

Original research article

A Prospective Study to Determine Outcomes in Underlay Tympanoplasty at a Tertiary Care Hospital, Udaipur.

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Abstract

Introduction: Tympanoplasty is defined as a surgical procedure to eradicate infection and restore the function of the middle ear. Different graft materials have been tried for reconstruction of the defect in the tympanic membrane and temporalis fascia is the most common auto graft used. **Aim:** to demonstrate the long term anatomical and functional outcomes of underlay tympanoplasty using temporalis fascia graft in patients with COM with subtotal perforations. **Method:** This prospective study was conducted in the department of Otorhinolaryngology and Head and Neck surgery, RNT medical College and MB hospital, Udaipur. Patients attending the outpatient department of Otorhinolaryngology were screened and 50 patients were included in the study. **Results:** In our study, the graft uptake rate was 96%. **Conclusion:** Patients having discharge duration for less than 5 years had better graft uptake as compared to patients who had discharged for longer duration.

Keywords: tympanoplasty, graft uptake, ear discharge, hearing loss

Introduction

Tympanoplasty is defined as a surgical procedure to eradicate infection and restore the function of the middle ear. It is the commonest procedure performed in patients with chronic otitis media. Different graft materials have been tried for reconstruction of the defect in the tympanic membrane and temporalis fascia is the most common auto graft used^{1,2}. Elevation of tympanomeatal flap with placement of temporalis fascia graft is crucial for successful uptake of graft. In the past various tympanomeatal flaps have been designed for reconstruction of the subtotal and anterior perforations to overcome the poor success rate. It is very important to provide support to the graft material by additional canal incisions for large central perforations, in order to avoid any residual perforations and medialisation³⁻⁵.

Although temporalis fascia graft is considered as the gold standard for the repair of tympanic membrane defect in chronic otitis media (COM), it is challenging for subtotal/large perforation due to its poor graft uptake rate. It could be due to the presence of minimal residual tympanic membrane (TM) left for the lateral support of the graft. Although anatomical outcome has been satisfactorily documented using autologous cartilage graft, the variable hearing outcome has been documented by past literature in the postoperative period^{1,2}.

In this study we would study the graft uptake in patients who would undergo circumferential tympanomeatal flap tympanoplasty. Our aim is to demonstrate the long term anatomical and functional outcomes of underlay tympanoplasty using temporalis fascia graft in patients with COM with subtotal perforations.

Methodology:

This prospective study was conducted in the department of Otorhinolaryngology and Head and Neck surgery, RNT medical College and MB hospital, Udaipur. Patients attending the outpatient department of Otorhinolaryngology were screened and 50 patients were included in the study.

Method of collection of data

- Detailed history was taken followed by clinical examination.
- Selected patients were investigated by doing Tuning fork tests, Pure Tone Audiometry before and after tympanoplasty.
- Follow up of patient was done on 1st month, 3rd month and 6th month and patient would be subjected to tested for Pure Tone Audiometry.

INCLUSION CRITERIA

- Chronic suppurative otitis media of tubotympanic type with Anterior large and sub total perforations
- Age group of patients 15 to 60 years and both the sexes.

EXCLUSION CRITERIA

- Cases of chronic suppurative otitis media of atticointral type,
- Cases of chronic suppurative otitis media with ossicular discontinuity.
- Cases of chronic suppurative otitis media with extensive disease requiring exteriorizing procedure like modified radical Mastoidectomy.

Results:

In the present study, it was observed that the majority of patients, 14 (28%) were in the age group of 31-35 years followed by 12 (24%) patients in the age group of 36-40 years. The minimum age was 17 years and maximum age was 49 years. The mean age was 31.68 ± 9.19 years. Present study had 28 female and 22 male.

Out of 50 patients, 4 patients (8%) had dry ear for duration upto 1 month, 12 patients (24%) for 1-2 months and 34 patients (68%) for more than 2 months. Among 50 patients selected, 26 patients (52%) were having the history of discharge for 1-5 years, 21 patients (42%) for 5-10 years and only 2 patients (4%) were having discharging ear for more than 10 years.

The overall result of study shows that out of 50 patients, the successful graft uptake was seen in 48 patients (96%) at the end of third postoperative month in 2 patients (4%) rejection of graft was observed.

Table 1: Comparison of “graft take-up rate” according to duration of discharge in affected ear before surgery

Duration of discharge before surgery (year)	No. of patients	Residual perforation	Graft taken	Success rate (%)
<5 years	26	0	26	100.00
5-10 years	21	1	20	95.42
>10 years	3	1	2	66.67

Patients having discharge duration for less than 5 years had better graft uptake as compared to patients who had discharged for longer duration.

Table 2: Comparison of “graft take-up rate” according to duration of dryness in affected ear before surgery

Duration of dryness of affected ear before surgery (year)	No. of patients	Residual perforation	Graft taken	Success rate (%)
<1 month	4	1	3	75.00
1-2 months	12	1	11	91.66
>2 months	34	0	34	100.00

Patients who had dry ear for more than 2 months before their surgery were having better results as compared to patients who had dry ear for less duration. In this study, 28 patients (56%) were having postoperative hearing gain (A-B gain in dB) was 10-20 dB, 18 patients (36%) were having postoperative hearing gain was 21-30 dB and in 4 patients (8%) postoperative hearing gain was <10 dB.

Discussion:

Chronic suppurative otitis media (CSOM) is one of the major illnesses in our country. A large majority of the CSOM cases belongs to the safe or tubo-tympanic variety in which central perforation or subtotal perforation is present in the tympanic membrane. Elevation of tympanomeatal flap with placement of temporalis fascia graft is crucial for successful uptake of graft. In the past various tympanomeatal flaps have been designed for reconstruction of the subtotal perforations to overcome the poor success rate.

It is very important to provide support to the graft material by additional canal incisions for subtotal perforations, in order to avoid any residual perforations and medialisation.

Circumferential elevation of tympanomeatal flap and underlay graft placement is thought to be a good surgical technique as it ensures elevation of canal skin over the Eustachian tube area to form a good assemble between the temporalis graft and the flap to increase the success rate.

In the present study, data revealed that patient encountered were in age group of 15-50 years. The mean age of the patient was 31.68 years. Patients aged between 31-35 years were more in study, 14 (28%) while patients aged between 46-50 years were encountered least, only 1 (2%). In a study by Navneet Mathur, Prakash Mishra⁶ (2004) in SMS Medical College, 89% of cases were in age group of 11-40 years, while one case was of 7 years of age and 9% of cases were between the age of 41-50 years.

In present study, patients who had dry ear more than 2 months, graft uptake rate was 100.00% and patients who had dry ear less than 1 month graft uptake rate was 75% and patients who had dry ear between 1 to 2 months, graft uptake rate was 91.66 %.

In study by Mahmood Sishegar et al⁷ (2012), patients who had at least one month or greater than one month dry period and normal middle ear mucosa graft uptake was 100%. As per study done by Armstrong and Chalotte (1965)⁸ dry ear is must before doing tympanoplasty, while Waleed Abdehameed et al. (2016) studied that patients with dry ear and normal middle ear mucosa for at least three months pre-operatively. The success rate of graft uptake was 92%.⁹

The results of present study are similar to the above mentioned studies that patients with dry ear more than one month had better graft uptake, because less chance of infection, better vascularity of graft and normal middle ear physiology present in dry ear, in contrast to wet ear in which presence of granulation tissue or edematous mucosa in the middle ear increase the distance between the middle ear cavity and capillaries. In our study, follow up was done after 3 months and we found that in 48 (96%) patients the tympanic membrane graft was intact and 2 (4%) patient, residual perforation were present. In our study, the overall graft acceptance rate with circumferential flap elevation was 96%.

Summary and Conclusion:

1. Patients like age and sex do not influence the graft uptake and hearing improvement.
2. Patients with history of ear discharge for less than 5 years had better graft uptake rate (100.00%) as compared to who had discharge for long duration (66.67%).
3. In our study, the graft uptake rate was 96%.

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