

Comparative Study between Tympanoplasty vs. Tympanomastoidectomy for the surgical outcome in tubotympanic Type CSOM

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Received: 27-03-2021 / Revised: 04-05-2021 / Accepted: 03-06-2021

Abstract

Traditionally tympanoplasty along with mastoidectomy has been considered as an effective procedure in the surgical management of chronic ear infection resistant to antibiotic therapy otologists have argued that with Tympanoplasty closure of tympanic membrane perforations and elimination of chronic ear drainage can be achieved effectively irrespective of mastoidectomy. **Materials and Method:** It is a prospective Case-control type of study comprises of 80 patients with chronic suppurative otitis media safe type. All the cases were operated during a period of 2 years between May 2018- May 2020 in the department of ENT and Head & Neck Surgery, A.B.V Govt Medical college, Vidisha, M.P, India 40 of these cases were selected for tympanoplasty alone (Group A) and 40 cases were selected for tympanoplasty along with cortical mastoidectomy (Group B). **Result:** In our study in Group A (Tympanoplasty) out of 40 cases 35 (87.5%) had good graft acceptance rate after 3 month follow up whereas 05 (12.5%) cases Graft were rejected. In Group B (Tympanoplasty with cortical mastoidectomy) Graft acceptance rate was 36 (90%) and graft rejection rate was 04 (10%). **Conclusion:** In our study we have concluded that Cortical mastoidectomy does not gives any statistically significant benefit over simple tympanoplasty in the treatment of CSOM tubotympanic type with dry ear in graft acceptance rate and eradication of the disease as *P* value is insignificant.

Keywords: CSOM, tubotympanic, cortical mastoidectomy, Tympanoplasty.

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Introduction

Chronic otitis media is an inflammation of middle ear cleft. The main purpose of surgical intervention in CSOM is to have a permanently dry ear and to closure of the perforation along with improvement in the hearing[1]. Tympanoplasty term was first coined by Wullstein in 1953[2] and it described the surgical techniques used for reconstruction of middle ear hearing mechanisms damaged by the middle ear disease[3]. Mastoidectomy was first described by Louis Petit in the 1700s, initially this concept did not had gained wide acceptance until in 1958 William House popularized the cortical mastoidectomy[4]. According to Jackler and Schindler[5], various factors contribute in the success or failure in Ear surgery, They can classified in two categories mastoid and non-mastoid factors. Age of the patient, Eustachian tube function, site and size of perforation, ossicular chain condition, and cochlear reserve status are considered as of non mastoid factors. Whereas the extent of pneumatization and the presence of inflammatory disease in the mastoid are considered as mastoid factors. Tympanoplasty is one of the most commonly done surgical procedures performed by ENT surgeons in tubotympanic type of CSOM. Traditionally tympanoplasty along with mastoidectomy was considered as an effective procedure in the surgical management of chronic ear infection resistant to antibiotic therapy[6]. Holmquist and Bergstrom suggested that patients suffering from tubotympanic CSOM, mastoidectomy can drastically improve the chance of

successful tympanoplasty by maintaining the aeration of mastoid air cells which enhances the success in patients with non functional tubal function or a small mastoid air cell system[7]. On the other hand various otologists have argued that with Tympanoplasty closure of tympanic membrane perforations and elimination of chronic ear drainage can be achieved effectively irrespective of mastoidectomy [8,9]. Also mastoidectomy can increase the risk of squamous epithelium in growths has a potential to injury inner ear structures and facial nerve during mastoid surgery having little or no significant clinical advantage. Hence in our study we aim to analyze and compare the surgical outcome of tympanoplasty with or without cortical mastoidectomy in chronic otitis media – Mucosal type and to assess the role of cortical mastoidectomy in the management of chronic otitis media – Mucosal type.

Materials and Method

It is a prospective Case-control type of study comprises of 80 patients with chronic suppurative otitis media safe type. All the cases were operated during a period of 2 years between May 2018- May 2020 in the department of ENT and Head & Neck Surgery, A.B.V Govt Medical college, Vidisha, M.P, India 40 of these cases were selected for tympanoplasty alone (Group A) and 40 cases were selected for tympanoplasty along with cortical mastoidectomy (Group B).

Inclusion Criteria

- All patients having CSOM tubotympanic type
- Dry ear for 1 month.
- Normal cochlear function.
- Patent Eustachian tube.
- No residual infection presence in nose, PNS, Nasopharynx, throat.

Exclusion Criteria

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- Attic and marginal perforation.
 - Revision surgery.
 - Uncontrolled systemic disorder DM, Hypertension, Sepsis
- Detailed history was taken followed by ENT examination with Examination under microscope to define the type of perforation, Middle Ear condition, and tuning fork test was performed followed by PTA to assess the type and degree of hearing loss. All routine laboratory and radiological tests were done including X-ray Mastoid Schuller's view and X-ray PNS and Nasopharynx. In case of residual infection in tonsils, adenoids or sinuses they were first treated then

taken for surgery. Surgeries were performed under local anesthesia and General anesthesia depending on the patient's age and general condition via postaural approach. (Group A) 40 patients underwent tympanoplasty and (Group B) 40 patients underwent tympanoplasty with cortical mastoidectomy. Clinico-audiological assessment of the operated ear with respect to graft status, ear discharge and hearing improvement was done in both groups at 1 week and 3 weeks,

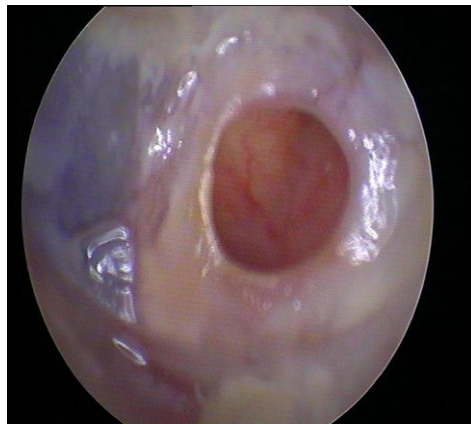


Fig 1: Perforated Tympanic membrane



Fig 2: Healed TM Post-OP after 3 months

Results

In our study we have studied 80 cases during a period of two years from May 2018-May 2020 in the department of ENT and Head & Neck surgery department A.B.V Govt Medical College, Vidisha, M.P, India. The Group A comprised of 40 patients who underwent Tympanoplasty using temporalis fascia graft and Group B had 40 patients undergone for Tympanoplasty with cortical mastoidectomy. Ethical committee approval and informed written consent were taken from every patient prior to taking participation in the study.

Out of a total of 80 patients of CSOM 48 (60%) were males and 32 (40%) females. Most patients belonged to 20-35 years group. In our study in Group A (Tympanoplasty) out of 40 cases 35 (87.5%) had good graft acceptance rate after 3 month follow up whereas 05 (12.5%) cases Graft was rejected. In Group B (Tympanoplasty with cortical mastoidectomy) Graft acceptance rate was 36 (90%) and graft rejection rate was 04 (10%). Hence out of 80 patients Graft acceptance rate was 71 (88.75%) and rejection rate was 09 (22.5%) inclusive of both Group A and Group B.

Table 1: Graft acceptance / Graft rejection rate

Group	Graft acceptance rate	Graft rejection rate
Table Group A (Tympanoplasty)	35 (87.5%)	05(12.5%)
Group B (Tympanoplasty with cortical mastoidectomy)	36 (90%)	04 (10%)
Total	71 (88.75%)	09 (22.5%)

Discussion

Chronic suppurative otitis media is a persistent disease, insidious in onset, can cause severe destruction it can clinically manifests with discharge from the ear lead to deafness. Eradication of the CSOM and reconstruction of conductive hearing can be achieved by performing tympanoplasty with or without mastoidectomy. The success of ear surgery can vary as due to various factors such as non mastoid and mastoid factors such as, age of the patient, Eustachian tube function, site and size of perforation, ossicular chain condition, and cochlear reserve status, extent of pneumatization and the presence of inflammatory disease in the mastoid. Post corrective surgery lifestyle of patient can be changed profoundly. Traditionally tympanoplasty along with mastoidectomy has been considered as an effective surgical management for chronic ear infection. There are a numerous studies done in the past which highlights the advantages as well as disadvantages of doing cortical mastoidectomy in the tubotympanic type of CSOM with dry perforation. But the role of performing

cortical mastoidectomy with tympanoplasty in dry tubotympanic disease with no obvious mastoid reservoir has been controversial hence a divided opinion is seen from various otologists. In our study of 80 patients treated for CSOM tubotympanic type with dry year we have found that in Group A (Tympanoplasty) out of 40 cases 35 (87.5%) had good graft acceptance rate after 3 month follow up whereas 05 (12.5%) cases Graft was rejected. whereas In Group B (Tympanoplasty with cortical mastoidectomy) Graft acceptance rate was 36 (90%) and graft rejection rate was 04 (10%). Hence out of 80 patients Graft acceptance rate was 71 (88.75%) and rejection rate was 09 (22.5%) inclusive of both Group A and Group B. hence in our study we have found that there was no significant difference in the graft uptake rates between the two groups. There was no statistical significance between the two groups as $p > 0.05$, suggesting that mastoidectomy when combined with tympanoplasty offers no added benefit over tympanoplasty alone. Also it mastoidectomy requires a well trained otologists to do the surgery, General anesthesia, takes

longer time in the surgery, requires more post operative care to perform a mastoidectomy, and increases the chances of risk of squamous epithelium ingrowths has a potential to injury inner ear structures and facial nerve during mastoid surgery having little or no significant clinical advantage. The results of our study is similar to with the study done by Chavan et al[10] where success rate of myringoplasty without mastoidectomy was reported 93.3 %, whereas in this study it is 94.2%, similarly the results of study done by Kaur et al[11] also states that the graft acceptance rate of myringoplasty with or without mastoidectomy respectively were 88% and 76% Albu et al[12] study also concluded that combining cortical mastoidectomy with tympanoplasty would not give any additional benefits in hearing improvement, disease clearance and graft acceptance rate.

Conclusion

In our study we have concluded that Cortical mastoidectomy does not gives any statistically significant benefit over simple tympanoplasty in the treatment of CSOM tubotympanic type with dry ear in graft acceptance rate and eradication of the diseases *P* value is insignificant, hence in healthy middle ear mucosa tympanoplasty alone is sufficient. Cortical mastoidectomy increases the costs to the patient, chance of injury to vital structures. But in cases where middle ear mucosa unhealthy there mastoidectomy should be performed to open the mastoid antrum and air cells.

Acknowledgement

Respected Prof. Dr. Sunil Nandeshwar sir, Dean. Dr. Shivkumar Raghuwanshi sir Assoc Prof, & HOD Department of ENT and Head & Neck Surgery, A.B.V Govt medical college, Vidisha, M.P, India. Prof.Dr D. Paramhans sir Medical Superintendent A.B.V Govt medical college, Vidisha, M.P, India. Thank You for your support and guidance.

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Conflict of Interest: Nil

Source of support: Nil