

Original Research Article

Surgical outcome of tragal cartilage in myringoplasty – A prospective study

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	International Archives of Integrated Medicine, Vol. 5, Issue 9, September, 2018. Copy right © 2018, IAIM, All Rights Reserved. Available online at http://iaimjournal.com/	
	ISSN: 2394-0026 (P)	ISSN: 2394-0034 (O)
	Received on: 23-08-2018	Accepted on: 30-08-2018
	Source of support: Nil	Conflict of interest: None declared.
How to cite this article: Balaji Swaminathan, Prem Nivas, Ruta Shanmugam, Shanmugam V.U. Surgical outcome of tragal cartilage in myringoplasty – A prospective study. IAIM, 2018; 5(9): 63-66.		

Abstract

Background: Tympanoplasty refers to any operation involving reconstruction of the tympanic membrane and/or the ossicular chain. Myringoplasty is a Tympanoplasty without ossicular reconstruction. Chronic otitis media is one of the commonest Otological problems among Sudanese, in both adult and children (43%) and they presented with perforation of the eardrum and different degrees of hearing loss.

Aim: To evaluate the audiological and surgical results of tragal cartilage graft in myringoplasty for reconstruction of tympanic membrane perforation.

Materials and methods: A total of 25 patients in the age group of 16 - 60 years suffering from chronic suppurative otitis media of tubotympanic type, attending the outpatient department at Rajah Muthiah Medical College and hospital and underwent tragal cartilage myringoplasty between October 2015 to August 2017 were included in the study.

Results: The mean preoperative pure tone average was 37 and the postoperative pure tone average was 25.80 at 6th week and 15.60 at 10th week. The calculated p-value was less than 0.001 which was statistically significant. Graft uptake was 92% in our study. There was no postoperative retraction. Postoperative reperforation was seen in 2 (8%) patients.

Conclusion: Graft take up in tragal cartilage myringoplasty has been excellent, hearing results are satisfactory and complications are minimal. Immobility of the transplant during the early stages of the healing process is the most important factor for the successful surgical outcome of myringoplasty.

Key words

Tympanoplasty, Ossicular Chain, Tragal Cartilage, Post-operative Improvement.

Introduction

Tympanic membrane perforation is a defect in the tympanic membrane resulting in exposure of middle ear [1]. Perforation occurs as a result of chronic suppurative otitis media which is one of the most common causes of deafness in India. Myringoplasty is the surgical procedure to reconstruct the tympanic membrane perforation. Reconstruction can be done with cartilage, fascia, skin, vein, and dura [2]. Ideal graft material used for tympanic membrane perforation closure should have a low basal metabolic rate low rejection rate, good tensile strength, conductive properties similar to the tympanic membrane and should be easily available in sufficient quantity [3]. Temporalis fascia subserves these criteria. Cartilage gives the necessary stiffness, immobility and mechanical stability to avoid retraction¹. It has low metabolic rate and good acceptance in the middle ear. Tragal cartilage is being composed of collagen type II, is physiologically similar to a tympanic membrane. Immobility of transplant during the early stages of the healing process is the most important factor for the successful surgical outcome of myringoplasty [4, 5]. In this study, we aimed to evaluate the audiological and surgical results of tragal cartilage graft in myringoplasty.

Materials and methods

25 patients age group between 16-60 years suffering from chronic suppurative otitis media of tubotympanic type in the inactive stage attending outpatient department at Rajah Muthiah Medical College and underwent tragal cartilage myringoplasty between October 2016 to October 2017.

Inclusion criteria

- Age group between 16 to 60 years
- Dry ear for one month

- Small to medium size central perforation
- the conductive hearing loss to 40db
- Middle ear mucosa free of infection.

Exclusion criteria

- Attic or posterior retraction with cholesteatoma
- Ossicular chain dysfunction
- External ear pathology

In the postoperative period patient was evaluated for hearing by pure tone audiogram. Pure tone average at the end of 6th and 10th week.

Post-op complications

- Postoperative retraction
- Postoperative reperforation.
- Postoperative surgical site infection

Preparation

Surgery was done under local anesthesia with 10 ml of 2% lignocaine with adrenaline. External auditory canal infiltration gave at, 6, 9 o'clock position at the bony-cartilaginous junction. Infiltration gave at the tragus. Tragal cartilage removed through the horizontal incision and a piece of tragal cartilage measuring 15X10 mm is harvested. The harvested graft has placed either post aural or transcanal approach. Gel foam placed for support. tympanomeatal flap repositioned. Antibiotic ear drops and mastoid dressing was done. On 7th day suture removal was done. Postoperatively, the patient evaluated at 6th and 10th week. Using ANOVA statistics data were analyzed with SPSS ver 21.0 software. Results were considered statistically significant when P value < 0.05.

Results

Most of the cases belong to age group of 31-40 years. The average mean age was 28.6 (Table – 1). Gender distribution was as per Table – 2. Size of central perforation was as per Table – 3.

Affected ear cases were as per **Table – 4**. Preoperative pure tone average was as per **Table – 5**. Post-operative pure tone average was as per **Table – 6**. 17 patients the pure tone average at the end of 6 weeks was 0-25dB (**Table – 6**). Post-operative pure tone average at 10th week was as per **Table – 6(a)**. At the end of 10 weeks, 24 patients pure tone average was in the range of 0-25dB. Post-operative complications were as per **Table – 7**.

Table – 1: Age distribution.

Age in year	No of cases	%
16-20	8	32
21-30	4	16
31-40	11	44
41-50	2	8
51-60	0	0
Total	25	100

Table – 2: Gender distribution.

Gender	No of cases	%
Male	5	20
Female	20	80
Total	25	100

Table – 3: Size of central perforation.

Type of Perforation	No of cases	%
Small	4	16
Moderate	21	84
Total	25	100

Table – 4: Affected Ear.

Affected Ear	No of cases	%
Right	10	40
Left	8	32
Bilateral	7	28
Total	25	100

Table – 5: Preoperative Pure tone Average.

Pure tone average pre-op	No of cases	%
0-25	1	4
26-40	24	96
Total	25	100

Table – 6: Post-operative Pure Tone Average.

Post op Pure Tone average @ 6 weeks	No of cases	%
0-25	17	68
26-40	8	32
Total	25	100

Table - 6(a): Post-op Pure Tone Average at 10th week.

Post op Pure Tone average @10 weeks	No of cases	%
0-25	24	96
26-40	1	4
Total	25	100

Table – 7: Post-operative complications.

	No of cases	%
Post op retraction	0	0
Post op reperforation	2	8
Surgical site infection		12

Discussion

In the present study, an attempt was made to evaluate audiological and surgical results of tragal cartilage graft in myringoplasty. Results were analyzed on the basis of hearing improvement and postoperative complications [6]. Our study includes 25 cases, age group 1-40 years the mean average age group was 28.6. the probable reason being, most of them are susceptible to recurrent respiratory infections [7]. In our study, 80% were female and 20% were male. In our study, a maximum number of patients had pure tone average in the range between 26-40 dB. Postoperatively at the end of 6 weeks, 68% of patients were in the range of 0-25 dB. At the end of 10 weeks, 96% of patients in the range of 0-25dB. The mean postoperative hearing improvement was 21.4 [8]. The calculated P value was <0.001 which was statistically significant. In our study, post-operative retraction or reperforation in 8% of cases. Post-operative surgical site infection in 12% of cases [9].

Conclusion

Chronic suppurative otitis media is the leading health problem in India causing significant hearing loss. Various graft and techniques have been used for Tympanic membrane closure. Temporalis fascia is the most commonly used graft material. In the last decade, there has been an increasing interest in using the cartilage graft. Cartilage is a good grafting material easily accessible, easy to fashion, well tolerated. Graft take up in cartilage myringoplasty has been excellent. Hearing results are satisfactory and complications are minimal. Tragal cartilage is an ideal material for Tympanic membrane perforation. In terms of postoperative healing and acoustic purpose.

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