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A Comparative Study Of The Effectiveness Of Tympanoplasty With And Without Mastoidectomy In A Tertiary Care Hospital

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Abstract

Background: The role of cortical mastoidectomy in addition to tympanoplasty for CSOM[1] remains controversial. **Objective**: To compare outcomes of tympanoplasty with and without mastoidectomy. Methods: 200 patients were randomized into two groups. Outcomes measured included hearing improvement, graft uptake, and retraction. **Methods**: A prospective randomized study was conducted on 200 patients with CSOM. Patients were divided into two groups: Group 1 (tympanoplasty alone) and Group 2 (tympanoplasty with cortical mastoidectomy). Outcomes were assessed at 3 months postoperatively. **Results**: Hearing improvement (>15 dB) was achieved in 77% of Group 1 and 82% of Group 2 ($p>0.05$). Graft uptake was 75% and 81% respectively ($p>0.05$). Retraction rates were 23% in Group 1 and 13% in Group 2 ($p>0.05$). However, in bilateral cases, mastoidectomy showed statistically significant improvement ($p<0.05$). **Conclusion**: Tympanoplasty alone is sufficient in most cases of CSOM. Mastoidectomy does not significantly improve outcomes routinely but may be beneficial in selected cases such as bilateral disease.

Keywords: NIL

Introduction

Chronic suppurative otitis media (CSOM[1]) is a persistent inflammatory disease of the middle ear characterized by tympanic membrane perforation and recurrent ear discharge. It remains a significant health problem in developing countries due to factors such as poor hygiene, overcrowding, and limited access to healthcare.Tympanoplasty is a well-established surgical procedure aimed at eradicating disease and restoring hearing. The role of cortical mastoidectomy as an adjunct to tympanoplasty remains controversial. While some surgeons advocate mastoidectomy to improve aeration and reduce recurrence, others believe it does not significantly influence surgical outcomes.

The mastoid air cell system is thought to act as a reservoir, aiding middle ear ventilation. However, mastoidectomy[3] is associated with increased operative time, cost, and potential complications such as facial nerve injury and dural exposure.

Given the conflicting evidence, this study aims to evaluate the necessity and effectiveness of mastoidectomy when combined with tympanoplasty in patients with CSOM[1].

Materials And Methods

This prospective randomized study was conducted on 200 patients diagnosed with CSOM[1] at a tertiary care hospital.

'Study Design"

Patients were randomly divided into two groups:

Group 1 (n=100): Tympanoplasty without mastoidectomy[3] Group 2 (n=100): Tympanoplasty with cortical mastoidectomy[3]

Inclusion Criteria

1. Age >14 years
2. Moderate, large, or subtotal central perforation
3. Inactive or quiescent disease

4. Exclusion Criteria
5. Active infection
6. Cholesteatoma
7. Revision surgeries
8. Intracranial complications

Outcome Measures

1. Hearing improvement (>15 dB) assessed by pure tone audiometry
2. Graft uptake at 3 months
3. Postoperative tympanic membrane retraction

Statistical Analysis

Data were analyzed using SPSS software. Quantitative variables were expressed as mean ± SD and qualitative variables as percentages. Chi-square test and independent t-test were used. A p-value <0.05 was considered statistically significant.

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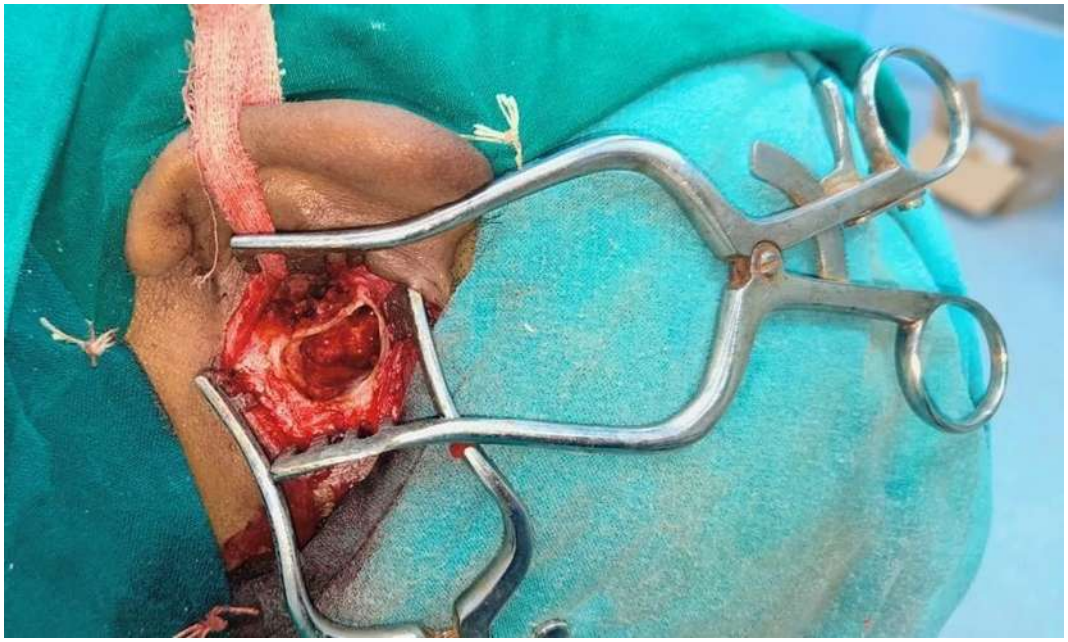

Surgery was done under local anaesthesia or under general anaesthesia , using Wilde's post auricular incision and underlay technique.

In group 1 tympanoplasty[2] without cortical mastoidectomy[3] was done. Standard underlay tympanoplasty was done. While in group 2 tympanoplasty with cortical mastoidectomy was done along with widening of the aditus and antrum, thorough removal of mastoid cells and exenteration of cells was attempted to remove any infection in air cells . The mastoid volume was enlarged to create a large air reservoir. Type of tympanoplasty was either type 1 or type 3 , with or without ossiculoplasty , depending on the intraoperative finding and pre operative hearing threshold. In both groups procedures were done by postauricular approach and using only autologous temporalis fascia as the grafting material. After grafting the middle ear was filled with gelfoam and graft secured. The ear canal was packed with gel foam and graft secured. The ear canal was packed with gel foam. A mastoid dressing was done for 1week post operatively. Sutures were removed on the 7th day postoperatively.

Adequate antibiotic coverage and anti-histaminics with decongestants were advised in all cases postoperatively.

Results

Comparison of retraction at 3 months between group 1 {without mastoidectomy[3]} and group 2 {with mastoidectomy}

Retractio n at 3months in bilateral	**Group 1 {without mastoidectomy}(n=11)**	**Group 2 {with mastoidectomy}(n=11)**	**Total**	**P value**
Absent	6 (54.55%)	11 (100%)	17 (77.27%)	
Present	5 (45.45%)	0 (0%)	5 (22.73%)	
Total	11	11	22	

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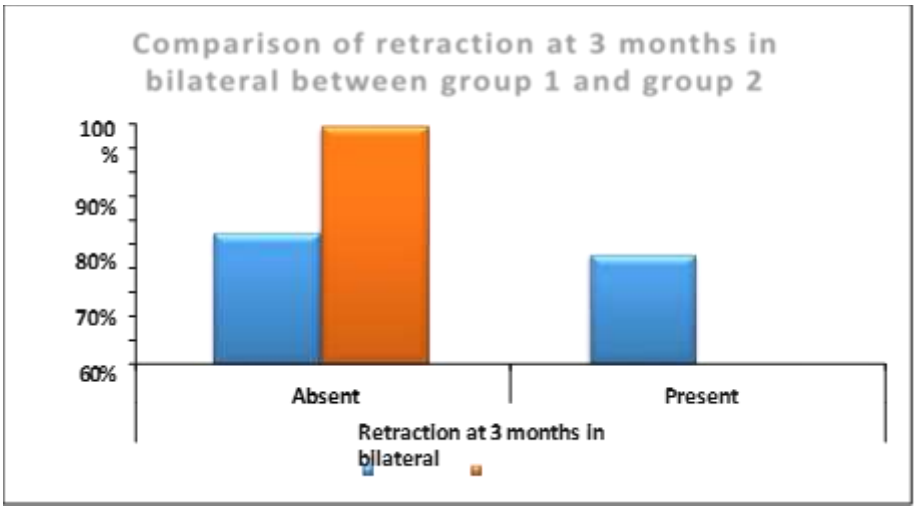
	(100%)	(100%)	(100%)	0.035 *



Comparison of graft uptake at 3 months between group 1 {without mastoidectomy[3]} and group 2 {with mastoidectomy}

Graft uptake at 3 months in bilaterl	Group 1 {without mastoidectomy}(n=11)	Group 2 {with mastoidectomy}(n=11)	Total	P value
Uptake	5 (45.45%)	11 (100%)	16 (72.73%)	
Failure	6 (54.55%)	0 (0%)	6 (27.27%)	
Total	11 (100%)	11 (100%)	22 (100%)	0.012 *

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Comparison of improvement in postoperative hearing threshold between group 1 {without mastoidectomy[3]} and group 2 {with mastoidectomy}.

Improveme nt in postoperative hearing threshold	Group 1 {without mastoidectomy}(n=100)	Group 2 {with mastoidectomy}(n=100)	Total	P value
No improvement <=15	23 (23%)	18 (18%)	41 (20.50%)	0.38
Improvement {>15 dB}	77 (77%)	82 (82%)	159 (79.50%)	
Total	100 (100%)	100 (100%)	200 (100%)	

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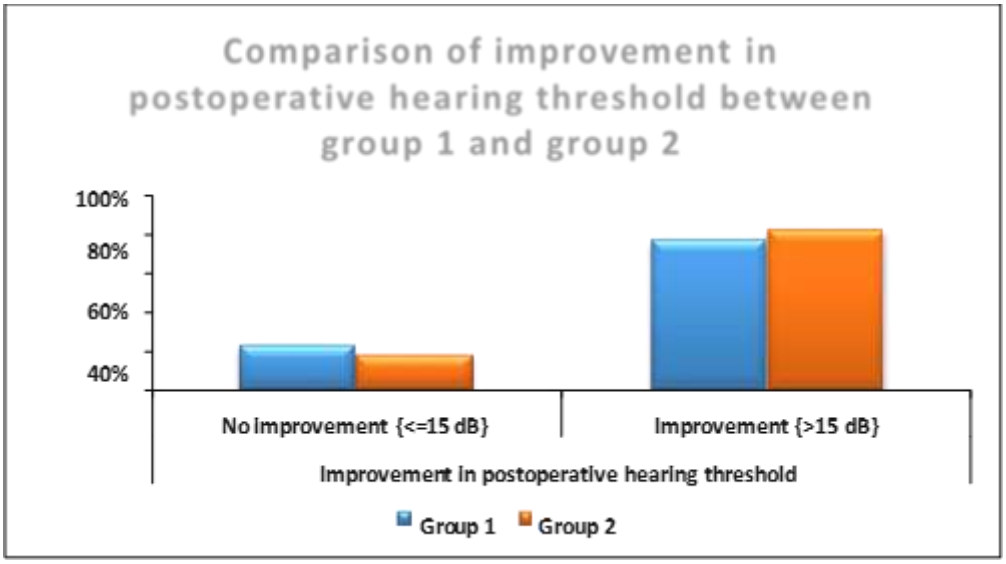

Both groups were comparable in terms of age, gender distribution, and size of perforation. Hearing Improvement

Group 1: 77% showed >15 dB improvement

Group 2: 82% showed >15 dB improvement No statistically significant difference ($p>0.05$)

Graft Uptake Group 1: 75%

Group 2: 81%

No statistically significant difference ($p>0.05$) Postoperative Retraction

Group 1: 23%

Group 2: 13%

No statistically significant difference ($p>0.05$) Bilateral Cases

In patients with bilateral disease, mastoidectomy[3] showed statistically significant improvement in hearing outcomes ($p<0.05$).

Review Of Literature

Several studies have evaluated the role of mastoidectomy[3] in conjunction with tympanoplasty[2]. McGrew et al.[4] conducted a large retrospective study and found no significant difference in graft uptake or hearing improvement between tympanoplasty alone and tympanoplasty with mastoidectomy. However, they noted a reduced rate of revision surgery in patients undergoing mastoidectomy.

Mishiro et al.[5] also reported comparable graft success rates and hearing outcomes in both groups, concluding that mastoidectomy may not be necessary in non-cholesteatomatous CSOM[1].

Balyan et al.[6] similarly found no statistically significant difference in outcomes, suggesting

that mastoidectomy[3] does not confer additional benefit in routine cases.

On the other hand, Nayak et al.[7] demonstrated improved graft uptake in patients with sclerotic mastoids undergoing mastoidectomy[3], highlighting its potential benefit in selected cases.

Studies have also emphasized the role of Eustachian tube function and mastoid pneumatization in determining surgical success. Poor aeration and tubal dysfunction may contribute to graft failure and retraction.

Overall, the literature suggests that while mastoidectomy[3] may not be routinely required, it could be beneficial in specific clinical scenarios..

Discussion

The present study demonstrates that the addition of cortical mastoidectomy to tympanoplasty does not significantly improve surgical outcomes in routine cases of CSOM[1].

The findings are consistent with studies by McGrew et al.[4] and Mishiro et al.[5], which reported comparable hearing improvement and graft uptake rates in both groups. Similarly, Balyan et al.[6] concluded that

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mastoidectomy[3] does not significantly influence surgical success.

The theoretical advantage of mastoidectomy[3] lies in improving middle ear aeration and eliminating residual disease. However, in cases with healthy mucosa and adequate Eustachian tube function, tympanoplasty[2] alone appears sufficient.

In the present study, although Group 2 showed slightly better outcomes in terms of hearing improvement and graft uptake, the difference was not statistically significant. This suggests that routine mastoidectomy[3] may not be justified given its added risks and costs.

However, a notable finding was the statistically significant improvement observed in bilateral cases. This may be attributed to poorer middle ear ventilation in such patients, where mastoidectomy[3] helps by increasing the air reservoir.

These findings support a selective approach to mastoidectomy[3] rather than its routine use. Patients with bilateral disease, poor Eustachian tube function, or sclerotic mastoids may benefit from mastoidectomy.

Conclusion

Tympanoplasty alone is effective in achieving satisfactory hearing improvement and graft uptake in most cases of CSOM[1].

Routine addition of mastoidectomy[3] does not significantly improve surgical outcomes. However, it may be beneficial in selected cases, particularly in patients with bilateral disease or compromised middle ear ventilation.

A tailored surgical approach based on individual patient factors is recommended.

References

1. Browning GG, Merchant SN, Kelly G, Swan IR, Canter R, McKerrow WS. Chronic otitis media. Scott-Brown's Otorhinolaryngology. 7th ed.
2. Wullstein H. Theory and practice of tympanoplasty. Laryngoscope. 1956.
3. Tos M. Middle ear ventilation and mastoid pneumatization. Acta Otolaryngol.
4. McGrew BM, Jackson CG, Glasscock ME. Impact of mastoidectomy on tympanic membrane repair. Laryngoscope. 2004.
5. Mishiro Y, Sakagami M, Kondoh K. Tympanoplasty with/without mastoidectomy. Eur Arch Otorhinolaryngol. 2001.
6. Balyan FR, Celikkanat S, Aslan A. Mastoidectomy in CSOM. Otolaryngol Head Neck Surg. 1997.
7. Nayak DR. Role of mastoidectomy in tympanoplasty. Indian J Otolaryngol.
8. Glasscock ME. Tympanic membrane grafting. Ann Otol Rhinol Laryngol.
9. Sheehy JL. Tympanoplasty: staging the operation. Laryngoscope.
10. Bluestone CD. Eustachian tube function in middle ear disease.
11. Holmquist J, Bergström B. Mastoid air cell system importance.
12. Sade J. Middle ear mucosa and aeration.
13. Jackler RK. Role of mastoid in chronic ear disease.
14. Vartiainen E. Results of tympanoplasty in chronic otitis media.
15. Merchant SN. Middle ear mechanics and pathology.

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