Scholars Journal of Applied Medical Sciences
Abbreviated Key Title: Sch J App Med Sci
ISSN 2347-954X (Print) | ISSN 2320-6691 (Online)
Journal homepage: https://saspublishers.com

OPEN ACCESS

ENT and Head-Neck Surgery

Tympanoplasty under Local Anesthesia without Preoperative Sedation

Dr. S.M Khaled Jahan[1]*, Dr. Mohammad Rokan Uddin Bhuiyan[2], Dr. Ayesha Akter[3], Dr. Sharif Md. Faisal Bari[4], Dr. Jannatul Mastura[5]

[1]Assistant Professor, Department of ENT and Head-Neck Surgery, Kurmitola General Hospital, Dhaka, Bangladesh
[2]Professor Department of ENT and Head-Neck Surgery, Kurmitola General Hospital, Dhaka, Bangladesh
[3]Junior Consultant, Department of ENT and Head-Neck Surgery, Kurmitola General Hospital, Dhaka, Bangladesh
[4]Assistant Professor, Department of ENT and Head-Neck Surgery, Kurmitola General Hospital, Dhaka, Bangladesh
[5]Medical Officer, Department of ENT and Head-Neck Surgery, Kurmitola General Hospital, Dhaka, Bangladesh

DOI: https://doi.org/10.36347/sjams.2026.v14i02.001 | **Received:** 21.11.2025 | **Accepted:** 27.01.2026 | **Published:** 05.02.2026

***Corresponding author:** Dr. S.M Khaled Jahan
Assistant Professor, Department of ENT and Head-Neck Surgery, Kurmitola General Hospital, Dhaka, Bangladesh

Abstract **Original Research Article**

***Introduction*:** Tympanoplasty, a surgical procedure for tympanic membrane perforation, is traditionally performed under general anesthesia. However, performing it under local anesthesia without sedation offers potential advantages, including reduced cost, avoidance of general anesthesia risks, and faster recovery. ***Objective*:** To evaluate the feasibility and outcomes of tympanoplasty under local anesthesia without preoperative sedation. ***Methods*:** A cross-sectional study was conducted at Bangladesh Medical College Hospital from October 2022 to June 2023. A purposive sample of 66 patients with chronic suppurative otitis media (tubotympanic type) undergoing tympanoplasty under local anesthesia (2% Lidocaine) without sedation was included. Preoperative anxiolytic (Bromazepam) was administered. Patient discomfort (anxiety, pain, uneasiness, backache, noise, claustrophobia) and surgeon's assessment of operative conditions (movement, pain, bleeding, etc.) were evaluated using defined scores (0-4). Postoperative complaints and satisfaction were also recorded. ***Results*:** Analysis of 66 patients with a mean age of 31 years revealed that tympanoplasty under local anesthesia without sedation was successfully performed in all cases. Patient discomfort scores for pain and noise were low, at 1.30 and 1.29, respectively. The most significant patient complaint was backache, with a mean score of 1.95. Surgeons reported a very low operative problem score of 0.41. Notably, postoperative patient satisfaction was high, with 72.73% of patients reporting excellent satisfaction. Conclusion: Tympanoplasty under local anesthesia without sedation is a viable and well-tolerated technique for selected patients. It yields high patient satisfaction and efficient resource use, making it a safe and effective alternative to general anesthesia in appropriate clinical settings.

Keywords: Chronic Suppurative Otitis Media, Local Anesthesia, Operative Discomfort, Otologic Surgery, Sedation-Free, Tympanoplasty.

INTRODUCTION

Chronic Suppurative Otitis Media (CSOM), particularly the tubotympanic type, is a prevalent global health issue characterized by a persistent perforation of the tympanic membrane, leading to hearing impairment and recurrent ear discharge [1]. It represents a significant cause of preventable hearing loss, especially in low and middle-income countries, imposing a substantial burden on healthcare systems and affecting patients' quality of life, social interactions, and economic productivity [2, 3]. The primary surgical intervention for restoring hearing and preventing recurrent infections in cases of CSOM is tympanoplasty, a procedure aimed at closing the tympanic membrane perforation [4]. The conventional and most widely practiced approach for tympanoplasty has been under general anesthesia (GA). GA provides a motionless surgical field, absolute patient comfort, and control of the airway, which is particularly advantageous for lengthy or complex procedures [5]. However, general anesthesia is not without significant drawbacks. It carries inherent risks of cardiopulmonary complications, postoperative nausea and vomiting, a longer recovery period, and requires advanced operating room facilities and resources, which escalates the overall cost of surgery [6, 7]. These factors can be prohibitive in resource-constrained settings and may pose an unacceptable risk for patients with significant comorbidities. In contrast, tympanoplasty under local anesthesia (LA) presents a compelling alternative. The advantages are multifold: it eliminates the risks associated with general anesthesia, reduces perioperative morbidity, allows for faster patient turnover, and significantly decreases the cost of the procedure [8, 9]. Furthermore, performing surgery under

local anesthesia enables unique intraoperative assessment, as the patient's hearing can be tested immediately after graft placement, providing the surgeon with instant feedback on the technical success of the procedure [10]. A critical evolution in this technique is the move towards performing tympanoplasty under local anesthesia without preoperative sedation. While sedation is often used to alleviate patient anxiety, it introduces its own spectrum of risks, including respiratory depression, paradoxical agitation, and hemodynamic instability, blurring the line between local and general anesthesia [11]. A sedation-free protocol maximizes the safety profile of local anesthesia, simplifies perioperative management, and facilitates an even faster post-operative recovery and discharge [12]. Despite these benefits, the widespread adoption of this technique is limited by concerns regarding patient tolerance, intraoperative movement, and the surgeon's comfort and satisfaction. The success of tympanoplasty under local anesthesia without sedation hinges on careful patient selection, detailed preoperative counseling, and effective local anesthetic technique. It is crucial to objectively evaluate both the patient's experience—encompassing factors such as anxiety, pain, and claustrophobia-and the surgeon's assessment of the operating conditions, including patient movement and bleeding [13]. Therefore, this cross-sectional study aims to evaluate the feasibility, patient tolerance, and surgical outcomes of tympanoplasty performed under local anesthesia without preoperative sedation, providing evidence for its viability as a standard practice in selected populations.

METHODOLOGY

Study population: This cross-sectional study was conducted at the Otolaryngology & Head-Neck Surgery Department of Bangladesh Medical College Hospital. A purposive sample of 66 patients who underwent tympanoplasty under local anesthesia without sedation was enrolled during the study period from October 2022 to June 2023.

Inclusion Criteria: Patients of any age and both sexes with Chronic Suppurative Otitis Media (tubotympanic type) in its inactive stage were included. The definitive criterion was the performance of tympanoplasty under local anesthesia without any form of preoperative or intraoperative sedation.

Exclusion Criteria: Pediatric patients were excluded due to their lower likelihood of remaining calm during the procedure. Furthermore, uncooperative adult and elderly patients who expressed a preference for general anesthesia were also excluded from the study cohort.

Study Procedure: Preoperatively, patients received counseling and an anxiolytic (Bromazepam 3mg) at the surgical procedure involved infiltration of 2% Lidocaine with adrenaline, followed by standard tympanoplasty steps. Patient and surgeon discomfort were evaluated intraoperatively using defined questionnaires with scores from 0 (none) to 4 (extreme). Postoperative complaints and satisfaction were similarly recorded.

Data Analysis: Data collected via a structured questionnaire were coded and analyzed using SPSS and Sigma Stat 3.1 software. Descriptive statistics were used to present the findings, with mean scores calculated for discomfort and satisfaction parameters.

RESULT

This study evaluated the outcomes of tympanoplasty under local anesthesia without sedation in 66 patients. The cohort comprised 41 males (62.1%) and 25 females (37.9%), yielding a male-to-female ratio of 1.8:1. The age of the participants ranged from 17 to 48 years, with a mean age of 31.12 ± 9.88 years. The largest proportion of patients (46.97%) belonged to the 20-30 years age group. The distribution of age was not significantly different between male and female patients ($p=0.45$). The duration of the disease, based on the history of ear discharge, varied among the patients. The majority (31.82%) reported a duration of 11-15 years, followed by 5-10 years (22.73%) and 16-20 years (19.70%). Regarding the tympanic membrane pathology, medium-sized perforations were most common (28.79%), followed by small (25.76%) and kidney-shaped (24.24%) perforations. Subtotal perforations accounted for 21.21% of cases. The most frequent site of perforation was the inferior quadrant (31.82%). In terms of the operated ear, a slight predominance of right-sided procedures (53.03%) was observed over left-sided (45.45%). The surgical approach was predominantly trans meatal, used in 59 patients (89.39%), while a postauricular approach was employed in the remaining 7 cases (10.61%). The mean duration of surgery for the trans meatal approach was 102 ± 5.48 minutes, which was significantly shorter than the 110.63 ± 8.75 minutes required for the postauricular approach ($p<0.05$). The intraoperative patient discomfort scores revealed that backache was the most significant issue, with a mean score of 1.95. While 19.70% of patients reported no backache, a considerable number experienced moderate to severe discomfort. Anxiety and uneasiness were also notable, with mean scores of 1.50 and 1.52, respectively. In contrast, pain and noise from the drill were better tolerated, with mean scores of 1.30 and 1.29. From the surgeon's perspective, patient movement was the most challenging factor, with a high mean score of 2.74; only 3.03% of cases were free from any movement. Bleeding was another significant factor, with no cases being completely bloodless (mean score 1.88). However, the overall operative problem score was very low (mean 0.41), with 84.85% of cases presenting no significant surgical problems. Patient-reported pain during surgery was low (mean 1.27), corroborating the surgeon's assessment. Postoperatively, patient satisfaction was high, with a mean score of 0.52; 72.73% of patients reported excellent satisfaction. The most common

complaint was headache, with a mean score of 2.29. Postoperative pain was reported with a mean score of 1.91. Notably, nausea and vertigo were minimal, affecting only a small subset of patients.

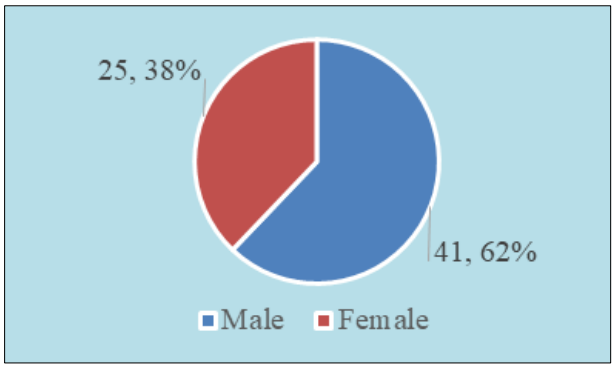

Figure 1: Sex distribution of the patient (N=66)

Table 1: Age and sex distribution of the patient

Age	Male		Female		Total	
	n	%	n	%	n	%
<20	6	14.63	6	24	12	18.18
20-30	19	46.34	12	48	31	46.97
31-40	12	29.27	5	20	17	25.76
>40	4	9.76	2	8	6	9.09
Total	41	100	25	100	66	100

Table 2: Duration of the diseases

Duration	n	%
<5 years	12	18.18
5-10 years	15	22.73
11-15 years	21	31.82
16-20 years	13	19.7
>21 years	5	7.58
Total	66	100

Table 3: Size of tympanic membrane perforation

Size	n	%
Small	17	25.76
Medium	19	28.79
Kidney shaped	16	24.24
Subtotal	14	21.21
Total	66	100

Table 4: Site of tympanic membrane perforation

Site	n	%
Anterior	16	24.24
Posterior	15	22.73
Inferior	21	31.82
Subtotal	14	21.21
Total	52	78.79

Table 5: Side of operated ear

Side	n	%
Right	35	53.03
Left	30	45.45
Both	1	1.52
Total	66	100

Table 6: Surgical approach of myringoplasty and its duration of surgery

Approach	n	%	Duration (min)	
			Mean	SD
Postauricular	7	10.61	110.63	8.75
Trans meatal	59	89.39	102	5.48
Total	66	100	108.78	10.14

Table 7: Per-operative discomfort score (0-4) of the patient

Character	0	1+	2+	3+	4+	Mean
Anxiety	25	11	10	12	8	1.5
Pain	28	12	11	8	7	1.3
Uneasiness	21	15	12	11	7	1.52
Backache	13	14	13	15	11	1.95
Noise	24	16	14	11	2	1.29
C	22	15	16	9	4	1.36

C: Claustrophobia, Score of discomfort (grading): 0=no discomfort, 1+ = mild discomfort, 2+ = moderate discomfort, 3+ severe (tolerable) discomfort, 4+= extreme discomfort

Table 8: Per-operative problem score (0-4) of the surgeon

Character	0	1+	2+	3+	4	Mean
Movement	2	8	13	25	18	2.74
Pain	21	21	13	7	4	1.27
Uneasiness	9	13	15	17	12	2.15
Discomfort	15	15	13	14	9	1.8
OP	56	2	2	3	3	0.41
Bleeding	0	29	21	11	5	1.88

OP: Operative Problem, Score of discomfort (grading), 0= no discomfort, excellent satisfaction, 1+= mild discomfort, good satisfaction, 2+ = moderate discomfort, bad satisfaction, 3+ severe (tolerable) discomfort, very bad satisfaction, 4+ = extreme discomfort, totally unsatisfied. Mean scores < 2.0 are considered an acceptable discomfort level. Bleeding Score Definition, 1 Minimal /no bleeding, excellent satisfaction, 2 Modest bleeding and impairment of operating condition, good satisfaction

Table 9: Postoperative patient complaint score (0-4)

Character	0	1	2	3	4	Mean
Pain	12	14	17	14	9	1.91
Nausea	53	1	2	0	0	0.08
Vertigo	49	8	6	3	0	0.44
Anxiety	17	21	17	6	5	1.41
Headache	6	12	19	15	14	2.29
Satisfaction	48	9	4	3	2	0.52

Score of discomfort (grading), 0= no complaint, excellent satisfaction, 1+=mild complaint, good satisfaction, 2+=moderate complaint, average satisfaction, 3+=severe complaint, bad satisfaction, 4+=extreme & intolerable, unsatisfied, mean scores < 2.0 are considered as acceptable with satisfaction

DISCUSSION

The present study demonstrates that tympanoplasty under local anesthesia without sedation is a viable and well-tolerated surgical approach for a carefully selected patient population. Our findings contribute to the growing body of evidence advocating for this technique as a safe and effective alternative to general anesthesia, particularly in settings where resource optimization and patient safety are paramount [8, 9]. The demographic profile of our study, with a mean age of 31 years and a predominance of patients in their second and third decades, aligns with the typical age distribution for elective tympanoplasty [14]. The male predominance observed is consistent with several other studies, though the reasons are likely socio-cultural rather than biological [15]. The high prevalence of the trans meatal approach (89.39%) and its association with a significantly shorter operative time underscore its efficiency for the majority of cases, minimizing surgical trauma and potentially reducing intraoperative patient discomfort [16]. A critical finding of this study is the overall acceptable level of patient tolerance. The mean discomfort scores for key parameters like pain (1.30) and drill noise (1.29) were well below the acceptable

threshold of 2.0. This suggests that with adequate local anesthetic infiltration and proper preoperative counseling, the physical sensations of surgery are manageable for most patients. However, the highest patient-reported discomfort was for backache (mean 1.95), a factor less frequently discussed in the literature. This highlights a non-audiological aspect of care, indicating that ergonomic optimization of the operating table and patient positioning are crucial for enhancing the patient experience during a procedure that can last over 100 minutes [17]. From the surgeon's perspective, the outcomes were similarly positive but highlighted specific challenges. The very low score for "operative problems" (0.41) confirms the technical feasibility of the procedure under LA. However, patient movement was identified as the most significant impediment, with a mean score of 2.74. This movement, likely a manifestation of anxiety and positional discomfort, can compromise surgical precision. This finding is crucial, as it identifies an area for improvement through better preoperative counseling, reassurance during surgery, and potentially the use of head-restraining devices [18]. Furthermore, while no case was completely bloodless, the bleeding was generally manageable (mean 1.88), which is a testament to the vasoconstrictive effect of the adrenaline-containing local anesthetic [19]. The high postoperative patient satisfaction rate (72.73% excellent satisfaction) is the most compelling argument for this technique. The minimal complaints of nausea and vertigo stand in stark contrast to the common side-effects associated with general anesthesia [6, 7]. This directly translates to a more comfortable and rapid recovery, facilitating same-day discharge in an ambulatory setting and reducing overall healthcare costs [12-20]. The low satisfaction scores were primarily linked to postoperative headache and pain, which are manageable with standard oral analgesics. Our study has limitations, including its single-center design and a purposive sample, which may limit the generalizability of the findings. The absence of a direct comparison group (e.g., patients under GA) prevents a definitive comparative efficacy analysis. Future prospective, randomized controlled studies are recommended to directly compare patient and surgeon outcomes, graft take rates, and cost-effectiveness between LA without sedation and GA [21]. Tympanoplasty under local anesthesia without preoperative sedation is a successful strategy for managing tympanic membrane perforations in cooperative patients. It offers a favorable safety profile, high patient satisfaction, and efficient use of surgical resources. Success hinges on meticulous patient selection, comprehensive preoperative counseling to manage expectations, and skilled local anesthetic technique. Surgeon adaptation to minor patient movement is a necessary component of this approach, which promises to expand access to safe otologic surgery, especially in resource-conscious environments [22, 23].

Limitations

The study limitations include its single-center design, purposive sampling, and the absence of a control group, which may affect generalizability and preclude definitive comparative conclusions regarding the efficacy of local versus general anesthesia.

CONCLUSION

Tympanoplasty under local anesthesia without sedation is a feasible and successful technique for selected, cooperative patients. It provides high patient satisfaction, a favorable safety profile, and efficient resource utilization. Successful implementation requires meticulous patient selection, comprehensive preoperative counseling, and skilled surgical technique to manage challenges like patient movement. This approach is a valuable alternative to general anesthesia, particularly in resource-conscious healthcare settings, offering comparable outcomes with enhanced recovery and reduced cost.

Recommendation

Future studies should employ randomized controlled trials to directly compare outcomes with general anesthesia. Surgeons should receive specific training in patient communication and local anesthetic techniques to optimize operative conditions and enhance patient comfort during these procedures.

REFERENCES

1. Monasta, Lorenzo, et al. "Burden of disease caused by otitis media: systematic review and global estimates." PloS one 7.4 (2012): e36226.
2. Schilder, Anne GM, et al. "Otitis media." Nature reviews Disease primers 2.1 (2016): 1-18.
3. Thai, Anthony, et al. "Long-term health utilization and outcomes in chronic suppurative otitis media." Otolaryngology–Head and Neck Surgery 167.2 (2022): 341-349.
4. ŞAHIN, Caner, et al., eds. Vakalarla Kulak Burun Boğaz. Akademisyen Kitabevi, 2021.
5. Salvador, Pedro, et al. "Type I tympanoplasty: surgical success and prognostic factors." Acta Otorrinolaringologica (English Edition) 72.3 (2021): 182-189.
6. Coffani, Sarita Franca, et al. "Local anesthesia and sedation in otorhinolaryngology endoscopic surgery-functional endoscopic sinus surgery and tympanoplasty-routines and epidemiology in a reference center." Am J Med Case Rep 3 (2017): 27-30.
7. Rollison, Julia, et al. "Enhanced Recovery After Surgery for Vascular Surgery." (2019).
8. Bhat, Poornima S. A Study Comparing the Outcomes of Temporalis Fascia Graft Versus Perichondrium Graft in Type I Tympanoplasty. MS thesis. Rajiv Gandhi University of Health Sciences (India), 2014.

9. Rajguru, Anagha Yogesh, et al. "Comparison of Levobupivacaine and Lidocaine for Post-Operative Analgesia Following Tympanoplasty." Journal of Evolution of Medical and Dental Sciences 9.41 (2020): 3029-3033.
10. Pairaudeau, C., and C. Mendonca. "Anesthesia for major middle ear surgery." BJA education 19.5 (2019): 136-143.
11. Guntinas-Lichius, Orlando, et al. "The first postoperative day: prospective evaluation of pain in adult otorhinolaryngologic surgery." The Clinical Journal of Pain 30.11 (2014): 978-986.
12. Guntinas-Lichius, Orlando, et al. "The first postoperative day: prospective evaluation of pain in adult otorhinolaryngologic surgery." The Clinical Journal of Pain 30.11 (2014): 978-986.
13. Javia, Luv, and Ellen S. Deutsch. "A systematic review of simulators in otolaryngology." Otolaryngology--Head and Neck Surgery 147.6 (2012): 999-1011.
14. Orji, Foster T., et al. "The changing epidemiological and complications profile of chronic suppurative otitis media in a developing country after two decades." European Archives of Oto-Rhino-Laryngology 273.9 (2016): 2461-2466.
15. Kataria, Gaurav, et al. "Study of 100 cases of chronic suppurative otitis media to find out the need of mastoid exploration." Journal of Evolution of Medical and Dental Sciences 3.27 (2014): 7497-7507.
16. Mohammed Esam, Hossam, Wael Hassan Abo El-Wafa, and Mohammed Kamel Ibrahem Al-Awady. "COMPARATIVE STUDY BETWEEN ENDOSCOPIC TRANSCANAL MYRINGOPLASTY VERSUS MICROSCOPIC MYRINGOPLASTY IN MIDDLE-AGED GROUP (20-40 YEARS)." Al-Azhar Medical Journal 49.4 (2020): 2065-2074.
17. Xu, Shan, et al. "Human-derived acellular dermal matrix may be an alternative to autologous grafts in tympanic membrane reconstruction: systematic review and meta-analysis." Journal of Otolaryngology-Head & Neck Surgery 50.1 (2021): 43.
18. Tshifularo, Mashudu. "Tympanoplasty success based on surgeon and patient-reported outcomes perspectives: a 10-year review in a tertiary center." The Egyptian Journal of Otolaryngology 38.1 (2022): 15.
19. Murdoch, I., P. Surda, and N. Nguyen-Lu. "Anesthesia for rhinological surgery." BJA education 21.6 (2021): 225-231.
20. UK, National Guideline Center. "Assessment tools for people with suspected OSAHS, OHS or COPD–OSAHS overlap syndrome." (2021).
21. Lee, J. M., et al. "Surgical outcomes of tympanoplasty using a sterile acellular dermal allograft: a prospective randomized controlled study." Acta otorhinolaryngologica Italica 38.6 (2018): 554.
22. Smith, M. C. F., C. Huins, and M. Bhutta. "Surgical treatment of chronic ear disease in remote or resource-constrained environments." The Journal of Laryngology & Otology 133.1 (2019): 49-58.
23. Roxbury, Christopher R., et al. "Safety and postoperative adverse events in pediatric otologic surgery: analysis of American College of Surgeons NSQIP-P 30-day outcomes." Otolaryngology--Head and Neck Surgery 152.5 (2015): 790-795.