Chapter

41

Anesthesia for Dental Procedures

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A three-year-old child presents for dental extractions and rehabilitation. Previous attempts to treat for a malodor and broken tooth in the dentist's office were unsuccessful.

What Criteria Does a Dentist Use to Decide Whether to Treat a Child in the Office or Under General Anesthesia?

Many factors enter into this decision and include the age of patient, treatment requirements (extraction, crowns, rehabilitation), behavior, and additional medical history.

Younger patients tend to have less cognitive and emotional ability to cooperate for an exam, radiographs, local anesthetic administration, and dental procedures in the office. Their attention span and ability to open their mouths for a prolonged amount of time are still being developed. Such children have often failed attempts at "conscious" sedation in the dentist's office.

Depending on the amount and extent of treatment necessary, the patient's ability to tolerate the treatment will vary. The average pediatric patient will have 20 primary teeth and, depending on the location of their cavities, may require multiple areas of local anesthetic. Therefore, a child who has a cavity on the lower right and also lower left quadrants of the mouth may need two separate injections. A patient who has anywhere from 8 to 12 cavities may require multiple dental procedures. Cooperation from a child often decreases with increased number of procedures. This can be consolidated into a single operating room visit under general anesthesia.

The presence of oral or perioral pathology, anatomical anomalies, or trauma that requires surgical intervention and requires stabilization and splinting will be facilitated by the use of general anesthesia.

Infections or abscesses that cause swelling or dysphagia will predispose to airway obstruction during sedation, and should instead be referred for general anesthesia.

Patients with comorbidities that require medical management, or unique management of sedation, should be referred for pediatric anesthesia consultation. These include congenital heart disease, bleeding disorders, craniofacial abnormalities with a compromised airway, severely developmentally delayed and combative patients, to name a few.

What Type of Tracheal Intubation Is Indicated for Dental Procedures?

A nasal intubation with a cuffed Ring-Adair-Elwyn (RAE) tube is preferred because it allows the dentist a clear view of the oral cavity and maximal working space in a limited area. Nasotracheal intubation is safe in children of all ages. The size of the nasal tube should be a half size smaller than the appropriate oral route size. The most common complication from nasotracheal intubation is bleeding that results from the tube shearing off friable nasal or adenoidal tissue. This can be decreased by softening the tube by presoaking it in hot water and using the red rubber catheter technique. This consists of preinsertion of a lubricated, appropriately sized red rubber catheter through the nasal passage and into the oropharynx. (It is initially used as a "sound" in each nasal passage to determine if one side is more patent than the other.) The nonleading flanged end of the rubber tube is attached to the beveled end of the nasotracheal tube to provide a nontraumatic leading edge through the nasopharynx, and then detached when the tracheal tube passes into the oropharynx. Prior to insertion

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of the nasotracheal tube, 0.05% oxymetazoline should be administered into each nasal passage to further attenuate bleeding. Nasotracheal tube insertion in children is not technically different than that for adults, except that the unique angling of the child's oropharynx usually necessitates the assistance of a Magill forceps to feed the tracheal tube in an anterior direction toward the glottic inlet.

When Should Antibiotics for Endocarditis Prophylaxis Be Administered?

Since nasotracheal intubation may result in a transient bacteremia, antibiotics for endocarditis prophylaxis should be administered to certain high-risk susceptible children. These include patients with:

- Prosthetic heart valves, including mechanical, bioprosthetic, and homograft valves (transcatheter-implanted as well as surgically implanted valves are included), and patients with prosthetic material used for cardiac valve repair, such as annuloplasty rings and chords;
- Prior history of endocarditis;
- Unrepaired cyanotic congenital heart disease;
- Repaired congenital heart disease with residual shunts or valvular regurgitation at the site or adjacent to the site of the prosthetic patch or prosthetic device;
- Repaired congenital heart defects with catheter-based intervention involving an occlusion device or stent during the first six months after the procedure; and
- Valve regurgitation due to a structurally abnormal valve in a transplanted heart

What Are the Contraindications to Nasal Intubation?

Certain medical circumstances may necessitate avoidance of a nasal intubation. These include bleeding disorders such as hemophilia, use of anticoagulants, and a previous cleft palate repair with a pharyngeal flap between the palate and the nasopharynx. An oral tracheal tube is then used, and the dentist, in collaboration with the anesthesia practitioner, moves it from side to side during the procedure to optimize surgical exposure.

Suggested Reading

Watt S, Pickhardt D, Lerman J, Armstrong J, Creighton PR, Feldman L. Telescoping tracheal tubes into catheters minimizes epistaxis during nasotracheal intubation in children. *Anesthesiology*. 2007;106:238–42. PMID: 17264716.

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