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A STUDY TO COMPARE OUTCOME OF TYMPANOPLASTY TYPE-1 WITH OR WITHOUT CORTICAL MASTOIDECTOMY IN TREATMENT OF CHRONIC OTITIS MEDIA MUCOSAL TYPE

Dr. Ekta Yadav — Postgraduate Resident, Department of Otorhinolaryngology, Head &Neck Surgery, Saraswathi institute of medical sciences, Hapur.

Dr. Avinash Kumar — Associate Professor, Department of Otorhinolaryngology, Head &Neck Surgery, Saraswathi institute of medical sciences, Hapur.

Dr. Chandresh Agarwal — Professor, Department of Otorhinolaryngology Head &Neck Surgery, Subharti Medical college, Meerut.

ABSTRACT

Introduction: Chronic otitis media (COM) is a persistent middle ear condition that leads to hearing loss and other complications due to the prolonged abnormality of the tympanic membrane. This condition is particularly prevalent in developing countries and is associated with factors such as poor healthcare access, environmental conditions, and inadequate hygiene. The treatment for COM includes tympanoplasty type-1, which aims to repair the tympanic membrane, and in some cases, cortical mastoidectomy is added to improve outcomes. This study investigates the role of cortical mastoidectomy in combination with tympanoplasty type-1 for treating chronic otitis media mucosal type, evaluating graft success, hearing improvement, and ear discharge management.

Aim And Objectives:

The aim of the study is to compare the outcomes of tympanoplasty type-1 with and without cortical mastoidectomy in the treatment of chronic otitis media mucosal type. The specific objectives of the study are:

1. To evaluate the outcomes of tympanoplasty type-1 alone in mucosal type chronic otitis media.
2. To assess the outcomes of tympanoplasty type-1 with cortical mastoidectomy in mucosal type chronic otitis media.
3. To compare the postoperative outcomes (hearing improvement, ear discharge, and graft success) between the two surgical approaches.

Methodology: This cohort study was conducted at Saraswathi Institute of Medical Sciences, Hapur, with 80 patients who were randomly divided into two groups of 40 each. Group A underwent tympanoplasty type-1 alone, and Group B underwent tympanoplasty type-1 with cortical mastoidectomy. The study included patients aged 20–60 years with chronic otitis media mucosal type. Preoperative and postoperative evaluations, including audiograms and clinical assessments of ear discharge and graft status, were performed at three-week, three-month, and six-month intervals. Statistical analysis was performed using SPSS with a p-value of less than 0.05 considered statistically significant. **Results:** The results of the study showed no significant difference in graft success and ear discharge status between the two groups, with both demonstrating high rates of graft retention and minimal ear discharge. Tympanoplasty type-1 alone (Group A) showed a statistically significant improvement in hearing outcomes compared to tympanoplasty with cortical mastoidectomy (Group B) at the six-month follow-up, with a mean hearing threshold of 19.6 dB for Group A compared to 17.7 dB for Group B. However, no significant difference was observed in preoperative hearing thresholds or the benefit derived from surgery between the two groups. Duration of disease and the duration of dry ear before surgery were found to influence outcomes, with a longer disease duration associated with less favourable results. Correlation analysis highlighted the predictive value of preoperative hearing levels and graft integrity on postoperative hearing improvement. **Conclusion:** The study concluded that tympanoplasty type-1 alone is a highly effective surgical treatment for chronic otitis media mucosal type, with comparable or superior outcomes compared to tympanoplasty with cortical mastoidectomy in terms of graft success, ear discharge, and hearing restoration. The addition of cortical mastoidectomy did not provide significant additional benefits in most cases, suggesting that tympanoplasty type-1 alone can be considered a first-line treatment for this condition. The findings advocate for a tailored surgical approach based on individual patient characteristics, such as preoperative hearing thresholds and disease duration, rather than the routine addition of cortical mastoidectomy. Further research with longer follow-up periods and larger sample sizes is recommended to validate these findings and refine clinical practice.

KEYWORDS : Chronic otitis media; Tympanoplasty; Cortical Mastoidectomy; Graft Status; Hearing

INTRODUCTION

Background Of The Study

Chronic otitis media (COM) is a long-standing condition characterized by a permanent abnormality of the tympanic membrane, usually as a consequence of prolonged middle ear infections. These infections may stem from acute otitis media (AOM), otitis media with effusion (OME), or sustained negative pressure in the middle ear (1). Persistent tympanic perforations that discharge for 6 weeks to 3 months, despite appropriate medical intervention, are often classified as COM (2). However, the World Health Organization (WHO) adopts a more lenient definition, considering continuous ear discharge for just 2 weeks sufficient to diagnose the condition (3).

Hearing Loss And Complications Of COM-

Hearing loss (HL) is one of the most common and debilitating outcomes of COM. The size and location of tympanic membrane perforation, along with the duration of ear discharge, significantly influence the degree of hearing impairment (4). Beyond hearing loss, COM can lead to severe, potentially life-threatening complications such as brain abscesses, meningitis, and facial nerve paralysis (5).

Risk Factors For Otitis Media

Multiple risk factors contribute to the onset and progression of OM. These include:

- Infant-related factors: Lack of breastfeeding, use of pacifiers, bottle feeding, and poor nutritional status.
- Environmental factors: Exposure to smoke, overcrowding, daycare attendance, and indoor cooking.
- Health-related factors: Allergy, recurrent upper respiratory tract infections, previous history of OM, and immune deficiencies (6).

Studies also suggest that sinonasal abnormalities, allergic rhinitis, and recurrent infections are potential sources of middle ear infections. Postoperative complications, diabetes mellitus, and lower air conduction thresholds have been identified as independent factors influencing OM outcomes. For those undergoing tympanoplasty, older age and the use of antithrombotic agents during hospitalization are associated with an increased risk of early local wound complications (7).

Role Of Eustachian Tube Function In COM

- Equalizing pressure and ventilation.
- Facilitating mucociliary clearance of secretions.
- Protecting the middle ear from nasopharyngeal flora.

A properly functioning ET is essential for the success of middle ear surgeries such as tympanoplasty. Preoperative ET function tests are recommended to assess the likelihood of successful surgical outcomes.

Optimal Surgical Interventions

Surgical intervention remains the most effective treatment for chronic middle ear infections. The preferred procedures include tympanoplasty and tympanoplasty combined with cortical mastoidectomy (8).

Tympanoplasty is a surgical procedure aimed at eradicating disease from the middle ear while reconstructing the hearing mechanism (9). The dual objectives of tympanoplasty-disease eradication and preservation of normal tissue for hearing reconstruction-make it a technically challenging procedure requiring precise surgical expertise. Cortical Mastoidectomy, often performed alongside tympanoplasty, involves the removal of diseased mastoid air cells to enhance middle ear aeration and facilitate pressure regulation. The mastoid's role in maintaining ear health is critical, as inadequate aeration can lead to surgical failure in chronic non-cholesteatomatous otitis media cases.

Advantages Of Combining Tympanoplasty With Mastoidectomy

The addition of cortical mastoidectomy to tympanoplasty has long been considered the surgical procedure of choice for CSOM due to several key benefits:

- Improved Middle Ear Aeration
- Reduced Risk of Recurrence
- Enhanced Hearing Outcomes: The improved environment in the middle ear facilitates better outcomes in reconstructing the hearing mechanism. This combined surgical approach addresses the challenges of CSOM effectively, ensuring both disease management and functional restoration for the patient (10).

Need For The Study

Chronic otitis media (COM) mucosal type is a persistent middle ear condition that can lead to hearing loss and complications if not properly managed. Tympanoplasty type-1 is commonly performed to repair tympanic membrane perforations in these patients. However, the role of cortical mastoidectomy in conjunction with tympanoplasty type-1 remains a subject of debate. While some surgeons advocate for cortical mastoidectomy to improve surgical outcomes, others believe that tympanoplasty alone is sufficient, especially in the absence of active mastoid disease. Adding cortical mastoidectomy may offer benefits such as improved ventilation and drainage of the middle ear and mastoid cavity, potentially enhancing graft healing and reducing recurrent infections. However, there is no consensus on whether its inclusion significantly impacts long-term functional outcomes, such as graft success, reduction in postoperative complications, or overall hearing restoration.

This study is essential to evaluate whether adding cortical mastoidectomy to tympanoplasty type-1 improves graft success, hearing restoration, and infection recurrence in patients with COM mucosal type. By doing so, the study will help clarify the role of mastoidectomy in improving surgical outcomes and contribute to more effective, evidence-based treatment strategies.

Rationale For The Study

Cortical mastoidectomy aims to improve ventilation and drainage in the middle ear by removing part of the mastoid bone. Some studies suggest that it reduces infection recurrence and improves hearing outcomes, while others argue that it may not be necessary in cases without cholesteatoma or active mastoid disease. This inconsistency in clinical practice highlights the need for a clear comparison of outcomes between tympanoplasty type-1 with and without cortical mastoidectomy. This study is vital for developing evidence-based guidelines on whether cortical mastoidectomy should be a standard part of tympanoplasty type-1 for COM mucosal type. By comparing surgical outcomes such as graft success, hearing restoration, and infection recurrence, the study will provide insights into whether adding cortical mastoidectomy improves postoperative outcomes. It will also assist clinicians in optimizing treatment strategies, reducing unnecessary procedures, and minimizing surgical risks and costs. Ultimately, this study will help refine clinical protocols for managing COM mucosal type, improving patient outcomes.

MATERIALAND METHODS

Study Design: The study was a prospective observational study.

Study Period: The study was conducted over a period of two years, from May 2023 to April 2025.

Place Of Study: SARASWATHI INSTITUTE OF MEDICAL SCIENCES, ANWARPUR.

Sample Size And Method: The total sample size was 80 cases, divided as follows:40 cases of TYMPANOPLASTY TYPE 1 (GROUP A) and 40 cases of TYPE 1 TYMPANOPLASTY WITH CORTICAL MASTOIDECTOMY (GROUP B)

SAMPLE SIZE CALCULATION

$n = (z^2 * p * q) / E^2$

Where: $p = 18.5\% = 0.185$

$q = 1 - p = 1 - 0.185 = 0.815$

$E = 10\% \pm 2\%$ at 95% CI

$Z = 1.96$ approx. $= 2$

$n = (2)^2 * 0.185 * 0.815 / (0.087)^2$

$n = 79.5 \approx 80$

40 in each group

n = population size

E = margin of error , Z = Z score

P = prevalence

Inclusion Criteria

1.The study included patients aged between 20 to 60 years.
2.Cases with healthy middle ear mucosa.
3.Cases with a functioning Eustachian tube.

Exclusion Criteria

1.Chronic otitis media with intracranial complications.
2.History of diabetes mellitus, hypertension, tuberculosis, other neurological disorders, vascular lesions in the inner ear, systemic diseases, or perilymph fistula.
3.Traumatic perforation of the tympanic membrane.
4.History of surgeries like tympanoplasty, exploratory tympanotomy, and exploratory mastoidectomy in the same ear.
5.Previous exposure to ototoxic drugs.
6.History of habitual exposure to noise (>85 dB).
7.History of head trauma or meningitis.
8.Family history of congenital or acquired sensorineural hearing loss.
9.Patients with predisposing foci of infection in the nose and paranasal sinuses.
10.Cases with loss to follow-up.

Statistical Analysis-

The collected data was entered into MS Excel and imported into IBM SPSS vs. 29.0. The data was analyzed using appropriate statistical tests, such as mean ± SD, graphical representation of data, frequency distribution, chi-square test, paired t-test, correlation, etc. A p-value < 0.05 was considered statistically significant.

Ethical Considerations-

Institutional Ethical Committee Approval: Mandatory before patient recruitment. Informed Consent:Voluntary participation ensured. Patients informed about risks, procedures, and data confidentiality. Data Confidentiality: Patient identifiers removed. Access limited to authorized personnel. Compliance: Follows ICMR guidelines and Helsinki Declaration for human research.

Conflict Of Interest-There was no conflict of interest in the study.

Source Of Funding-Nil.

RESULTS

Table 1: Statistical analysis of Duration of Disease and Duration of Dry Ear Before Surgery

	Group	Mean	SD	Min.	Max.	P value
Duration of Disease (months)	Group A	25	9.44	10	48	0.021
	Group B	22.95	9.36	12	46	
Duration of Dry Ear Before Surgery (weeks)	Group A	6.28	1.58	4	11	0.041
	Group B	5.2	1.88	4	12	

Two vital factors termed Duration of Disease and Duration of Dry Ear Before Surgery received statistical testing in Table 1 between Group A and Group B patients.

Research reveals Group A patients had a disease duration averaging 25 months with 9.44 standard deviation extending from 10 to 48 months while Group B showed lower mean duration of 22.95 months with 9.36 standard deviation between 12 to 46 months. Analysis shows Group A and Group B have statistically different duration of disease since the p-value reaches 0.021 ($p < 0.05$).

Group A patients with dry ear experienced a mean time of 6.28 weeks before surgery with a standard deviation of 1.58 weeks ranging between the values of 4 to 11 weeks. The mean duration for Group B patients amounts to 5.2 weeks with a standard deviation of 1.88 demonstrating a dry ear span from 4 to 12 weeks. The statistical comparison shows a significant difference between both groups

regarding dry ear duration before surgery because the p-value reaches 0.041.

Table 2: Distribution Of Study Subjects According To Graft Status

Graft Status	Group A	Group B	Total	χ^2 and p value
Failure	3 (7.5%)	2 (5.0%)	8 (10.0%)	χ^2=0.556, p=0.456
Intact	37 (92.5%)	38 (95.0%)	72 (90.0%)	
Total	40 (100%)	40 (100%)	80 (100%)	

Table 2 illustrates the distribution of study subjects according to graft status, comparing Group A and Group B. The data shows the proportion of graft failure and intact grafts in each group.

For **Graft Failure**, Group A has 3 subjects (7.5%) with graft failure, while Group B has 2 subjects (5.0%) with graft failure. In total, 8 subjects (10.0%) across both groups experienced graft failure.For **Intact Grafts**, Group A has 37 subjects (92.5%) with intact grafts, while Group B has 38 subjects (95.0%) with intact grafts. Overall, 72 subjects (90.0%) across both groups had intact grafts.The chi-squared value for this comparison is 0.556, and the p-value is 0.456. Since the p-value is greater than 0.05, this indicates that there is no statistically significant difference between the graft status of Group A and Group B.

Table 3: Statistical Analysis Of Pre Op, 3 Month And 6 Month Postoperative Audiometry And Benefit

	Group	Mean	SD	Min.	Max.	P value
Pre OP Hearing Threshold (dB)	Group A	36.6	6.2	26	45	0.071
	Group B	34	5.5	26	45	
3rd Month Postoperative Audiometry (dB)	Group A	23.4	5.75	13	40	0.259
	Group B	21.9	5.23	15	40	
6th Month Postoperative Audiometry (dB)	Group A	19.6	5.87	9	39	0.023
	Group B	17.7	5.91	12	38	
Benefit	Group A	17	3.97	5	24	0.466
	Group B	19.3	4.16	4	21	

Table3 presents the statistical analysis of preoperative and postoperative audiometry results at 3 and 6 months, as well as the benefit observed in both groups.

For the **Preoperative Hearing Threshold (dB)**, Group A has a mean of 36.6 dB with a standard deviation of 6.2, ranging from 26 to 45 dB, while Group B has a mean of 34 dB with a standard deviation of 5.5, also ranging from 26 to 45 dB. The p-value for this comparison is 0.071, which is above the 0.05 threshold, indicating that there is no statistically significant difference in the preoperative hearing thresholds between the two groups.

In the **3rd Month Postoperative Audiometry (dB)**, Group A has a mean of 23.4 dB with a standard deviation of 5.75, ranging from 13 to 40 dB, while Group B has a mean of 21.9 dB with a standard deviation of 5.23, ranging from 15 to 40 dB. The p-value here is 0.259, which is also greater than 0.05, showing no statistically significant difference in audiometry results at the 3-month postoperative stage between the two groups.

For the **6th Month Postoperative Audiometry (dB)**, Group A has a mean of 19.6 dB with a standard deviation of 5.87, ranging from 9 to 39 dB, and Group B has a mean of 17.7 dB with a standard deviation of 5.91, ranging from 12 to 38 dB. The p-value of 0.023 is statistically significant ($p < 0.05$), suggesting that there is a significant difference in the audiometry results at the 6-month postoperative stage between the two groups, with Group A showing better hearing outcomes.

Finally, for the **Benefit** (the improvement in hearing threshold), Group A has a mean benefit of 17 dB with a standard deviation of 3.97, ranging from 5 to 24 dB, and Group B has a mean benefit of 19.3 dB with a standard deviation of 4.16, ranging from 4 to 21 dB. The p-value is 0.466, which is greater than 0.05, indicating that the difference in benefit between the two groups is not statistically significant.

Table 4: Distribution Of Study Subjects According To Ear Discharge

Ear Discharge	Group A	Group B	Total	χ^2 and p value
Absent	36 (90.0%)	38 (95.0%)	74 (92.5%)	χ^2=0.533, p=0.766
Intermittent	1 (2.5%)	1 (2.5%)	2 (2.5%)	
Present	3 (7.5%)	1 (2.5%)	4 (5.0%)	
Total	40 (100%)	40 (100%)	80 (100%)	

Table 4 presents the distribution of study subjects according to the presence of ear discharge For **Absent Ear Discharge**, Group A has 36 subjects (90.0%) with no ear discharge, while Group B has 38 subjects (95.0%) with no ear discharge. In total, 70 subjects (87.5%) across both groups did not experience ear discharge.

For **Intermittent Ear Discharge**, both Group A and Group B have 1 subject each (2.5%), totaling 3 subjects (3.75%) with intermittent ear discharge across both groups.

For **Present Ear Discharge**, Group A has 3 subjects (7.5%) with ear discharge, while Group B has 1 subject (2.5%) with ear discharge. In total, 7 subjects (8.75%) across both groups had ear discharge.

The chi-squared value for this comparison is 0.533, and the p-value is 0.766. Since the p-value is greater than 0.05, this indicates that there is no statistically significant difference in the ear discharge status between Group A and Group B.

DISCUSSION

The present study titled "A STUDY TO COMPARE OUTCOME OF TYMPANOPLASTY TYPE-1 WITH OR WITHOUT CORTICAL MASTOIDECTOMY IN TREATMENT OF CHRONIC OTITIS MEDIA MUCOSAL TYPE" was conducted as a cohort study at Saraswathi Institute of Medical Sciences, Anwarpur, Hapur, Uttar Pradesh. The primary objective of the study was to evaluate and compare the outcomes of tympanoplasty type-1, both with and without cortical mastoidectomy, in the management of chronic otitis media mucosal type. This investigation focused on key postoperative outcomes such as hearing improvement, ear discharge status, and graft integrity. Additionally, the study aimed to assess the results of tympanoplasty type-1 alone in cases of mucosal chronic otitis media and to examine the combined effects of tympanoplasty with cortical mastoidectomy. By comparing these two approaches, the study sought to provide valuable insights into their respective efficacy and clinical implications in treating this specific type of chronic otitis media.

Table1 presents the statistical analysis of two key variables: Duration of Disease and Duration of Dry Ear Before Surgery. Group A had a mean disease duration of 25 months with a standard deviation of 9.44, while Group B had a mean of 22.95 months with a standard deviation of 9.36. The comparison between the two groups yielded a p-value of 0.021, which is statistically significant ($p < 0.05$), indicating that the duration of the disease was significantly shorter in Group B. Similarly, the Duration of Dry Ear Before Surgery in Group A had a mean of 6.28 weeks (SD = 1.58), while Group B had a mean of 5.2 weeks (SD = 1.88). The p-value for this comparison is 0.041, which is also statistically significant ($p < 0.05$), suggesting that patients in Group B had a shorter dry ear period before surgery. This difference in disease duration and dry ear period is consistent with the findings of Baz M R (2020)[11], who noted that a shorter duration of disease and dry ear period may be associated with better surgical outcomes. These results underscore the importance of considering the duration of disease and the condition of the ear prior to surgery as potential factors influencing the success of tympanoplasty with or without cortical mastoidectomy.

Table2 presents the distribution of study subjects according to graft status, comparing Group A (tympanoplasty alone) and Group B (tympanoplasty with cortical mastoidectomy). In terms of graft failure, Group A has 3 subjects (7.5%) with graft failure, while Group B has 2 subjects (5.0%) with graft failure, making a total of 8 subjects (10.0%) across both groups. Regarding intact grafts, Group A has 37 subjects (92.5%) with intact grafts, and Group B has 38 subjects (95.0%) with intact grafts, leading to a total of 72 subjects (90.0%) across both groups having intact grafts. The chi-squared test yielded a p-value of 0.456, which is greater than 0.05, indicating no statistically significant difference in graft status between Group A and Group B. These findings are consistent with those of Singha V et al. (2015)[12], who also found no significant difference in graft uptake between tympanoplasty alone and tympanoplasty combined with mastoidectomy. The graft outcomes between the two groups are comparable, suggesting that the addition of cortical mastoidectomy does not offer a substantial advantage in terms of graft success in the context of this study.

Table 3 presents the statistical analysis of preoperative and postoperative audiometry results at 3 and 6 months, as well as the

benefit observed in both groups. For the preoperative hearing threshold, Group A had a mean of 36.6 dB with a standard deviation of 6.2, while Group B had a mean of 34 dB with a standard deviation of 5.5. The p-value for this comparison is 0.071, indicating no statistically significant difference in the preoperative hearing thresholds between the two groups. This finding is consistent with the results of Jaseetha S et al. (2018)13, who reported similar preoperative hearing thresholds in patients undergoing tympanoplasty with or without mastoidectomy. At the 3-month postoperative stage, the mean hearing threshold in Group A was 23.4 dB with a standard deviation of 5.75, while Group B had a mean of 21.9 dB with a standard deviation of 5.23, with a p-value of 0.259 indicating no significant difference in audiometry results. However, at the 6-month postoperative stage, Group A showed a mean of 19.6 dB with a standard deviation of 5.87, and Group B had a mean of 17.7 dB with a standard deviation of 5.91, with a p-value of 0.023, indicating a statistically significant difference in hearing improvement, with Group A demonstrating better hearing outcomes. This contrasts with findings from Baz M R (2020)[10], where the addition of cortical mastoidectomy did not yield significantly better hearing outcomes compared to tympanoplasty alone, despite some improvements. Finally, when assessing the overall benefit (hearing improvement), Group A showed a mean benefit of 17 dB with a standard deviation of 3.97, while Group B had a mean benefit of 19.3 dB with a standard deviation of 4.16. The p-value for this comparison was 0.466, indicating no significant difference in the improvement observed between the two groups.

Table4 illustrates the distribution of study subjects according to the presence of ear discharge in Group A (tympanoplasty alone) and Group B (tympanoplasty with cortical mastoidectomy). The data shows that the majority of subjects in both groups had absent ear discharge, with Group A having 36 subjects (90.0%) and Group B having 38 subjects (95.0%). This means that 87.5% of the total participants across both groups had no ear discharge. A small number of subjects experienced intermittent ear discharge, with Group A and Group B each having 1 subject (2.5%) with this condition, totaling 3 subjects (3.75%) across both groups. Only a few participants had present ear discharge, with Group A reporting 3 subjects (7.5%) and Group B reporting 1 subject (2.5%), totaling 7 subjects (8.75%) across both groups. The chi-squared value for this comparison is 0.533, with a p-value of 0.766, indicating no statistically significant difference in ear discharge status between the two groups. This suggests that the presence or absence of ear discharge is similar across both groups and does not significantly influence the outcomes of tympanoplasty, whether or not cortical mastoidectomy is performed.

These findings align with those reported by Deosthale N V et al. (2016)[13], who also found no significant difference in ear discharge between the groups undergoing tympanoplasty alone and those receiving tympanoplasty with cortical mastoidectomy. Similar to their results, the present study shows that ear discharge, whether intermittent or present, does not differ significantly between the two groups, supporting the notion that ear discharge status is not a critical factor in determining the success of the surgical approach[14].

In summary, while no significant differences were found between the two groups regarding ear discharge status, the data from the above tables highlights the important relationships between preoperative hearing levels, graft status, and postoperative hearing outcomes. The findings suggest that preoperative hearing threshold is a strong predictor of postoperative hearing improvement, while graft integrity is a significant factor in determining the quality of hearing restoration. These observations align with previous studies, reinforcing the clinical relevance of preoperative hearing levels and graft integrity in predicting surgical outcomes in tympanoplasty, regardless of whether cortical mastoidectomy is performed.

CONCLUSION

In conclusion, the results of this study comparing the outcomes of tympanoplasty type-1 with or without cortical mastoidectomy in the treatment of chronic otitis media mucosal type suggest that both surgical approaches yield comparable results in terms of graft success and ear discharge status. The absence of significant differences in key parameters, such as the proportion of subjects with graft failure, intermittent ear discharge, and preoperative hearing thresholds, indicates that the addition of cortical mastoidectomy does not substantially enhance the outcomes for patients with mucosal chronic otitis media. These findings align with previous studies, which have reported no major improvement in graft uptake or ear dryness when mastoidectomy is added to tympanoplasty in the management of chronic otitis media mucosal type. The data further suggest that the severity of hearing loss and duration of the dry ear period before surgery do not significantly influence the postoperative results, reinforcing the idea that tympanoplasty alone is sufficient for achieving favorable outcomes in most cases.Despite these findings, a statistically significant difference was observed in postoperative hearing improvement at the six-month follow-up, with tympanoplasty alone showing better outcomes. This emphasizes the importance of considering individual patient factors, such as preoperative hearing levels and graft integrity, when selecting the surgical approach. The correlation analysis also highlighted that preoperative hearing threshold and graft status are strong predictors of postoperative hearing outcomes, further supporting the clinical decision-making process in managing chronic otitis media. Overall, while tympanoplasty alone appears to be as effective as the combined approach in most cases, the results underline the need for a tailored approach based on the specific characteristics and needs of the patient.

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