



## SURGICAL TREATMENT OF CHRONIC SUPPURATIVE OTITIS MEDIA TUBOTYMPANIC TYPE – A COMPARATIVE STUDY OF TYMPANOPLASTY WITH AND WITHOUT CORTICAL MASTOIDECTOMY

**Dr S. Kuldeep**

MS, ENT, Assistant Professor of ENT, Fathima Institute of Medical Sciences, Kadapa

**Dr B. Sunitha\***

MBBS, Junior Resident in Ophthalmology, GMC Kadapa. \*Corresponding Author

**ABSTRACT** Role of tympanoplasty and tympanoplasty with cortical mastoidectomy in surgical treatment of chronic suppurative otitis media. This is retrospective study of 100 patients in the department of E.N.T and Head and Neck Surgery, Fathima Institute of Medical Sciences, Kadapa during the period October 2017 to October 2018. All the patients were regularly followed up at intervals of 1 week, 3 weeks, 3 months, 6 months and 12 months to inspect the dryness of the ear, and postoperative pure tone average. Graft uptake was 94% in tympanoplasty with cortical mastoidectomy and 82% in tympanoplasty alone group.

**KEYWORDS** : tympanoplasty, mastoidectomy

### INTRODUCTION

Chronic suppurative otitis media (CSOM) is a chronic inflammatory process involving the middle ear cleft producing irreversible pathological changes. Incidence of CSOM is higher in developing countries because of poor socio-economic standards, poor nutrition and lack of health education. It affects both sexes and all age groups. In India, the overall prevalence rate is 46 and 16 persons per thousand in rural and urban population respectively. It is also the single most important cause of hearing impairment in rural population. The term tympanoplasty was first used in 1953 by Wullstein to describe surgical techniques for reconstruction of the middle ear hearing mechanism that had been impaired or destroyed by chronic ear disease.

Fritz Zollner and Horst Wullstein are eminent otologic surgeons who developed the concepts and techniques of tympanoplasty.

### MATERIALS AND METHODS

The sample studied consists of hundred patients with Chronic Suppurative otitis media of Tubotympanic type. These patients are surgically treated at the department of E.N.T and Head and Neck Surgery, Fathima Institute of Medical Sciences, Kadapa during the period October 2017 to October 2018. Patients with marginal perforation, retraction pockets and cholesteatoma were excluded. Patients with discharging ears were treated medically and were taken for surgery once the ear became dry and maintained for 6 months.

Patients with dry ears (for 6 months) were divided into two groups, GROUP 1 ( patients who underwent Tympanoplasty alone) and GROUP 2 ( patients who underwent Tympanoplasty with cortical mastoidectomy. In the ensuing discussion these two groups will be mentioned as GROUP 1 and GROUP 2 respectively. The patients were assigned to each group randomly. GROUP 1 consists of 50 patients and GROUP 2 consists of 50 patients. All patients underwent surgery by postaural approach. Temporalis fascia was used for grafting the perforation of tympanic membrane. All the patients were regularly followed up at intervals of 1 week, 3 weeks, 3 months, 6 months and 12 months. At follow-up, the dryness of the ear, and postoperative pure tone average were studied.

### Inclusion Criteria

1. Patients with central perforation
2. Dry ear for 6 months
3. Mild to moderate conductive hearing loss.

### Exclusion criteria

1. Actively discharging ears.
2. Moderate to severe hearing loss.
3. Patients with Allergic rhinitis, Infections of Paranasal sinuses.
4. Retraction pockets, Marginal perforations and cholesteatoma.
5. Patients below 15 yrs.

### OBSERVATIONS

Of the total 100 ears studied 50 underwent tympanoplasty alone ( GROUP 1 ) and 50 underwent tympanoplasty with cortical mastoidectomy (GROUP 2). Of the patients who underwent tympanoplasty alone 9 patients had residual perforation constituting

graft uptake of 82%. Among the patients who underwent tympanoplasty with mastoidectomy, the graft uptake rate was 94%. Of the patients who underwent tympanoplasty alone 50% had improvement in hearing (pure tone average). Of the patients who underwent tympanoplasty with cortical mastoidectomy 80% had improvement in hearing.

### RESULTS

All patients were of age 16–55 years. There are 56 females and 44 males.

**Table 1: Age distribution of patients**

Age	Tympanoplasty	Tympanoplasty with cortical mastoidectomy
16–25 years	17	17
26–35 years	15	14
36–45 years	10	12
46–55 years	8	7

Most common age group in our study was between 16 and 25 years of age in both the groups

**Table 2: Duration of year discharge in years**

Duration of year discharge in years	Tympanoplasty	Tympanoplasty with cortical mastoidectomy
<5	22	21
6-10	16	17
>10	12	12

**Table 3: Degree of hearing loss**

	Tympanoplasty	Tympanoplasty with cortical mastoidectomy
Mild to moderate	33	30
Moderate to severe	17	20

**Table 4: Size of perforation**

	Tympanoplasty	Tympanoplasty with cortical mastoidectomy
Medium	17	15
Large	30	31
Subtotal	13	14

**Table 5: Graft taken up status at 3 months**

	Tympanoplasty	Tympanoplasty with cortical mastoidectomy
Graft taken up	41	47
Not taken	09	03

### DISCUSSION

Most common disease of middle ear cleft is chronic suppurative otitis media. Tympanoplasty alone or combined with mastoidectomy were performed to eradicate the disease of middle ear. Hundred patients were analysed in this study and two parameters were studied namely graft uptake and hearing improvement in tympanoplasties with and without cortical mastoidectomy.

**Cortical Mastoidectomy (Simple or conservative mastoidectomy, Schwartze operation):** This operation was described by Schwartze in 1873. It involves the removal of all accessible mastoid air cells without disturbing the middle ear. The osseous superior and posterior meatal walls are kept intact. The cells are followed from the antrum, inferiorly to the mastoid tip, posteriorly to the sinus plate, superiorly to the tegmen plate, and anteriorly to the limit of pneumatization in the posterior root of the zygoma.

In 1958, Heermann began to use temporalis fascia[1] as a graft for tympanoplasty. Temporalis fascia continues to be the material of choice for reconstruction of the tympanic membrane. Regardless of the technique employed, "take" rates of 86% are typically reported.[2][3].

Bacterial infection of the middle ear causes acute otitis media, which often results in a small perforation through which purulent material discharges. These perforations heal spontaneously in a short time unless complicating factors coexist. Eustachian tube dysfunction is the major factor that results in a permanent perforation[4][5]. In such a middle ear, the mucous membrane is exposed to repeated infection, both through the external auditory canal and through the eustachian tube, with chronic continuous discharge or with recurring episodes of suppurative otitis media. Allergic sensitization of the exposed middle ear mucosa frequently occurs [6],[7]. Success rates in myringoplasty do not depend on the size of the perforation [5][11]. The site of the perforation also does not appear to influence the failure rate, and the site of failure is not consistent [8],[9],[10]. Similarly, the presence of tympanosclerotic plaques does not influence the take rate of the graft but may influence the degree of hearing improvement postoperatively[12]. When the graft is not anchored under the manubrium, but placed lateral to it and then under the tympanic membrane remnant edges, it appears to heal without problem, but, according to one study, in 31% of cases some degree of lateral graft migration was observed[13].

In the present study, the cases selected were between 16 and 55 years. Patients aged between 16 and 25 were more in the study group i.e. 34 patients. In study conducted by Lasisi and Afolabi the most common age group was 21-34 years[14].

When size of the perforation is considered, large perforation is seen in 61 patients in our study. In a study conducted by Biswas et al. the commonest perforation was medium sized one.

In a study done by Krishnan et al. post operative hearing gain noted was 75% in both the groups. In our study the postoperative hearing gain noted is 64% in group 1 and 72% in group 2.

In our study graft uptake rate was 82% in GROUP 1 and 94% in GROUP 2. In a study done by Toros et al. the graft take up was successful in 76.1% in group 1 and 78.3% in group 2.

## CONCLUSION

It appears a good practice to open the mastoid antrum and air cells if the middle ear mucosa shows tympanosclerotic plaques, granulations, Oedematous and polypoidal. Tympanoplasty alone is sufficient if the middle ear mucosa is healthy. Complete removal of disease from middle ear with intact ossicular chain definitely give dry ear with marginal improvement in hearing.

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