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SPECIAL CONSIDERATIONS FOR ANESTHETIC CARE DURING DENTAL PROCEDURES IN CHILDREN WITH DISABILITIES

Lia Dzidziguri

Anesthesiology, Reanimatology and Toxicology Department, Tbilisi State Medical University, Tbilisi, Georgia

In modern dental practice, the administration of safe and effective anesthesia is essential, particularly given the expanding population of high-risk and medically vulnerable patients. Despite significant advancements in pharmacology and monitoring techniques, discrepancies persist across dental facilities regarding clinical decision-making, patient selection criteria, and standard safety practices. This study synthesizes updated clinical knowledge regarding local and general anesthesia in dentistry, focusing on novel techniques, pharmacological principles, perioperative challenges, and patient outcomes.

Pediatric Anesthesia & Clinical Challenges

In pediatric populations, dental procedures under general anesthesia are frequently required for children with comorbidities such as autism spectrum disorder (ASD), cerebral palsy, epilepsy, and congenital heart defects. General anesthesia is indicated when local anesthesia or conscious sedation fails—specifically in very young patients, individuals with disabilities, or those with severe dentophobia requiring extensive interventions. For many children with disabilities, single-session elective dental care under general anesthesia offers the safest comprehensive treatment option. Demonstrating this demand, 252 children underwent elective dental procedures under general anesthesia at the Givi Zhvania Pediatric Academic Clinic of TSMU in 2025.

Emergence from anesthesia represents a uniquely challenging and high-risk phase for children with ASD, often manifesting as severe behavioral agitation and emergence delirium (ED). Inhalation anesthetics, particularly sevoflurane, significantly elevate these risks due to three key factors:

1. High baseline preoperative anxiety, which inherently predisposes to emergence agitation;
2. Sensory overload upon awakening caused by bright lights, noise, and unfamiliar surroundings;
3. The child's internal difficulty in distinguishing physical pain from emotional fear.

Furthermore, approximately 50% of children with ASD develop long-term postoperative behavioral disturbances lasting weeks or months. These include sleep disruptions, dietary

alterations, heightened irritability, and specific phobias, such as "white coat" anxiety, driven by baseline sensory hypersensitivity and communication barriers.

Management Strategies & Recommendations

To mitigate perioperative risks and improve outcomes in vulnerable pediatric cohorts, targeted strategies must be implemented:

- Premedication: Utilizing intranasal combinations of dexmedetomidine and esketamine to reduce baseline anxiety.
- Anesthetic Technique: Minimizing inhalation agents by favoring Total Intravenous Anesthesia (TIVA) over volatile maintenance.
- Intraoperative Care: Administering alpha-2 agonists, propofol, or midazolam to prevent emergence agitation, along with adequate multimodal analgesia, antiemetics, and intravenous hydration.
- Environmental & Protocol Support: Creating low-sensory emergence environments with tactile soothing, alongside thorough preoperative psychological preparation, specialized staff training, and screening for drug interactions with long-term medications.

Advancements in anesthetic pharmacology and monitoring substantially enhance procedure safety. Standardizing clinical guidelines and integrating global best practices are essential to ensure consistent, high-quality anesthetic care for children with disabilities.

Keywords: Dental Anesthesia, Children with Disabilities, Autism Spectrum Disorder (ASD), General Anesthesia, Total Intravenous Anesthesia (TIVA), Dexmedetomidine.