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A Comparative Study of Tympanoplasty Alone Versus Tympanoplasty with Cortical Mastoidectomy in Patients with Chronic Suppurative Otitis Media - Tubotympanic Type

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Abstract

Background: Chronic suppurative otitis media (CSOM), tubotympanic type, is a common otological disorder associated with persistent ear discharge and conductive hearing loss. Tympanoplasty is the standard surgical procedure; however, the role of cortical mastoidectomy as an adjunct remains controversial.

Objective: To compare the outcomes of tympanoplasty alone and tympanoplasty combined with cortical mastoidectomy with respect to graft uptake, recurrence of disease, and hearing improvement.

Methods: A prospective comparative study was conducted on 50 patients diagnosed with CSOM (tubotympanic type). Patients were randomly allocated into two groups: Group A (n = 25) underwent tympanoplasty alone, and Group B (n = 25) underwent tympanoplasty with cortical mastoidectomy. Temporalis fascia graft was used in all cases for repair of the tympanic membrane. Patients were followed for a period of three months postoperatively. Outcome measures included graft uptake rate, recurrence of otorrhea, and hearing improvement assessed by pure tone audiometry.

Results: Successful graft uptake was observed in 84% of patients in Group A and 92% in Group B. Recurrence of disease was noted in 16% of Group A and 8% of Group B patients. Hearing improvement, defined as air–bone gap closure of ≥10 dB, was achieved in 80% of Group A and 88% of Group B.

Conclusion: Tympanoplasty combined with cortical mastoidectomy showed slightly better anatomical and functional outcomes compared to tympanoplasty alone. However, tympanoplasty alone remains an effective surgical option in selected uncomplicated cases.

Keywords: Chronic Suppurative Otitis Media, Tympanoplasty, Cortical Mastoidectomy, Hearing Improvement.

Introduction

Chronic suppurative otitis media (CSOM) is a major health problem in developing countries and is a leading cause of preventable hearing loss. The tubotympanic type of CSOM is characterized by a central perforation of the tympanic membrane, recurrent or persistent otorrhea, and conductive hearing impairment.

Tympanoplasty is performed to eliminate middle ear pathology and improve hearing through reconstruction of the tympanic membrane. In cases of tubotympanic chronic suppurative otitis media (CSOM), the addition of cortical mastoidectomy remains a subject of clinical consideration. The present study was designed to evaluate the outcomes of tympanoplasty performed with and without cortical mastoidectomy in the management of tubotympanic CSOM.

Materials And Methods

Study design and setting: This was a prospective comparative study conducted in the Department of Otorhinolaryngology at a tertiary care hospital.

Sample size: 50 patients with CSOM (tubotympanic type)

Inclusion criteria

- Age between 15 and 50 years
- Dry ear for at least 4 weeks
- Presence of conductive hearing loss

Exclusion criteria

- Atticoantral disease
- Sensorineural hearing loss
- Previous ear surgery
- Complications of CSOM

Table 1: Grouping of patients

Group	Procedure	Number of patients
A	Tympanoplasty	25
B	Tympanoplasty + Cortical mastoidectomy	25

Temporalis fascia graft was used in all cases. Postoperative follow-up was done at 1 month and 3 months.

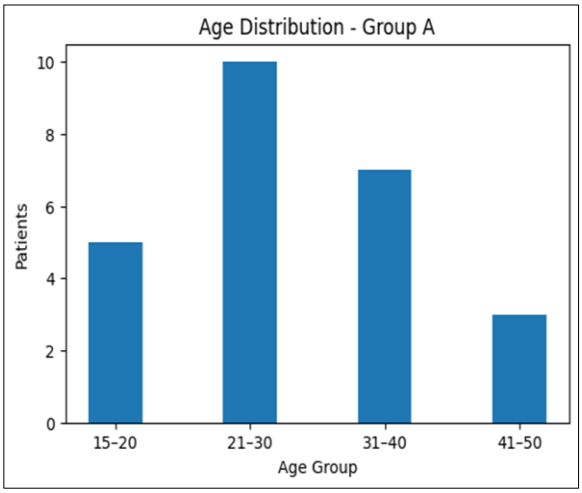
Results

Table 2: Age distribution of patients

Age (years)	Group A	Group B	Total
15–20	5	4	9
21–30	10	11	21
31–40	7	6	13

41–50	3	4	7
Total	25	25	50

Graph 1:

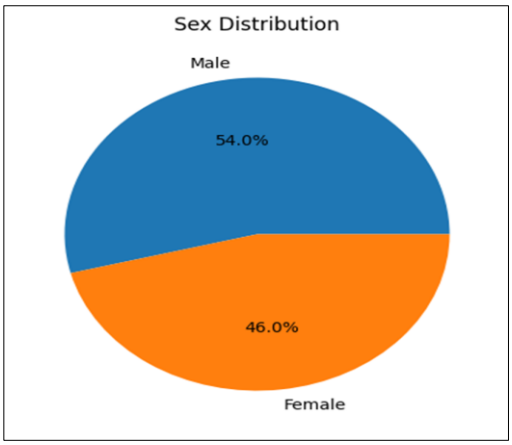


Most patients belonged to the 21–30 years age group, followed by 31–40 years. This indicates that chronic ear disease is more common in young and middle-aged adults, possibly due to increased exposure to upper respiratory tract infections, poor Eustachian tube function, and delayed treatment seeking. Both groups had comparable age distribution, ensuring baseline similarity.

Table 3: Sex distribution of patients

Sex	Group A	Group B	Total
Male	14	13	27
Female	11	12	23

Graph 2:

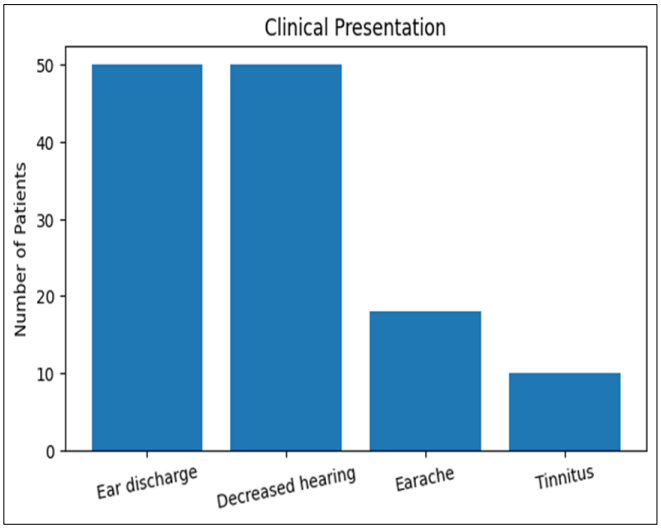


There was a slight male predominance in both groups. This may be attributed to increased outdoor activity, higher exposure to infections, and greater healthcare-seeking behavior among males.

Table 4: Clinical presentation of patients

Clinical feature	Number (%)
Ear discharge	50 (100%)
Decreased hearing	50 (100%)
Earache	18 (36%)
Tinnitus	10 (20%)

Graph 3:



Ear discharge and decreased hearing were present in all patients, indicating these as the cardinal symptoms of the disease. Earache and tinnitus were less common and occurred mainly during active infection or inflammation. This pattern is typical of chronic suppurative otitis media.

Table 5: Size of perforation

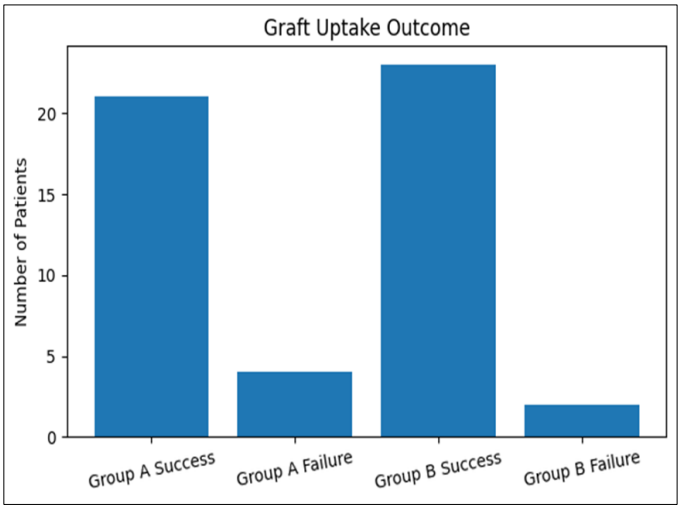
Size	Group A	Group B	Total
Small	6	5	11
Medium	9	10	19
Large	10	10	20

Most patients had medium to large perforations, suggesting long-standing disease with repeated infections. Larger perforations are commonly associated with persistent discharge and greater conductive hearing loss. Both groups showed a similar distribution, maintaining comparability.

Table 6: Graft uptake outcome

Outcome	Group A	Group B
Success	21 (84%)	23 (92%)
Failure	4 (16%)	2 (8%)

Graph 4:



Graft uptake was higher in Group B (92%) compared to Group A (84%). The improved success rate in Group B may be due to better surgical technique, graft material, or postoperative care. Failure in a few cases could be due to infection, Eustachian tube dysfunction, or poor vascularity.

Table 7: Recurrence of otorrhea

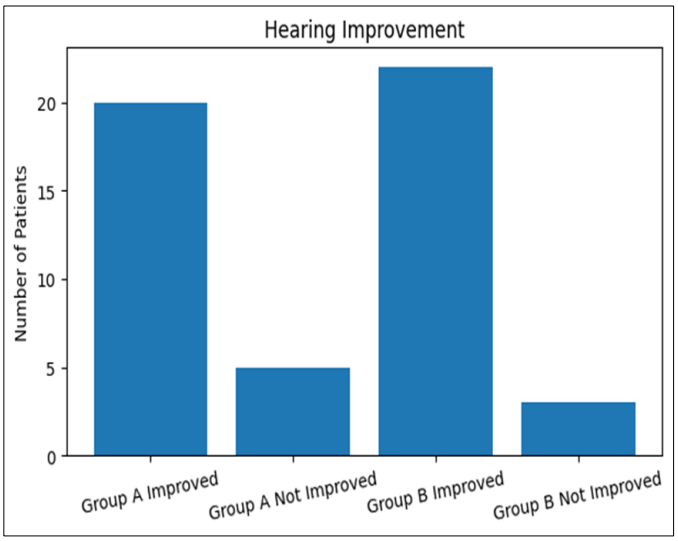
Recurrence	Group A	Group B
Present	4 (16%)	2 (8%)
Absent	21 (84%)	23 (92%)

Recurrence of otorrhea was less in Group B, correlating with the higher graft uptake rate. Persistent or recurrent discharge may be related to residual infection, poor middle ear aeration, or non-compliance with postoperative instructions.

Table 8: Hearing improvement

Outcome	Group A	Group B
Improved	20 (80%)	22 (88%)
Not improved	5 (20%)	3 (12%)

Graph 5:



Hearing improvement was observed in a greater proportion of Group B patients (88%) compared to Group A (80%). Successful graft uptake, restoration of tympanic membrane integrity, and absence of middle ear pathology likely contributed to better hearing outcomes.

Table 9:

Group	Mean Preoperative ABG (dB)	Mean Postoperative ABG (dB)	Mean ABG Closure (dB)
Group A (Tympanoplasty alone)	32 ± 5 dB	20 ± 4 dB	12 dB
Group B (Tympanoplasty + Cortical Mastoidectomy)	34 ± 6 dB	18 ± 3 dB	16 dB

Discussion

The results of the present study are comparable with previously published studies. Most authors have reported graft success rates ranging from 80% to 90% following tympanoplasty. Studies by Sheehy and Anderson, Vartiainen, and McGrew et al. have demonstrated that the addition of mastoidectomy does not significantly alter surgical outcomes in uncomplicated cases of tubotympanic CSOM. In the present study, graft uptake and hearing improvement were slightly higher in patients undergoing tympanoplasty with cortical mastoidectomy, although the difference was not statistically significant.

The present study demonstrates that tympanoplasty combined with cortical mastoidectomy provides marginally better graft uptake and hearing outcomes compared to tympanoplasty alone. The reduced recurrence rate in patients undergoing mastoidectomy may be attributed to improved clearance of mastoid pathology and enhanced middle ear ventilation. These findings are consistent with previous studies reported in the literature.

The mean preoperative air–bone gap was comparable between the two groups. Postoperative pure tone audiometry demonstrated improvement in both groups, with a greater mean air–bone gap closure observed in the

group undergoing tympanoplasty with cortical mastoidectomy.

Conclusion

Tympanoplasty with cortical mastoidectomy yields slightly superior anatomical and functional outcomes compared to tympanoplasty alone. However, tympanoplasty alone remains an effective surgical option in carefully selected uncomplicated cases of tubotympanic CSOM.

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