Original Article

Permeatal Approach for Tympanoplasty: Scar-less Approach of External Auditory Canal Integrity

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ABSTRACT

OBJECTIVE: The objective of this study is to assess the outcome of permeatal approach of tympanoplasty.

STUDY DESIGN: Descriptive Retrospective

SETTING: ENT Department of Jaber Al- Ahmed Forces Hospital, Kuwait.

DURATION: From January 2010 to December 2012.

PATIENTS AND METHODS: 50 cases of ear drum perforation of various sizes were included in this study. Ranging between the age of 21 years to 50 years including 21 females and 29 males .In all these cases permeatal approach used to graft the perforated tympanic membranes.

RESULTS: Among 50 cases graft taken without any complication in 46 cases, 2 cases had residual perforation which healed spontaneously over period of time; in 2 cases revision tympanoplasty was done.

CONCLUSION: Permeatal approach is safe and effective method of treating perforated tympanic membrane.

KEYWORDS: Tympanoplasty, permeatal approach, Integrity of canal, operative time.

INTRODUCTION

Tympanoplasty is the surgical procedure for the reconstruction of tympanic membrane and ossicles of the middle ear after the removal of the disease. In clinical practice tympanoplasty is classified under five headings.

Type I: Reconstruction of tympanic membrane only. Type 1 is also called myringoplasty.

Type II: Keeping the graft over Incus. (Malleus missing)

Type III: Graft is kept over head of stapes (Malleus + Incus missing)

Type IV: Graft is kept over footplate (Malleus, incus and stapes missing).

Type V: Round Window is covered by graft.

There are three surgical approaches for the tympanoplasty. Incision behind the auricle (postaural), Incision in front of auricle (endaural) and directly through external auditory canal (permeatal or transcanal approach). Temporalis fascia, tragal cartilage, vein & fat are the common materials for grafting. This grafting is usually medial or lateral to perforated tympanic membrane. Lateral grafting of tympanic membrane is called onlay technique and medial grafting is called inlay technique. Sometime inlay grafting is falling medially and causing some portion of perforation not in contact of graft, this can be covered by onlay graft and this is called Sandwich technique. In our study of fifty cases, permeatal approach is used to perform tympanoplasty.

PATIENTS AND METHODS

Fifty cases of permeatal tympanoplasty performed over a period of three years (from January 2010 to December 2012) The criteria of selection of cases was any type of perforation, without narrowing of external auditory canal. 21 of these perforations were medium size anterior, 7 were posterior medium size, 15 were subtotal and 7 were total perforations.

DESCRIPTION OF TYMPANIC MEMBRANE PERFORATIONS

Anterior Medium size	Posterior Medium size	Subtotal	Total
21	7	15	7

The hearing level was evaluated to assure the cochlear reserve. CT scan of sinuses and temporal bone was done in all these cases to rule out neighborhood problem in nose and cholestestoma in ear. Nose and sinuses showed no disease and middle ear was free of cholesteatoma. We injected external auditory canal with local aneasthesia prior to surgery. During surgery appropriate size ear speculum used, margin of perforation freshened done, tragal perichondrial cartilage

graft taken. Tympanomeatal flap raised and graft tucked as inlay technique .Tympanomeatal flap reflected back, silastic strip kept and external auditory canal filled with gelfoam and outer dressing applied.

RESULTS

Out of 50 cases, the grafts survive successfully in 46 cases (92%). Two cases showed small residual perforations but very interestingly these perforations found healed spontaneously within three weeks. One case of residual perforation underwent revision tympanoplasty. In one case graft was kept on suprastructure of stapes (tympanoplasty type III) as malleus and incus were missing. Postoperatively in this case there was severe Sensory Neural Hearing Loss (SNHL) due to displacement of stapes. Revision tympanoplasty was done using Total Ossicular Reconstruction Prosthesis (TORP).

DISCUSSION

In tympanoplasty disease is removed from middle ear and reconstruction is done. Chronic otitis media of both varieties (Tubotympanic and atticoantral) lead to destruction of ossicles and tympanic membrane and needs surgical management.[1,2,3] Type 1 tympanoplasty is also called myringoplasty, as in this case only tympanic membrane is perforated and this need reconstruction.[4,5] Grafting is done either by onlay or inlay technique.[6] In this series we performed only inlay technique; as it has least chances of rejection due to its stability. The factors presumed to influence the outcome, includes age, sex, middle ear status at surgery, size of the perforation, surgical approach and technique chosen by surgeon.[7-10] Prior to tympanoplasty, complete removal of disease specially cholesteatoma both in adult and children is essential.[11,12] Except temporalis fascia, other grafts like cartilage and perichondrium is also used commonly.[13] In all our cases we have used tragal cartilage and perichondruim. Hence no scar is obvious in our cases which is commonly seen in those, where endaural or postaural incision is used to tuck the graft. In our cases as we have not used temporatis fascia therefore no outer scar is visible. Gelfoam was used as a postoperative packing but other packing has also been used. [14] There is a role of endoscope too in cases of tympanoplasty.[15,16] Usually grafting failed due to technical error, infection, poor tubal function and patient's factor like diabetes. Complications[17] can also occur during surgery but due to precise technical work and good selection of patient, the rate of complications can be minimized. Keeping all these factors in our mind, the overall found results using were excellent this technique (92% of the cases).

CONCLUSION

The permeatal approach of tympanoplasty is less time consuming, do not affect integrity of external auditory canal without any obvious scarring either in front or behind the pinna.

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