Section: Paediatrics

Original Research Article

ANALYSIS OF PERIOPERATIVE COMPLICATIONS OF PEDIATRIC OTOLARYNGOLOGIC SURGERIES AT A TERTIARY CARE HOSPITAL

Ankit Kumar Maheshwari[1], Geeta Solanki[2], Prerna Mandowara[3]

[1]MD (Paediatrics), PGMO, District Civil Hospital, Neemuch, Madhya Pradesh, India.
[2]MS (ENT), Assistant Professor, Department of ENT, S. P. Medical College, Bikaner, Rajasthan, India.
[3]MS (ENT), Associate Professor, Department of ENT, Geetanjali Medical College & Hospital, Udaipur, Rajasthan, India.

Received : 03/06/2025
Received in revised form : 23/06/2025
Accepted : 14/07/2025

Keywords:
Perioperative, Complications, Otolaryngology, Surgeries.

Corresponding Author:
Dr. Prerna Mandowara,
Email: prernamandowara@gmail.com

DOI: 10.47009/jamp.2025.7.4.137

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2025; 7 (4); 735-737

ABSTRACT

Background: Safety in the operating room in paediatrics focuses on proper patient identification, safe positioning to avoid injury, aseptic techniques to prevent infections, and improved surgical outcomes. Hence; the present study was conducted to analyze perioperative complications of pediatric otolaryngologic surgeries at a tertiary care hospital. **Materials and Methods:** This study assessed 50 pediatric patients (≤16 years) undergoing elective otorhinolaryngologic surgeries of ≤1-hour duration. A uniform anesthetic protocol using intravenous induction and neuromuscular blockade was applied. Monitored intraoperative complications included arrhythmias, arterial hypertension, and desaturation, while postoperative events encompassed cardiovascular and respiratory complications, pain, emergence delirium, postoperative nausea and vomiting. Data were compiled and statistically analyzed using SPSS software. **Result:** The study analyzed 50 pediatric patients (mean age: 9.2 years), with a male predominance (80%), undergoing various otolaryngologic procedures. The most common surgeries were adenotomy (36%), adenotonsillotomy/adenotonsillectomy (24%), tonsillotomy (22%), and sinus/ear surgeries (18%). Perioperative complications included cardiovascular events (12%), arrhythmias (10%), hypertension (16%), desaturation (8%), apnea (4%), pain (12%), and delirium (6%), highlighting the frequency of hemodynamic and respiratory instability and the need for meticulous anesthetic vigilance in pediatric ENT surgeries. **Conclusion:** The study highlights that perioperative cardiovascular and respiratory complications are not uncommon in pediatric otolaryngologic surgeries. Careful preoperative evaluation and vigilant anesthetic monitoring are essential to ensure safe outcomes in this patient population.

INTRODUCTION

Safety in the operating room in paediatrics focuses on proper patient identification, safe positioning to avoid injury, aseptic techniques to prevent infections, and improved surgical outcomes. Efficiency is also important when the volume of surgical cases is high, the duration of cases is short, and rapid room turnover reduces medical costs. Pediatric otolaryngologic surgeries, such as pressure equalizing tube insertion and adenotonsillectomy, are among the most frequently performed procedures in children. As such, anesthesiologists involved in these cases must be well-versed in the complexities of managing a shared airway with the otolaryngologist, especially when operating in the head and neck region. Beyond technical expertise, it is essential to approach pediatric patients and their families with empathy and clarity—from the preoperative evaluation through postoperative recovery—to ensure both safety and comfort.[1,2] Airway management in pediatric patients presents unique and sometimes critical challenges, particularly in infants with compromised or anatomically altered airways. Conditions such as craniofacial anomalies or congenital malformations of the upper aerodigestive tract demand a heightened level of preparedness and adaptability.[3]

Even for routine otolaryngologic procedures, general anesthesiologists and ENT surgeons must cultivate specialized pediatric airway skills to anticipate and effectively manage potential complications.[4-6] Hence; the present study was conducted to analyze perioperative complications of pediatric otolaryngologic surgeries at a tertiary care hospital.

ISSN (O): 2687-5365; ISSN (P): 2753-6556

MATERIALS AND METHODS

The present study involved evaluation of 50 pediatric patients (upto 16 years of age) undergoing elective otorhinolaryngologic surgery lasting ≤1 hour. Exclusion criteria included acute infections, congenital anomalies, psychological uncooperativeness, or emergency interventions. Preoperative assessments included ASA physical status classification, comorbidities, nasal airflow metrics, tonsillar hypertrophy etc. Autonomic tone was assessed via heart rate variability. General anesthesia with intravenous induction and neuromuscular blockade was uniformly applied. Intraoperative events included arrhythmias, hypertension, and desaturation, while postoperative complications included cardiovascular instability, respiratory depression, pain, delirium, postoperative nausea and vomiting. All collected data were methodically compiled and subjected to statistical evaluation using SPSS software.

RESULTS

The study included a total of 50 pediatric patients with a mean age of 9.2 years. There was a predominance of male patients (n = 40) compared to females (n = 10). Regarding the type of surgical intervention, the most frequently performed procedure was adenotomy in 18 cases, followed by adenotonsillotomy or adenotonsillectomy in 12 patients, tonsillotomy in 11 patients, and sinus or ear surgeries in 9 cases. These data reflect the typical distribution of otolaryngologic procedures in the pediatric population within the study cohort. Among the 50 pediatric patients, the incidence of various perioperative complications was as follows: Cardiovascular complications were observed in 6 patients (12%), Arrhythmias occurred in 5 patients (10%), Arterial hypertension was noted in 8 patients (16%), Desaturation episodes (SpO_2 < 90%) were reported in 4 patients (8%), Apnoea occurred in 2 patients (4%), Postoperative pain was documented in 6 patients (12%), based on Hanallah scale assessment, and Emergence delirium was identified in 3 patients (6%), using the PAED score. These findings indicate that hemodynamic fluctuations and respiratory complications were relatively common in the perioperative period, underscoring the importance of vigilant monitoring and targeted anesthetic management in pediatric otolaryngologic surgeries.

Table 1: Demographic and clinical variables

Variable	Value
Mean age (years)	9.2
Boy	40
Girl	10
Adenotomy	18
Adenotonsillotomy/ Adenotonsillectomy	12
Tonsillotomy	11
Surgical procedures involving sinuses, and ear	9

Table 2: Perioperative complications

Variable	Value
Cardiovascular complications	6
Arrhythmia	5
Arterial hypertension	8
Desaturation	4
Apnoea	2
Pain	6
Delirium	3

DISCUSSION

Tonsillectomy and adenoidectomy (T&A) are among the most common pediatric surgeries in the United States, with obstructive sleep apnea (OSA) being a leading indication. Although patients with severe OSA were historically admitted to intensive care due to risk of postoperative hypoxia, recent studies support the safety of outpatient T&A, citing low rates of respiratory complications and unplanned admissions, thereby enabling cost-effective recovery in a home setting.[7-9]

The study included a total of 50 pediatric patients with a mean age of 9.2 years. There was a predominance of male patients (n = 40) compared to females (n = 10).

Regarding the type of surgical intervention, the most frequently performed procedure was adenotomy in 18 cases, followed by adenotonsillotomy or adenotonsillectomy in 12 patients, tonsillotomy in 11 patients, and sinus or ear surgeries in 9 cases. These data reflect the typical distribution of otolaryngologic procedures in the pediatric population within the study cohort.

Among the 50 pediatric patients, the incidence of various perioperative complications was as follows: Cardiovascular complications were observed in 6 patients (12%), Arrhythmias occurred in 5 patients (10%), Arterial hypertension was noted in 8 patients (16%), Desaturation episodes (SpO_2 < 90%) were reported in 4 patients (8%), Apnoea occurred in 2 patients (4%), Postoperative pain was documented in

ISSN (O): 2687-5365; ISSN (P): 2753-6556

6 patients (12%), based on Hanallah scale assessment, and Emergence delirium was identified in 3 patients (6%), using the PAED score. These findings indicate that hemodynamic fluctuations and respiratory complications were relatively common in the perioperative period, underscoring the importance of vigilant monitoring and targeted anesthetic management in pediatric otolaryngologic surgeries.

Aleksandrovich YS et al. conducted a study to identify predictors of perioperative complications in children aged 7 to 17 years undergoing ambulatory ENT surgeries. A total of 141 patients were classified into three groups based on complication frequency: no complications (n=64), one complication (n=55), and two or more complications (n=22). Evaluations included preoperative clinical status, nasal airflow (via rhinomanometry), somnography in 31 children, and heart rate variability. Intraoperative complications primarily involved desaturation (SpO_2 < 90%), while postoperative events were dominated by pain, nausea, and vomiting, marking these as the most prevalent complications in respective phases of care.[10]

Misha et al. conducted a large-scale retrospective analysis of 115,214 pediatric patients who underwent tonsillectomy and adenoidectomy (T&A) across various facility types in California between 2005 and 2010. Using inpatient and ambulatory datasets, the study compared airway, respiratory, and cardiovascular complications across hospitals, hospital-based facilities (HBFs), and free-standing surgical facilities (FSFs). Results showed that inpatients had higher comorbidity burdens and complication rates—2 to 5 times greater than HBFs and over 10 times higher than FSFs. Complication risk varied significantly with age and setting, with children aged 0–9 years, especially those under 1 year, being at highest risk for airway events. T&A was independently associated with elevated complication rates in both settings, with an odds ratio of 8.5 for respiratory complications in ambulatory centers. The study emphasizes caution in performing T&A in high-risk pediatric populations, particularly in outpatient environments.[11]

CONCLUSION

Perioperative cardiovascular and respiratory complications are not uncommon in pediatric otolaryngologic surgeries. Careful preoperative evaluation and vigilant anesthetic monitoring are essential to ensure safe outcomes.

REFERENCES

1. Fearon B, Whalen JS. Tracheal dimensions in the living infant: preliminary report. Ann Otol Rhinol Laryngol. 1967;76:965–74.
2. Weiss M, Knirsch W, Kretschmar O, et al. Tracheal tube-tip displacement in children during head-neck movement: a radiological assessment. Br J Anaesth. 2006;96:486–9.
3. Fink BR. The etiology and treatment of laryngeal spasm. Anesthesiology. 1956;17:59–577.
4. Wheeler M, Cote CJ, Todres ID. The pediatric airway. In: Cote CJ, Lerman J, Todres ID, editors. A Practice of Anesthesia for Infants and Children. 4th ed. Philadelphia: Saunders; 2009. p. 237–78.
5. Roy WL, Lerman J. Laryngospasm in paediatric anaesthesia. Can J Anaesth. 1988;35:93–8
6. Batra YK, Ivanova M, Ali SS, et al. Efficacy of a subhypnotic does of propofol in preventing laryngospasm following tonsillectomy and adenoidectomy in children. Pediatr Anesth. 2005;15:1094–7.
7. Feld LH, Negus JB, White PF. Oral midazolam preanesthetic medication in pediatric outpatients. Anesthesiology. 1990;73:831–4.
8. Rita L, Seleny FL, Mazurek A, et al. Intramuscular midazolam for pediatric preanesthetic sedation: a double-blind controlled study with morphine. Anesthesiology. 1985;63:528–31.
9. Wilton NC, Leigh J, Rosen DR, et al. Preanesthetic sedation of preschool children using intranasal midazolam. Anesthesiology. 1988;69:972–5.
10. Aleksandrovich YS, Rybianov VV, Pshenisnov KV, Razumov SA. Perioperative complications of pediatric otorhinolaryngological operations. Saudi J Anaesth. 2020 Oct-Dec;14(4):446-453
11. Misha Amoils, Kay W. Chang, Olga Saynina. Postoperative Complications in Pediatric Tonsillectomy and Adenoidectomy in Ambulatory vs Inpatient Settings. JAMA Otolaryngol Head Neck Surg. 2016;142;(4):344-350.

ISSN (O): 2687-5365; ISSN (P): 2753-6556