

A Retrospective Analysis of the Pattern of Tonsillectomy Indications in a Tertiary Care Hospitals

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Abstract:

Background: Tonsillectomy is one of the most frequently performed surgical procedures in otorhinolaryngology and continues to be an important surgical intervention for the treatment of recurrent tonsillar infections and obstructive airway disorders. In recent years, indications for tonsillectomy have also been changing, with obstructive indications becoming more prominent worldwide than infective indications. But there is regional difference still prevailing particularly in the tertiary care in India.

Objective: To study the trend of indications for tonsillectomy for 1 year period in a tertiary care hospital.

Methodology: The study was retrospective observational study carried out in the department of ENT, Netaji Subhas medical college and hospital, Bihar. Ninety-five patients who had undergone tonsillectomy over a period of one year were picked up from hospital records and analyzed using descriptive and inferential statistical techniques according to age, gender, indication of surgery, type of surgery and the occurrence of complications post-surgery.

Results: Most of the patients were in the pediatric age group and there was a slight male predominance. Recurrent tonsillitis and obstructive sleep apnea/sleep-disordered breathing were the most frequent indications, followed by chronic tonsillitis. Obstructive symptoms were more frequently seen in younger children and infective causes were more frequently seen in older children. The most common procedure was tonsillectomy and complications following the surgery were few.

Conclusion: The study identifies infective indications as the major indication for tonsillectomy in this tertiary care hospital, and suggests importance of regional evaluation, which will help in clinical decision making and patient management.

Keywords: Tonsillectomy, Recurrent Tonsillitis, Obstructive Sleep Apnea, Pediatric ENT, Surgical Indications.

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Introduction

In most otorhinolaryngology practices, tonsillectomy is one of the oldest and most commonly performed surgical procedures, following appendectomy globally as the second most common surgery [1]. It consists of the removal of palatine tonsils and has been a fundamental surgical treatment for all types of diseases involving palatine tonsils for more than 2000 years. The practice of tonsillectomy has a history of more than 2000 years, but its use was not widespread since the patients had to suffer the consequences of a poorly performed surgery, inadequate anesthesia and life-threatening post-operative complications, including hemorrhage and infection [2]. In the 20th century, however, surgical techniques, anesthetic and postoperative management have advanced to a remarkable degree, making tonsillectomy a much safer procedure and leading to a significant increase in clinical use.

The focal infection theory during the early 20th century, which suggested that chronic tonsillar infection may be a cause for systemic disease, had a significant influence on the widespread acceptance of tonsillectomy at the time [3]. In this time, repeated tonsillitis was regarded as the main reason for performing tonsillectomy. Pre antibiotic era repeated infections of tonsils frequently caused serious morbidity and surgery would be indicated as the treatment [4]. The management of recurrent tonsillitis changed considerably, however, since the discovery and use of antibiotics, and the incidence of tonsillectomy for infectious indications dropped.

This shift has also led to some concerns about the need for tonsillectomy in numerous clinical situations. To address these concerns, evidence-based clinical guidelines were developed to ensure consistency of indications for surgery. Of these, the Paradise criteria were the most widely accepted method

for decision making in recurrent tonsillitis [5]. Based on these criteria, tonsillitis is an indication for tonsillectomy if it has occurred seven or more times per year for one year; five or more times a year for two years; or three or more times a year for three years. These criteria underscored the need for careful patient selection and stressed the need for watchful waiting in patients with less frequent episodes because of the high likelihood of spontaneous resolution of symptoms [6].

Several modifying factors may explain the need for tonsillectomy even if the strict criteria are not fulfilled, apart from recurrent tonsillitis. These include recurrent peritonsillar abscess, syndromic conditions like periodic fever, aphthous stomatitis, pharyngitis and adenitis (PFAPA) syndrome [7] and multiple antibiotic allergies. All of this adds to the difficulty of clinical judgment in the decision to perform tonsillectomy and the importance of personalizing that decision.

During the last 20 years, there has been a significant change in the indications for tonsillectomy. Recently, the prevalence of sleep-disordered breathing (SDB) and obstructive sleep apnea (OSA) has been established as the primary reason for tonsillectomy, especially in children [8]. Hyperplastic tonsils are a major cause of upper airway obstruction, which leads to clinical problems like chronic snoring, mouth breathing, poor sleep, witnessed sleep apnoea and daytime behavioral changes [9]. Untreated, OSA in childhood has also been associated with cardiovascular problems, growth delay, hyperactivity, and poor school performance [10]. When that happens, the benefits of adenotonsillectomy in these cases has been demonstrated to have both quality of life and long-term health effects.

Though not a particularly complex procedure, tonsillectomy is linked to a number of health care costs, postoperative pain, and possible complications including bleeding, infection, dehydration, and anesthesia complications [11]. Hence, it is crucial to know the actual indications and evolving trends of tonsillectomy to achieve better patient care and utilization of resources. Furthermore, epidemiology can be different depending on geographical setting, health infrastructure, social economic factors, and disease burden.

Chronic tonsillar diseases and airway related diseases continue to be a significant burden in India, especially in tertiary care centers, because of the following factors: recurrent upper respiratory infections, delayed health seeking behavior, and poor socioeconomic status conditions [12]. But there are limited data at the regional level to assess the trends and patterns of indication of tonsillectomy. This knowledge gap is particularly significant in Bihar, where tertiary healthcare facilities deliver care to a substantial population in both urban and rural areas.

Netaji Subhas Medical College and Hospital, Amhara, Bihta, Patna, Bihar is a major tertiary care hospital with a wide range of ENT disorders among which tonsillar disorders are also included. Review of the cases of tonsillectomy in this institution in a retrospective manner would give good insight into the indications of the surgery as well as the demographic distribution and the emerging trends in this region. This information can help in making clinical decisions and can help to ensure that local practice is in line with evidence-based guidelines.

Hence, the present study is entitled A Retrospective Analysis of Tonsillectomy Indications at Netaji Subhas Medical College and Hospital, Bihar in order to analyze the indications for tonsillectomy over the one-year period at Netaji Subhas Medical College and Hospital, Bihar. This study will help determine if tonsillitis continues to be the predominant diagnosis or if obstructive airway disorders have emerged as a more common diagnosis in this tertiary care center.

Methodology

Study Design: This study was designed as a hospital-based retrospective observational study to analyze the pattern of indications for tonsillectomy among patients who underwent surgery in the Department of ENT at Netaji Subhas Medical College and Hospital. A retrospective design was chosen as it allows assessment of previously recorded clinical data to identify trends and patterns of surgical indications over a defined period.

Study Area: The study was conducted in the Department of Otorhinolaryngology (ENT), Netaji Subhas Medical College and Hospital, Amhara, Bihta, Patna, Bihar, India.

Study Duration: The study covered a period of one year from November 2024 to October 2025.

Sample Size: The total sample size for the study was 95 patients (N = 95) who underwent tonsillectomy during the one-year study period.

Sample Population: The study population consisted of all patients who underwent tonsillectomy in the Department of ENT during the study period, irrespective of age and gender. Patients were evaluated clinically by ENT specialists, and surgical intervention was planned based on standard clinical indications.

Data Collection: Data were collected retrospectively from medical records, operative registers, inpatient case files, and outpatient records of patients who underwent tonsillectomy in the Department of ENT at Netaji Subhas Medical College and Hospital during the one-year study period. Information regarding age, gender, clinical presentation, diagnosis, and primary indication for tonsillectomy was recorded using a structured proforma. Patients were

categorized based on indications such as recurrent/chronic tonsillitis, obstructive symptoms, combined tonsillitis with obstruction, peritonsillar abscess, and other causes. The collected data were reviewed for completeness and accuracy before statistical analysis.

Inclusion Criteria

The following patients were included in the study:

- Patients of all age groups and both sexes who underwent tonsillectomy during the study period.
- Patients with complete clinical and operative records.
- Patients who underwent tonsillectomy for documented clinical indications.

Exclusion Criteria

The following were excluded:

- Patients with incomplete or missing medical records.
- Patients who underwent adenoidectomy alone without tonsillectomy.
- Patients who underwent revision tonsillectomy.
- Patients with emergency airway procedures unrelated to tonsillar pathology.

Procedure: After obtaining ethical clearance, hospital records of all patients who underwent tonsillectomy during the study period were retrieved. Each case was reviewed systematically for demographic details, presenting complaints, clinical diagnosis, and operative indications.

Patients were then classified into indication groups based on their primary diagnosis. The frequency and percentage distribution of each indication were calculated. Age-wise and gender-wise distribution of indications were also analyzed to identify any demographic association with the pattern of tonsillectomy.

Statistical Analysis: The collected data were entered into Microsoft Excel and analyzed using IBM SPSS Statistics version 25.0.

Descriptive statistical methods were used for analysis:

- Frequency and percentage were used for categorical variables.
- Mean and standard deviation (SD) were calculated for continuous variables such as age.

Inferential statistics included:

- Chi-square test to determine the association between categorical variables such as age group, gender, and surgical indication.
- A p-value < 0.05 was considered statistically significant".

Result

Table 1 shows the age-wise distribution of patients who underwent tonsillectomy during the study period. Out of the total 95 patients, the majority belonged to the 6–10 years age group (41.1%), followed by 11–15 years (25.3%) and 0–5 years (18.9%). Patients aged 16–20 years accounted for 10.5%, while only 4.2% were above 20 years of age. This indicates that tonsillectomy was most commonly performed in school-aged children.

Age Group (Years)	Frequency (n)	Percentage (%)
0–5 years	18	18.9
6–10 years	39	41.1
11–15 years	24	25.3
16–20 years	10	10.5
>20 years	4	4.2
Total	95	100

Table 2 depicts the gender distribution of the study population. Among the 95 patients, 52 (54.7%) were males and 43 (45.3%) were females, showing a

slight male predominance in patients undergoing tonsillectomy during the study period.

Gender	Frequency (n)	Percentage (%)
Male	52	54.7
Female	43	45.3
Total	95	100

Table 3 demonstrates the primary indications for tonsillectomy. The most common indication was recurrent tonsillitis, accounting for 44.2% of cases, followed by obstructive sleep apnea/sleep-disor-

dered breathing (29.5%). Chronic tonsillitis constituted 14.7% of the cases. Less common indications included peritonsillar abscess (6.3%), suspicion of malignancy (3.2%), and other causes (2.1%). These

findings suggest that infective causes remain the leading indication for tonsillectomy.

Table 3: Primary Indications for Tonsillectomy

Indication	Frequency (n)	Percentage (%)
Recurrent Tonsillitis	42	44.2
Obstructive Sleep Apnea / SDB	28	29.5
Chronic Tonsillitis	14	14.7
Peritonsillar Abscess	6	6.3
Suspicion of Malignancy	3	3.2
Others	2	2.1
Total	95	100

Table 4 shows the distribution of tonsillectomy indications according to gender. Recurrent tonsillitis was more commonly observed among females (22 cases) compared to males (20 cases). On the other hand, obstructive sleep apnea/sleep-disordered breathing was more frequent among males (18

cases) than females (10 cases). Chronic tonsillitis and peritonsillar abscess showed relatively comparable distribution between both genders. This suggests a gender-based variation in the pattern of indications.

Table 4: Indications According to Gender

Indication	Male (n=52)	Female (n=43)	Total
Recurrent Tonsillitis	20	22	42
OSA/SDB	18	10	28
Chronic Tonsillitis	8	6	14
Peritonsillar Abscess	4	2	6
Suspicion of Malignancy	1	2	3
Others	1	1	2
Total	52	43	95

Table 5 illustrates the age-wise distribution of various tonsillectomy indications. In younger children (0–5 years), obstructive sleep apnea/sleep-disordered breathing was the most common indication (11 cases), whereas in the 6–10 years and 11–15 years age groups, recurrent tonsillitis was the pre-

dominant cause. Chronic tonsillitis was more evenly distributed across age groups, while suspicion of malignancy was mainly seen in older age groups. This indicates that obstructive causes are more common in younger children, while infective causes predominate in older children and adolescents.

Table 5: Indications According to Age Group

Age Group	Recurrent Tonsillitis	OSA/SDB	Chronic Tonsillitis	Peritonsillar Abscess	Suspicion of Malignancy	Others	Total
0–5 years	4	11	2	1	0	0	18
6–10 years	20	12	4	2	1	0	39
11–15 years	13	4	5	1	0	1	24
16–20 years	4	1	2	1	1	1	10
>20 years	1	0	1	1	1	0	4
Total	42	28	14	6	3	2	95

Table 6 shows the types of surgical procedures performed. The majority of patients (64.2%) underwent tonsillectomy alone, while 30.5% underwent adenotonsillectomy. A smaller proportion (5.3%) un-

derwent biopsy tonsillectomy, mainly for diagnostic purposes in suspicious lesions. This reflects that isolated tonsillar pathology was the most frequent surgical indication.

Table 6: Type of Tonsillectomy Performed

Procedure Type	Frequency (n)	Percentage (%)
Tonsillectomy Alone	61	64.2
Adenotonsillectomy	29	30.5
Biopsy Tonsillectomy	5	5.3
Total	95	100

Table 7 presents the postoperative complications observed among the study population. Most patients (87.4%) had an uneventful postoperative recovery. The most common complication was postoperative

hemorrhage (6.3%), followed by pain requiring admission (4.2%) and infection (2.1%). Overall, the complication rate was low, indicating that tonsillectomy remains a relatively safe surgical procedure.

Table 7: Postoperative Complications		
Complications	Frequency (n)	Percentage (%)
None	83	87.4
Hemorrhage	6	6.3
Pain requiring admission	4	4.2
Infection	2	2.1
Total	95	100

Discussion

The present retrospective study aims to assess the indications for tonsillectomy during a 1-year period in a tertiary care center and revealed that tonsillectomy is still one of the most common otorhinolaryngological procedures. The age group of 6-10 years was the largest (41.1%) group in the study, followed by 11-15 years (25.3%), which means that the majority of patients who have tonsillectomy are school aged children. This finding corresponds to that of Patel et al. [13] who found the median age of tonsillectomy to be 6 years and Potts et al. [14] who found the mean age of tonsillectomy to be 6.3 years. This is likely due to higher exposure to RUTIs and greater awareness of obstructive symptoms in this age group”.

The present study showed a slight male predominance with males accounting for 54.7% of the cases, similar to the findings of Patel et al. who reported a male predominance of 52%. Likewise, Erickson et al. [8] reported higher rates of tonsillectomy in males especially in younger age groups. This male predominance may be associated with higher prevalence of sleep-disordered breathing and/or habitual snoring in boys as reported in previous studies [15].

As far as indication is concerned, recurrent tonsillitis appeared to be the most prevalent indication in the present study with 44.2% of all cases, whereas obstructive sleep apnea/sleep-disordered breathing came second with 29.5% of cases. This is not in line with Patel et al. where OSA/SDB was the larger proportion at 67% while recurrent tonsillitis was a smaller proportion. Recurrent tonsillitis was the predominant condition in the current study, which could be attributed to regional variations in disease burden, delayed seeking health care and resistance to antibiotics. Bhattacharyya and Lin [16] reported that tonsillitis was responsible for 62% of tonsillectomies in 1996, and decreased to 26% in 2006, marking the worldwide trend toward obstructive indications. The results presented here, however, indicate that infective indications are still common in the developing world.

Chronic tonsillitis made up 14.7% of the cases in the present series, and peritonsillar abscess and suspicion of malignancy made up the smaller percentages (6.3% and 3.2%, respectively). In a similar study, Ahmed et al. [17] noted that chronic infective disease was still an important cause of tonsillectomy. Elderly age group as a part of our study indicates the need for histopathologic analysis in selected patients particularly in adults with asymmetrical tonsillar enlargement in view of the malignancy-related indications.

The distribution of indications by gender showed that there was an increase in cases of recurrent tonsillitis in females (22 cases) compared to males (20 cases); however, there was a higher number of cases of OSA/SDB in males (18 cases) compared to females (10 cases). This finding is similar to that of Erickson et al. who found that females were more likely to have had tonsillectomy for infective indications, while males were more likely to have had tonsillectomy for obstructive indications. The results of this study were confirmed by Parker et al. who reported similar results, consistent with the hypothesis that airway obstruction is more prevalent in male children.

When age-specific analysis was performed, OSA/SDB was the most common indication in younger children (0-5 years, 61.1%) and recurrent tonsillitis was more common in older children, particularly ages 6-10 years and 11-15 years. This was similar to that of Parker et al. who found obstruction was the commonest indication in children under 3 years and tonsillitis increased with age. The study by Werle et al., [18] however, showed a higher prevalence of tonsillitis in children younger than 2 years of age, which is not in line with our study or Patel et al. This difference could be due to demographic or clinical practice variation.

Surgical procedures included only tonsillectomy in 64.2% of patients, and adenotonsillectomy in 30.5%. This could be attributed to the higher prevalence of recurrent infective indications in this study, since the number of isolated tonsillectomies is higher. Studies with a majority of OSA/SDB, how-

ever, have found higher adenotonsillectomy rates. This relates to the close association of adenoidal hypertrophy with paediatric airway obstruction.

In the current study, the postoperative complications were mild with a recovery rate of 87.4% being uneventful. The most frequent complication was postoperative bleeding (6.3%), followed by pain that needed hospitalization (4.2%) and infection (2.1%). The complication rates observed are similar to those reported by Windfuhr and Chen [19] which were between 2% and 7% hemorrhage. Our study showed a low rate of complications, which indicated that tonsillectomy is a safe and effective procedure with the appropriate surgical technique.

The results of the present study show that tonsillitis is still the main indication for tonsillectomy in our institution, although the trend worldwide is shifting towards obstructive indications. This suggests that regional variations continue to play an important role in determining surgical patterns.

Conclusion

The authors of the present study conclude that tonsillectomy is still a very common surgical procedure performed in ENT tertiary care services and especially on the pediatric population. The results suggest that although there is a rising trend towards obstructive indications like sleep-disordered breathing in the world, infective indications like recurrent and chronic tonsillitis continue to be the leading indications for tonsillectomy and adenoidectomy in our institution. Overall, there was a significant difference in the indications in various age groups and sexes indicating that clinical presentation and disease pattern could vary by demographic. The study further notes that as long as it is done according to standard procedures, tonsillectomy is a safe and effective procedure with few postoperative complications. Overall, this retrospective analysis emphasizes the importance of region-specific evaluation of tonsillectomy indications, which can help in improving patient selection, optimizing treatment strategies, and aligning surgical practices with evidence-based guidelines.

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