Original Research Article

An observation study of type I tympanoplasty with and without mastoidectomy in safe type of chronic suppurative otitis media

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Abstract

Background: CSOM (Chronic suppurative otitis media) is highly prevalent condition in developing countries. It has various effects on health of a person. Hearing loss and learning disabilities are frequently seen in children. Tympanoplasty and mastoidectomy are considered as important surgeries for treating the disease. **Aim and objective:** To compare results of type 1 tympanoplasty with and without mastoidectomy using following parameters Graft status, Hearing status by post operative audiometry and Ear discharge**. Methodology:** Study was done on patients with Chronic Suppurative Otitis Media. Two groups were studied. Group A underwent type 1 tympanoplasty and Group B underwent Tympanoplasty with masiridectomy. Both groups were compared for outcome like graft status, audiological assessment and ear discharge after surgery. **Results and discussion:** Maximum patients were in the age group of 20-29 years (Group A 43.3% and Group B 50%). Majority of the patients in our study were having unilateral CSOM. Type 1 tympanoplasty and tympanoplasty with mastoidectomy did not show statistically significant differences with respect to graft status, audiological assessment and ear discharge after surgery. ($p>0.05$)

Key Word: chronic suppurative otitis media.

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INTRODUCTION

Chronic suppurative otitis media (CSOM) is characterized by a persistent discharge from the middle ear through a tympanic perforation. It is an important cause of preventable hearing loss, particularly in the developing world. The disease usually begins in childhood [1,2] as a spontaneous tympanic perforation due to an acute infection of the middle ear, known as acute otitis media Most of the patients develop either recurrent episodes of otorrhoea (active CSOM) or a dry but permanent tympanic perforation (inactive CSOM). In majority cases the perforation heals imperfectly with areas of retraction and scarring in the eardrum. The episodes of otorrhoea are often provoked by upper respiratory infections. Incidence of CSOM is higher in poor socioeconomic group, poor nutrition and lack of health education in rural population. CSOM produces mild to moderate conductive hearing loss in more than 50% of cases. CSOM in children is likely to inhibit language and cognitive development. Several studies have proved persistent and significant hearing loss from otitis media during the first two years of life with learning disabilities.[3,4] (CSOM in some cases show complications as facial nerve paralysis, lateral sinus thrombosis, labyrinthitis, meningitis and brain abscess [5,6]. Mastoidectomy and tympanoplasty are frequently needed surgeries to permanently cure CSOM. Tympanoplasty is a procedure used to eradicate disease in the middle ear and to reconstruct the hearing mechanism with or without tympanic membrane grafting [7,8]. Cortical mastoidectomy is an operation performed to remove disease from the

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mastoid antrum and the air cell system and aditus ad antrum with preservation of intact bony external auditory canal wall, without disturbing the existing middle ear contents [9]. In present study we compared both the techniques I.e tympanoplasty and tympanoplasty with mastoidectomy for graft status and audiological improvement.

Aim and objective: To compare results of type 1 tympanoplasty with and without mastoidectomy using following parameters Graft status, Hearing status by post operative audiometry and Ear discharge.

MATERIAL AND METHODS

This is prospective study of results of type 1 tympanoplasty with and without mastoidectomy. This study comprises of 60 patients of chronic suppurative otitis media safe type with dry ear. This study had been carried from October 2011to to date in ENT department at Kamenini Institute Of Medical Sciences, Narketpally. 30 cases was selected for type 1 tympanoplasty alone (group A) and 30 cases for type 1 tympanoplasty with cortical mastoidectomy (group B).

Inclusion criteria: 1.Age between 20 to 60 years. 2.Cases with healthy ear mucosa and central perforation 3.patients with a discharge free period of minimum 6 weeks and conductive loss within 45dB.

Exclusion criteria: 1. Patients with systemic diseases like diabetes, hypertension, tuberculosis, cardiac problems 2. Active ear discharge 3. patients with Nasal allergy, Otitis externa. 4.Patients with history of previous ear surgeries 5. Patients with diagnosis of mixed hearing loss or sensorineural hearing loss. Study was approved by ethical committee of the institute. A valid written consent was taken from the patients after explaining study to them. Alternate patients were taken for type 1 tympanoplasty with mastoidectomy and for type 1 tympanoplasty without mastoidectomy. Data was collected with per tested questionnaire. Data included sociodemographic data and clinical history. A through clinical examination of ear nose throat including Examination under microscope was done. All patients underwent investigations like Routine blood and urine examinations, x-ray mastoid, Pure tone Audiometry and Eustachian tube function. Patients underwent surgery as per the study group. We followed the patients for 6 months. Pure tone audiometry was done at 3 months and 6 months follow up. Outcome was measured as per Graft status, Hearing status by post operative audiometry and Ear discharge. All data recorded. Data was analyzed using SPSS software version 22. P value <0.05 is considered for statistical significance.

RESULTS

Table 1 shows Comparison of patients of CSOM (Group A and Group B) according to age group. Maximum patients were in the age group of 20-29 years (Group A 43.3% and Group B 50%). In the age group 30-39 years Group A patients were 36.7% and Group B were 23.3%. in age group of 50-59 years less patients were observed (3.3% and 6.7%). Mean age of the patients in Group A was 27.34± 2.1 years and in Group B was 26.34± 1.6 years. In group A males were 53.3% and females were 46.7%. In group B males were 40 % and females were 60%. More females were observed in group B. Majority of the patients in our study were having unilateral CSOM. In Group A 76.7% patients had unilateral CSOM while 90% of patients in Group B had unilateral CSOM. (table 3) Both the groups were comparable with respect to size of perforation and duration of discharge. After operative procedure, we followed the patients for graft status. In Group A out of total 30 patients, 27 (90%) patients have taken up the Graft and 3(10%) patient's graft failed. In Group B where we did tympanoplasty with cortical mastoidectomy 26 (86.7%) patients had taken the graft well but 4 (13.3%) had graft failed. Graft failure was more in group B but it is not statistically significant (p>0.05) Table 5 shows comparison of audiological assessment in both the groups. Pre-op hearing loss was 31.07±9.07 in Group A and 29.33±8.08 in Group B. At 3 month follow up pure tone threshold was 25.70±9.16 in Group A and 24.68±8.88 in Group B. Pure tone threshold in Group A (20.44±8.36)was more than Group B (19.81±7.03). Benefit in Group A (10.90±6.77) was more than Group B (10.19±5.89) but it was not statistically significant. In our study we found 4 patients with ear discharge. Group A had 3 patients with ear discharge and Group b had 1patient with ear discharge. Group B has less ear discharge as compared to group A but the difference was not statistically significant.

Table 1: Comparison of patients of CSOM (Group A and Group B) according to age group

Age group	Tympanoplasty		Tympanoplasty with cortical mastoidectomy	
	Patients	Percentage	Patients	Percentage
20-29	13	43.3	15	50.0
30-39	11	36.7	7	23.3
40-49	5	16.7	6	20.0
50-59	1	3.3	2	6.7
Total	**30**	**100.0**	**30**	**100.0**

P>0.05 Not Significant

Table 2: Comparison of patients of CSOM (Group A and Group B) according to age group

Gender	Tympanoplasty		Tympanoplasty with cortical mastoidectomy	
	Patients	Percentage	Patients	Percentage
MALE	16	53.3	12	40.0
FEMALE	14	46.7	18	60.0
TOTAL	30	100.0	30	100.0

P>0.05 Not Significant

Table 3: Comparison of patients of CSOM (Group A and Group B) according to laterality

Laterality	Tympanoplasty		Tympanoplasty with cortical mastoidectomy	
	Patients	Percentage	Patients	Percentage
Unilateral	**23**	**76.7**	**27**	**90.0**
Bilateral	7	23.3	3	10.0
Total	30	100.0	30	100.0

P>0.05 Not Significant

Table 4: Comparison of patients of CSOM (Group A and Group B) according to graft status

Graft status	Tympanoplasty		Tympanoplasty with cortical mastoidectomy	
	Patients	Percentage	Patients	Percentage
Graft taken up	27	90.0	26	86.7
Graft failure	3	10.0	4	13.3
Total	**30**	**100.0**	**30**	**100.0**

P>0.05 Not Significant

Table 5: Comparison of patients of CSOM (Group A and Group B) according to audiological assessment

Audiological Assesment	Tympanoplasty	Tympanoplasty with cortical mastoidectomy
Pre-op hearing loss	31.07±9.07	29.33±8.08
Pure tone threshold at 3rd month	25.70±9.16	24.68±8.88
Pure tone threshold at 6th month	20.44±8.36	19.81±7.03
Benefit in decibels	10.90±6.77	10.19±5.89
Total	**30**	**30**

Table 6: Comparison of patients of CSOM (Group A and Group B) according to ear discharge after surgery

Ear discharge	Tympanoplasty		Tympanoplasty with cortical mastoidectomy	
	Patients	Percentage	Patients	Percentage
Positive	**03**	**10**	**01**	**3.33**
Negative	27	90	29	96.67
Total	**30**	**100.0**	**30**	**100.0**

P>0.05 Not Significant

DISCUSSION

In our study Maximum patients were in the age group of 20-29 years. Similar findings were seen in a study conducted by Lasisi and Afolabi [10] where the majority of patients were aged 21–34 years. Similar findings were seen in Anjana *et al.*. [11].

In group A males were 53.3% and females were 46.7%. In group B males were 40 % and females were 60%. More females were observed in both groups. Similar findings were seen in a study by Lasisi and Afolabi [10] and Kaur *et al...*[12] contrast to our study Biswas *et al..*,[13] observed male preponderance. This difference can be due to different geographic areas, different population, educational perception of the subjects. Graft take up was more in Group A (90%) than Group B (86.7%) but the difference was not statistically significant. (p>0.05) in accordance with our study Balyan *et al.*[14] found no significant difference in graft failure rates. They also added that the addition of mastoidectomy had increased effort and risk to the surgery. Benefit in audiological improvement after surgery in Group A (10.90±6.77 Db) was more than Group B (10.19±5.89 Db) but it was not statistically significant. Similar to our study , Krishnan *et al.*[15] observed postoperative hearing advantage was 75% in both groups.

Another study by Grew *et al...* [16] also found similar success rate for both the groups.

CONCLUSION

Tympanic membrane reconstruction need not always be combined with cortical mastoidectomy and should only be done in cases where mastoid source of infection is suspected.

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