

Quality of Life Assessment after Mastoidectomy in Chronic Suppurative Otitis Media Patients

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Abstract:

Background: One of the most frequent chronic middle ear infections and a major contributor to avoidable hearing loss, especially in developing nations, is chronic suppurative otitis media (CSOM). Patients' quality of life is greatly impacted by repeated infections, hearing loss, persistent ear drainage, and other consequences. The conventional surgical procedure for hazardous CSOM and certain chronic instances is mastoidectomy. Evaluating postoperative quality of life has emerged as a crucial patient-centered metric for determining the total success and efficacy of surgical therapy, going beyond disease eradication and hearing improvement.

Methods: Anugrah Narayan Magadh Medical College and Hospital in Gaya Ji, Bihar, performed a retrospective observational study on 125 patients who had mastoidectomies for chronic suppurative otitis media over a period of eight months. We looked at follow-up, clinical, surgical, audiological, and demographic data. The Glasgow Benefit Inventory (GBI) was used to measure postoperative quality of life. SPSS version 26.0 was used for the statistical analysis, and $p < 0.05$ was deemed statistically significant.

Results: 56.8% of the population was male, and the mean age was 34.8 ± 12.6 years. 60.8% of patients underwent canal wall-up mastoidectomy. Hearing, ear discharge, and quality of life all showed significant improvements ($p < 0.001$). 84.8% of patients reported having positive Glasgow Benefit Inventory (GBI) scores. Improved quality of life was substantially correlated with younger age, shorter disease duration, and better hearing outcomes ($p < 0.05$).

Conclusion: Mastoidectomy significantly improves both clinical outcomes and health-related quality of life in patients with chronic suppurative otitis media. Incorporating patient-reported outcome measures alongside conventional surgical success parameters provides a comprehensive evaluation of treatment effectiveness and supports improved postoperative care.

Keywords: Chronic Suppurative Otitis Media; Mastoidectomy; Quality Of Life; Glasgow Benefit Inventory; Hearing Loss; Otologic Surgery; Retrospective Study.

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Introduction

A chronic tympanic membrane rupture and recurrent or continuous ear discharge that lasts longer than six weeks are the hallmarks of chronic suppurative otitis media (CSOM), a chronic inflammatory illness of the middle ear cleft. It is still a major public health concern, especially in low- and middle-income nations where its high incidence is caused by overcrowding, poor socioeconomic conditions, limited access to healthcare, malnutrition, and recurring upper respiratory tract infections. Millions of people worldwide suffer with CSOM, and a significant percentage go on to develop conductive hearing loss and permanent disability, according to

the World Health Organisation. If the illness is left untreated, it may develop into cholesteatoma, ossicular damage, facial nerve palsy, labyrinthine fistula, and perhaps fatal cerebral consequences. The elimination of the disease, creation of a dry and safe ear, preservation or restoration of hearing, and avoidance of recurring infections are the main objectives of surgical care for CSOM. The mainstay of treatment for dangerous CSOM and certain cases of refractory chronic ear disease is still mastoidectomy, which can be done either as canal wall-up or canal wall-down procedures depending on the severity of the disease [1].

Traditionally, objective clinical measures such as graft uptake, cavity status, recurrence rates, hearing outcomes, and postoperative complications have been used to evaluate surgical success. Nevertheless, the patient's perception of recovery or general well-being is not sufficiently reflected by these metrics alone. Because chronic ear illness affects many aspects of everyday life, health-related quality of life (HRQoL) has come to be recognised as a crucial outcome in otologic surgery. Persistent otorrhea, hearing loss, tinnitus, vertigo, social embarrassment, communication problems, sleep disruptions, and psychological stress can all seriously hinder academic success, professional productivity, interpersonal connections, and emotional well-being. The Glasgow Benefit Inventory (GBI), Chronic Otitis Media Questionnaire-12 (COMQ-12), and Chronic Ear Survey are examples of patient-reported outcome measures that have emerged as useful instruments for assessing the wider effects of surgical surgery beyond morphological and audiological effectiveness [2].

Data on postoperative quality of life among Indian patients are still scarce, especially from tertiary care teaching hospitals in eastern India, despite mounting evidence of the advantages of mastoidectomy. Optimising surgical decision-making, counselling patients about anticipated recovery, and enhancing long-term postoperative care all depend on an understanding of patient-reported outcomes. In order to assess postoperative quality of life after mastoidectomy in patients with chronic suppurative otitis media and to find clinical factors linked to better patient-reported outcomes, the current retrospective study was conducted at the Department of Otorhinolaryngology, Anugrah Narayan Magadh Medical College and Hospital, Gaya Ji, Bihar [3].

Materials and Methods

Study Design and Setting: This retrospective observational study was conducted in the Department of Otorhinolaryngology (ENT), Anugrah Narayan Magadh Medical College and Hospital, Gaya Ji, Bihar, India. The study involved a retrospective review of medical records of patients who underwent mastoidectomy for chronic suppurative otitis media (CSOM) over an 8-month period. Institutional Ethics Committee approval was obtained prior to commencement of the study (Approval No.: IEC/ANMMC/ENT/2025/XXX). Patient confidentiality was maintained throughout the study by anonymizing all collected data.

Study Population: A total of 125 patients diagnosed with CSOM who underwent mastoidectomy during the study period were included in the analysis.

Inclusion Criteria

- Patients aged ≥ 18 years.

- Diagnosed with chronic suppurative otitis media (safe or unsafe type).
- Underwent canal wall-up (CWU) or canal wall-down (CWD) mastoidectomy with or without tympanoplasty.
- Minimum postoperative follow-up of 6 months.
- Complete medical records including audiological evaluation and quality of life assessment.

Exclusion Criteria

- Revision mastoidectomy cases.
- Patients with congenital ear anomalies.
- Previous temporal bone surgery.
- Patients with malignant middle ear disease.
- Patients with incomplete clinical records or lost to follow-up.
- Patients with severe neurological or psychiatric disorders affecting quality-of-life assessment.

Sample Size: The study included all eligible patients undergoing mastoidectomy during the study period. A total of 125 consecutive cases fulfilled the inclusion criteria and were included for final analysis.

Data Collection: Data were retrieved from hospital records, operative registers, audiology reports, and outpatient follow-up records using a structured data collection form.

The following variables were collected:

Demographic Variables

- Age
- Gender
- Residence (Urban/Rural)
- Occupation

Clinical Variables

- Duration of ear discharge
- Side involved
- Type of CSOM (Safe/Unsafe)
- Presence of cholesteatoma
- Hearing loss
- Vertigo
- Tinnitus
- Facial nerve involvement
- Previous medical treatment

Outcome Measures

Primary Outcome

- Postoperative quality of life assessed using Glasgow Benefit Inventory.

Secondary Outcomes

- Hearing improvement.
- Dry ear achievement.
- Postoperative complications.

- Factors associated with improved quality of life.

Statistical Analysis: Data were entered into Microsoft Excel and analyzed using IBM SPSS Statistics version 26.0 (IBM Corp., Armonk, NY, USA).

Continuous variables were expressed as mean $\pm$ standard deviation (SD), while categorical variables were presented as frequency and percentage.

Comparisons between categorical variables were performed using the Chi-square test or Fisher's Exact test wherever appropriate.

Continuous variables were compared using the Independent Student's t-test or Paired t-test for normally distributed data.

Predictors of improved postoperative quality of life were evaluated using multivariate logistic regression analysis, and adjusted odds ratios (AOR) with 95% confidence intervals (CI) were calculated.

A p-value <0.05 was considered statistically significant.

Results

Among the 125 patients undergoing mastoidectomy, most were middle-aged adults with a predominance of unsafe CSOM. Canal wall-up mastoidectomy was the preferred surgical technique. Significant improvements were observed in hearing thresholds, dry ear rates, and postoperative quality of life. More than four-fifths of patients reported positive GBI scores, and quality-of-life improvement was significantly associated with younger age, shorter disease duration, successful hearing restoration, dry ear status, and absence of postoperative complications (all $p < 0.05$). These findings support mastoidectomy as an effective intervention for improving both clinical outcomes and patient-reported quality of life in individuals with chronic suppurative otitis media.

Table 1: Demographic Characteristics of the Study Population (N=125)

Variable	Frequency	Percentage	p-value
Age Group (years)			0.021*
18–30	42	33.6	
31–45	46	36.8	
46–60	25	20.0	
>60	12	9.6	
Gender			
Male	71	56.8	0.108
Female	54	43.2	
Residence			
Urban	48	38.4	0.013*
Rural	77	61.6	
Occupation			
Student	18	14.4	
Farmer	34	27.2	
Housewife	31	24.8	
Service	24	19.2	
Others	18	14.4	0.084

Interpretation: The majority of patients were aged 31–45 years (36.8%), followed by 18–30 years (33.6%). Males constituted 56.8% of the study

population. Rural residents accounted for 61.6%, indicating a significantly higher burden of CSOM among rural populations ($p=0.013$).

Table 2: Clinical Characteristics

Variable	Frequency	Percentage	p-value
Safe CSOM	47	37.6	
Unsafe CSOM	78	62.4	$<0.001^*$
Cholesteatoma present	74	59.2	$<0.001^*$
Hearing loss	118	94.4	$<0.001^*$
Persistent ear discharge	121	96.8	$<0.001^*$
Tinnitus	51	40.8	0.072
Vertigo	19	15.2	0.146
Facial nerve weakness	5	4.0	0.398

Interpretation: Unsafe CSOM (62.4%) and cholesteatoma (59.2%) were significantly more

prevalent. Hearing loss and persistent otorrhea were present in over 90% of patients ($p<0.001$).

Table 3: Surgical Procedures Performed

Procedure	Frequency	Percentage	p-value
Canal Wall-Up Mastoidectomy	76	60.8	
Canal Wall-Down Mastoidectomy	49	39.2	0.034*
Type I Tympanoplasty	68	54.4	
Type III Tympanoplasty	57	45.6	0.091

Interpretation: Canal wall-up mastoidectomy was the most commonly performed procedure (60.8%)

and was significantly more frequent than canal wall-down surgery (p=0.034).

Table 4: Hearing Improvement Following Surgery

Hearing Status	Preoperative	Postoperative	p-value
Mean PTA (dB)	47.8 ± 10.4	29.6 ± 8.3	<0.001*
Improved (>10 dB)	—	102 (81.6%)	<0.001*
No significant improvement	—	23 (18.4%)	

Interpretation: There was a statistically significant improvement in hearing thresholds following mastoidectomy, with 81.6% of patients

demonstrating clinically meaningful hearing gain (p<0.001).

Table 5: Postoperative Complications

Complication	Frequency	Percentage	p-value
None	101	80.8	
Persistent discharge	8	6.4	
Wound infection	6	4.8	
Transient vertigo	5	4.0	
Facial weakness	2	1.6	
Recurrence	3	2.4	0.017*

Interpretation: Most patients (80.8%) experienced an uncomplicated postoperative recovery. Persistent ear discharge remained the most common

complication, while recurrence occurred in only 2.4% of cases.

Table 6: Glasgow Benefit Inventory (GBI) Quality of Life Scores

GBI Category	Frequency	Percentage	p-value
Excellent (>40)	54	43.2	
Moderate (20–40)	39	31.2	
Mild (1–19)	13	10.4	
No Improvement (≤0)	19	15.2	<0.001*

Interpretation: Overall, 84.8% of patients demonstrated positive postoperative quality-of-life

improvement, with 43.2% reporting excellent benefit according to GBI scores.

Table 7: Factors Associated with Improved Quality of Life

Variable	Improved QoL (n=106)	No Improvement (n=19)	p-value
Age <40 years	67	6	0.011*
Disease duration <5 years	74	7	0.004*
Dry ear achieved	99	8	<0.001*
Hearing improvement	96	6	<0.001*
No postoperative complications	94	7	<0.001*

Interpretation: Patients who were younger, had a shorter duration of disease, achieved a dry ear, experienced hearing improvement, and had no postoperative complications showed significantly better quality-of-life outcomes.

Discussion

At Anugrah Narayan Magadh Medical College and Hospital in Gaya Ji, Bihar, 125 patients undergoing mastoidectomy for chronic suppurative otitis media

(CSOM) had their postoperative quality of life assessed in the current retrospective study. The results show that mastoidectomy significantly improved patients' health-related quality of life (HRQoL) in addition to achieving satisfactory disease control and hearing improvement. These findings highlight how crucial it is to include patient-reported outcome indicators in addition to traditional clinical metrics when evaluating surgical outcomes. The majority of patients in the current

study were between the ages of 31 and 45, with a little male predominance. Previous research from India and other countries has shown similar demographic trends, with CSOM being more common among economically productive individuals [4].

Due to poor cleanliness, overcrowding, repeated upper respiratory tract infections, delayed access to healthcare, and low awareness of early treatment, chronic ear disease is more common in underserved populations, as evidenced by the preponderance of rural patients. These results highlight the ongoing importance of CSOM for public health in situations with limited resources. Nearly two-thirds of the study group had unsafe CSOM, and over half of the patients had cholesteatoma. These findings align with publications suggesting that, due to its destructive character and propensity for both intracranial and extracranial consequences, cholesteatoma continues to be one of the most common justifications for mastoidectomy. In these situations, early surgical intervention is crucial for disease eradication, prevention of recurrence, and preservation of hearing function [5].

The most common surgical treatment in the current study was canal wall-up mastoidectomy. When the severity of the illness permits, the surgeons may prefer to maintain normal ear canal anatomy. While avoiding the lifetime cavity care associated with canal wall-down surgeries, canal wall-up treatments typically provide in better anatomical repair and hearing outcomes. However, when total disease clearance is the major goal, canal wall-down mastoidectomy is still essential for large cholesteatoma or weakly pneumatized mastoids. Following surgery, hearing thresholds significantly improved, and almost four-fifths of patients showed clinically significant hearing gain. One of the main objectives of mastoid surgery is to restore hearing because hearing loss negatively impacts social relationships, communication, professional performance, and academic success. Numerous researchers have documented comparable improvements in postoperative audiological results, supporting the efficacy of mastoidectomy in conjunction with tympanoplasty in carefully chosen patients [6].

The significant improvement in postoperative quality of life was one of the study's most significant conclusions. Positive Glasgow Benefit Inventory (GBI) ratings were recorded by about 85% of patients, indicating a significant improvement in everyday functioning, emotional stability, and general health. Repeated infections, tinnitus, hearing loss, and persistent ear discharge frequently result in significant psychological and social costs. When these symptoms are successfully managed surgically, patients can return to their regular activities with more confidence and less need on

medical care. Numerous studies have shown comparable postoperative improvements in GBI and Chronic Otitis Media Questionnaire (COMQ-12) scores, underscoring the importance of patient-reported outcome measures in otologic treatment. The current study also showed that better quality-of-life outcomes were independently linked to younger age, shorter disease duration, effective hearing improvement, dry ear status, and the absence of postoperative complications. Because they imply that early identification and prompt surgical intervention may optimise postoperative benefits, these findings are therapeutically significant [7].

Treatment delays frequently result in severe cholesteatoma, prolonged inflammation, and irreversible ossicular damage, all of which might hinder functional recovery. The most frequent adverse events were chronic ear drainage and wound infection, but postoperative complications were rare. This study's low recurrence rate is a result of appropriate postoperative follow-up and adequate surgical disease clearance. Long-term success is mostly determined by careful cavity treatment, effective surgical technique, and patient adherence to follow-up appointments. This study's strengths include the use of a validated quality-of-life instrument, a comparatively large sample size, and a thorough assessment of both clinical and patient-reported outcomes. But there are a few restrictions to be aware of. The single-center setting may restrict the findings' generalizability, and the retrospective methodology may introduce selection and information bias. Longer follow-up would be helpful to evaluate sustained improvements and late disease recurrence, because preoperative quality-of-life measures were not available for direct comparison. To further validate these results, future prospective multicenter studies that include long-term audiological evaluation and disease-specific quality-of-life surveys are advised [8].

Overall, the current study shows that mastoidectomy offers significant clinical and functional benefits, including improvements in hearing, disease eradication, and postoperative quality of life. These findings support mastoidectomy's status as the recommended surgical procedure for CSOM patients who are carefully chosen [9].

Conclusion

The current retrospective analysis shows that mastoidectomy is a successful surgical procedure that significantly improves clinical outcomes and health-related quality of life for patients with chronic suppurative otitis media. The majority of patients had favourable postoperative recovery, a dry ear, substantial hearing improvement, and effective disease elimination. The significant advantages of surgery from the patient's point of view are demonstrated by the fact that almost four-

fifths of the study population had positive Glasgow Benefit Inventory ratings.

Additionally, the study found that enhanced postoperative quality of life was significantly predicted by younger age, shorter disease duration, complete hearing restoration, dry ear status, and the absence of postoperative comorbidities. In order to maximise long-term patient outcomes, our results highlight the significance of early diagnosis, prompt surgical therapy, careful operational technique, and organised postoperative follow-up.

Because they offer a more thorough assessment of treatment efficacy, patient-reported quality-of-life variables should be evaluated in addition to traditional clinical indicators such hearing thresholds, graft uptake, and recurrence rates. Better patient counselling, customised treatment planning, and result monitoring may be made possible by integrating proven tools like the Glasgow Benefit Inventory into regular clinical practice.

This study offers important evidence that mastoidectomy is a safe and successful operation for enhancing functional hearing outcomes and overall quality of life in patients with chronic suppurative otitis media, despite the inherent limitations of its retrospective single-center design. To validate these results and improve patient-centered outcome assessment in otologic surgery, more prospective multicenter studies with extended follow-up are necessary.

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