

Clinical Study of Results of Myringoplasty with Tragal Perichondrium

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Abstract: A clinical study was undertaken to evaluate incidence of age, sexin tubotympanic type chronic suppurative otitis media patients admitted in the ward of s v s medical college and hospital. Clinical study of pathology (site of perforation), preoperative audiological evaluation in chronic suppurative otitis media patients. Study of surgical procedure (myringoplasty) with tragal perichondrium adopted for treatment for tubotympanic type chronic suppurative otitis media in the patients selected. Post operative follow up, success rate of graft uptake, hearing improvement results were analysed.

Keywords: Chronic suppurative otitis media, central perforation, air bone gap, tragal perichondrium, myringoplasty

1. Introduction

The perforation of the tympanic membrane may be of traumatic origin or due to chronic suppurative otitis media. If the perforation fails to heal spontaneously or by conservative therapy, they require surgical closure. The repaired perforation restores the vibratory area of the tympanic membrane and affords round window protection, thus improving hearing.

Chronic otitis media is the most advanced disease state in the spectrum of otitis media and is associated with some form of irreversible pathologic condition in the middle ear such as granulation tissue, ossicular changes, tympanosclerosis, tympanic membrane perforation and cholesteatoma.

Traditionally chronic otitis media is classified into tubotympanic disease characterised by the presence of a central perforation and atticotympanic disease characterised by the presence of attic perforation, marginal perforation with or without cholesteatoma.

Myringoplasty is the main surgical treatment for tubotympanic disease. It is defined as an operation performed to eradicate disease in the middle ear and to reconstruct the hearing mechanism without mastoid surgery.

Biological graft materials act as scaffold of tissue matrix when applied to seal the perforation and this subsequently revascularises in readiness for migration of fibroblasts and epithelium. Some of the commonly used autologous graft materials include vein, fat, fascia lata, temporalis fascia, tragal perichondrium and cartilage. However due to its anatomic proximity, translucency and suppleness, temporalis fascia and tragal perichondrium are two most preferred grafting materials. In this study, we have attempted to analyse the tragal perichondrium as the ideal graft material with regards to graft uptake and hearing improvement in cases of underlay myringoplasty.

2. Objectives

We are performing a prospective randomized study with a sample size of 60 patients to evaluate the efficacy of graft material. We are evaluating the underlay myringoplasty

using the graft material tragal perichondrium by the criteria of graft uptake rate, hearing improvement and infection rate.

To establish the ideal graft material with regard to graft uptake, hearing improvement.

3. Materials and Methods

All patients the ENT outpatient department in S V S hospital, Mahabubnagar between July 2011 and Nov 2012 with complaints of ear discharge and decreased hearing were screened. Those patients, in whom tubotympanic type of chronic suppurative otitis media was found, were taken up for this prospective study.

This study comprises of 60 patients who were subjected to underlay myringoplasty for the treatment of chronic suppurative otitis media. Each patient was subjected to detailed examination of nose, para nasal sinuses and throat to rule out any focus of infection, which could influence the result of myringoplasty. The study was done on following parameters, graft uptake audiological outcome (closure air bone gap, sensory neural hearing loss), late complications like re-perforation, retraction, adhesions, worsening of air bone gap.

Method of collection of data: cases selected for the study were subjected to detailed history taking and clinical examination of ear, nose and throat was done with special reference to the ear. An otoscopic examination was done to record the site and size of perforation. All findings were confirmed with examination of the ear under microscope. Hearing status was assessed with tuning fork tests (Rinnes, webers, absolute bone conduction tests), using 256, 512, 1024 hz tuning forks. Pure tone audiometry performed in the frequencies of 500, 1000, 2000, and 4000.

Inclusion criteria: chronic suppurative otitis media tubotympanic type with central perforation of unilateral type, patients both male and females age group from 13 to 56 years, pure tone average between 20-45 db hearing loss, ear to be operated should be without discharge for at least 4 weeks before surgery, no sensory neural hearing loss, Eustachian tube function should be normal.

Exclusion criteria: Active discharging ear, patient with uncontrolled hypertension, diabetes and severe anemia,

patient with nose, pns and throat problems are eliminated, bilateral ear discharge, revision myringoplasty, patient <12 years >56 years

Observations: our study includes follow up of post operative cases for 2yrs. Out of 60 cases operated 11 cases did not come for follow up. Hence they were excluded. The remaining 49 cases came for follow up were included in the study.

Age distribution: The youngest patient in our study was 13 years old while the oldest patient was 56 year old. The average incidence was 26.6 years.

Table 1: Age distribution

Years	Total Number	Percentage %
13 - 20	20	40.9
21 - 30	19	38.9
31 - 40	5	10.1
>40	5	10.1
TOTAL	49	100

Sex distribution: The overall male to female ratio was 27.22. Among patients undergoing surgery 55 % were males, 45% were females.

Table 2: Sex distribution

Sex	Total Number	Percentage%
Males	25	55
Females	22	45
Total	49	100

Site of tympanic membrane perforation: Of the patients undergoing surgery 38.7 % had anterior quadrant perforation while 8.3% had posterior quadrant perforation, 53% had both quadrant perforations.

Table 3: Site of Tympanic Membrane Perforation

Quadrant	Total Number	Percentage%
Anterior	19	38.7
Posterior	4	8.3
Both	26	53
Total	49	100

Pre operative air-bone gap: patients who underwent surgery 30.6% had 25 db while 40.8% had 30 db gap and 28.6% had more than 30 db air bone gap.

Table 4: Pre Operative Air Bone Gap

Pure Tone Average (DB)	Total Number	Percentage%
20-25	15	30.6
26-30	20	40.8
>30	14	28.6
Total	49	100

Post operative air bone gap: patients underwent surgery 90% had a gap of 20db while 10% had a gap of >20db.

Table 5: Post Operative Air Bone Gap

Air Bone Gap Closure	Total Number	Percentage
<10	36	73
10-20	8	16.3
>20	5	10.7
TOTAL	49	100

Post operative graft status: The graft uptake rate was 83.6%. pinhole size perforation located anteriorly was seen in 11 cases, 4 perforations healed after 2 weeks with chemical cautery. Persistent perforation is seen in 7 cases.

Table 6: Post Operative Graft Status

Graft Status	Total Number	Percentage
Intact	42	83.6
Persistent Perforation	7	16.4
Total	49	100

Post operative subjective hearing assessment: 65% patients who underwent surgery had significant improvement in hearing while 20% patients had mild hearing improvement, 15% patients had no hearing improvement.

Table 7: Post Operative Subjective Hearing Assessment

Hearing Assessment	Total Number	Percentage
Significant Improvement	32	65
Mild Improvement	10	20
No Change	7	15
Worsened	0	0
Total	49	100

4. Discussion

Age incidence: The youngest patient in our study was 13 years old while the oldest patient was 56 years old. The average age incidence was 26.6 years. A study conducted by Jyothidhabolkar also corresponded with the same age group. In the study conducted by Anand et al the average age was 26 years.

Sex incidence: The overall male to female ratio in our study was 55:45. In Jyothidhabolkar study the ratio was 66:34 and Anand group the ratio was 60:40. Though the overall male to female ratio was consistent with other studies.

Site of perforation: Of the patients undergoing surgery 38.7% had anterior quadrant perforations, 8.3% patients had posterior quadrant perforations, 53% patient had both quadrant perforations. In our study both the quadrant perforations are equivalent to moderate and large perforations.

Graft uptake: The graft uptake rate 83.6% in our study. Various studies showed the graft uptake was in the ratio of 80-90%. Abraham eviator noted that graft uptake rate with tragal perichondrium was 90.47%, T S Anand et al observed graft take up rate of 90% with hearing improvement 85%. The present study graft uptake rate is reasonably comparable with other authors.

Hearing results: 90% patients who underwent surgery had an air bone gap more than 20 db. Taking post operative air bone gap as the criteria, our study results show that tragal perichondrium myringoplasty gives better results. A study was conducted by John L Dorn hoffer, the hearing results using tragal perichondrium grafts, out of 22 patients who underwent surgery, the graft was taken up in all the patients and average air bone gap was 6.8db in the post operative period. In our study post operative 73% patients had air bone gap of < 10db. The present study graft uptake rate is

reasonably comparable with other authors, tragal cartilage perichondrium graft used appears stiff and thick, but allows good sound conduction and hence gratifying post operative hearing results.

5. Conclusions

Myringoplasty is effective surgery in tubotympanic disease, for control of the disease as well as in improvement of hearing. Taking post operative puretone average as the criterion, tragal perichondrium gives better results in hearing improvement. The results of myringoplasty with tragal perichondrium is very good, when graft uptake is concerned. Tragal perichondrium appears to be a better alternative to other grafts like temporalis fascia.

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References

- [1] Abraham Eviator: Tragal perichondrium and cartilage in reconstructive ear surgery; Laryngoscope No, 11; 88; 1-23.
- [2] John L. Dornhoffer. Hearing results with cartilage tympanoplasty; Laryngoscope; 1997 Aug; 107(8); 1094-9.
- [3] Goodhill V. Harris I. and Brockmann S.J. (1964); Tympanoplasty with perichondrial graft; Archives of otolaryngology; 79: 131-137.
- [4] Jyothi P. Dobhalkar, Krishnavora, Abhiksikdar (2007); comparative study of under tympanoplasty with temporalis fascia and tragal perichondrium, I. J. O. Head neck surg (April-June 2007); 59, 116-119.
- [5] Qurishi M.S, N.S. Jones (1995): Day care myringoplasty using tragal perichondrium; Clinical Otolaryngology; 20: 12-14.
- [6] Anand T.S, Geethakathuria, Sandeepkumar, Vikramwadhwa, Tapaswinipradhan (2002) I.J.O. and HNS vol. 54; No. 1, (January-March 2000)