

Prospective Study to Determine Post Operative Complications after Surgical Correction of Subtotal Tympanic Membrane Perforation at a Tertiary Care Hospital in Rajasthan

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Received: 24-02-2022 / Revised: 25-03-2022 / Accepted: 30-04-2022

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Conflict of interest: Nil

Abstract

Introduction: Tympanoplasty is the commonest surgical procedure performed in patients to combat ear infection and restore its function. 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.

Aim: To determine complications of circumferential flaps in subtotal tympanic membrane 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, among the 50 patients, 5 patients were having minor complication, 2 patients (4%) were having otitis media effusion, 1 patient (2%) having retraction, 1 patient (2%) having myringitis and 1 patient (2%) having lateralization.

Conclusion: Most common post operative complications was Otitis Media with effusion.

Keywords: Tympanoplasty, Otitis media with effusion, retraction

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Introduction

Ear morbidities are very common, specially in a developing country like ours. Tympanoplasty is the commonest surgical procedure performed in patients to combat ear infection and restore its function. 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]. Underlay and overlay techniques refer to

the placement of the graft material either medial or lateral to the Fibrous annulus.

Although underlay grafting technique is preferred over overlay technique, it is challenging for subtotal or anterior perforations as the graft falls away from the anterior remnant of tympanic membrane causing medialisation of graft causing failure [3]. Overlay technique has a higher success rate in anterior and

subtotal tympanic membrane perforations, but serious complications including lateralization, blunting and cholesteatoma formation may occur [3,4].

Classically described vascular strip technique has some limitations with respect to anterior and large or subtotal perforations.

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]. The index study has been designed to study the outcomes and complications of circumferential flaps in 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 subtotal 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: Preoperative (A-B gap) in dB

| A-B gap in dB | Number of patients | % |
|---------------|--------------------|------|
| 10-25 dB | 11 | 22.0 |
| 26-40 dB | 35 | 70.0 |
| 41-55 dB | 4 | 8.0 |

Among 50 patients, 11 patients (22%) were having the A-B gap 10-25 dB, 35 patients (70%) patients were having the A-B gap 26-40 dB and 4 patients (8%) were having the A-B gap 41-55 dB.

Table 2: Postoperative hearing gain (A-B gain in dB)

| Hearing gain in (AB) (dB) | Number of patients | % |
|---------------------------|--------------------|------|
| <10 dB | 4 | 8.0 |
| 10-20 dB | 28 | 56.0 |
| 21-30 dB | 18 | 36.0 |

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.

Table 3: Complications in 50 cases (N = 50)

| Complications | Number of patients | % |
|-----------------------|--------------------|-----|
| Otitis media effusion | 2 | 4.0 |
| Retraction | 1 | 2.0 |
| Myringitis | 1 | 2.0 |
| Lateralization | 1 | 2.0 |

In our study, among the 50 patients, 5 patients were having minor complication, 2 patients (4%) were having otitis media effusion, 1 patient (2%) having retraction, 1 patient (2%) having myringitis and 1 patient (2%) having lateralization.

Discussion:

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%.

In our study preoperatively 92% of the cases presented with air bone gap in the range of 10-40 dB. Degree of hearing loss was mild in 42%, moderate in 54%, hearing gain of 10-30 dB was achieved in 92% of the cases. 10% of the cases suffered minor complication like otitis media with effusion (4%), retraction (2%), myringitis (2%) and lateralization (2%).

In a study by Schilder A G , he elevated fibrous annulus along with the

tympanomeatal flap anterosuperiorly over the Eustachian tube where 2-4 mm tunnel was made through which the graft was pulled out anterior meatal skin. [5]

In a study by Schraff et al. [6] where he first elevated the fibrous annulus from bony sulcus followed by the elevation of canal skin over the antero-superior quadrant retrogradely and underlay grafting was done by placing the graft between the raw bone and the anterior meatal skin. He found encouraging postoperative results with 94.5% graft uptake without any serious complication.

In a study by Guneri et al. [7] included 20 patients of COM who underwent circumferential subannular grafting in type 1 tympanoplasty demonstrated successful

hearing outcome after a mean follow-up of 13.6 months.

Venkatesha et al 2018 [8] intended to study the surgical and hearing outcome in patients undergoing tympanoplasty perforations. Graft uptake was 92%, blunting was noticed in 4% and medialisation in 4% of patients in circumferential group. In our study patients who had duration of discharge before surgery < 5 years, success rate was 100 %, who had duration of discharge between 5 -10 years success rate was 95.43 % and who had duration of discharge >10 years had success rate of 66.67 %.

In a study done by Anjana Agarwal et al [9] patients who had duration of discharge < 7 years, Success rate was 98 % and patients who had duration of discharge >7 years the success rate was 88 %. [10]

Summary and conclusion:

In our study, 8% patients had postoperative hearing improvement in the range of 1-10 dB, 56% in 11-20 dB and 36% in 21-30 dB range. 10% of the cases suffered minor complications like otitis media with effusion (94%), retraction (2%), myringitis (2%) and lateralization (2%). The primary objective of surgery for CSOM is to eradicate infection and disease and achieve safe and dry ear. Success of tympanoplasty is better in restoring hearing in cases with lesser air bone gap at the presentation than with larger air bone gap provided regular postoperative care is done. However, it should be noted that the key to success in otologic surgery is not what technique is used but how well one uses it.

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