



COMPARATIVE EVALUATION OF GRAFT MATERIALS (TEMPORALIS FASCIA VS CARTILAGE) WITH HEARING OUTCOME AND GRAFT UPTAKE IN TYMpanoplasty

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ABSTRACT

Introduction: Tympanoplasty is a widely performed surgical procedure for the repair of tympanic membrane perforations with the primary goals of achieving graft uptake and improving hearing outcomes. Temporalis fascia has traditionally been the most commonly used graft material due to its favorable acoustic properties, while cartilage grafts have gained popularity due to their rigidity and resistance to retraction. **Aim:** To compare graft uptake and hearing outcomes between temporalis fascia and cartilage grafts in tympanoplasty. **Methodology:** A prospective observational study was conducted on 96 patients undergoing type I tympanoplasty. Patients were divided into two groups: temporalis fascia (n=48) and cartilage graft (n=48). Preoperative and postoperative clinical and audiological evaluations were performed. **Results:** Graft uptake was significantly higher in the cartilage group (93.7%) compared to the temporalis fascia group (81.2%) (p=0.040). Hearing improvement was slightly higher in the fascia group (72.9%) compared to cartilage (68.7%), but the difference was not statistically significant (p=0.63). Mean air-bone gap closure was comparable between groups. **Conclusion:** Cartilage grafts demonstrate superior graft uptake, while hearing outcomes are comparable between both materials. Cartilage is preferable in high-risk cases.

KEYWORDS

Tympanoplasty, Cartilage graft, Temporalis fascia, Hearing outcome, Graft uptake

INTRODUCTION

Tympanoplasty is a commonly performed surgical procedure aimed at achieving closure of tympanic membrane perforation and restoration of hearing in patients with chronic otitis media. Chronic otitis media remains a major health burden in developing countries like India due to recurrent infections and poor socioeconomic conditions. The success of tympanoplasty depends on graft uptake and hearing improvement, both of which are influenced by graft material and middle ear status.

Temporalis fascia has long been considered the gold standard due to its availability and acoustic properties. However, its long-term stability may be compromised due to retraction and shrinkage. Cartilage grafts have emerged as an alternative due to their rigidity and resistance to adverse middle ear conditions. Several studies suggest better graft uptake with cartilage, though concerns remain regarding hearing outcomes.

AIM

To compare graft uptake and hearing outcomes between temporalis fascia and cartilage grafts in tympanoplasty.

MATERIALS AND METHODS

This hospital-based observational study was conducted in the Department of Otorhinolaryngology over one year (April 2025 to March 2026). A total of 96 patients diagnosed with chronic suppurative otitis media were included.

Patients were divided into two groups:

- Temporalis fascia group (n=48)
- Cartilage graft group (n=48)

Inclusion and exclusion criteria were applied. All patients underwent detailed clinical and audiological evaluation including pure tone audiometry. Tympanoplasty was performed using standard surgical techniques.

Postoperative follow-up was done at 4, 8, and 12 weeks. Graft uptake and hearing improvement were assessed. Data were analyzed using SPSS software. Chi-square test and unpaired t-test were used. A p-value <0.05 was considered significant.

RESULTS

Graft uptake was observed in 39 patients (81.2%) in the temporalis fascia group and 45 patients (93.7%) in the cartilage group. The difference was statistically significant (p=0.040).

Hearing improvement was seen in 35 patients (72.9%) in the fascia group and 33 patients (68.7%) in the cartilage group, with no significant difference (p=0.63).

Mean air-bone gap closure was 14.2 ± 4.8 dB in the fascia group and 13.5 ± 5.1 dB in the cartilage group (p=0.46).

Cartilage grafts showed significantly better results in large perforations (91.0% vs 70.0%, p=0.023).

DISCUSSION

The present study demonstrated superior graft uptake with cartilage grafts compared to temporalis fascia. These findings are consistent with previous studies reporting higher anatomical success rates with cartilage due to its rigidity and resistance to retraction.

Hearing outcomes were comparable between both groups, indicating that cartilage does not significantly compromise auditory function. Similar findings have been reported in multiple studies, suggesting that modern cartilage techniques preserve hearing outcomes effectively.

Cartilage grafts were particularly advantageous in large perforations, where structural support is critical.

Cartilage grafts provide superior graft uptake compared to temporalis fascia, especially in large perforations, while hearing outcomes remain comparable. Cartilage is a reliable and effective graft material in tympanoplasty and may be preferred in high-risk cases.

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