

Original article:

A comparative study between temporalis fascia graft versus perichondrium graft in tympanoplasty

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Abstract

Introduction: Permanent perforation of the tympanic membrane occurring as sequelae of chronic suppurative otitis media is a major cause for deafness in India. Controversies range about every step of the operation from the incision to the material used for packing.

Material and methods: Present study was conducted at Department of E.N.T., Tertiary Care Government Teaching Hospital. All the patients presenting with tympanic membrane perforation, of both sexes, of age group 12-55 years where tympanoplasty is advisable.

Results: Association between follow up 6 months versus graft type was not significant. It was seen that graft uptake at 6 months was better in temporalis fascia graft compared to perichondrium with more graft intact rate and less residual perforation and no retraction.

Conclusion: Success involved in tympanoplasties depend on various factors resulting in diverse outcomes in the studies comparing the success rates of the grafts. These factors include the number of patients included in the study, the surgical technique employed, the age of the patient, the size of the perforation in the tympanic membrane, the simultaneous interventions applied in the middle ear, co-morbid middle ear pathologies, and the duration of follow-up periods of the patients and also on experience of surgeon and advanced technologies and health care.

Keywords: temporalis fascia graft , perichondrium graft, tympanoplasty

Introduction:

Permanent perforation of the tympanic membrane occurring as sequelae of chronic suppurative otitis media is a major cause for deafness in India. Controversies range about every step of the operation from the incision to the material used for packing. ¹The studies give contradictory results. Due to it anatomic proximity, translucency,

and suppleness, temporalis fascia and tragal perichondrium are the two most preferred grafting materials of the contemporary otologist. There are few studies on a comparison between the two materials for the repair of tympanic membrane perforation.^{2,3,4}

In this study we have compared the results of tragal perichondrium and temporalis fascia grafts used in tympanoplasty. Both tragal perichondrium and temporalis fascia are accessible near the operative site, available in satisfactory quantity, have excellent delineation, can be thinned down and possess excellent survival capacity. Thus they fulfill all the criteria of ideal graft tissue and also are free from the possibility of causing post operative cholesteatoma. Also our study wants to study an alternative routine TM reconstruction material without any concern of effecting audiologic results. Our study proposes that tragal perichondrium graft is thin, easily available and easier to use than tragal cartilage and can easily be used to cover the full TM perforation. No previous report has described the use of Post conchal perichondrium in large perforation repair.^{5,6}

Material and methods:

Present study was conducted at Department of E.N.T., Tertiary Care Government Teaching Hospital.

Duration of study: 2 years

Sampling method: Simple random sampling

Sample size: 60

Inclusion criteria:

All the patients presenting with tympanic membrane perforation, of both sexes, of age group 12-55 years where tympanoplasty is advisable.

Exclusion criteria

1. ossicular chain discontinuity
2. ossicular fixity
3. eustachian tube dysfunction
4. unsafe CSOM
5. revision cases
6. malignancy

Results:

Mean age is 33.7 years with standard deviation 8.958. There were more males than females.

Table no 1: Association between graft uptake at follow up 6 months versus graft type

follow up 6 months	Group 1	Group 2
graft intact	27	24
graft medialised	0	1
graft washed out	1	0
residual perforation	2	4
Retracted	0	1
Total	30	30

Pearson Chi-Square 3.843, p value >0. 05.

Association between follow up 6 months versus graft type was not significant. It was seen that graft uptake at 6 months was better in temporalisfascia graft compared to perichondrium with more graft intact rate and less residual perforation and no retraction.

Table no 2: Association between subjective improvement versus grafttype

subjective improvement	Group 1	Group 2
no	2	2
yes	28	28
Total	30	30

It is seen from table 18 that subjective improvement was comparable in both graft .

P value >0.05. Association between subjective improvement versus graft type was not significant.

Table no 3: graft versus approach

	endomeatal	Postauricular
Temporal fascia	6	24
Perichondrium	5	25
Total	11	49

Pearson Chi-Square.111, p value0 .5

Association between approach and graft type was not statistically significant.

Table no 4: Graft versus age

graft	N	Mean	Std. Deviation	P value
Temporalis fascia	30	33.60	8.020	0.932
Perichondrium	30	33.80	9.946	

Association between age versus graft type was not statistically significant. Association between approach and graft type was not significant in our study.

Discussion:

For small sized perforation with adequate tympanic membrane remnant all around modified inlay technique proved to be very good with 100% graft uptake rate. Bhanu Bhardwaj⁶ and Jaskaran Singh in study concluded both temporalis fascia and conchal cartilage with perichondrium are acceptable graft material for successful closure of tympanic membrane perforation but hearing improvement was better with conchal cartilage group. ⁶⁵ Dabholkar

study it is seen that Tragal perichondrium offers excellent graft uptake rate and closure of Air-Bone Gap comparable to temporalis fascia . Tragal perichondrium available locally, is tough and easily harvestable with just a small incision which is given on the inner surface of the tragus with an inconspicuous scar. In revision cases where temporalis fascia has already been harvested in the earlier surgery, tragal perichondrium provides a good source of graft material.^{7,8,9}

Our study findings show that temporal fascia should be used as graft especially in large perforations for hearing gain and air bone gap closure as well as for good graft uptake similar to Manu Malhotra study which says in Indian scenario temporal fascia is commonly used. Success involved in tympanoplasties depend on various factors resulting in diverse outcomes in the studies comparing the success rates of the grafts. These factors include the number of patients included in the study, the surgical technique employed, the age of the patient, the size of the perforation in the tympanic membrane, the simultaneous interventions applied in the middle ear, co-morbid middle ear pathologies, and the duration of follow-up periods of the patients and also on experience of surgeon and advanced technologies and health care.

In our study adult patients were included in our present study. The number of patients included in this study is relatively lower, the follow-up periods were also shorter in the study. It is seen in our study that hearing outcomes and good graft retention success rates was better with temporal fascia when compared to perichondrium grafts. In study by Nishanthkumar study approach was post auricular or endmeatal. Of the 50 tympanoplasties performed, 26 were done by endaural approach using three flap technique, 16 were done by post aural approach using routine underlay technique, 5 by post aural approach using bucket handle technique and 3 were by modified inlay technique. The study by Nishanthkumar observed results similar to them in a comparative study of underlay and overlay technique of myringoplasty done by Singh et al, graft take up rate was found to be the same (93.3%). The results with underlay technique with both temporalis fascia and tragal perichondrium graft - uptake after three months in temporalis fascia 95.65%, in tragal perichondrium 89.5%.⁹

Conclusion:

Success involved in tympanoplasties depend on various factors resulting in diverse outcomes in the studies comparing the success rates of the grafts. These factors include the number of patients included in the study, the surgical technique employed, the age of the patient, the size of the perforation in the tympanic membrane, the simultaneous interventions applied in the middle ear, co-morbid middle ear pathologies, and the duration of follow-up periods of the patients and also on experience of surgeon and advanced technologies and health care.

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