

Original Research Article

Post-tonsillectomy outcomes: a prospective analysis of morbidities in 70 patients

Farzana Hoque^{1*}, Mohammad Kamran Akhtar²

¹Department of ENT-Head and Neck Surgery, Medical College for Women and Hospital, Dhaka, Bangladesh

²Medical Officer National Institute of Cancer Research and Hospital (NICRH), Dhaka, Bangladesh

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*Correspondence:

Dr. Farzana Hoque,

E-mail: kariul@hotmail.com

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ABSTRACT

Background: Tonsillectomy is one of the most commonly performed surgical procedures in otolaryngology. Despite its routine nature, postoperative morbidities remain a significant concern for both surgeons and patients. Objective was to prospectively analyze the outcomes of tonsillectomy with a specific focus on the spectrum and frequency of early postoperative morbidities following cold dissection tonsillectomy.

Methods: This prospective study was conducted at the department of otolaryngology-head and neck surgery, Medical College for Women and Hospital, Dhaka, from July to December 2010. A total of 70 patients undergoing tonsillectomy for recurrent tonsillitis were enrolled using purposive sampling. Pain was assessed using a 0-10 numeric rating scale. Data were analyzed by SPSS version 23.0.

Results: Among 70 patients, females predominated (61.43%), with the highest proportion aged 21-30 years (38.57%). Most operations (50%) lasted 20-30 minutes. Senior surgeons performed 42.86% of procedures. On postoperative day 1, dysphagia was the most frequent morbidity (68.57%), followed by otalgia (12.86%) and nausea or vomiting (2.86%). Instrumental injuries occurred in 14.29% of patients. Secondary hemorrhage occurred in one patient (1.43%) on day 6. On postoperative day 7, throat pain persisted in 28.57%, dysphagia in 22.86%, and otalgia in 20%. Pain scores showed 17 patients scoring 5/10 on day 1, reducing to 30 patients scoring 1/10 by day 7.

Conclusions: Dysphagia and pain are the predominant early morbidities following cold dissection tonsillectomy. Instrumental injuries remain notable, particularly with less experienced surgeons. Secondary hemorrhage is rare but requires vigilance.

Keywords: Dysphagia, Hemorrhage, Pain measurement, Postoperative period, Tonsillectomy

INTRODUCTION

Tonsillectomy, the surgical removal of the palatine tonsils, remains one of the most frequently performed procedures in otolaryngology practice worldwide.¹ The operation is indicated primarily for recurrent episodes of bacterial tonsillitis that are disabling and prevent normal functioning, as well as for obstructive sleep-disordered breathing in children, peritonsillar abscess, and other less common conditions.^{2,3} Despite being viewed relatively as a low-risk procedure, tonsillectomy carries inherent potential for postoperative morbidity that continues to concern both surgeons and patients.⁴ The spectrum of post-

tonsillectomy morbidities is diverse, ranging from expected sequelae such as pain and dysphagia to more serious complications, including hemorrhage, which accounts for approximately one-third of all adverse events following this surgery.⁵ Pain is universally experienced after tonsillectomy and remains the primary driver of patient dissatisfaction, delayed recovery, and secondary complications such as dehydration from reduced oral intake.¹ Dysphagia, or difficulty swallowing, represents another near-universal but often underreported morbidity that can persist well beyond the immediate postoperative period.⁶ Hemorrhage, while less frequent, commands the greatest clinical attention due to its potential severity. Post-

tonsillectomy hemorrhage is classified as primary (reactionary) when occurring within 24 hours of surgery, typically resulting from inadequate intraoperative hemostasis, or secondary when occurring beyond 24 hours, usually due to infection or sloughing of the eschar.⁷ The reported incidence of post-tonsillectomy hemorrhage varies considerably across studies, ranging from 0.12% to 18%, with secondary hemorrhage being more common than primary.⁵ A large population study from Sweden covering 82,527 operations reported mortality after tonsil surgery at 0.006%.⁸ Instrumental injuries during tonsillectomy represent another category of complication that, while generally minor, can have significant implications. These include dislodged teeth, thermal injury to oral commissures, and trauma to the soft palate, uvula, pharyngeal pillars, or posterior pharyngeal wall.⁹ The incidence of such injuries is influenced by surgical technique, exposure, and operator experience.⁴ Surgeon experience has been identified as a significant factor influencing tonsillectomy outcomes.¹⁰ A retrospective analysis of 1,284 patients demonstrated that reactionary hemorrhage occurred significantly more frequently when operations were performed by trainees compared with consultants ($p=0.033$), with operative time and intraoperative blood loss being higher in the hemorrhage group.⁴ This underscores the importance of adequate surgical training and supervision. The cold dissection technique, employed in the present study, remains a standard approach against which newer technologies are compared. Unlike thermal techniques such as diathermy or coblation, cold dissection relies on sharp dissection with metallic instruments followed by hemostasis achieved through ligation or bipolar diathermy.¹ While this technique avoids thermal injury to surrounding tissues, the learning curve may be steeper, and intraoperative blood loss may be greater compared with electrocautery methods.⁴ Understanding the pattern, frequency, and risk factors for post-tonsillectomy morbidities is essential for improving patient selection, refining surgical technique, optimizing postoperative care protocols, and providing accurate preoperative counselling. This prospective study was therefore undertaken to analyze the outcomes of cold dissection tonsillectomy with a specific focus on early postoperative morbidities in a tertiary care teaching hospital setting.

METHODS

This prospective study was conducted at the department of otolaryngology-head and neck surgery, Medical College for Women and Hospital, Uttara, Dhaka, from July 1, 2010, to December 31, 2010. A total of 70 patients admitted for tonsillectomy were enrolled using a purposive sampling technique.

Inclusion criteria

All patients admitted for tonsillectomy for recurrent tonsillitis were included in the study.

Exclusion criteria

Patients with tonsillitis and enlarged adenoids were excluded. Additionally, patients admitted for tonsillectomy who also underwent other procedures such as submucosal diathermy, antral washout, turbinectomy, septoplasty, polypectomy, or submucosal resection were excluded.

Study procedure

All tonsillectomies were performed using the cold dissection technique under general anesthesia. Hemostasis was achieved using bipolar diathermy, ligature, or a combination of both. Data were collected using a structured questionnaire through patient interviews, clinical examination, investigation reports, and postoperative follow-up. Pain was assessed on the 1st and 7th postoperative days using a 0-10 numeric rating scale, where 0 represented no pain, and 10 represented the worst imaginable pain.¹⁰ Follow-up was conducted on postoperative day 1 and day 7.

Data analysis

Data were entered and analyzed using SPSS version 23.0. Descriptive statistics, including frequency, percentage, and mean, were calculated and presented in tables.

RESULTS

A total of 70 patients who underwent tonsillectomy were included in this prospective study. Female patients predominated, accounting for 61.43% of the study population, with a female-to-male ratio of approximately 1.6:1.

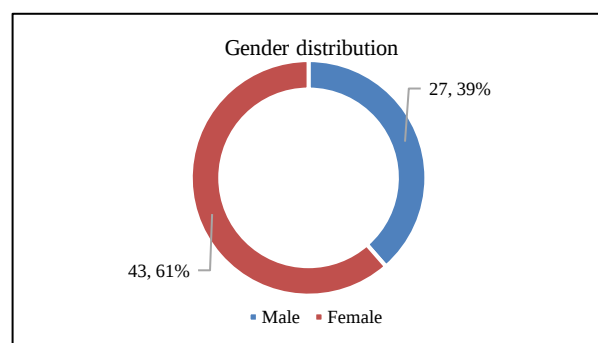


Figure 1: Gender distribution of participants (n=70).

The age distribution revealed that the maximum number of patients (38.57%) belonged to the 21-30 years age group, followed by 28.57% in the 11-20 years group. Patients aged 0-10 years and 31-40 years each constituted 14.28% of the sample, while the smallest proportion (4.29%) was in the 41-50 years age group. Regarding blood group distribution, O positive was the most prevalent (35.71%), followed by B positive (32.86%), A positive (22.86%), AB positive (5.71%), and O negative (2.86%).

Table 1: Duration of operation (n=70).

Duration (minutes)	N	%
Less than 20	7	10.00
20-30	35	50.00
31-40	12	17.14
41-50	12	17.14
51-60	4	5.71

Table 2: Duration of operation by surgeon experience.

Surgeons	N	Mean operative time
Resident surgeon	22	34.2 minutes
Junior surgeon	18	38.7 minutes
Senior surgeon	30	22.5 minutes

Operative duration analysis showed that half of the procedures (50%) were completed within 20-30 minutes. Procedures lasting less than 20 minutes accounted for 10%, while operations lasting 31-40 minutes and 41-50 minutes each represented 17.14%. Only 5.71% of operations required 51-60 minutes. Senior surgeons performed the majority of operations (42.86%), followed by resident surgeons (31.43%) and junior surgeons (25.71%). Analysis of operative duration by surgeon experience revealed that senior surgeons completed operations more efficiently, with a mean operative time of 22.5 minutes. Resident surgeons had a mean operative time of 34.2 minutes, while junior surgeons required the longest mean operative time of 38.7 minutes.

**Figure 2: Post tonsillectomy scab formation in the tonsillar fossae.****Table 3: Complications on the first postoperative day.**

Complications	N	%
Dysphagia	48	68.57
Instrumental injuries	10	14.29
Otalgia	9	12.86
Nausea and vomiting	2	2.86
Secondary hemorrhage	1	1.43

Note: Instrumental injuries included dislodged teeth (n=2), tongue injury (n=1), soft palate injury (n=1), uvula injury (n=1), pillar injury (n=4), and posterior pharyngeal wall injury (n=1).

Table 4: Complications on the seventh postoperative day.

Complications	N	%
Throat pain	20	28.57
Dysphagia	16	22.86
Otalgia	14	20.00
Edematous uvula	1	1.43

On the first postoperative day, dysphagia was the most frequently observed morbidity, affecting 68.57% of patients. Instrumental injuries occurred in 14.29% of patients, with pillar injuries being the most common (5.71%), followed by dislodged teeth (2.86%). Otalgia was reported by 12.86% of patients, while nausea or vomiting occurred in 2.86%. Secondary hemorrhage was documented in one patient (1.43%) on the sixth postoperative day. No reactionary hemorrhage was observed. On the seventh postoperative day, throat pain persisted in 28.57% of patients, dysphagia in 22.86%, and otalgia in 20%. Oedematous uvula was noted in one patient (1.43%). Pain score assessment showed marked improvement from the first to the seventh postoperative day. On the first postoperative day, the highest number of patients (17) had a pain score of 5, followed by 16 patients with a score of 0. On the seventh postoperative day, 30 patients reported a pain score of 1, 2 patients scored 2, and 2 patients scored 3, indicating substantial resolution of pain by one week after surgery.

Table 5: Pain score distribution on the first and seventh postoperative day.

Pain scores	1 st POD (N)	7 th POD (N)
0	16	0
1	0	30
2	0	2
3	0	2
4	10	0
5	17	0
6	12	0
7	6	0
8	2	0
9	0	0
10	0	0

POD: Postoperative day.

DISCUSSION

The present prospective study analyzed postoperative outcomes following cold dissection tonsillectomy in 70 patients, with particular emphasis on the spectrum and frequency of early morbidities. The findings demonstrate that while dysphagia and pain are nearly universal in the immediate postoperative period, most symptoms resolve substantially by the seventh postoperative day. The female preponderance observed in this study (61.43%) is consistent with previous reports.¹¹ This finding may be explained by the fact that the study was conducted at a

women's medical college hospital, where a higher proportion of female patients seek care. Additionally, females are known to seek medical attention for recurrent tonsillitis more frequently than males.¹² Regarding age distribution, the highest proportion of patients (38.57%) was in the 21-30 years age group, followed by 28.57% in the 11-20 years age group. This pattern aligns with the natural history of recurrent tonsillitis, which peaks in late childhood and early adulthood.¹³ The declining frequency in older age groups reflects the physiological involution of tonsillar tissue with advancing age.¹ Dysphagia was the most common morbidity on the first postoperative day, affecting 68.57% of patients. This finding is comparable to previous studies reporting post-tonsillectomy dysphagia in 60-75% of patients.^{6,14} The etiology of post-tonsillectomy dysphagia is multifactorial, involving pain-induced avoidance of swallowing, local edema, and possible neuropraxia of the glossopharyngeal nerve.⁶ By the seventh postoperative day, dysphagia decreased to 22.86%, indicating gradual resolution. Instrumental injuries occurred in 14.29% of patients, which is higher than the 3-8% reported in some series.^{15,16} This discrepancy may be attributed to the inclusion of minor injuries such as mucosal tears and the fact that a considerable proportion of operations were performed by resident and junior surgeons (57.14%). The most common instrumental injury was to the tonsillar pillars (5.71%), followed by dislodged teeth (2.86%). These findings underscore the importance of meticulous surgical technique and adequate exposure.⁴ Secondary hemorrhage occurred in only one patient (1.43%) on the sixth postoperative day, while no case of reactionary hemorrhage was observed. This low hemorrhage rate is comparable to previously published figures ranging from 1.85% to 2% for cold dissection tonsillectomy.^{17,18} The absence of reactionary hemorrhage reflects meticulous intraoperative hemostasis using bipolar diathermy and ligature techniques. Secondary hemorrhage, though rare, typically occurs between the fifth and eighth postoperative days due to infection or premature sloughing of the eschar.⁵ Pain scores demonstrated marked improvement from the first to the seventh postoperative day. On day one, 17 patients reported a pain score of 5, while 16 patients (all children aged 5-12 years) reported a score of 0. This age-related difference suggests that children may experience or report less postoperative pain than adults, possibly due to differences in pain perception, anxiety levels, or expression.¹⁹ By the seventh postoperative day, 30 patients reported a pain score of 1, indicating substantial recovery. The mean pain scores in this study are comparable to those reported for cold dissection tonsillectomy in other series.^{10,20} Operative duration analysis revealed that senior surgeons completed tonsillectomies faster (mean 22.5 minutes) than resident (34.2 minutes) and junior surgeons (38.7 minutes). This finding is expected and reflects the impact of surgical experience on efficiency.⁴ Importantly, longer operative duration did not translate into higher complication rates in this study, although larger series have demonstrated such associations.⁵

This study is limited by its small sample size, single-center design, short follow-up duration of seven days, and lack of statistical comparison between surgeon groups due to absence of variance data.

CONCLUSION

Cold dissection tonsillectomy is associated with high rates of dysphagia and pain in the early postoperative period, though these morbidities resolve substantially by the seventh day. Instrumental injuries are notable, particularly with less experienced surgeons. Secondary hemorrhage is rare. Surgical experience influences operative duration but not necessarily complication rates. Adequate training, meticulous technique, and vigilant postoperative care remain essential for optimizing patient outcomes.

Recommendations

Future large-scale, multicenter prospective studies with extended follow-up periods are recommended to validate these findings. Structured surgical training programs should emphasize gentle tissue handling and meticulous hemostasis to reduce instrumental injuries and improve patient outcomes.

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