic success in adults with irreversible pulpitis and to find the possible covariates that could predict treatment effect.

MATERIALS AND METHODS: A systematic search using electronic databases up to March 2015 was conducted. Odds ratio (OR) and 95% confidence intervals (CIs) were estimated using random and fixed-effect inverse variance method. Subgroup and meta-regression analyses were conducted to assess the potential source of heterogeneity.

RESULTS: Results showed that preemptive analgesics are more effective than placebo in increasing anesthetic success (OR = 0.30, CI% 0.24-0.39, p = 0.000) [Q = 55.860 (p = 0.001)]. In the subgroup analysis, administration of NSAIDs as monotherapy, ibuprofen as mono- vs. combination therapy, oxicam type drugs as monotherapy, and acetaminophen as combination therapy were significantly more effective in increasing anesthetic success OR = 0.25, CI% 0.16-0.38, p = 0.00, Q = 40.539 (p = 0.003); OR = 0.44, CI% 0.26-0.75, p = 0.00, Q = 12.833 (p = 0.011); OR = 0.48, CI% 0.30-0.74, p = 0.002, Q = 15.898 (p = 0.14); OR = 0.30, CI% 0.16-0.38, p = 0.001, Q = 7.506 (p = 0.02); OR = 0.10, CI% 0.06-0.16, p = 0.001, Q = 5.075 (p = 0.07), respectively. However, there was no significant difference in increasing anesthetic success between treatment and placebo arms when acetaminophen was administrated alone. In meta-regression analysis, an association between different types of NSAIDs (indomethacin, diclofenac potassium, and oxicam-type drugs) and articaine with treatment effect was observed.

CONCLUSIONS: The administration of preemptive analgesics can induce superior intraoperative analgesia for patients with irreversible pulpitis. However, strategies such as co-administration of certain types of analgesics and anesthetic solution might be predictors of treatment effect. Additionally, there was no association between different timing and dosage of analgesics and treatment effect.

CLINICAL RELEVANCE: When compared to placebo, preemptive oral analgesics are superior in achieving anesthetic success in inflamed pulp.
Title
A Review of Current Literature of Interest to the Office-Based Anesthesiologist.

Comments
Comment on: Br J Anaesth. 2017 Mar 1;118(3):325-343; PMID: 28203729
Comment on: Paediatr Anaesth. 2017 Jan;27(1):37-44; PMID: 27734549
Comment on: Anesth Analg. 2017 Apr;124(4):1231-1236; PMID: 28166099
Comment on: Anesth Analg. 2017 May;124(5):1447-1449; PMID: 27984222

Source

Local Messages
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Title
A Review of Scientific Literature of Interest to Office-Based Anesthesiology Practice.

Comments
Comment on: Br J Anaesth. 2017 Mar 1;118(3):344-354; PMID: 28186265
Comment on: Anesthesiology, 2017 Feb;126(2):214-222; PMID: 27984262
Comment on: Anesthesiology. 2017 Feb;126(2):234-248; PMID: 27922839
Comment on: Anesthesiology. 2016 Aug;125(2):295-303; PMID: 27275669
Comment on: Anesthesiology. 2017 Mar;126(3):376-393; PMID: 28045707

Source

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Title
Patients With Type 2 Diabetes: Anesthetic Management in the Ambulatory Setting: Part 2: Pharmacology and Guidelines for Perioperative Management. [Review]

Source

Local Messages
Type 2 diabetes is a disease of metabolism in which the afflicted patient cannot properly utilize carbohydrates, fats, and proteins. Because the prevalence of type 2 diabetes is rapidly increasing throughout the general population, anesthesia providers must realize that a significant percentage of their patients will present with the disease. Anesthesia providers should have an intimate knowledge of the comorbidities and complications that are associated with type 2 diabetes and know the specific pharmacokinetics and pharmacodynamics of the drugs used to treat the disease. Part 1 of this series on the anesthetic management of type 2 diabetes in the ambulatory theater addressed the pathology of diabetes and its comorbid disease states. Part 2 of the series now focuses on the pharmacology associated with the many medications used to treat the disorder and the most recent guidelines for blood glucose management recommended for patients in an ambulatory surgery setting.

Mitochondrial disease (MD) represents a category of metabolic disorders with a wide range of symptoms across a variety of organ systems. It occurs with an incidence of greater than 1:5000 and can be difficult to specifically diagnose because of the variety of clinical presentations and multiple genomic origins. Although phenotypically variable, MD symptoms often include hypotonia, cardiac defects, dysautonomia, and metabolic dysfunction. Mitochondrial disease presents a unique challenge in terms of anesthetic management, as many anesthetic drugs suppress mitochondrial function. Additional considerations may need to be made in order to evaluate the patient's metabolic compensation prior to surgery. This article presents an in-depth discussion of a case involving a nearly 10-year-old boy with a history of an unspecified form of MD, who presented for endodontic treatment of tooth No. 30 under deep sedation. The article also provides a thorough review of the current literature surrounding the anesthetic management of patients with MD.
INTRODUCTION: Topical anesthesia is widely used in dentistry to reduce pain caused by needle insertion and injection of the anesthetic. However, successful anesthesia is not always achieved using the formulations that are currently commercially available. As a result, local anesthesia is still one of the procedures that is most feared by dental patients. Drug delivery systems (DDSs) provide ways of improving the efficacy of topical agents. Areas covered: An overview of the structure and permeability of oral mucosa is given, followed by a review of DDSs designed for dental topical anesthesia and their related clinical trials. Chemical approaches to enhance permeation and anesthesia efficacy, or to promote superficial anesthesia, include mucoadhesive systems, and hydrogels. Physical methods include pre-cooling, iontophoresis, and microneedle arrays. Expert opinion: The combination of different chemical and physical methods is an attractive option for effective topical anesthesia in oral mucosa. This comprehensive review should provide the readers with the
Effects of Hypotensive Anesthesia on Reducing Intraoperative Blood Loss, Duration of Operation, and Quality of Surgical Field During Orthognathic Surgery: A Systematic Review and Meta-Analysis of Randomized Controlled Trials. [Review]

**Purpose:** The objective of this study was to evaluate the efficacy of hypotensive anesthesia in reducing intraoperative blood loss, decreasing operation time, and improving the quality of the surgical field during orthognathic surgery. A systematic review and meta-analysis of randomized controlled trials addressing these issues were carried out.

**Materials and Methods:** An electronic database search was performed. The risk of bias was evaluated with the Jadad Scale and Delphi List. The inverse variance statistical method and a random-effects model were used.

**Results:** Ten randomized controlled trials were included for analysis. Our meta-analysis indicated that hypotensive anesthesia reduced intraoperative blood loss by a mean of about 169 mL. Hypotensive anesthesia was not shown to reduce the operation time for orthognathic surgery, but it did improve the quality of the surgical field. Subgroup analysis indicated that for blood loss in double-jaw surgery, the weighted mean difference favored the hypotensive group, with a reduction in blood loss of 175 mL, but no statistically significant reduction in blood loss was found for anterior maxillary osteotomy. If local anesthesia with epinephrine was used in conjunction with hypotensive general anesthesia, the reduction in intraoperative blood loss was increased to 254.93 mL.

**Conclusions:** Hypotensive anesthesia was effective in reducing blood loss and improving the quality of the surgical field, but it did not reduce the operation time for orthognathic surgery. The use of local anesthesia in conjunction with hypotensive general anesthesia further reduced the amount of intraoperative blood loss for orthognathic surgery.
RECENT REVIEWS RELATED TO DENTAL ANAESTHESIA/SEDATION

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Title
Public Health Aspects of Paediatric Dental Treatment under General Anaesthetic. [Review]

Source
Dentistry Journal. 4(2), 2016 Jun 08.

Abstract
Early childhood caries (ECC) has negative psychosocial effects on children, with chronic pain, changed eating habits, disrupted sleep and altered growth very common, and it disrupts the day-to-day lives of their families. The treatment of young children with ECC places a considerable burden on health systems, with a considerable amount having to be provided under general anaesthesia (GA), which is resource-intensive. Justifying its use requires evidence of the efficacy of treatment in improving the lives of affected children and their families. This paper discusses the available evidence and then makes some suggestions for a research agenda.

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Title
Smart syringe pumps for drug infusion during dental intravenous sedation. [Review]

Source

Abstract
Dentists often sedate patients in order to reduce their dental phobia and stress during dental treatment. Sedatives are administered through various routes such as oral, inhalation, and intravenous routes. Intravenous administration has the advantage of rapid onset of action, predictable duration of action, and easy titration. Typically, midazolam, propofol or dexmedetomidine are used as intravenous sedatives. Administration of these sedatives via infusion by using a syringe pump is more effective and successful than infusing them as a bolus. However, during intravenous infusion of sedatives or opioids using a syringe pump, fatal accidents may occur due to the clinician's carelessness. To prevent such risks, smart syringe pumps have been introduced clinically. They allow clinicians to perform effective sedation by using a computer to control the dose of the drug being infused. To ensure patient safety, various alarm features along with a drug library, which provides drug information and prevents excessive infusion by limiting the dose, have been added to smart pumps. In addition, programmed infusion systems and target-controlled infusion systems have also been developed to enable effective administration of sedatives. Patient-controlled infusion, which allows a patient to control his/her level of sedation through self-infusion, has also been developed. Safer and more successful sedation may be achieved by fully utilizing these new features of the smart pump.

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Title
Developmental procedures for the clinical practice guidelines for conscious sedation in dentistry for the Korean Academy of Dental Sciences.
Source
Abstract
BACKGROUND: Evidence-based clinical practice guidelines (CPGs) are defined as "statements that are scientifically reviewed about evidence and systematically developed to assist in the doctors' and patients' decision making in certain clinical situations." This recommendation aims to promote good clinical practice for the provision of safe and effective practices of conscious sedation in dentistry.

METHODS: The development of this clinical practice guideline was conducted by performing a systematic search of the literature for evidence-based CPGs. Existing guidelines, relevant systematic reviews, policy documents, legislation, or other recommendations were reviewed and appraised. To supplement this information, key questions were formulated by the Guideline Development Group and used as the basis for designing systematic literature search strategies to identify literature that may address these questions. Guideline documents were evaluated through a review of domestic and international databases for the development of a renewing of existing conscious sedation guidelines for dentistry. Clinical practice guidelines were critically appraised for their methodologies using Appraisal of guidelines for research and evaluation (AGREE) II.

RESULTS: A total of 12 existing CPGs were included and 13 recommendations were made in a range of general, adult, and pediatric areas.

CONCLUSION: The clinical practice guidelines for conscious sedation will be reviewed in 5 years' time for further updates to reflect significant changes in the field.

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Title
Recent advances in topical anesthesia. [Review]
Source
Abstract
Topical anesthetics act on the peripheral nerves and reduce the sensation of pain at the site of application. In dentistry, they are used to control local pain caused by needling, placement of orthodontic bands, the vomiting reflex, oral mucositis, and rubber-dam clamp placement. Traditional topical anesthetics contain lidocaine or benzocaine as active ingredients and are used in the form of solutions, creams, gels, and sprays. Eutectic mixtures of local anesthesia cream, a mixture of various topical anesthetics, has been reported to be more potent than other anesthetics. Recently, new products with modified ingredients and application methods have been introduced into the market. These products may be used for mild pain during periodontal treatment, such as scaling. Dentists should be aware that topical anesthetics, although rare, might induce allergic reactions or side effects as a result of an overdose. Topical anesthetics are useful aids during dental treatment, as they reduce dental phobia, especially in children, by mitigating discomfort and pain.
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Title
Current trends in intravenous sedative drugs for dental procedures. [Review]

Source

Abstract
Anxiety and phobia in dental procedures are common deterrents for patients visiting the dental care unit. For these individuals, procedural sedation may aid in completion of dental treatments. In most cases, the patients are conscious during sedation, thereby allowing spontaneous ventilation. Intravenous sedation (IVS) is widely used during dental treatment to relieve patient anxiety. IVS is the most effective route of administration to achieve this goal, but it requires advanced training, more than that provided during undergraduate education. During IVS, rapid onset, repetitive drug administration, easy titration, and rapid recovery from sedation can be achieved. However, conscious sedation during IVS can result in deep sedation that can cause respiratory and cardiovascular depression. Therefore, the characteristics of intravenous sedatives should be known. The purpose of this review is to discuss the characteristics and usage of intravenous sedatives currently used for dental procedures.

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Title
Computer-controlled local anesthetic delivery for painless anesthesia: a literature review. [Review]

Source

Abstract
Local anesthesia is administered to reduce pain during dental treatments, but may itself cause pain and contribute to increased dental fear. Computer-controlled local anesthetic delivery (CCLAD) is one the method to reduce patient pain during local anesthesia; it is a device that slowly administers anesthetics by using a computerized device to control the injection speed. This literature review aims to provide an objective assessment of the usefulness of CCLAD for controlling pain by reviewing papers published to date that have used CCLAD.

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Title
Pediatric advanced life support and sedation of pediatric dental patients. [Review]

Source

Abstract
Programs provided by the Korea Association of Cardiopulmonary Resuscitation include Basic Life Support (BLS), Advanced Cardiac Life Support (ACLS), Pediatric Advanced Life Support (PALS), and Korean Advanced Life Support (KALS). However, programs pertinent to dental care are lacking. Since 2015, related organizations have been attempting to develop a Dental Advanced Life Support (DALS) program, which can meet the needs of the dental environment. Generally, for initial management of emergency situations, basic life support is most important. However, emergencies in young children mostly involve breathing. Therefore, physicians who treat pediatric dental patients should learn PALS. It is necessary for the physician to regularly renew training every two years to be able to immediately implement professional skills in emergency situations. In order to manage emergency situations in the pediatric dental clinic, respiratory support is most important. Therefore, mastering professional PALS,
which includes respiratory care and core cases, particularly upper airway obstruction and respiratory depression caused by a respiratory control problem, would be highly desirable for a physician who treats pediatric dental patients. Regular training and renewal training every two years is absolutely necessary to be able to immediately implement professional skills in emergency situations.

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**Title**  
The newer aspect of dexmedetomidine use in dentistry: As an additive to local anesthesia, initial experience, and review of literature.

**Source**  

**Abstract**  
INTRODUCTION: Despite the availability of a wide variety of pharmacological agents in the field of anesthesia, there has always been a continuous search for newer local anesthetic agents with improved efficacy, potency, and better handling properties. Dexmedetomidine, a selective alpha-2 adrenergic receptor agonist, is an emerging agent for provision of additive local anesthetic effect if used with conventional local anesthetics, which can be implicated in dentistry for performing many minor oral surgical procedures. The present paper reports a pilot study comparing clinical efficacy and potency of this newer emerging drug in combination with lignocaine.

MATERIALS AND METHODS: Ten patients undergoing orthodontic extraction for correction of malocclusion and other dentofacial deformities requiring orthodontic treatment were locally infiltrated with 2% lignocaine plus dexmedetomidine 1mu/ml and 2% lignocaine plus adrenaline in 1:200,000 dilution at two different appointments. The onset of action, duration of action, and pain threshold were assessed.

RESULTS: Onset of action was found to be faster with longer duration of action with the newer drug dexmedetomidine and lignocaine combination when compared with combination of lignocaine and adrenaline.

CONCLUSION: The study demonstrated that the combination of dexmedetomidine with lignocaine enhances the local anesthetic potency of lignocaine without significant systemic effects when locally injected into oral mucosa.
The efficacy of eutectic mixture of local anesthetics as a topical anesthetic agent used for dental procedures: A brief review.

Source

Abstract
Dental pain management is one of the most critical aspects of modern dentistry which might affect patient's quality of life. Several methods are suggested to provide a painless situation for patients. Desensitization of the oral site using topical anesthetics is one of those methods. The improvements of topical anesthetic agents are probably one of the most important advances in dental science in the past 100 years. Most of them are safe and can be applied on oral mucosa with minimal irritation and allergic reactions. At present, these agents are various with different potent and indications. Eutectic mixture of local anesthetics (EMLA) (lidocaine + prilocaine) is a commercial anesthetic agent which has got acceptance among dental clinicians. This article provides a brief review about the efficacy of EMLA as a topical anesthetic agent when used during dental procedures.

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Title
Source

Abstract
BACKGROUND: Local anaesthetics play a key role in reducing pain and anxiety during dental treatment. However the disadvantage of using syringe and needle technique in the maxilla, proximal to the apices of the teeth is that it is painful and also leads to collateral anaesthesia. Hence this systematic review aims to identify whether computer assisted local anaesthetic delivery system could produce predictable results similar to conventional syringe needle technique and also eliminate the disadvantages.

METHOD: Electronic databases were searched for eligible studies. A pre-tested data extraction form was created and following data were extracted from each eligible study: trial site, year, trial methods, participants, interventions and outcomes. A significant heterogeneity was seen in between the eligible studies.

RESULTS: Six studies met the inclusion criteria and were included in the present review. One was cross-over and one split mouth, while others were parallel. Only one was open label and the rest were single blinded. Three studies were conducted in children while the rest in adults. The outcome measurement was directed to measure psychological attributes using visual analog scale, electric pulp testing and pain behaviour code.

CONCLUSION: Unfortunately because of the clinical heterogeneity, meta-analysis could not be performed. Hence it is difficult to conclude that the computer assisted delivery is better than the conventional method, although it was found to perform better. Many high quality studies assessing the efficacy and cost-efficiency of various modes of administration are required to confirm the utility of computer assisted delivery systems.

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Journal Article.
Year of Publication
2016

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27480473
Status
In-Data-Review
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Title
INTRODUCTION: Accessory innervation (AI) may account for the persistent sensation perceived after successful mandibular anesthesia in the adult patient. The purpose of this systematic review was to record the quality of evidence pertaining to the cervical plexus (CP) AI in dental anesthesia.

MATERIALS AND METHODS: Electronic and manual searches were conducted using Ovid and Medline of articles published from 1922 to March of 2015. Studies written in any language were included as long as they involved: (i) humans, animals, and/or cadavers AND (ii) anatomical and/or research anesthetic-technique approaches and/or clinical approaches. Exclusion criteria were (i) maxillary buccal infiltration, (ii) no abstract/paper available, (iii) studies that do not comprise the description of the branches of the CP branches in dentistry and (iv) duplicated articles. The articles were reviewed and graded by levels of evidence (LOE) through a methodological scoring index (MSI).

RESULTS: Forty-four out of 185 papers fulfilled the inclusion criteria. One randomized control trial, 3 comprehensive reviews, 1 cohort study, 5 case series/reports, 16 poor-quality cohort and case series/reports and 18 reviews/case, reports/expert opinions were found. Of the 44 publications, there were 4 LOE 1, 1 LOE 2, 5 LOE 3, 20 LOE 4 and 14 LOE 5 studies.

CONCLUSIONS: The MSI helped to classify papers LOE in a standardized and objective approach. The objective evidence quality occurrence recorded was found to be LOE 4 (n = 20) > LOE 5 (n = 14) > LOE 3 (n = 5) > LOE 1 (n = 4) > LOE 2 (n = 1). The anatomy of the CP needs to be reexamined and understood in the anatomical literature.

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Title
Pain and anxiety management for pediatric dental procedures using various combinations of sedative drugs: A review. [Review]

Source

Abstract
For fearful and uncooperative children behavioral management techniques are used. In order to control the pain and anxiety in pedodontic patients, pharmacologic sedation, anesthesia and analgesia are commonly used. Midazolam is commonly used as an oral sedation agent in children; it has several features such as safety of use, quick onset and certain degree of amnesia that makes it a desirable sedation agent in children. This review paper discusses various aspects of oral midazolam, ketamine and their combinations in conscious sedation including, advantages of oral route of sedation, pharmacokinetics, range of oral doses, and antagonists for clinical dental treatment procedures.

Publication Type
Journal Article. Review.

Year of Publication
2016
Recent Reviews Related to Dental Anaesthesia/Sedation

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Title
Different Aspects of General Anesthesia in Pediatric Dentistry: A Review. [Review]

Source

Abstract
CONTEXT: Most child population is able to undergo dental treatment in the conventional setting. However, some children fail to cope with in-office conscious state and cannot respond to usual management modalities. This review aims to discuss the topic further.

EVIDENCE ACQUISITION: A computerized search in databases PubMed, MEDLINE, EMBASE, Google Scholar and Google were performed using dental general anesthesia related keywords. Original and review English-written articles that were limited to child population were retrieved without any limitation of publication date. The suitable papers were selected and carefully studied. A data form designed by author was used to write relevant findings.

RESULTS: Preoperative oral examination and comprehensive evaluation of treatment needs is only possible after clinical and radiographic oral examination. Effective collaboration in dental GA team should be made to minimize psychological trauma of children who undergo dental GA. Before conducting comprehensive dental treatment under GA, the general health of the child and the success rate of procedures provided needs to be accurately evaluated. It is noteworthy that determination of the optimal timing for GA dental operation is of great importance. Providing safety with pediatric dental rehabilitation under GA is critical.

CONCLUSIONS: Besides criteria for case selection of dental GA, some degree of dental practitioner's judgment is required to make decision. Pre- and post-operative instructions to parents or caregiver decrease the risk of complications. However, trained resuscitation providers, careful monitoring and advanced equipment minimize adverse outcomes.

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2016

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Unique Identifier
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Status
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Title
Techniques to administer oral, inhalational, and IV sedation in dentistry. [Review]

Source

Abstract
BACKGROUND: Sedation in dentistry is a controversial topic given the variety of opinions regarding its safe practice.

AIMS: This article evaluates the various techniques used to administer sedation in dentistry and specific methods practiced to form a recommendation for clinicians.

METHODS: An extensive literature search was performed using PubMed, Medline, Google Scholar, Google, and local library resources.

RESULTS: Most of the literature revealed a consensus that light sedation on low-risk American Society of Anesthesiologists (ASA) groups, that is ASA I, and possibly II, is the safest method for sedation in a dental outpatient setting.

CONCLUSION: Formal training is essential to achieve the safe practice of sedation in dentistry or medicine. The appropriate setting for sedation should be determined as there is an increased risk outside the hospital setting. Patients should be adequately assessed and medication titrated appropriately, based on individual requirements.

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Journal Article. Review.

Year of Publication
2016

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Authors
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RECENT REVIEWS RELATED TO DENTAL ANAESTHESIA/SEDATION

Davoudi A; Rismanchian M; Akhavan A; Nosouhian S; Bajoghli F; Haghighat A; Arbabzadeh F; Samimi P; Fiez A; Shadmehr E; Tabari K; Jahadi S.

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Title
A brief review on the efficacy of different possible and nonpharmacological techniques in eliminating discomfort of local anesthesia injection during dental procedures. [Review]

Source
Albang Maqalat Wa Abhat Fi Altahdir Waalinas. 10(1):13-6, 2016 Jan-Apr.

Abstract
Dental anxiety and fear of needle injection is one of the most common problems encountered by dental practitioners, especially in the pediatric patient. In consequence, it might affect the patient's quality of life. Several methods are suggested to lower the discomfort of local anesthesia injection during dental procedures. Desensitization of injection site is one of the recommended strategies. Among chemical anesthetic topical agents that are effective but might have allergic side effects, using some nonpharmacological and safe techniques might be useful. This study aimed to overview the efficacy of using cooling techniques, mostly by ice or popsicles, warming or pH buffering of drug, and using modern devices to diminish the discomfort of local anesthesia injection during dental procedures.

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Title
Irreversible pulpitis and achieving profound anesthesia: Complexities and managements. [Review]

Source
Albang Maqalat Wa Abhat Fi Altahdir Waalinas. 10(1):3-6, 2016 Jan-Apr.

Abstract
Irreversible pulpitis is one of the most critical aspects of modern dentistry. Irreversible pulpitis and further root canal therapy might cause an untolerated pain to the patients. The improvements in anesthetic agents and techniques were one of the advantages of studying nerve biology and stimulation. This article tried to overview of the nerve activities in inflammatory environments or induced pain. Furthermore, the proper advises, and supplementary techniques were reviewed for better pain management of irreversible pulpitis.

Publication Type
**Title**
Role of intraseptal anesthesia for pain-free dental treatment. [Review]

**Source**

**Abstract**
Pain control during the dental procedure is essential. A complete efficacious pulp anesthesia has not been attained yet. The regional anesthesia such as inferior alveolar nerve block (IANB) only does not guarantee the effective anesthesia with patients suffering from irreversible pulpitis. This main aim of this review was to discuss various aspects of intraseptal dental anesthesia and its role significance in pain-free treatment in the dental office. In addition, reasons of failure and limitations of this technique have been highlighted.

Literature search was conducted for peer-reviewed articles published in English language in the last 30 years. Search words such as dental anesthesia, pain control, intraseptal, and nerve block were entered using a web of knowledge and Google scholar databases. Various dental local anesthesia techniques were reviewed. A combination of block anesthesia, buccal infiltration, and intraligamentary injection resulted in deep anesthesia (P = 0.003), and higher success rate compared to IANB. For pain-free management of conditions such as irreversible pulpitis, buccal infiltration (4% articaine), and intraosseous injection (2% lidocaine) are better than intraligamentary and IANB injections. Similarly, nerve block is not always effective for pain-free root canal treatment hence, needing supplemental anesthesia. Intraseptal anesthesia is an efficient and effective technique that can be used in maxillary and mandibular adult dentition. This technique is also beneficial when used in conjunction to the regional block or local dental anesthesia.

**Title**
Intrapocket anaesthesia and pain during probing, scaling and root planing: a systematic review and meta-analysis. [Review]

**Comments**
Comment in: Evid Based Dent. 2017 Dec 22;18(4):111-112; PMID: 29269814

**Source**
RECENT REVIEWS RELATED TO DENTAL ANAESTHESIA/SEDATION

METHODS: A search was performed in PubMed, Scopus, Web of Science, Latin American and Caribbean Health Sciences Literature database, Brazilian Library in Dentistry, Cochrane Library and Grey literature. IADR abstracts, unpublished trials registries, dissertations and theses were also searched for randomized clinical trials comparing the clinical effectiveness of intra-pocket anaesthesia and placebo. Risk/intensity of pain was the primary outcome. The risk of bias tool from the Cochrane Collaboration was used for quality assessment. Meta-analysis was performed on studies considered at low risk of bias.

RESULTS: A total of 1740 articles were identified. Eleven remained in the qualitative synthesis, and nine studies were considered at “low” risk of bias for meta-analysis. Standardized Hedge's g mean difference for pain intensity using visual analogue scale and Heft-Parker pain scales was -0.576 (95% confidence interval [CI] -0.94 to -0.22; p = 0.002) and for verbal rating scale pain scale it was -1.814 (95% CI -3.38 to -0.245; p = 0.023). The odds ratio for the risk of pain was 0.025 (95% CI 0.003 to 0.25; p = 0.002) and the odds ratio for the need for rescue anaesthesia was 0.358 (95% CI 0.174 to 0.736; p = 0.005).

CONCLUSIONS: The anaesthetic gel decreases the risk and intensity of pain during probing/SRP.
INTRODUCTION: Many Canadian children are affected by early childhood caries (ECC) and require treatment under general anesthesia. The purpose of this study was to determine the burden of day surgery for children with ECC in Canada.

METHODS: Day surgery abstracts for children 6 years of age with ECC were extracted from the Canadian Institute for Health Information Discharge Abstract Database and National Ambulatory Care Reporting System for 4 years, 2010/11 to 2013/14. All provinces and territories participated except Quebec. Variables considered included sex, age, proportion of immigrants in the neighbourhood, Aboriginal concentration, material deprivation index and rurality. Rates were calculated for the pooled 4-year cohort.

RESULTS: The overall rate of dental surgery to treat ECC was 12.1 per 1000 children 12-59 months of age, accounting for 31.0% of all day surgeries performed on this age group in Canada. Rates of dental surgery for children from neighbourhoods with a high proportion of Aboriginal people were 7.8 times those for children living in areas with a low proportion (84.5 vs. 10.9 per 1000). For children from rural regions of Canada, rates were 3.2 times those of urban dwelling children (31.2 vs. 9.8 per 1000). Children from the least-affluent regions had dental surgery rates 3.7 times higher than those from the most-affluent communities (25.7 vs. 6.9 per 1000). Total hospital-associated costs of treating ECC under general anesthesia averaged $21184545 annually.

CONCLUSION: Dental surgery for ECC is far too common and occurs more often among children from the least-affluent households, rural regions and communities with a high proportion of Aboriginal people. Dental surgery rates can serve as an important population health indicator.

Abstract

There is a growing body of work examining whether a palatal injection is necessary for the extraction of maxillary teeth with contemporary local anaesthetics. The available literature was reviewed systematically by conducting a search of the PubMed, EMBASE, and Cochrane CENTRAL databases for trials examining outcomes of maxillary tooth extraction where buccal injection of local anaesthetic only was used for one or more test groups. The selected studies were reviewed for study type, sample size, quality, participant characteristics and methodology, outcome variables, and findings. Fifteen studies met the inclusion criteria. Six of the studies were randomized controlled trials. Four studies were controlled clinical trials that did not report randomization. Five were clinical trials that were not controlled and examined outcomes of one or more test groups. The pain of local anaesthetic injection(s) in the test group (buccal injection only) versus control group (buccal and palatal injection), number of cases requiring supplemental buccal or palatal injection in cases of unsuccessful local anaesthesia, and pain during the procedure were designated as primary outcomes. Pain on probing of the mucosa was designated as a secondary outcome. All nine controlled studies that assessed pain during the procedure found no statistically significant difference between the test and control groups.

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2016

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Authors
Anesthesia for off-floor dental and oral surgery. [Review]

Purpose of Review: Anesthesia for dentistry is commonly performed outside the operating room. The combination of a shared airway between surgeon and anesthetist, the variety of open airway techniques, and the out-of-operating room setting often results in anxiety and avoidance of dental cases among anesthesia personnel. This review attempts to demystify dental treatment and facilitate the anesthesia provider in providing effective sedation of dental procedures performed in the nonoperating room setting.

Recent Findings: Specific indications for dental anesthesia improve the patient selection process. Airway assessment and strategies to secure the difficult airway are paramount because of the nature of the procedures and the patients on whom they are performed. Pediatric patients and those with special needs present specific preanesthetic assessment, induction, and management challenges. Emergence delirium is disruptive, possibly dangerous, prolongs recovery time, and may necessitate hospitalization. Simplified techniques and objective recovery criteria are necessary to ensure a safe and smooth discharge to home. Airway fire precautions should not be overlooked given the rare but potential risk of airway fire during dental treatment.

Summary: This article reviews the indications, facility and equipment needs, monitoring requirements, treatment methods, and recovery protocols necessary for the safe administration of off-floor anesthesia for dentistry.

Dental treatment under general anesthesia for special-needs patients: analysis of the literature. [Review]

The aim of the present review was to identify the studies published on dental treatment under general anesthesia for special-needs patients. A comprehensive search of the reported literature from January 1966 to May 2012 was conducted using PubMed, Medline, and Embase. Keywords used in the search were "dental treatment under general anesthesia", "special-needs patients", "medically-compromised patients", and "children", in various combinations. Studies published only on dental treatment under general anesthesia and in English were included. Only 10 studies were available for final analysis. Age range from 1 to 50 years, and restorative procedures, were most prevalent. Only two studies discussed repeated general anesthesia, with rates of 7.2% and 10.2%. Over time, the provision of general anesthesia for special-needs patients has changed from dental clinics to general hospitals. The demand for dental treatment for special-needs patients under general anesthesia continues to increase. Currently, there are no certain accepted protocols for the provision of dental treatment under general anesthesia.
The safe sedation of children for procedures requires a systematic approach that includes the following: no administration of sedating medication without the safety net of medical/dental supervision, careful presedation evaluation for underlying medical or surgical conditions that would place the child at increased risk from sedating medications, appropriate fasting for elective procedures and a balance between the depth of sedation and risk for those who are unable to fast because of the urgent nature of the procedure, a focused airway examination for large (kissing) tonsils or anatomic airway abnormalities that might increase the potential for airway obstruction, a clear understanding of the medication's pharmacokinetic and pharmacodynamic effects and drug interactions, appropriate training and skills in airway management to allow rescue of the patient, age- and size-appropriate equipment for airway management and venous access, appropriate medications and reversal agents, sufficient numbers of staff to

BACKGROUND: Perioperative dental injury (PDI) is a common adverse event associated with anesthesia that can easily lead to medicolegal litigation. A quality improvement program was conducted with the electronic, standardized dental chart to document dentition before anesthesia and dentist consultation when necessary. This study aimed to reduce PDIs through execution of a quality improvement program.

METHODS: We reviewed the 42-month interval anesthetic records of 64,718 patients who underwent anesthesia. A standardized electronic dental chart was designed to identify any dental prosthetics, fixed and removable dentures, and degree of loose teeth. The incidence of dental injuries associated with anesthesia was separated into three time periods: baseline, initiative (Phase I), and execution (Phase II). Primary outcome measurement was the incidence of PDIs related to anesthesia.

RESULTS: The overall incidence of dental injury related to anesthesia was 0.059% (38/64,718 patients). During the baseline period, the dental injury rate was 0.108% (28/24,137 patients), and it decreased from 0.051% in the initiative period (10/19,711 patients) to 0.009% in the execution period (2/20,870 patients) during implementation of the quality improvement program. Most dental injuries were associated with laryngeal mask airway (42.1%) and laryngoscopy (28.9%). The most commonly involved teeth were the upper incisors.

CONCLUSION: Dental injury incidence was significantly reduced and remained at low levels after implementation of the quality improvement program. We suggest the implementation of a standardized dental examination into the preoperative evaluation system adding pathologic teeth fixed or protected devices to minimize dental injury associated with anesthesia.
both carry out the procedure and monitor the patient, appropriate physiologic monitoring during and after the procedure, a properly equipped and staffed recovery area, recovery to the presedation level of consciousness before discharge from medical/dental supervision, and appropriate discharge instructions. This report was developed through a collaborative effort of the American Academy of Pediatrics and the American Academy of Pediatric Dentistry to offer pediatric providers updated information and guidance in delivering safe sedation to children.

Publication Type: Journal Article. Practice Guideline.
Year of Publication: 2016

<63>
Unique Identifier: 27973934
Status: MEDLINE
Authors: Cornelius BW.
Authors Full Name: Cornelius, Bryant W.
Institution: Cornelius, Bryant W. Assistant Professor, Department of Dental Anesthesiology, University of Pittsburgh School of Dental Medicine, Pittsburgh, Pennsylvania.
Title: Patients With Type 2 Diabetes: Anesthetic Management in the Ambulatory Setting. Part 1: Pathophysiology and Associated Disease States. [Review]

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Abstract:
The increasing prevalence of diabetes mellitus in the general population has many implications for the ambulatory anesthesia provider. Complications, particularly associated with poor glycemic control, can affect multiple organ systems and jeopardize the safety of any planned anesthetic. It is essential that anesthesiologists and sedation providers have in-depth knowledge of the pathophysiology of diabetes mellitus and the comorbid conditions that commonly accompany it. Anesthesiologists and sedation providers must also understand certain surgical and anesthetic considerations when planning an effective and safe anesthetic for diabetic patients. This is a 2-part series concerning perioperative glycemic control for patients with diabetes mellitus. Part 1 will focus on the physiology of diabetes and its associated disease states. Part 2 will address the pharmacology associated with the wide variety of medications used to treat the disorder and the most recent guidelines for blood glucose management in ambulatory surgical patients.

Publication Type: Journal Article. Review.
Year of Publication: 2016

<64>
Unique Identifier: 27931464
Status: MEDLINE
Authors: Anonymous.
Title: Guideline on Use of Anesthesia Personnel in the Administration of Office-based Deep Sedation/General Anesthesia to the Pediatric Dental Patient.

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Publication Type: Journal Article. Practice Guideline.
Year of Publication: 2016
RECENT REVIEWS RELATED TO DENTAL ANAESTHESIA/SEDATION

Title
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Abstract
The safe sedation of children for procedures requires a systematic approach that includes the following: no administration of sedating medication without the safety net of medical/dental supervision, careful presedation evaluation for underlying medical or surgical conditions that would place the child at increased risk from sedating medications, appropriate fasting for elective procedures and a balance between the depth of sedation and risk for those who are unable to fast because of the urgent nature of the procedure, a focused airway examination for large (kissing) tonsils or anatomic airway abnormalities that might increase the potential for airway obstruction, a clear understanding of the medication's pharmacokinetic and pharmacodynamic effects and drug interactions, appropriate training and skills in airway management to allow rescue of the patient, age- and size-appropriate equipment for airway management and venous access, appropriate medications and reversal agents, sufficient numbers of staff to both carry out the procedure and monitor the patient, appropriate physiologic monitoring during and after the procedure, a properly equipped and staffed recovery area, recovery to the presedation level of consciousness before discharge from medical/dental supervision, and appropriate discharge instructions. This report was developed through a collaborative effort of the American Academy of Pediatrics and the American Academy of Pediatric Dentistry to offer pediatric providers updated information and guidance in delivering safe sedation to children.
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2016

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27931462
Status
MEDLINE
Authors
Anonymous.
Title
Guideline on Use of Nitrous Oxide for Pediatric Dental Patients.
Source
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Title
Guideline on Use of Local Anesthesia for Pediatric Dental Patients.
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Unique Identifier
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Status
MEDLINE
Authors
Anonymous.
Title
Policy on the Use of Deep Sedation and General Anesthesia in the Pediatric Dental Office. [Review]

Source

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Journal Article. Review.

Year of Publication
2016

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27670066

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Title
Most American Association of Oral and Maxillofacial Surgeons Members Have Not Adopted the American Society of Anesthesiologists-Recommended Nil Per Os Guidelines.

Source

Local Messages
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Abstract
PURPOSE: The purpose of this study was to determine if American Association of Oral and Maxillofacial Surgeons members have integrated the current American Society of Anesthesiologists (ASA) nil per os (NPO) guidelines into their preoperative instructions.

MATERIALS AND METHODS: We designed and implemented a cross-sectional study and enrolled a random sample of private-practice American Association of Oral and Maxillofacial Surgeons members who practice in the United States. The predictor variables were year of graduation from residency, dual degree (MD and DDS or DMD) or single degree, and region. The primary outcome variable was adoption of the ASA NPO guidelines, defined as recommending fasting times of 2 hours for clear liquids and 6 hours for solid foods. To collect data, a systematic online search was implemented. Appropriate univariate and bivariate statistics were computed, and the level of significance was set at .05; in addition, 95% confidence intervals were calculated.

RESULTS: The study sample was composed of 431 oral and maxillofacial surgeons (OMSs). Almost all of the study sample (99.1%) did not adopt the ASA guidelines. The fasting recommendations were different from 2 hours for clear liquids and 6 hours for solid foods. To collect data, a systematic online search was implemented. Appropriate univariate and bivariate statistics were computed, and the level of significance was set at .05; in addition, 95% confidence intervals were calculated.

CONCLUSIONS: OMSs in private practice are overwhelmingly recommending longer fasting times for clear liquids and solid foods on their Web sites when compared with the current ASA guidelines before ambulatory anesthesia. The ASA guidelines are based on meta-analysis; therefore, deviations in practice, although not incorrect, may call for discussion.

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2016

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27585420

VI 1
Benzodiazepine Allergy With Anesthesia Administration: A Review of Current Literature. 

**Abstract**

The incidence of anaphylactic/anaphylactoid reactions has been reported to vary between 1:3500 and 1:20,000 cases with a mortality rate ranging from 3 to 9%. Clinical signs present as skin rash, urticaria, angioedema, bronchospasm, tachycardia, bradycardia, and hypotension. Rapid identification and treatment are crucial to overall patient prognosis, as delayed intervention is associated with increased mortality. Diagnosis may be confirmed with clinical presentation, serum tryptase levels, and skin test results. While the main causative agents in anesthetic practice are typically neuromuscular blocking agents (NMBs), latex, and antibiotics, this review aims to discuss recognition, management, and preventive measures in perioperative anaphylactic/anaphylactoid reactions from benzodiazepine administration.

**Temporary Diplopia After Gow-Gates Injection: Case Report and Review.**

**Abstract**

Complications associated with various local anesthetic techniques have been recorded in case reports and reviews. This current case reports a transient incident of blurred, double vision (diplopia) following a Gow-Gates mandibular block injection. There is descriptive discussion on possibilities associated with intra-arterial injection, intravenous injection, diffusion through tissue planes, and the autonomic nervous system pathway to lend credence suggesting the etiology of the complication. For practitioners, recognizing when a complication arises from anesthesia delivery and managing the patient in an appropriate manner is essential to an overall agreeable outcome.
RECENT REVIEWS RELATED TO DENTAL ANAESTHESIA/SEDATION

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Title
Intranasal sedatives in pediatric dentistry. [Review]
Source

Abstract
OBJECTIVES: To identify the intranasal (IN) sedatives used to achieve conscious sedation during dental procedures amongst children.

METHODS: A literature review was conducted by identifying relevant studies through searches on Medline. Search included IN of midazolam, ketamine, sufentanil, dexmedetomidine, clonidine, haloperidol, and loranzepam. Studies included were conducted amongst individuals below 18 years, published in English, and were not restricted by year. Exclusion criteria were articles that did not focus on pediatric dentistry.

RESULTS: Twenty studies were included. The most commonly used sedatives were midazolam, followed by ketamine and sufentanil. Onset of action for IN midazolam was 5-15 minutes (min), however, IN ketamine was faster (mean 5.74 min), while both IN sufentanil (mean 20 min) and IN dexmedetomidine (mean 25 min) were slow in comparison. Midazolam was effective for modifying behavior in mild to moderately anxious children, however, for more invasive or prolonged procedures, stronger sedatives, such as IN ketamine, IN sufentanil were recommended. In addition, ketamine fared better in overall success rate (89%) when compared with IN midazolam (69%). Intranasal dexmedetomidine was only used as pre-medication amongst children. While its' onset of action is longer when compared with IN midazolam, it produced deeper sedation at the time of separation from the parent and at the time of anesthesia induction.

CONCLUSION: Intranasal midazolam, ketamine, and sufentanil are effective and safe for conscious sedation, while intranasal midazolam, dexmedetomidine, and sufentanil have proven to be effective premedications.

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Journal Article. Review.
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2016

Unique Identifier
27354454


Abstract
The safe sedation of children for procedures requires a systematic approach that includes the following: no administration of sedating medication without the safety net of medical/dental supervision, careful presedation evaluation for underlying medical or surgical conditions that would place the child at increased risk from sedating medications, appropriate fasting for elective procedures and a balance between the depth of sedation and risk for those who are unable to fast because of the urgent nature of the procedure, a focused airway examination for large (kissing) tonsils or anatomic airway abnormalities that might increase the potential for airway obstruction, a clear understanding of the medication’s pharmacokinetic and pharmacodynamic effects and drug interactions, appropriate training and skills in airway management to allow rescue of the patient, age- and size-appropriate equipment for airway management and venous access, appropriate medications and reversal agents, sufficient numbers of staff to both carry out the procedure and monitor the patient, appropriate physiologic monitoring during and after the procedure, a properly equipped and staffed recovery area, recovery to the presedation level of consciousness before discharge from medical/dental supervision, and appropriate discharge instructions. This report was developed through a collaborative effort of the American Academy of Pediatrics and the American Academy of Pediatric Dentistry to offer pediatric providers updated information and guidance in delivering safe sedation to children.

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BACKGROUND: Midazolam is used for sedation before diagnostic and therapeutic medical procedures. It is an imidazole benzodiazepine that has depressant effects on the central nervous system (CNS) with rapid onset of action and few adverse effects. The drug can be administered by several routes including oral, intravenous, intranasal and intramuscular.

OBJECTIVES: To determine the evidence on the effectiveness of midazolam for sedation when administered before a procedure (diagnostic or therapeutic).

SEARCH METHODS: We searched the Cochrane Central Register of Controlled Trials (CENTRAL to January 2016), MEDLINE in Ovid (1966 to January 2016) and Ovid EMBASE (1980 to January 2016). We imposed no language restrictions.

SELECTION CRITERIA: Randomized controlled trials in which midazolam, administered to participants of any age, by any route, at any dose or any time before any procedure (apart from dental procedures), was compared with placebo or other medications including sedatives and analgésics.

DATA COLLECTION AND ANALYSIS: Two authors extracted data and assessed risk of bias for each included study. We performed a separate analysis for each different drug comparison.

MAIN RESULTS: We included 30 trials (2319 participants) of midazolam for gastrointestinal endoscopy (16 trials), bronchoscopy (3), diagnostic imaging (5), cardioversion (1), lumbar puncture (1), suturing (2) and Kirschner wire removal (1). Comparisons were: intravenous diazepam (14), placebo (5) etomidate (1) fentanyl (1), flunitrazepam (1) and propofol (1); oral chloral hydrate (4), diazepam (2), dixepam and clonidine (1); ketamine (1) and placebo (3); and intranasal placebo (2). There was a high risk of bias due to inadequate reporting about randomization (75% of trials). Effect estimates were imprecise due to small sample sizes. None of the trials reported on allergic or anaphylactoid reactions. Intravenous midazolam versus diazepam (14 trials; 1069 participants)There was no difference in anxiety (risk ratio (RR) 0.80, 95% confidence interval (CI) 0.39 to 1.62; 175 participants; 2 trials) or discomfort/pain (RR 0.60, 95% CI 0.24 to 1.49; 415 participants; 5 trials; I² = 67%). Midazolam produced greater anterograde amnesia (RR 0.45; 95% CI 0.30 to 0.66; 587 participants; 9 trials; low-quality evidence). Intravenous midazolam versus placebo (5 trials; 493 participants)One trial reported that fewer participants who received midazolam were anxious (3/47 versus 15/35; low-quality evidence). There was no difference in discomfort/pain identified in a further trial (3/85 in midazolam group; 4/82 in placebo group; P = 0.876; very low-quality evidence). Oral midazolam versus chloral hydrate (4 trials; 268 participants)Midazolam increased the risk of incomplete procedures (RR 4.01; 95% CI 1.92 to 8.40; moderate-quality evidence). Oral midazolam versus placebo (3 trials; 176 participants)Midazolam reduced pain (midazolam mean 2.56 (standard deviation (SD) 2.6); placebo mean 4.62 (SD 1.49); P < 0.005) and anxiety (midazolam mean 1.52 (SD 0.3); placebo mean 3.97 (SD 0.4); P < 0.0001) in one trial with 99 participants. Two other trials did not find a difference in numerical rating of anxiety (mean 1.7 (SD 2.4) for 20 participants randomized to midazolam; mean 2.6 (SD 2.9) for 22 participants randomized to placebo; P = 0.216; mean Spielberger’s Trait Anxiety Inventory score 47.56 (SD 11.68) in the midazolam group; mean 52.78 (SD 9.61) in placebo group; P > 0.05). Intranasal midazolam versus placebo (2 trials; 149 participants)Midazolam induced sedation (midazolam mean 3.15 (SD 0.36); placebo mean 2.56 (SD 0.64); P = 0.001) and reduced the numerical rating of anxiety in one trial with 54 participants (midazolam mean 17.3 (SD 19.58); placebo mean 49.3 (SD 29.46); P < 0.001). There was no difference in meta-analysis of results from both trials for risk of incomplete procedures (RR 0.14, 95% CI 0.02 to 1.12; downgraded to low-quality evidence).

AUTHORS’ CONCLUSIONS: We found no high-quality evidence to determine if midazolam, when administered as the sole sedative agent prior to a procedure, produces more or less effective sedation than placebo or other medications. There is low-quality evidence that intravenous midazolam produces less effective sedation than chloral hydrate for completion of procedures for children undergoing non-invasive diagnostic procedures.

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Conway A; Rolley J; Sutherland JR.
RECENT REVIEWS RELATED TO DENTAL ANAESTHESIA/SEDATION

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Title
A review of daycase GA services for Special Care patients at University Hospital, Bristol.
Source
Local Messages
THIS JOURNAL IS AVAILABLE IN THE BDA LIBRARY, TO REQUEST THIS ARTICLE FROM THE LIBRARY GO TO:
Abstract
This paper describes and discusses a review of adult special care dentistry day cases in a UK hospital over a two year period and makes recommendations for other such reviews and for practice. Dental public health competencies illustrated: oral health needs assessment and evaluation of dental health services.
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Journal Article.
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2016

Yeung V.
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Articaine--to use or not to use?. [Review]
Source
SAAD Digest. 32:50-4, 2016 Jan.
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2016

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Title
Defining Over-Sedation: Literature Review and National Survey of Dental Hospitals Within the United Kingdom. [Review]
Source
SAAD Digest. 32:28-33, 2016 Jan.
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Abstract
AIMS: To review the literature, to investigate whether there was a consensus on what encompasses over-sedation, and to determine the guidance employed for the administration of flumazenil.
METHODS: A literature search was performed following which a self-designed questionnaire was emailed to 14 sedation leads within UK Dental Hospitals.
RESULTS: 10 documents in the literature review met the inclusion criteria. In their definitions of over-sedation, loss of consciousness and respiratory depression were the main terms used; but a variety of terms were also seen, indicating a lack of agreement. Fourteen dental institutes were contacted of which nine (64%) responded. Thirty-seven per cent of sedation leads who responded stated they were unaware of a definition for over-sedation. Seventy-seven percent stated that when flumazenil was used this was recorded in a drugs book, with a broad range of justifications given.
CONCLUSION: This study shows that there is a lack of uniformity both from clinicians and the literature, in what encompasses over-sedation. This makes formulating an accepted definition of over-sedation difficult. In order to ensure accurate reporting, monitoring and auditing of such events, a clear definition for over-sedation is required and can be used to provide clarity when flumazenil is to be administered.
As described in this article, there are many advances in topical and local anesthesia. Topical and local anesthetics have played a great role in dentistry in alleviating the fears of patients, eliminating pain, and providing pain control. Many invasive procedures would not be performed without the use and advances of topical/local anesthetics. The modern-day dentist has the responsibility of knowing the variety of products on the market and should have at least references to access before, during, and after treatment. This practice ensures proper care with topical and local anesthetics for the masses of patients entering dental offices worldwide.

Several sedation options are used to minimize pain, anxiety, and discomfort during oral surgery procedures. Minimizing or eliminating pain and anxiety for dental care is the primary goal for conscious sedation. Intravenous conscious sedation is a drug-induced depression of consciousness during which patients respond purposefully to verbal commands. No interventions are required to maintain a patent airway, and spontaneous ventilation is adequate as well as cardiovascular function. Patients must retain their protective airway reflexes, and respond to and understand verbal communication. The drugs and techniques used must therefore carry a broad margin of safety.
RECENT REVIEWS RELATED TO DENTAL ANAESTHESIA/SEDATION

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Title
Oral Sedation in the Dental Office. [Review]

Source

Abstract
This article highlights the commonly used medications used in dentistry and oral surgery. General dentists and specialists must be knowledgeable about the pharmacology of the drugs currently available along with their risks and benefits. Enteral sedation is a useful adjunct for the treatment of anxious adult and pediatric patients. When enteral sedation is used within the standards of care, the interests of the public and the dental profession are served through a cost-effective, effective service that can be widely available. Oral sedation enables dentists to provide dental care to millions of individuals who otherwise would have unmet dental needs.

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Title
Hypersensitivity to local anesthetics. [Review]

Source

Abstract
Using local anaesthetics in daily practice, particularly by anaesthetists and dentists, is connected with the risk of side effects. Therefore, the observation of side effects, carrying out detailed research (according to the chart proposed in this study) and conducting specialist examinations is of the highest importance. There is a variety of side effects that could occur during local anaesthesia procedures, with the intensity ranging from clinically unimportant to life threatening. Clinicians' major concerns are the appearance of various hypersensitivity reactions, including anaphylaxis. Healthcare providers responsible for the administration of local anaesthetics should be able to detect hypersensitivity reactions to implement appropriate treatment and then choose highly selected diagnostic procedures. The final diagnosis should be based on specific medical history; documentation, including a description of the case and measurement of tryptase activity; skin tests; and provocation trials. Screening tests are not recommended in populations without hypersensitivity to local anaesthetics in their medical history.

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Title
In Regard to Local Versus General Anesthesia for the Management of Nasal Bone Fractures: A Systematic Review and Meta-Analysis.
Comments
Source
Local Messages
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Letter. Comment.
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VI 1
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Title
Memor
ey effects of sedative drugs in children and adolescents--protocol for a systematic review. [Review]
Source
Systematic Reviews. 5:34, 2016 Feb 18.
Abstract
BACKGROUND: Some sedatives used in children and adolescents can affect memory function. Memory impairment of traumatic experience can minimize the chance of future psychological trauma. Knowledge about the potential of different sedatives to produce amnesia can help in the decision-making process of choosing a sedative regimen. The aim of this systematic review is to evaluate the effect of different sedatives on memory of perioperative events in children and adolescents.
METHODS/DESIGN: Electronic databases and other sources, such as trial registers, gray literature, and conference abstracts will be searched. Randomized controlled trials will be included that assess memory of perioperative events in children and adolescents 2-19 years old receiving sedative drugs as premedication or as agents for procedural sedation in a medical or dental settings. The outcomes will be loss of memory after and before sedative administration (anterograde and retrograde amnesia). Two independent reviewers will perform screening, study selection, and data extraction. Disagreement at all levels will be resolved by consensus or by involving a third reviewer. Assessment of the risk of bias of included studies will be performed according to "Cochrane Collaboration's Tool for Assessing Risk of Bias in Randomized Trials." Clinical and methodological heterogeneity across studies will be determined if it is possible to combine or not combine study results in a meta-analysis.
DISCUSSION: To the best of our knowledge, there is no systematic review that specifically addresses this question. Findings from the review will be useful in the decision-making process about the best sedative for minimizing recall of the medical/dental event and possible psychological trauma.
SYSTEMATIC REVIEW REGISTRATION: PROSPERO CRD42015017559.
### Recent Reviews Related to Dental Anaesthesia/Sedation

#### Review: Articaine buccal infiltration vs lidocaine inferior dental block - a review of the literature

**Abstract**

**AIM:** This paper aims to compare the effectiveness of articaine buccal infiltrations (BIs) and lidocaine inferior alveolar nerve blocks (IANBs) for inducing pulpal anaesthesia in mandibular molars.

**METHOD:** Studies which compared articaine BIs with lidocaine IANBs were identified by completing a full literature search using the MEDLINE, EMBASE and Cochrane Central Register of Controlled Trials databases. Only studies that used permanent mandibular molars were included. Two papers were accepted for appraisal.

**RESULTS:** It was found that 55.6-69.2% and 65.4-70.4% of lidocaine IANBs and articaine BIs were successful, respectively. Neither study was able to determine a significant difference between the two techniques.

**CONCLUSIONS:** Articaine BIs are no more effective than lidocaine IANBs and the decision of which method to practice should be based on patient selection, cost and time efficiency. The studies present a number of weaknesses in their design, hence, the level of evidence they provide is inconclusive. Further investigation in this field is warranted.

**Publication Type**

Comparative Study. Journal Article. Review.

**Year of Publication**

2016

#### Review: Ophthalmologic complications after administration of local anesthesia in dentistry: a systematic review

**Abstract**

**OBJECTIVE:** The aim of this review was to investigate the association between the occurrence of ocular adverse events and dental local anesthesia, the most plausible anatomic mechanisms, and the measures that offer patients a restitutio ad integrum.

**STUDY DESIGN:** This systematic review adopted a structured protocol to access available publications and followed the PRISMA statement.
RESULTS: Eighty-nine cases of patients experiencing ocular adverse events after administration of dental local anesthesia have been reported in the literature. Most of the complications manifested as double vision. Only 8% of the complications caused permanent functional damage, either as vision deficit or anisocoria. Complete permanent blindness was not reported.

CONCLUSIONS: Ocular complications as a result of dental local anesthesia may be seen as rare occurrences with usually low intensity. However, visual function may become permanently impaired and serious medical conditions may obscure ocular dysfunction.

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Title
Alleged malpractice in anesthesiology: analysis of a series of private insurance claims.

Source

Abstract
BACKGROUND: Medical malpractice is currently a crucial topic and anesthesia is a key specialty for the improvement of patient safety. However, death and permanent impairment due to anesthesia still occur and studies of insurance analysis data are increasing. We investigated the main features of a major Italian insurance broker's archive in order to identify possible recurrent pitfalls in this critical field of medicine.

METHODS: Three hundred seventeen Italian claims were analyzed, filling out a standardized form that recorded information on patient and physician's characteristics, procedures, sequence and location of events and outcomes. The operative setting, the type of anesthesia performed the origin of the multidisciplinary team malpractice hypothesis, the final clinical outcome and the malpractice investigation results were also analyzed.

RESULTS: In 225 malpractice claims, the adverse event was surgery-linked, either intraoperatively (114 cases) or postoperatively (111 cases): abdominal surgery (26%), orthopedics (22%), gynecology (20%), heart surgery (11%) and neurosurgery (9.5%) were the most frequently involved surgical specialties. In 92 cases, the claim was unlinked to a surgeon's activity, with dental damage in oral intubation procedures as the greatest contributor (42.3%). Anesthetists' malpractice was technically ascertained in 39% of cases, 74.8% resulting in permanent impairment.

CONCLUSIONS: Malpractice was mainly suspected in surgery-linked procedures. Most of the claims were settled for procedural error in performing locoregional anesthesia and oral intubation procedures. 60% of all closed claims resulted in no malpractice ascertained. Confirmed malpractice typically deals with non surgery-linked and non multidisciplinary team cases, causing permanent impairment.

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Journal Article.
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2016