

Original article:

Study of effectiveness of cortical mastoidectomy on tympanoplasty

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Abstract:

Introduction: The two opposing demands of tympanoplasty namely removal of all disease process and at the same time trying to maintain as much of normal tissue as possible to facilitate reconstruction of hearing mechanism is a demanding task.

Material and methods: The study was carried out on 50 patients, who were divided into two groups of 25 patients respectively. Group A to consist of patients undergoing only tympanoplasty and Group B to consist of patients undergoing tympanoplasty surgery with mastoidectomy.

Results: In our study, Right sided ear was found to be affected in 30 cases (60%) and left sided was found to be affected in 20 cases (40%). This was in correlation with the study conducted by S.K.Nagle where the perforation was more commonly found on the right side.

Conclusions: A simple mastoidectomy is an effective means of repneumatizing the mastoid air cell system as well as eradicating the mastoid source of infection.

Introduction

The two opposing demands of tympanoplasty namely removal of all disease process and at the same time trying to maintain as much of normal tissue as possible to facilitate reconstruction of hearing mechanism is a demanding task.¹ As long as there is infection lurking in and around the middle ear cleft especially mastoid antrum, any attempt at reconstruction may seem futile. In this context cortical mastoidectomy could be beneficial in the final outcome of tympanoplasty. An attempt is made in this study to analyse the role of cortical mastoidectomy with tympanoplasty in the surgical outcome of patients with mucosal COM with poorly

pneumatized or sclerotic mastoid on x-ray, Schuller's view.² With this view present work was done to study effectiveness of cortical mastoidectomy on tympanoplasty.

Material and methods

Institutional Ethics Committee Clearance was obtained before start of study and written and informed consent for the procedure was obtained from all the patients. The study was carried out on 50 patients, who were divided into two groups of 25 patients respectively.

Group A to consist of patients undergoing only tympanoplasty and Group B to consist of patients undergoing tympanoplasty surgery with mastoidectomy.

The segregation of patients into the two groups was randomized.

Inclusion and Exclusion criteria

Inclusion criteria :

- ❖ Age 15-60 years
- ❖ Patient with inactive mucosal chronic otitis media
- ❖ Isolated conductive hearing loss
- ❖ X ray mastoid Schuller's view showing sclerotic mastoid

Exclusion criteria :

- ❖ Age less than 15 years and more than 60 years.
- ❖ Patients having Attico-antral disease of the ear.
- ❖ Patient with active mucosal chronic otitis media
- ❖ X ray mastoid Schuller's view showing pneumatic mastoid

- ❖ Patient with sensory neural hearing loss and mixed hearing loss
- ❖ Immunocompromised patients.
- ❖ Medical contraindications to undergo surgery.

Sampling procedure: A predesigned proforma will be used to record the relevant information (patient's data, clinical findings, investigation reports) from the individual patient selected with the above inclusion and exclusion criteria.

Methodology: The patients were selected consecutively as and when they present during the study period considering the inclusion and exclusion criteria. And the outcome of results of tympanoplasty with cortical mastoidectomy will be compared with tympanoplasty without cortical mastoidectomy.

Observation and results

Table 1: Side wise distribution of cases in Group I and Group II

Side	Group I	Group II	Total
Right	14	16	30
Left	11	9	20
Total	25	25	50

Chi-square = 0.33, P>0.05

- Total numbers of patients with disease on right side were 30 with 14 patients in Group I and 16 patients in Group II
- Total numbers of patients with disease on left side were 20 with 11 patients in Group I and 9 Group II.

Table 2: Unilateral/Bilateral wise distribution of cases in Group I and Group II

Unilateral/Bilateral	Group I	Group II	Total
Unilateral	22	21	43
Bilateral	3	4	7
Total	25	25	50

Fisher exact test = 1

- There was total number of 43 patients who had unilateral disease out of which 22 were in the Group I and 21 in Group II.
- Total 7 patients had bilateral disease 3 in Group I and 4 in Group II
- In the patients with bilateral COM, the ear which showed higher conductive deafness was operated and included in the study.

Table 3: Post operative discharge wise distribution of cases in Group I and Group II

Post operative Discharge	Group I (n=25)	Group II (n=25)	Z Value	P Value
	2 (8)	1 (4)	0.59	>0.05

- Post operatively 3 patients had discharge due to infection out of which 2 were in Group I (8%) and 1 in Group II (4%)

Table 4: Comparison of audiological assessment in Group I and Group II

Audiological assessment (db)	Group I (n=25)		Group II (n=25)		t Value	P Value
	Mean	SD	Mean	SD		
At Pre op	35.20	6.690	36.20	6.338	0.54	>0.05
At 3 months	15.60	5.831	14.20	6.403	0.81	>0.05
At 6 months	13.20	5.930	12.20	6.137	0.59	>0.05

- The mean air bone gap at pre op in Group I was 35.20 db and in Group II 36.20db
- Post operative assessment at 3rd month revealed mean air bone gap of 15.60 db in Group I and 14.20 db in Group II
- At 6th month mean air bone gap of 13.20 db in Group I and 12.20 db in Group II

Discussion

Tympanoplasty refers to any operation involving reconstruction of the tympanic membrane and/or the ossicular chain.

In our study, Right sided ear was found to be affected in 30 cases (60%) and left sided was found to be affected in 20 cases (40%). This was in correlation with the study conducted by S.K.Nagle where the perforation was more commonly found on the right side¹. In a study conducted by MR Haque³⁵ the perforation was found more on the left side which was in contrast to our study.

In a study conducted by McGrew et al of a sample size of 484 patients which were followed up for a period of 33 months had a success rate of 91.6% in mastoidectomy with tympanoplasty

and 90.6% in tympanoplasty revealing that mastoidectomy does not influence the outcomes of surgery for of tympanic membrane perforations, but may improve underlying disease process.³

The present study is in accordance with A.Krishnan et al, Balyan et al, Y. Mishiro et al and Bhat et al studies. In our study the difference in hearing improvement between the two groups were not statistically significant. In a study by Toros et al⁴ evaluated tympanoplasty with or without mastoidectomy performed in patients with sclerotic mastoid bone, as for hearing results and graft success and couldn't find any statistically significant difference between both groups. ⁵They indicated that

simple mastoidectomy is an effective intervention in establishing re pneumatization of sclerotic mastoid cells and eradication of infection within mastoid bones. However they also asserted that especially in cases scheduled for myringoplasty only, its added benefits, potential risks and cost effectiveness should be meticulously evaluated. Study done with

higher sample size will be more needful.⁶

Translational research aproch will be more beneficial and ethically should be sound.^{7,8}

Conclusions

A simple mastoidectomy is an effective means of repneumatizing the mastoid air cell system as well as eradicating the mastoid source of infection.

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