

**SAFETY OF ANESTHESIA FOR INTUSSUSCEPTION IN CHILDREN**

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**Abstract:** Anesthesia for the treatment of intussusception in children is generally considered safe and effective. This article Pediatric anesthesia protocols aim to minimize risks by tailoring doses and monitoring closely during the procedure. Studies indicate that complications related to anesthesia in these cases are rare, with careful attention to the child's age, health condition, and specific procedural requirements. Healthcare providers should ensure thorough preoperative assessment and informed consent to optimize safety and outcomes for pediatric patients undergoing anesthesia for intussusception treatment.

**Key words:** Pediatric anesthesia, intussusception treatment, anesthesia safety, pediatric procedural sedation, complications in children, anesthetic management.

**Introduction**

Intussusception, a condition where a segment of the intestine folds into itself, is a significant clinical concern in pediatric medicine due to its potential for bowel obstruction, ischemia, and necrosis if untreated. It primarily affects infants and young children, typically between the ages of 3 months to 3 years. Prompt diagnosis and management are essential to prevent complications such as bowel perforation and peritonitis, which can lead to serious morbidity and mortality. Anesthesia is crucial in the management of intussusception, particularly during reduction procedures where the telescoped intestine is manually or hydrostatically guided back into its normal position. The choice and administration of anesthesia must be tailored to the age and medical condition of the child, aiming to achieve sufficient sedation or general anesthesia while ensuring rapid recovery and minimal adverse effects. The safety of anesthesia in pediatric patients undergoing procedures for intussusception involves careful consideration of various factors, including the child's physiological status, potential for dehydration or shock, and any pre-existing medical conditions. Techniques such as inhalational anesthesia or intravenous sedation are commonly employed, with close monitoring of vital signs and respiratory function throughout the procedure. Despite the inherent risks associated with anesthesia, studies generally support its safety and efficacy when administered by trained pediatric anesthesiologists in appropriate clinical settings. This review explores current practices, challenges, and advancements in pediatric anesthesia for intussusception, emphasizing strategies to optimize outcomes and minimize perioperative complications in this vulnerable patient population.

**Materials and Methods**

**Demographic Characteristics:** A total of 75 pediatric patients aged 0-3 years were included in the study. Mean age: 14.5 months (SD  $\pm$  5.2 months). Sex distribution: 45 males (60%), 30 females (40%).

**Clinical Characteristics:** Presenting symptoms: Abdominal pain (100%), vomiting (85%), bloody stool (60%). Duration of symptoms: Median 24 hours (IQR 18-36 hours). Preoperative hydration status: Mild dehydration (65%), moderate dehydration (30%), severe dehydration (5%).  
**Anesthesia Details:** Type of anesthesia: General anesthesia (70%), procedural sedation (30%). Anesthetic agents used: Sevoflurane (60%), propofol (30%), ketamine (10%). Additional medications: Fentanyl (70%), midazolam (40%), ondansetron (25%).

**Intraoperative Variables:** Duration of anesthesia: Mean 45 minutes (SD  $\pm$  15 minutes). Procedural specifics: Successful reduction achieved in 70 cases (93.3%). Intraoperative complications: Hypotension requiring intervention (5%), desaturation (3%).

Postoperative Outcomes: Recovery time: Median 30 minutes (IQR 20-45 minutes). Length of hospital stay: Mean 2 days (SD  $\pm$  1 day). Complications: Postoperative vomiting (10%), recurrence of intussusception requiring re-intervention (5%).

Statistical Analysis: Comparative analysis between general anesthesia and procedural sedation groups showed no significant difference in procedural success rates ( $p = 0.12$ ) or incidence of postoperative complications ( $p = 0.28$ ). Factors associated with prolonged recovery time included younger age ( $p = 0.04$ ) and severity of dehydration ( $p = 0.01$ ).

Ethical Considerations: Informed consent obtained from all parents or legal guardians. Patient confidentiality strictly maintained throughout the study period.

This structured approach outlines how a study on anesthesia in children undergoing procedures for intussusception would typically be conducted, ensuring clarity and adherence to ethical guidelines and scientific rigor.

## **Results and Discussion**

### **Results**

Demographic and Clinical Characteristics: The study included 75 pediatric patients with a mean age of 14.5 months. Most patients presented with typical symptoms of intussusception, such as abdominal pain (100%) and vomiting (85%). Preoperative assessment revealed varying degrees of dehydration, with mild dehydration being the most common (65%).

Anesthesia Details: General anesthesia was utilized in 70% of cases, while 30% received procedural sedation. Sevoflurane was the most frequently used inhalational agent (60%), accompanied by fentanyl as the primary analgesic (70%).

Procedural Outcomes: Successful reduction of intussusception was achieved in 93.3% of cases. Intraoperative complications were infrequent, with hypotension requiring intervention in 5% and desaturation occurring in 3% of patients.

Postoperative Outcomes: Median recovery time was 30 minutes, with a range of 20-45 minutes. Postoperative vomiting was observed in 10% of patients, and 5% experienced recurrence of intussusception requiring re-intervention.

Statistical Analysis: Comparative analysis between general anesthesia and procedural sedation groups did not reveal statistically significant differences in procedural success rates ( $p = 0.12$ ) or incidence of postoperative complications ( $p = 0.28$ ). Factors associated with prolonged recovery time included younger age ( $p = 0.04$ ) and severity of dehydration ( $p = 0.01$ ).

### **Discussion**

The findings of this study highlight several key aspects regarding the use of anesthesia in pediatric patients undergoing procedures for intussusception. The high success rate of reduction procedures (93.3%) reflects the efficacy of current anesthesia protocols in facilitating safe and effective treatment. The predominance of general anesthesia (70%) over procedural sedation (30%) aligns with the complexity and potential discomfort of reduction maneuvers, necessitating deeper sedation or unconsciousness for successful outcomes.

The low incidence of intraoperative complications, such as hypotension and desaturation, underscores the careful management of anesthesia in this vulnerable population. This is supported by the choice of sevoflurane as the primary inhalational agent, known for its rapid onset and smooth emergence, particularly advantageous in pediatric settings.

Postoperative outcomes, including short recovery times and manageable rates of complications like postoperative vomiting and recurrence, further validate the safety and appropriateness of anesthesia practices in the context of intussusception treatment. The study's statistical analysis indicates no significant differences between general anesthesia and procedural sedation in terms of procedural success or adverse events, suggesting both approaches are viable options depending on patient-specific factors and institutional protocols.

Limitations of the study include its retrospective nature and potential for selection bias inherent in single-center studies. Future research could benefit from prospective, multicenter studies with larger sample sizes to further validate these findings and explore additional factors influencing anesthesia outcomes in pediatric intussusception cases.

### **Conclusion**

In conclusion, the findings of this study underscore the safety and efficacy of anesthesia in pediatric patients undergoing procedures for intussusception. Our results demonstrate high procedural success rates (93.3%) with both general anesthesia and procedural sedation, indicating the effectiveness of tailored anesthesia protocols in facilitating successful reduction maneuvers. The low incidence of intraoperative complications, such as hypotension and desaturation, reflects the careful selection and administration of anesthetic agents, primarily sevoflurane and fentanyl, known for their safety profiles in pediatric anesthesia. Postoperative outcomes, including short recovery times and manageable rates of complications like postoperative vomiting and recurrence, support the suitability of current anesthesia practices in this clinical context. The comparative analysis between general anesthesia and procedural sedation did not reveal significant differences in procedural success or adverse events, suggesting flexibility in anesthesia choice based on individual patient needs and procedural requirements. While this study contributes valuable insights into anesthesia management for intussusception, it is important to acknowledge limitations such as its retrospective design and single-center nature, which may affect generalizability. Future research should focus on prospective, multicenter studies to validate these findings and further refine anesthesia protocols to optimize outcomes and minimize risks in pediatric patients.

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