Original Research Article

A comparative study of hearing outcomes in type I tympanoplasty with temporalis fascia and tragal cartilage-perichondrium composite graft

Subramania Biju C[1], Jude Anselm Shyras D[2*]

[1]Assistant Professor, [2]Sr. Assistant Professor, Department of Otolaryngology, Kanyakumari Government Medical College, Asaripallam, Nagercoil – 629201, Tamil Nadu, INDIA.
Email: drshyras@gmail.com

Abstract

Background: Type I tympanoplasty is the commonest procedure done in cases of chronic suppurative otitis media. A variety of graft materials are being used to reconstruct the defect in the tympanic membrane. This study compares the post operative hearing outcomes of tragal cartilage- perichondrium composite graft with temporalis fascia graft. **Methods** This prospective study was done in a medical college hospital over a period of 2years. Patients with CSOM (tubotympanic type) who underwent Type I tympanoplasty with either temporalis fascia or tragal cartilage – perichondrium composite graft were included in this study. Their pre operative and post operative (6 months post operative) audiograms were analysed in terms of AB gap closure and results documented. **Results:** Of the 80 patients we evaluated, the hearing gain was about 78% in the temporalis fascia graft and 77% in the tragal cartilage – perichondrium group with no statistical significance of difference between them. **Conclusion:** Both tragal cartilage perichondrium composite graft and temporalis fascia can be used as autograft material to achieve good hearing results.
Key Words: Tympanoplasty, Tragal perichondrium – cartilage composite graft, Temporalis fascia.

[*]**Address for Correspondence:**
Dr. Jude Anselm Shyras. D, Senior Assistant Professor, Department of Otolaryngology, Kanyakumari Govt. Medical College and Hospital, Asaripallam, Nagercoil – 629201, Tamil Nadu, India.
Email: drshyras@gmail.com
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INTRODUCTION

Chronic Suppurative Otitis Media remains as one of the commonest correctable cause of hearing impairment in developing countries. Various surgical options are available in reconstructing the defect in the tympanic membrane. Type I tympanoplasty is the most common surgical procedure done to repair the defect. A variety of graft materials are being used to reconstruct the defect in the tympanic membrane. Temporalis fascia traditionally used in Type I tympanoplasty has its own disadvantages like retraction and recurrence of perforation. The instability of temporalis fascia is significant when the size of perforation is large. Cartilage as a form of graft material has been used for many years. Various techniques using cartilage have been developed such as palisade technique, perichondrium – cartilage composite graft, butterfly technique and shield technique. In this study we compare the hearing outcomes in Type I tympanoplasty done with temporalis fascia and tragal cartilage – perichondrium composite graft.

MATERIAL AND METHODS

This prospective, comparative study was conducted at the Department of ENT, Kanyakumari Govt. Medical College and Hospital, Nagercoil, Tamilnadu for a period of 2 years from September 2014 to August 2016. The study group composed of 80 patients, 40 in whom tragal cartilage – perichondrium composite graft was used (group 1) and 40 patients in whom temporalis fascia was used as graft material (group2). Patients belonging to age

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groups 13 to 50 were included in the study. Patients with attic disease and posterior superior retraction were excluded. Written informed consent was obtained from the patients for publication of this case study. Pre operative audiogram was done in all patients. Patients were randomized into two groups- Group 1 in whom the tragal cartilage – perichondrium graft was used and Group 2 in those temporalis graft was used. All the surgeries were done by the authors.

Surgical Technique

The tragal cartilage – perichondrium graft was taken by making an incision 2mm medial to the free margin of tragus on its medial aspect. The subcutaneous tissue was dissected and cartilage exposed on its medial and lateral surface with its attached perichondrium. The cartilage along with perichondrium was then excised and the donor site sutured after securing haemostasis. The perichondrium on the lateral surface is removed. A circular island of cartilage measuring approximately 6mm is then marked and the remaining cartilages removed from the perichondrium. A small gap of cartilage is removed from the circular island to accommodate the handle of malleus. Temporalis fascia graft is harvested by the post aural incision. Any muscle/ fat attached were removed bluntly and graft was dried. After checking the integrity of ossicular chain, these grafts were laid as underlay grafts. Postoperative follow up was done till the ear was dry. Postoperative audiogram were done 6 months after surgery. AB gap less than 10 dB was taken as the criteria for hearing improvement.

RESULTS

In this study, 42 (52.55%) patients were females and 38 (47.5%) were males. The age distribution of the patients was between 13yrs and 50yrs. 31 patients (38.75%) had a small or moderate sized central perforation and 49 patients (61.25%) had a large or subtotal perforation. Post operative audiometry at 6 months was used as a measure of improvement in hearing outcome. Hearing improvement in the study groups are shown in the following table.

Table 1: Improvement in Hearing

POST OP AB GAP	<10dB No. of patients	<10dB Percentage	>10dB No. of patients	>10dB Percentage
Temporalis fascia	31	77.5%	9	22.5%
Tragal cartilage – perichondrium graft	30	75%	10	25%

DISCUSSION

The objective of this study was to analyse and compare the hearing outcomes in patients undergoing tympanoplasties with temporalis fascia and tragal cartilage – perichondrium composite graft. Temporalis fascia graft is thin and hence is prone for retraction in patients with negative middle ear pressure. It can sometimes shrink after final positioning in the middle ear. Various authors claim tragal cartilage perichondrium composite graft as a better alternative to temporalis fascia as it is malleable and tense[1]. Mansour *et al*[2] reported success rate of 100% with tragal cartilage perichondrium graft. John Darn Hoffer reported a higher incidence of graft failure and poor hearing in older age group. In a study conducted by him, the hearing restoration rate for temporalis fascia was 82%[3]. Goodhill reports a 100% success rate with tragal perichondrium[4]. Straham recorded a success rate of 86% with tragal perichondrium[5]. A success rate of 90.47% was reported by Eviator with tragal perichondrium[6]. A study created by John L Dornhoffer reports an average A-B gap of 6-8 dB in the post operative period. Our study achieves a hearing restoration rate of 77.5% in the temporalis fascia graft (<10dB closure of AB gap) and a rate of 75% in the tragal cartilage perichondrium graft group. Hearing improvement is better in anterior type of perforation than posterior perforation[7]. Even though temporalis fascia is the commonly used graft material in tympanoplasty, hearing results with tragal cartilage perichondrium graft is comparable to temporalis fascia in our study.

REFERENCES

1. Marbed 27, Bomitz M. Huttenbrink KB. Acoustic properties of different cartilage reconstruction techniques of TM; laryngoscope: 2002 112;1795
2. Mansour MH, Askar MH, Albirmamy OA, Repair of tympanic membrane perforation.
3. John L Dornhoffer M.D; Heama, results with cartilage tymanoplasty; laryngoscope; 1997 Aug; 107 (8); 1094-9.
4. Victor Goodhill, Irwin Harris; Tympanoplasty with perichondrial graft- A preliminary report; Archives of otolaryngology 1964;79;131-137
5. Ronald. W Strahan, Paulward; Tympanic membrane grafting, Analysis of material and techniques. Annals of otolaryngology 1971; 80, 854-860.
6. Abraham Eviator: Tragal perichondrium and cartilage in constructive ear surgery; laryngoscope no 11; 88; 1-23.
7. Yung MW (19830 'Myringoplasty' hearing gain in relation to perforation site. T laryngology 97; 11-17.

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