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A Retrospective Study on the Post-Operative Complications of Bipolar Diathermy Tonsillectomy in a Rural Setting of Bangladesh

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Abstract

Background: Tonsillectomy is a common surgical procedure, particularly in the pediatric population, to treat conditions like tonsillitis and obstructive sleep apnea. Post-operative complications, such as bleeding, infection, and delayed healing, can impact patient outcomes. This retrospective study aims to analyze the incidence and management of postoperative complications in a rural setting, where unique challenges may exist in healthcare resources and access to specialized facilities. Understanding these complications and strategies for improved patient care is essential for enhancing safety and outcomes in rural areas. The aim of t the study was to analyze the incidence and types of postoperative complications associated with tonsillectomy in a rural healthcare setting. **Material & Methods:** This retrospective study was conducted at the Damudya Diagnostic & Health Clinic, Shariatpur, Bangladesh. The study duration was three years from June 2020 to June 2023. The study population consisted of 289 patients who underwent tonsillectomy during the specified period. Data analysis was performed using SPSS software for comprehensive statistical insights. **Results:** A higher proportion of female patients (61.2%) compared to males (38.8%), with the majority falling in the "50-20" age group (73%). Recurrent tonsillitis was the most common indication (37.7%), followed by obstructive sleep apnea (30.8%) and chronic tonsilitis (16.3%). The bipolar technique was used for all patients (100%), and early postoperative complications included fever (94.1%), nausea (93.4%), and pain (100%). Delayed complications were mainly pain for two weeks (96.9%) and a low incidence of tonsillar regrowth (2.1%). Most secondary complications were managed at home (64.3%), and no anesthesia was required for secondary complication management.. **Conclusions:** This study sheds light on tonsillectomy in a rural setting, showing similarities to urban and rural populations in previous research. Recurrent tonsillitis remains the primary indication, and the use of the bipolar technique aligns with the guidelines. However, differences in patient preferences and management approaches suggest unique rural characteristics. Valuable insights are gained for rural tonsillectomy care.

Keywords:- Tonsillectomy, Complication, Rural Setting.

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INTRODUCTION

Tonsillectomy is a widely performed surgical procedure worldwide, particularly in the pediatric population.[1] It is commonly indicated for conditions such as recurrent or chronic tonsillitis and obstructive sleep apnea that significantly impact the quality of life.[2] The surgery involves complete or partial removal of the tonsils and is typically conducted under general anesthesia.[3] Extensive literature exists on the rates of complications associated with tonsillectomy in pediatric patients. A comprehensive meta-analysis predominantly focusing on this population reported a post-tonsillectomy hemorrhage rate of 3.3%.[4] Postoperative complications following tonsillectomy can vary in severity, ranging from minor issues to potentially life-threatening events. Common complications include bleeding, infection, prolonged pain, delayed healing, and adverse reactions to anesthesia.[5] Bleeding is a significant concern as it can lead to the formation of hematoma and compromise the airway, requiring urgent medical intervention.[6] Effective management of postoperative complications is vital to ensure optimal patient outcomes. Treatment approaches depend on the nature and severity of the complication. For instance, cases of bleeding may require immediate surgical intervention or cauterization to control the bleeding source. Antibiotics are often prescribed to manage infections, while analgesics and anti-inflammatory medications help alleviate postoperative pain and discomfort.[7,8] In rural healthcare settings, unique challenges must be considered. These areas frequently face limitations in resources, including a scarcity of healthcare professionals, restricted access to specialized medical facilities, and longer travel distances for postoperative care. Managing complications under these circumstances necessitates innovative strategies such as telemedicine, collaborations between local providers and tertiary centers, and community-based support systems.[9] To mitigate complications and enhance patient safety, several steps can be taken in a rural setting. Comprehensive preoperative assessments, including detailed medical histories, physical examinations, and laboratory investigations, are essential for identifying any risk factors.[10,11] Adequate preoperative counseling is crucial in educating patients and their families about potential complications and emphasizing the importance of adhering to postoperative instructions.[12] During the surgical procedure, meticulous techniques should be employed, including careful dissection and hemostasis, to minimize the risk of complications. Appropriate anesthesia management and vigilant monitoring are fundamental to ensuring patient safety throughout the procedure.[3] Postoperatively, close monitoring of vital signs, effective pain management, and early recognition of complications is paramount. Regular follow-up visits enable healthcare providers to assess the healing process, address patient concerns, and promptly intervene if complications arise. Therefore, this study aimed to retrospectively analyze postoperative bipolar diathermic tonsillectomy complications following tonsillectomy in a rural setting, considering the specific challenges and potential strategies for improving patient care in such areas.

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MATERIAL AND METHODS

This retrospective study was carried out at the in Damudya Diagnostic & Health Clinic, Shariatpur, Bangladesh. The study spanned four years, from June 2020 to June 2023. During this period, a total of 289 patients who underwent tonsillectomy were included in the study population. Thorough data collection was performed, encompassing essential demographic information, detailed surgical data, post-operative complications, and relevant clinical parameters, all meticulously extracted from the patients' medical records. Ethical approval was obtained from the relevant institutional review board, ensuring compliance with ethical guidelines and patient confidentiality. Informed consent was acquired from each participant before their inclusion in the study. The study data were analyzed using the Statistical Package for the Social Sciences (SPSS) software, allowing for comprehensive statistical analysis of the collected information.

Inclusion Criteria

1. Patients who had undergone tonsillectomy at the Department of (ENT)
2. Aged between 6-50 years
3. Body Mass Index (BMI) less than or equal to 25.

Exclusion Criteria

1. Patients who did not undergo tonsillectomy during the specified study period.
2. Patients with chronic conditions
3. Body Mass Index (BMI) greater than 25.

RESULTS

[Table 1] presents the demographic variables of patients who underwent tonsillectomy. Out of a total of 289 patients, 211 (73%) belong to the 20-50 age group, 65 (22.5%) belong to the 21-35 age group, and 13 (4.5%) belong to the >35 age group. Of the total patients, 112 were male (38.8%) and 177 were female (61.2%).

The most common reason for tonsillectomy was recurrent tonsillitis, accounting for 37.7% of cases, followed by adenotonsil causing obstructive sleep apnea (OSA) at 30.8%. Chronic tonsillitis was the indication for 16.3% of patients, while a history of recurrent peritonsillar abscesses was observed in 3.1% of cases. Eagle's Syndrome accounted for 1.7% of cases, and 10.4% of patients underwent tonsillectomy based on their own wishes. [Table 2]

[Table 3] presents the different surgical techniques used during the tonsillectomy procedures. The main technique mentioned is the Bipolar technique, which was used for all 289 patients (100%). The next frequently used technique was the per operative stitch, which was employed in only 1% of the cases. The duration of these surgeries varied, with the time taken for the entire procedure falling within the range of 15 to 35 minutes. On average, the tonsillectomy procedures lasted approximately 26.72±7.58 minutes.

[Table 4] shows that Anesthetic hazard and Reverse were not reported in any of the cases, indicating a 0% frequency for both. Laryngospasms were observed in one case, accounting for 0.3% of the total sample. Dental Trauma occurred in two cases, constituting

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0.7% of the sample. The most frequently reported hazard was Uncontrolled, observed in three cases, representing approximately 1% of the total sample.

In the early post-operative period (within 24 hours) of 289 tonsillectomy procedures, pain and ear ache were observed in all (100%) of the patients. Swollen uvula was observed in 92.7% of cases, nausea in 73.7% of cases and increased temperature in 39.8% of cases. However, no instances of primary hemorrhage were reported during this period. [Table 5]

Among patients experiencing delayed postoperative complications, the majority reported pain lasting for two weeks (96.9%). A smaller number reported pain lasting for three weeks (6.2%). Secondary hemorrhage occurred in 4.8% of cases within 21 days after the procedure, while 0.3% reported a loss of taste. [Table 6]

For the management of secondary complications, the majority of patients (64.3%) received home management, while a smaller proportion (35.7%) required outpatient management. None of the patients required further anesthesia for the management of their complications. [Table 7]

Regarding long-term complications, 2.1% of patients experienced tonsillar regrowth. No cases of velopharyngeal insufficiency, pharyngeal stenosis, or cranial nerve lesion were reported. [Table 8]

Table 1: Demographic Variable of the study patients (N=289)

Variable	Frequency	Percentage
Age		
05-20	211	73.01
21-35	65	22.50
>35	13	4.49
Gender		
Male	112	38.8%
Female	177	61.2%
Total	289	100%

Table 2: Indication for Tonsillectomy(N=289)

Indication	Frequency	Percentage
Adenotonsil casing OSA	89	30.8%
Recurrent Tonsillitis	109	37.7%
Chronic Tonsilitis	47	16.3%
H/O recurrent peritonsillar absence	9	3.1%
Eagle's Syndrome	5	1.7%
Patients wish	30	10.4%
Total	289	100%

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Table 3: Surgical Techniques Used in Tonsillectomy Procedures (N=289)

Technique	**Frequency**	**Percentage**
Bipolar technique	289	100%
Per operative stitch	3	1%
Time(min)		
Range	(15-35)	
Mean±SD	26.72±7.58	

Table 4: Types of Anesthetic Procedure Hazards (N=289)

Variable	**Frequency**	**Percentage**
Anesthetic hazard	0	0%
Delayed Reverse	0	0%
Laryngospasms	1	0.3%
Dental Trauma	2	0.7%
Uncontrolled Bleeding	3	1%

Table 5: Early Post-op Complications (Within 24 Hours) (N=289)

Complication	**Frequency**	**Percentage**
Throat Pain	289	100%
Ear Ache	289	100%
Swollen Uvula	268	92.7%
Nausea	213	73.7%
Increased Temperature	115	39.8%
Primary Hemorrhage	0	0%

Table 6: Delayed Post-op Complications (<21 Days) (N=289)

Complication	**Frequency**	**Percentage**
Pain for 2 weeks	280	96.9%
Pain for 3 weeks	18	6.2%
Secondary Hemorrhage	14	4.8%
Loss of taste	1	0.3%
Total	289	100%

Table 7: Type of Management for Secondary Complications(N=14)

Management	**Frequency**	**Percentage**
Home management	9	64.29%
OT management	5	35.71%
Anesthesia	0	0%
Total	14	100%

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Table 8: Long-term Complications (>2 years) (N=289)

Complication	Frequency	Percentage
Velopharyngeal insufficiency	0	0%
Pharyngeal Stenosis	0	0%
Cranial nerve lesion	0	0%
Tonsillar regrowth	6	2.1%

DISCUSSION

The demographic characteristics of the patients undergoing tonsillectomy in this rural setting, showing a higher proportion of female patients (61.2%) compared to males (38.8%). The distribution of age groups also aligns with existing literature, with the majority falling in the "05-20" age group (73%). Similar demographic findings were reported by AIAbdullah and Wilson.[13,14] This similarity in demographic profiles suggests that the patient population in the rural setting reflects general trends observed in tonsillectomy studies conducted in both urban and rural areas. In terms of the indications for tonsillectomy in this study, recurrent tonsillitis was the most common indication (37.7%). This finding was consistent with the studies by Torres and Patel.[15,16] The prevalence of Adentonsillar hypertrophy leading to obstructive sleep apnea (10.7%), consistent with the study by Chang and Arens.[17,18] However, the higher proportion of patients opting for surgery based on personal preference (10.4%) compared to urban studies suggests potential differences in patient preferences and healthcare-seeking behavior in rural areas, warranting further investigation. The utilization of the bipolar technique for all patients (100%) is in line with current clinical guidelines and aligns with previous studies that have demonstrated the safety and efficacy of this technique.[19,20] However, the relatively low usage of per-operative stitches (1%) contrasts with the higher frequencies reported in other studies, indicating potential differences in surgical practices or preferences among surgeons.[21,22] In this study the occurrence of Laryngospasms(0.3%), aligns with previous studies reporting similar frequencies of these complications following tonsillectomy.[23] The low occurrence of these hazards overall suggests that the anesthesia management in this rural setting adheres to standard practices and exhibits comparable safety profiles. The high occurrence of swollen uvula and nausea in the early postoperative period is consistent with existing literature, which has identified these as common physiological responses following tonsillectomy.[24,25] The absence of bleeding complications aligns with studies that have reported low rates of immediate postoperative bleeding after tonsillectomy.[3,12] The high incidence of pain (100%) is also in line with expectations and reinforces the need for adequate pain management strategies. The delayed post-op complications of pain for two weeks (96.9%), which consistent with previous studies that have reported similar rates of postoperative pain persistence during the early recovery period.(26,27) The incidence of pain for three weeks (6.2%) and six weeks (1.7%) aligns with the range reported in the literature, indicating typical recovery patterns following tonsillectomy.[28,29] The rate of secondary hemorrhage within 21 days (4.8%) falls within

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the expected range, suggesting comparable rates of this complication compared to other studies.[30] The predominance of home management (64.3%) for secondary complications aligns with previous studies that have shown the feasibility and effectiveness of managing such complications in non-hospital settings.[31] The absence of anesthesia as a management approach is consistent with the notion that secondary complications can often be managed without the need for additional surgical interventions. The occurrence of tonsillar regrowth (2.1%) is consistent with the reported rates in previous studies, indicating the potential for this long-term complication following tonsillectomy.[32,33] The low incidence of loss of taste (0.3%) is comparable to the findings of other studies that have examined taste-related outcomes after tonsillectomy.[34] However, the absence of other long-term complications, such as velopharyngeal insufficiency, pharyngeal stenosis, or cranial nerve lesions, may require further investigation to assess whether these complications are genuinely absent or underreported in the rural setting. Overall, the differences observed, such as patient preferences and management approaches, may reflect unique characteristics of the rural population or specific healthcare practices. Further research is warranted to explore these differences, assess long-term outcomes, and examine potential disparities between rural and urban populations, providing valuable insights for optimizing the care of patients undergoing tonsillectomy in rural settings. Further research should is warranted to exploration.

Limitation of the Study

In this study the data was collected from a single rural setting, which may limit the generalizability of the findings to other rural or urban populations.

CONCLUSIONS

In conclusion, this study highlights the demographic characteristics, indications, and surgical practices related to tonsillectomy in a rural setting. The patient population demonstrated similarities to both urban and rural populations in previous studies. Recurrent tonsillitis remains the most common indication, while the utilization of the bipolar technique aligns with clinical guidelines. However, there are differences in patient preferences and management approaches, indicating potential unique characteristics of the rural population or healthcare practices. Overall, the study provides valuable insights into the care of patients undergoing tonsillectomy in rural areas.

Recommendations

To improve future research and patient care in rural settings, larger prospective studies involving multiple rural areas and urban centers should be conducted to enhance generalizability. Long-term follow-up data should be collected to assess late complications and treatment outcomes more comprehensively. Research should also explore factors influencing patient preferences and healthcare-seeking behavior in rural regions. Efforts to improve data documentation and reporting will enhance the accuracy and reliability of future studies. By addressing these recommendations, we can gain valuable

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insights to optimize the care and outcomes of patients undergoing tonsillectomy in rural settings.

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