

Original Research Article

DOI: <http://dx.doi.org/10.18203/issn.2454-5929.ijohns20203201>

Tympanoplasty with and without mastoidectomy in wet ears: a comparative study

Manish Munjal^{1*}, Gopika Talwar¹, Shubham Munjal², Tulika Saggari¹

¹Department of ENT, ²Department of Anatomy, Dayanand Medical College, Ludhiana, Punjab, India

Received: 15 May 2020

Revised: 26 June 2020

Accepted: 30 June 2020

*Correspondence:

Dr. Manish Munjal,

E-mail: manishmunjaldr@yahoo.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: Effect of cortical mastoidectomy on graft uptake and graft mobility and thence shift of hearing thresholds was analysed in tympanoplasty in discharging ears.

Methods: In this study, 60 subjects of safe chronic suppurative otitis media were selected from the outpatient clinics of Dayanand Medical College and Hospital, Ludhiana. All were subjected to tympanoplasty utilizing the underlay technique. Mastoid exploration was undertaken in the ears with persistent ear discharge.

Results: Cortical mastoidectomy performed in 20 (33.3%) out of 60 patients and most of cases were done in superiorly based/superior cuff tympanoplasty group in our study. No statistically significance found between cortical mastoidectomy and different flap technique. Mean hearing gain is more with cortical mastoidectomy (16.85 dB) than without cortical mastoidectomy (13.05 dB) and graft uptake was 97.5% without cortical and 95% with cortical mastoidectomy.

Conclusions: There was higher mean gain in thresholds of hearing in subjects with cortical mastoidectomy with tympanoplasty though uptake was almost equal to those without mastoidectomy.

Keywords: Cortical mastoidectomy, Graft uptake, Hearing gain, Wet ear

INTRODUCTION

The surgical repair of tympanic membrane perforation was first described by Berthold 1878 as Myringoplasty.¹

The earliest attempt to re-establish a connection between the tympanic membrane and the oval window in the case of a missing ossicle was in 1901. Battista et al, Louis Petil 1700s first described the procedure cortical mastoidectomy but it didn't gain acceptance until 1958, and was later popularized by William House.^{2,3}

Myringoplasty is the surgical reconstruction of the tympanic membrane. Tympanoplasty is the surgical reconstruction of the tympanic membrane. Cortical mastoidectomy is a procedure to remove mastoid

air cells without affecting the middle ear and typically done for mastoiditis.

Cortical mastoidectomy has been justified in cases of CSOM, refractory to antibiotic therapy and for the eradication of disease process. On the contrary some propagate that mastoidectomy is unnecessary and increases patient risk with no significant advantage in clinical outcome- Jackler et al.⁴

The primary role of mastoidectomy is in the improvement of middle ear and mastoid- Milieu intérieur in terms of ventilation and drainage of the temporal bone/mastoid air cell system (MACS).

Aerated mastoid acts as a buffering system to reduce the impact of pressure changes experienced by the middle ear by Holmquist et al, Sade et al and Richards et al.⁵⁻⁷

Overall success rate of tympanoplasty, with or without mastoidectomy, in the treatment of chronic pediatric otitis media, was high and did not depend on patient age, the status of the contralateral ear, the inclusion or absence of surgical mastoidectomy, or the method of mastoidectomy Yoon et al 2007.⁸

Aim of the study was to compare results of tympanoplasty with and without cortical mastoidectomy in discharging ears.

METHODS

60 cases of safe chronic suppurative otitis media were selected from the otology clinics of Dayanand Medical College and Hospital, Ludhiana. The study was conducted for the period of 1 year from June 2015 to August 2016.

All the patients fulfilled the standard criteria for tympanoplasty a proper work out was carried out as per the performa.

Inclusion criteria

Patients with tubotympanic/mucosal safe perforations.

Exclusion criteria

Patients with atticotympanic/squamosal unsafe perforations; otitis externa; ossicular discontinuity.

Patients with both dry and wet ears were taken and different flap techniques were used randomly. Clinical and hearing assessment was carried out at 2 weeks, 4 weeks, 3 months and 6 months in all the patients. The graft uptake, graft mobility with valsava and pneumatic sealisation, and the hearing gain in patients with cortical or without cortical mastoidectomy was also compared.

Statistical analysis

All statistical calculations were done using Statistical Package of Social Sciences (SPSS) 17 Version statistical program for Microsoft windows (SPSS Inc. released 2008. SPSS statistic for windows, version 17.0, Chicago). Ethical approval of the study was taken from the Institutional Ethics Committee.

RESULTS

Demographic profile

Maximum numbers of patients were in the age group of 31-40 years (26.7%), followed by age group of >50 years

(23.3%). 11 years was notes to be the minimum age whereas the maximum was noted to be 65. Mean age was 36.67.

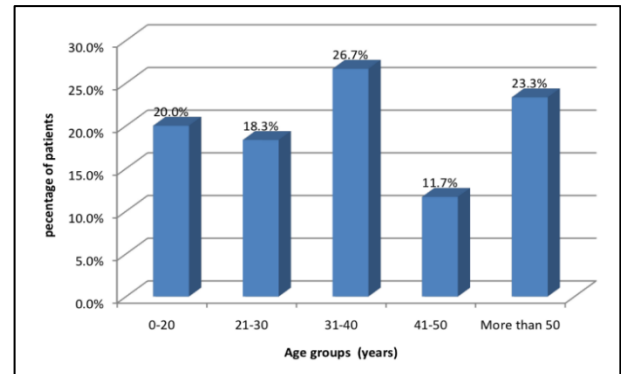


Figure 1: Age distribution of patients taken up for surgery.

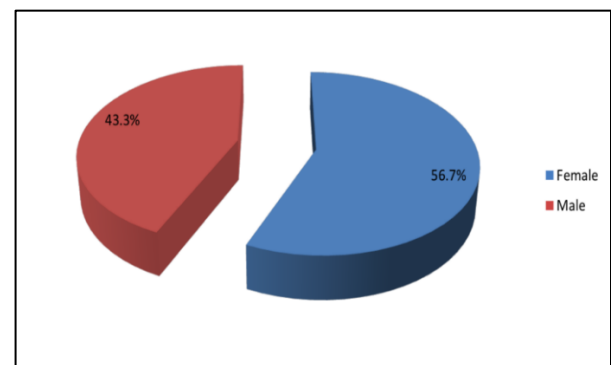


Figure 2: Gender distribution of patients taken up for surgery.

Female patients were observed with significant findings as compared to male patients. Female patients constituted 56.7% of study population. Male patients were 43.3%. Maximum number of male and female patients were seen in the age group of 31-40 years. The selection of patients was random and irrespective of gender. Most of the female patients were seen to have chronic suppurative otitis media (safe type) which shows the ignorance and delay in taking otologic consultation.

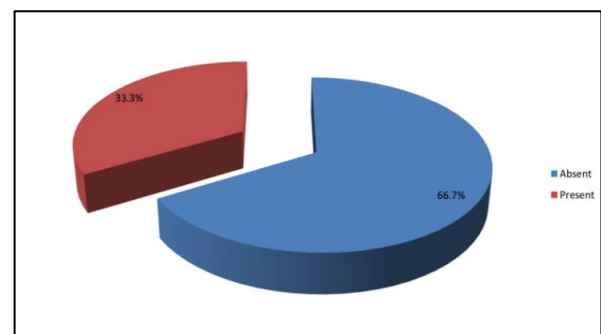


Figure 3: Patients who underwent tympanoplasty with cortical mastoidectomy.

Cortical mastoidectomy had to be performed in 20 (33.3%) patients in our study of 60 patients.

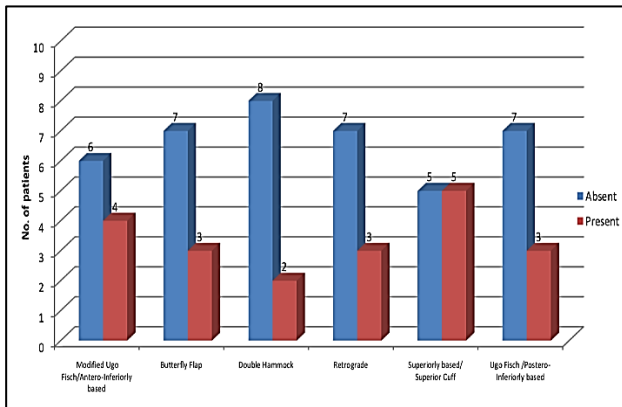


Figure 4: Different flaps in patients with cortical mastoidectomy.

Cortical mastoidectomy performed in 20 (33.3%) out of 60 patients and most of cases were done in superiorly based/superior cuff tympanoplasty group in our study. No statistically significance found between cortical mastoidectomy and different flap technique.

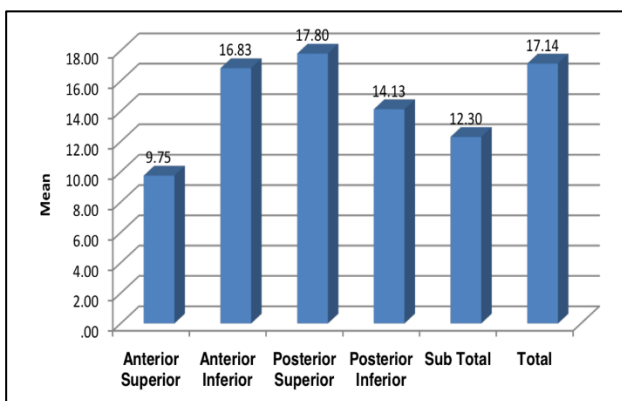


Figure 5: Hearing gain achieved in patients with different types of perforation..

Hearing gain is best after the repair of postero-superior perforation (17.80 dB) followed by total (17.14 dB) and anterior inferior (16.83 dB) and least in anterior superior perforation (9.75 dB)

DISCUSSION

In our study the mean hearing gain was more with cortical mastoidectomy (16.85 dB) than without cortical mastoidectomy (13.05 dB) and graft uptake was 97.5% without cortical and 95% with cortical mastoidectomy.

Cortical mastoidectomy performed in 20 (33.3%) out of 60 patients and most of cases were done in superiorly based/ superior cuff tympanoplasty group in our study.

No statistically significance found between cortical mastoidectomy and different flap technique.

Overall success rate of tympanoplasty, with or without mastoidectomy, in the treatment of chronic pediatric otitis media, was high and did not depend on patient age, the status of the contralateral ear, the inclusion or absence of surgical mastoidectomy, or the method of mastoidectomy Yoon et al.⁸ Comparing the results of tympanoplasties with and without mastoidectomy in non-cholesteatomatous chronic otitis media there was no statistically significant difference in graft success rate between discharging ears and dry ears. Thus, it was concluded that mastoidectomy is not helpful in tympanoplasty for non-cholesteatomatous chronic otitis media, even in discharging ear Mishiroy et al.⁹

McGrew et al compared the surgical outcome of repair of tympanic perforation with and without canal wall up mastoidectomy.¹⁰ Tympanic membrane repair was equally effective in both groups and the hearing results were comparable. They proposed the futility of cortical mastoidectomy for successful repair of simple tympanic membrane perforations

A graft take-up rate of 91.6% and 90.6% was recorded in patients who had tympanoplasties with and without cortical mastoidectomy, respectively by McGrew et al.¹⁰

In present study cortical mastoidectomy was performed in 20 out of 60 patients and found that graft uptake was equal in patient with or without cortical mastoidectomy but the mean hearing gain was more in patients with cortical mastoidectomy (16.85 dB) than without cortical mastoidectomy (13.05 dB).

CONCLUSION

There was higher mean gain in thresholds of hearing in subjects with cortical mastoidectomy with tympanoplasty though uptake was almost equal to those without mastoidectomy.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Mudry A. History of myringoplasty and tympanoplasty type I. Otolaryngol Head Neck Surg. 2008;139(5):613-4.
2. Ellis M. The evolution of the mastoid operation. Proc R Soc Med. 1967;60(5):467-74.
3. Bento RF, de Oliveira Fonseca AC. A brief history of mastoidectomy. Int Arch Otorhinolaryngol. 2013;17(02):168-78.

4. Jackler RK, Schindler RA. Role of the mastoid in tympanic membrane reconstruction. *Laryngoscope*. 1984;94:495-500.
5. Holmquist J, Bergstrom B. The mastoid air cell system in ear surgery. *Arch Otolaryngol*. 1978;104:127-9.
6. Sade J. The correlation of middle ear aeration with mastoid pneumatization. The mastoid as a pressure buffer. *Eur Arch Otorhinolaryngol*. 1992;249:301-4.
7. Cinamon U, Sadé J. Mastoid and tympanic membrane as pressure buffers: a quantitative study in a middle ear cleft model. *Otol Neurotol*. 2003;24(6):839-42.
8. Yoon TH, Park SK, Kim JY, Pae KH, Ahn JH. Tympanoplasty, with or without mastoidectomy, is highly effective for treatment of chronic otitis media in children. *Acta Otolaryngol Suppl*. 2007;558:44-8.
9. Mishiroy Y, Sakagami M, Takahashi Y, Kitahara T, Kajikawa H, Kubo T. Tympanoplasty with and without mastoidectomy for non-cholesteatomatous chronic otitis media. *Eur Arch Otorhinolaryngol*. 2001;258:13-5.
10. McGrew BM, Jackson CG, Glasscock ME. Impact of mastoidectomy on simple tympanic membrane perforation repair. *Laryngoscope*. 2004;114:506-11.

Cite this article as: Munjal M, Talwar G, Munjal S, Saggar T. Tympanoplasty with and without mastoidectomy in wet ears: a comparative study. *Int J Otorhinolaryngol Head Neck Surg* 2020;6:1509-12.