

A Comparative Study of Permeatal Sandwich Tympanoplasty and Postaural Underlay Technique of Tympanoplasty

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ABSTRACT

Background: Tympanoplasty is one of the most common surgery performed in the Department of Otolaryngology. The present study was conducted to compare permeatal sandwich tympanoplasty and postaural underlay technique of tympanoplasty. **Methods:** 60 cases suffering from chronic suppurative otitis media were divided into 2 groups of 30 each. Group I were treated with permeatal sandwich tympanoplasty and group II were treated with postaural underlay technique of tympanoplasty. Size of perforation and hearing loss were compared. **Results:** Group I had 20 males and 10 females and group II had 18 males and 12 females. Size was large central was 15 in group I and 18 in group II, moderate central 10 in group I and 6 in group II and small 5 in group I and 6 in group II. The difference was significant ($P < 0.05$). **Conclusion:** Permeatal Sandwich technique produce much better results as compared to Postaural approach.

Keywords: Suppurative otitis media, Permeatal Sandwich technique, postaural underlay technique.

INTRODUCTION

Tympanoplasty is one of the most common surgery performed in the Department of Otolaryngology.^[1] During the last hundred years various modifications in the surgical technique have been introduced because of continued efforts made by otologists all over the world to achieve the best surgical outcome. With the advent of otoendoscopes, the traditional techniques have been modified to minimal invasive surgery achieving better results and less complication rate.^[2]

Chronic otitis media with perforation of the tympanic membrane is a common cause of hearing loss and ear discharge.^[3] There are two popular surgical techniques, the underlay and overlay methods for tympanoplasty. The underlay technique is quicker and easier to perform, and the creation of a tympano-meatal flap with elevation of the annulus allows inspection of the ossicular chain.^[4] However, there is a risk of medial displacement of the graft, especially in large and/or anterior perforations. The overlay technique avoids this pitfall, but there is a

risk of keratin pearl formation within the tympanic membrane, and also a risk of blunting of the angle between the drum and the anterior meatal wall.^[5] A number of other techniques of tympanic membrane repair have been described. The term 'sandwich technique' was coined by Farrior in 1983 to describe a method in which sheets of areolar fascia were placed medial and lateral to the drum, with the fibrous layer as the 'meat' in the sandwich.^[6] The present study was conducted to compare permeatal sandwich tympanoplasty and postaural underlay technique of tympanoplasty.

MATERIALS AND METHODS

The present study was conducted among 60 cases suffering from chronic suppurative otitis media (CSOM) of both genders. All were informed regarding the study and their consent was obtained. Data such as name, age, gender etc. was recorded. Patients were divided into 2 groups of 30 each. Group I were treated with permeatal sandwich tympanoplasty and group II were treated with postaural underlay technique of tympanoplasty. Size of perforation and hearing loss were compared. Results thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

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RESULTS

Table 1: Distribution of patients

Groups	Group I	Group II
Technique	Permeatal sandwich tympanoplasty	Postaural underlay tympanoplasty
M:F	20:10	18:12

[Table 1] shows that group I had 20 males and 10 females and group II had 18 males and 12 females.

Table 2: Size of perforation

Perforation	Group I	Group II	P value
Large central	15	18	0.05
Moderate central	10	6	
Small	5	6	

[Table 2, Figure 1] shows that size was large central was 15 in group I and 18 in group II, moderate central 10 in group I and 6 in group II and small 5 in group I and 6 in group II. The difference was significant ($P < 0.05$).

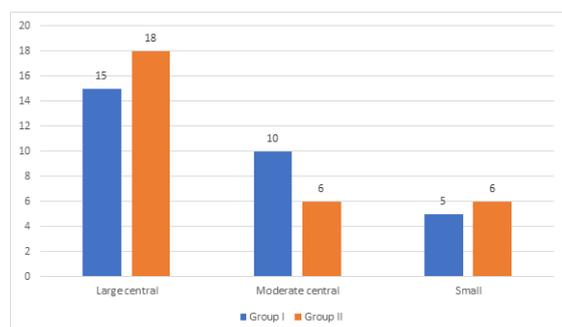


Figure 1: Size of perforation

Table 3: Post-op assessment of hearing

Hearing loss	Group I		Group II		P value
	Pre-op	Post-op	Pre-op	Post-op	
Normal hearing	0	4	0	5	0.06
Slight hearing loss	3	13	4	10	0.05
Mild hearing loss	8	7	7	12	0.02
Moderate hearing loss	14	6	15	3	0.01
Moderately severe hearing loss	5	0	4	0	0.12
Severe hearing loss	0	0	0	0	0
Profound hearing loss	0	0	0	0	0

[Table 3] shows significant difference in pre- op and post- op cases of hearing loss in both groups ($P < 0.05$).

DISCUSSION

Successful tympanoplasty depends on the integrity and stability of tympanic membrane (TM) which in turn affects the final position of the reconstructed

tympanic membrane.^[7] Though a variety of materials like skin, perichondrium, vein, dura and cartilage are available for closure of TM perforations, temporalis fascia is the most commonly used graft with its certain advantages as it is easily available in sufficient quantity and through same incision, its thickness is similar to TM with low basal metabolic rate.^[8]

Tympanoplasty is a surgical procedure defined as reconstruction of the hearing mechanism with reconstruction of tympanic membrane.^[9] Various approaches have been described but with the advent of otoendoscopes the surgery has become quite simplified. The things to be considered which might have resulted in the difference in results between the two techniques is, first and foremost its tissue trauma which is much more in postaural approach compared to permeatal approach.^[10] Secondly handling of the tympanomeatal flap by elevating it from the bony external auditory canal also leads to edema and delayed post-operative healing which is prevented in permeatal technique. Lastly, the preservation of vascular strip comes into consideration which is not affected during the permeatal technique but there are chances of it getting damaged while raising the tympanomeatal flap, these all factors lead to more complications and affect wound healing.^[11] The present study was conducted to compare permeatal sandwich tympanoplasty and postaural underlay technique of tympanoplasty.

In present study, group I had 20 males and 10 females and group II had 18 males and 12 females. We found that size was large central was 15 in group I and 18 in group II, moderate central 10 in group I and 6 in group II and small 5 in group I and 6 in group II. Singh et al,^[12] compared the graft take up and complications associated with the Permeatal Sandwich Tympanoplasty performed with the use of Otoendoscope and traditional Postaural Underlay technique of Tympanoplasty. A total of 100 patients were included in the study and the overall graft take was 92.3% in cases of Permeatal Sandwich technique as compared to 64.58% in the case of postaural underlay technique, with a majority of the failures in the large central perforation group rendering a $p = 0.021$ for patients operated for Large perforations, $p = 0.036$ for moderate perforations and $p = 0.476$ for small perforations. The overall $p = 0.000649$ which is highly significant. On comparing the complications there were only 2 cases in Permeatal Sandwich Technique compared to 25 cases in Postaural Underlay technique rendering a highly significant. There was a difference in hearing improvement with majority of the cases improving to the range of 16-25 dB in Permeatal Sandwich technique compared to 26-45 dB in Postaural Underlay technique.

We observed that there was significant difference in pre- op and post- op cases of hearing loss in both groups ($P < 0.05$). Usami et al,^[13] reported on 22

myringoplasty patients treated with endoscopic assistance with a follow-up time of 24.5 months. The rate of perforation closure was 81.8% and improvement in ABG after surgery was 14.8 dB. Karhketto et al,^[14] reviewed the records of 29 myringoplasty patients treated with the aid of rigid otoendoscopes with a follow-up time of one year. The rate of perforation closure was 80% and improvement in ABG after surgery was 7 dB.

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CONCLUSION

Authors found that Permeatal Sandwich technique produce much better results as compared to Postaural approach.

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