

ORIGINAL RESEARCH

A Comparative Study of graft uptake and hearing improvement following Myringoplasty using Temporalis fascia and Tragal perichondrium in mucosal type of COM

¹Dr.M.Meena Kumari, ²Dr.Soujanya Kumari

¹Senior Resident, ²Assistant Professor, Department of ENT, Osmania Medical College, Hyderabad, Telangana, India

Correspondence:

Dr.M.Meena Kumari

Senior Resident, Department of ENT, Osmania Medical College, Hyderabad, Telangana, India

ABSTRACT

Aim: The aim of the study is to compare the results of myringoplasty performed using temporalis fascia with that of tragal perichondrium.

Methodology: A Hospital based prospective study was conducted to compare the success rate of myringoplasty performed with temporalis fascia versus tragal perichondrial grafting at department of ENT, Govt ENT Hospital, Koti, Hyderabad.. Patients with chronic suppurative otitis media with tubo tympanic type were included in the study.

Results: A total of 60 patients were studied among which 30 were in group A and 30 in group B. Patients were diagnosed by clinical examination and otomicroscopy. Pre operative hearing evaluation was done by pure tone audiometry. Myringoplasty was performed using temporalis fascia and tragal perichondrium in group A and group B respectively. Follow up was done at 3 weeks, 6 weeks, 3 months and at 6 months post operatively. During the follow up, patients were assessed for graft uptake and hearing improvement and the results were compared between both the groups. The results were as follows: Age of pts was between 15- 60 yrs with majority between 20 to 40yrs. There were a total of 33 males and 27 females. Right ear was operated in 33 patients and left ear in 27 patients. A total of 14 cases were operated with presence of bilateral disease (6:8). Overall graft uptake rate was 85%. Graft uptake rate was 83.33% with temporalis fascia and 86.66% with tragal perichondrium. Mean improvement in hearing for temporalis fascia was 9.81 ± 5.10 dB and for tragal perichondrium was 8.42 ± 4.10 dB.

Conclusion: It is concluded that graft material does not influence the either graft uptake or hearing improvement in safe type of CSOM when conductive hearing loss is less than 40 db and in the absence of central pathology and tympanosclerosis.

Keywords: tympanosclerosis, CSOM, tragal perichondrium, Myringoplasty, chronic suppurative otitis media.

INTRODUCTION

COM is a common condition seen in patients attending the otolaryngology clinic and is an important public health problem with substantial economic and societal costs, affecting 0.5 - 30% of the community. A conservative estimate of the number of people in the world suffering from COM is over 20 million ⁽¹⁾. Chronic otitis media is the chronic inflammation

of mucoperiosteal lining of the middle ear cleft characterized by ear discharge, a permanent perforation of the tympanic membrane and impairment in hearing. It is one of the most common ear diseases encountered in developing countries due to poor socio-economic standards, poor nutrition, lack of health education and unhygienic habits.⁽³⁻⁵⁾ It is a major cause for hearing loss in India.⁽⁶⁾

The perforations of the tympanic membrane may be of traumatic origin or due to chronic suppurative otitis media.⁽⁷⁾ If perforations fail to heal spontaneously or by conservative treatment they require surgical closure. Many autogenous, several homogenous and few heterogenous graft materials have been used for closure of ear drum perforation^(8,9) Autologous graft materials such as, temporalis fascia, tragal perichondrium, cartilage, fat, and fascia lata have stood the test of time in repairing tympanic membrane perforations. Such abundance of materials implies that there is no clear cut favourite and the choice of graft material depends on individual surgeon's preference.⁽¹⁰⁾

However, due to its anatomic proximity, translucency, and suppleness, temporalis fascia is the most preferred grafting materials among the otologists and successful closure is anticipated in approximately 90% of primary tympanoplasties. Graft displacement, improper placement, autolysis, infection, hemorrhage, Eustachian tube dysfunction are the known contributing factors for the failure of closure of perforation⁽¹¹⁾

The healing of tympanic membrane perforation is preceded by ingrowths of connective tissue edges over which the epithelium migrates to close the perforation.⁽¹²⁾ Keeping this physiological principle in consideration it follows that connective tissue grafts, that is grafts of mesodermal origin like vein, perichondrium or fascia, prove superior to all other graft materials.⁽¹²⁾

Newer allograft materials such as alloderm, which is treated as cellular human dermis have been used in experimental animals⁽¹³⁾ The ideal graft material should meet certain criteria like low rejection rate, sufficient quantity, good tensile strength, easy availability and conductive properties similar to that of tympanic membrane⁽¹⁴⁾

The repaired perforation restores the vibratory area of tympanic membrane. It affords round window protection thus improving hearing. It also prevents exposure of middle ear to external infections and allergens.

The purpose of this study was to demonstrate the anatomical and functional results of myringoplasty in comparison with the commonly used graft materials. With available resources at ENT department at Govt ENT Hospital, myringoplasty was done for 60 cases. The autologous temporalis fascia and tragal perichondrium was used. The patients were audiologicaly assessed preoperatively and postoperatively for the hearing status, with focus on audiometric evaluation of the A-B gap.

AIM

The aim of the study is to compare the results of myringoplasty performed using temporalis fascia with that of tragal perichondrium.

OBJECTIVES

1. To study and compare the graft uptake following myringoplasty using temporalis fascia versus tragal perichondrium.
2. To study and compare the hearing improvement following myringoplasty using temporalis fascia versus tragal perichondrium.

METHODOLOGY

PATIENTS AND METHODS

- A prospective study was conducted among 60 patients in the department of ENT at Govt ENT Hospital Koti, Hyderabad.

Patients were divided into two groups alternatively:

- Group A (30 patients): Myringoplasty using temporalis fascia
- Group B (30 patients): Myringoplasty using tragal perichondrium

INCLUSION CRITERIA

- Patients presenting with central perforation of tympanic membrane.
- Patients between 15 to 60 years of age
- Patients with dry ear for minimum of 6 weeks
- Patients with hearing loss less than 40dB
- Patients with good cochlear reserve (without SNHL)
- Patients willing for regular follow up.

EXCLUSION CRITERIA

- Patients with age less than 15 years & age more than 60 years
- Patients with active ear discharge
- Patients who underwent surgery previously in same ear
- Perforation in only hearing ear
- Patients with tympanosclerosis
- Patients with co morbid conditions like diabetes, hypertension, bronchial asthma, nasal allergy & hypothyroidism

METHOD OF COLLECTION OF DATA

- The approval from ethics committee was taken.
- Informed consents were obtained from the patients.
- All the patients in the study were clinically evaluated by taking detailed history and clinical examination by Otoscopy and Tuning fork tests.
- Dry aural toilet was done to remove debris from ear canal.
- Otomicroscopy was performed to confirm the otoscopic findings.
- Pure tone audiometry was done
- Plain X- ray for mastoids were taken (Schuller view)
- Cases then were randomised into group A and B alternatively and surgical plan of management was formulated and accordingly patients were counselled.
- In patients with bilateral disease worst hearing ear was operated.(labelled after performing weber's test)

PROCEDURE

All the cases were performed under GA

Post aural route was chosen for all the cases

Temporalis fascia was taken from same post aural incision

Tragal perichondrium was taken from separate incision on tragus of same ear.

Tympanomeatal flap was elevated lateral to handle of malleus

Graft was placed by underlay technique

Gelfoam was placed in the canal and incision was sutured

Sutures were removed on the 7th post operative day.

Follow up was done at 3 weeks, 6 weeks, 3 months and at 6 months.

At 3 weeks and at 6 weeks otoscopy and aural toilet was done.

At 3 months and at 6 months in addition to otoscopy and aural toilet, audiometry was done.

Pure tone average (PTA) for each ear was evaluated by calculating average A-B gap at 500, 1000 & 2000 Hz. Post operative improvement in hearing was assessed.

STATISTICAL ANALYSIS

The results were evaluated in the form of graft uptake and hearing outcome. Intact tympanic membrane, moving on seigalization was taken as successful graft uptake, while any residual perforations or retraction of tympanic membrane were taken as failures.

Postoperative and preoperative puretone averages were compared and hearing gains were documented.

The collected data were tabulated and statistical analysis was performed .

Statistical analysis with the Student's t-test and Chi-square test was used to examine these parameters with regards to graft take-up and hearing improvement and results of both the groups were compared with each other. The criteria for statistical significance were set at $p < 0.05$

OBSERVATIONS AND RESULTS

Table1: Age distribution (n=60)

AGE (yrs)	Myringoplasty using temporalis fascia		Myringoplasty using tragal perichondrium	
	n=30	%	n=30	%
15-20	5	16.66	2	6.66
21-30	8	26.66	11	36.66
31-40	9	30	7	23.33
41-50	5	16.66	8	26.66
51-60	3	10	2	6.66
TOTAL	30	100	30	100

A total of 60 patients were enrolled into the study. Group A had 30 and group B had 30 patients. Age distribution among the groups was from 15 to 60 years. The youngest patient was 15 year old and the eldest was 57 year old. Average age among the groups is 34.34 years. However there was no significant difference between both groups A and B.($p = 0.932$)

Table 2: Sex distribution (N = 60)

Sex distribution	Myringoplasty using temporalis fascia		Myringoplasty using tragal perichondrium	
	N= 30	%	N=30	%
MALE	13	43.33	20	66.66
FEMALE	17	56.66	10	33.33
TOTAL	30	100	30	100

In our study out of 60 patients there were 33 males and 27 females. M : F=1.22. However there is no statistical significance between the two groups. ($p= 0.119$)

Table 3: Side involved (N=60)

Side involved	Myringoplasty using temporalis fascia		Myringoplasty using tragal perichondrium	
	N=30	%	N=30	%
RIGHT	16	53.33	17	56.66
LEFT	14	46.66	13	43.33
TOTAL	30	100	30	100

Right ear was operated in 33 patients and left ear in 27 patients.

However there is no statistical difference between the two groups.(p=0.98)

Table 4: Laterality (N=60)

Laterality	Myringoplasty using temporalis fascia		Myringoplasty using tragal perichondrium	
	N=30	%	N=30	%
UNILATERAL	24	80	22	73.33
BILATERAL	6	20	8	26.66
TOTAL	30	100	30	100

Present study includes 46 unilateral and 14 bilateral cases. The chosen side of operation among the bilateral ear cases was the worse ear. However there is no statistical difference between the two groups.(p=0.76)

Table 5: Pre operative air bone GAP

Pre op air bone gap	Myringoplasty using temporalis fascia		Myringoplasty using tragal perichondrium	
	N=30	%	N=30	%
0 -10	0	0	0	0
11-20	11	36.66	7	23.33
21-30	14	46.66	20	66.66
31-40	5	16.66	3	10
Total	30	100	30	100

Majority of patients showed mild hearing loss. Both the groups are statistically comparable.(p=0.878).

Table 6: Postoperative air bone GAP at 3 months

Post operative air bone gap	Myringoplasty using temporalis fascia		Myringoplasty using tragal perichondrium	
	N=30	%	N=30	%
0-10	9	30	6	20
11-20	12	40	11	36.66
21-30	9	30	12	40
31-40	0	0	1	3.33
Total	30	100	30	100

There is no statistically significant difference seen between both the groups (p=0.118).

Table 7: Post operative air bone GAP at 6 months

Post operative air bone gap	Myringoplasty using temporalis fascia		Myringoplasty using tragal perichondrium	
	N=30	%	N=30	%
0 -10	12	40	8	26.66
11-20	13	43.33	16	53.33
21-30	5	16.66	6	20
31-40	0	0	0	0
Total	30	100	30	100

Both groups are not statistically significant.(p=0.349)

Table 8: Status of graft

Graft	Myringoplasty using temporalis fascia		Myringoplasty using tragal perichondrium	
	N=30	%	N=30	%
Graft taken	25	83.33	26	86.66

Graft failure	5	16.66	4	13.33
Total	30	100	30	100

25 (83.3%) out of 30 ears operated using temporalis fascia graft healed completely at the end of 3 months. 26 (86.66%) out of 30 ears operated using tragal perichondrium were graft healed completely at the end of 3 months.

No statistical association was found in graft uptake with respect to type of graft. $X^2 = 0.647$, ($p= 0.4212$)

Table 9: Audiological assessment

Audiological assessment by mean air bone gap	Myringoplasty using temporalis fascia	Myringoplasty using tragal perichondrium	P value
PRE OPERATIVE	23.54 dB±5.58	23.75 dB±4.75	0.878
POST OPERATIVE -3 MONTHS	15.46 dB ±6.52	18.11 dB±6.39	0.118
POST OPERATIVE -6 MONTHS	13.73 dB±6.74	15.31 dB ± 6.20	0.349
IMPROVEMENT IN HEARING AT 6 MONTHS POST OP	9.81 dB ±5.10	8.42 dB ±4.10	0.252

Mean improvement in hearing using temporalis fascia was 9.81±5.10 dB.

Mean improvement in hearing using tragal perichondrium was 8.42 ±4.10dB.

There was no statistical difference between the groups in the hearing improvement.($p= 0.252$).

FACTORS AFFECTING GRAFT UPTAKE

Table 10: Graft uptake with respect to age

Age group	No of patients	Percentage
15 - 20	6/7	85.71%
21 - 30	16/19	84.21%
31 - 40	13/16	81.25%
41 - 50	12/13	92.30%
51 - 60	4/5	80%

There was no statistically significant difference seen in graft uptake among different age groups.

Table 11: Graft uptake with respect to sex

Sex	No of patients	Percentage
MALES	29/33	87.87%
FEMALES	23/27	85.18%

The above table shows that graft uptake was 87.87% (29 out of 33) in males and 85.18 % (23 out of 27) in females. It is not statistically significant.($p=0.91$).

Table 12: Period of dry ear before surgery

Period of dry ear	No of patients	No of failures
LESS THAN 6 WEEKS	0	0
6 - 8 WEEKS	8	7
8 - 10 WEEKS	4	2
MORE THAN 10 WEEKS	48	0

Out of the nine failures, 7 of them had dry ears for 8 weeks and 2 had dry ears for 10 weeks. Among the 51 cases with successful graft uptake only 3 had dry ears for less than 10 weeks. Out of 12 cases with duration of dry ear < 10 weeks 9 failures(75%) were present and 3 had shown graft uptake(25%) .

DISCUSSION

This is the prospective study of 60 Myringoplasties done on patients between the age of 15 to 60 years, who were admitted in the Department Of E.N.T. This entire study group of patients suffered from Chronic Suppurative Otitis Media. Patients in this study were from all socioeconomic groups, including patients referred from other practitioners also.

Conservative measures were first tried in all cases, particularly for small to moderately sized perforations. These included systemic antibiotics, trichloro-acetic acid cautery, repeated aural toilet in ears with active infections. Cases with bilateral ear diseases with suspected central septic focus were operated with tonsillectomy, adenoidectomy, septoplasty, etc. as needed. 30 patients were subjected to myringoplasty with temporalis fascia remaining 30 with tragal perichondrium. Follow up of postoperative cases was for 6 months. The present aim of our study was to restore hearing by myringoplasty comparing the effectiveness of graft material temporalis fascia and tragal perichondrium.

AGE DISTRIBUTION

The possible predisposition of age towards disease was assessed and it was found that most of the cases, that is, 19 patients (31.66%) were in the age group of 21 - 30 years and least, that is, 5 patients (8.33%) were in the age group of 51 - 60 years. The mean age of all cases was 34.34 years.

Table 13: Age distribution

	Mean age at presentation
Patil et al ⁽¹⁾ 2014 (n=120)	29.8 yrs
Singh B J et al ⁽²⁾ 2009 (n= 220)	28.9 yrs
Zhang et al 2011 ⁽³⁾ (n=117)	25.6 yrs
Maheswari A et al 2015 ⁽⁴⁾ (n= 130)	26.4 yrs
Bhoopendra S et al 2015 ⁽⁵⁾ (n = 40)	28.2 yrs
Present study (n=60)	34.34yrs

Mean age at presentation is in accordance with the above studies. The possible predisposition of age towards disease was assessed and it was found that most of the cases were in the age group of 21 - 30years. The mean age of all the cases together was 34.34 years.

Similar findings were noted in the study of Singh B J et al in which the mean age was 28.9 years (range: 13-48 years), in the study of Patil et al in which mean age was 29.8 years (range: 12-60 years), in the study of Zhang et al in which mean age was 25.6 years(range : 12-51 years), in the study of Maheswari A et al in which mean age was 28.4 years (range : 10 - 60 years) and in the study of Bhoopendra S et al in which the mean age was 28.2 years(range : 10 - 60 years).

SEX DISTRIBUTION

In our study out of 60 patients there were 33 males and 27 females. M : F=1.22.

Group A out of 30 patients there were 13 males and 17 females. In group B out of 30 patients there were 20 males and 10 females.

Table 14: Sex distribution

	Males	Females
Patil et al ⁽¹⁾ 2009 (n=120)	56.66%	43.33%
Zhang et al ⁽³⁾ 2011 (n=117)	55.55%	44.44%
Maheswari A ⁽⁴⁾ et al 2015 (n=130)	58.46%	41.54%
Dabholkar et al ⁽⁶⁾ 2007 (n=50)	66%	34%
Present study (n = 60)	55%	45%

Out of 60 patients, 33 were males(55%) and 27 were females(45%). The bias probably may be attributed to the fact that most of female patients refused for surgery with tragal perichondrium, fearing disfigurement of pinna.

Similar findings were noted in the study of Patil et al in which 56.66% were males and 43.33% were females. Out of 120 patients 68 were males and 52 were females. Zhang et al in which 55.55% were males and 44.44% were females. Out of 117 patients 65 were males and 52 were females. Maheswari A et al in which 58.46% were males and 41.54 % were females. Out of 130 cases there were 76 males and 54 females.

In the study of Dabholkar et al 66% were males and 34% were females. Out of 50 patients 33 were males and 17 were females. This study showed difference in the ratio between males and females. The reason could be females refusing to give consent for tragal perichondrium.

LATERALITY

A total of 60 patients were studied among which bilateral disease was seen in 14 patients. Out of 30 patients operated with temporalis fascia 6 patients had bilateral disease and out of 30 patients operated with tragal perichondrium 8 patients had bilateral disease. Pathology in the nose and paraansal sinuses was ruled out in these patients.

TABLE 15: Laterality

	Bilateral disease
Robert et al ⁽⁷⁾ 1984	25 %
John et al ⁽⁸⁾ 1989	30%
Present study (n=60)	23.33%

Frequency of Bilateral disease is comparable with other studies. In our study of 60 cases, 46 cases(46.66%) had unilateral disease and 14 cases(23.33%) had bilateral disease. It correlates well with quoted literature.

GRAFT UPTAKE

A successful graft take up is taken as an intact tympanic membrane which moves on siegelization. Successful graft uptake is seen in 24 patients in group A (83.33%) and in 25 patients in group B (86.66%). Statistical analysis was done using Chi square test.

The results of standard underlay methods obtained by various authors are compared and shown below. The results obtained from all these studies are more or less comparable with our study.

Table 16: Graft uptake

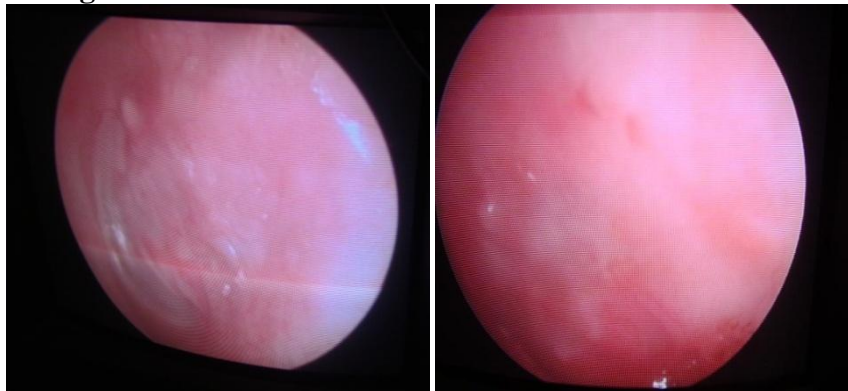
	Temporalis fascia	Tragal perichondrium
Patil et al ⁽¹⁾ 2009 (n =120)	86.67 %	87.5 %
Quraishi et al ⁽⁹⁾ 1995 (n=32)	84 %	94 %
Allackany & Sarkis et al ⁽¹⁰⁾ 2005 (n= 305)	80 %	92 %
Shetty AK et al ⁽¹¹⁾ 2013 (n=50)	92%	96%
Zhang et al ⁽³⁾ 2011(n =117)	78.57%	71.42%
Singh B J ⁽²⁾ et al 2009(n=220)	95%	90%
Dabholkar et al ⁽⁶⁾ 2007 (n=50)	84%	80%

Kumar R et al ⁽¹²⁾ 2014 (n=40)	80%	75%
Present study (n=60)	83.33	86.66

The present study is in accordance with the following studies . When success rate of the tympanic membrane closure with different graft materials was compared, successful graft take-up rate of 83.33% was achieved for temporalis fascia and 86.66% for tragal perichondrium with overall successful graft take-up rate of 85%. These results are comparable with studies of Patil et al where graft uptake for temporalis fascia was 86.67% and for tragal perichondrium was 87.50%. Dabholkar et al where graft uptake for temporalis fascia was 84% and for tragal perichondrium was 80%. Singh B J et al where graft uptake for temporalis fascia was 95% and for tragal perichondrium was 90%. Shetty A K et al where graft uptake for temporalis fascia was 92% and for tragal perichondrium was 96%. Zhang et al where graft uptake for temporalis fascia was 78.57% and for tragal perichondrium 71.42% Difference in graft take up rates is seen in the study of Quraishi et al where graft uptake for temporalis fascia was 84% and tragal perichondrium was 94%. Allackney & Sarkis et al where graft uptake for temporalis fascia was 80% and for tragal perichondrium was 92%. Kumar et al where graft uptake for temporalis fascia was 80% and for tragal perichondrium was 75%

In the studies of Singh et al, Zhang et al and Dabholkar et al showed better graft uptake for temporalis fascia but it was not statistically significant.

Post operative photographs of myringoplasty with Temporalis fascia graft



Post operative photographs of myringoplasty with Tragal perichondrium graft

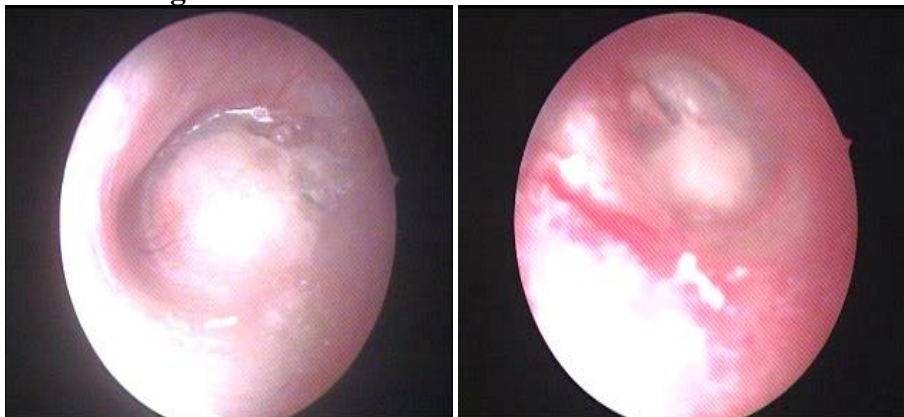


Table 17: Age factor affecting graft uptake

Age at presentation	% of graft uptake
Patil et al ⁽¹⁾ 2009 (n= 120)	89.65%
Kumar R et al ⁽¹²⁾ 2014 (n=40)	87.5%
Singh B J et al ⁽²⁾ 2009 (n=220)	95%
Present study (n=60)	90.90%

It was observed that maximum graft uptake (90.90%) was seen in the age group of 21- 30 yrs in our study. Similar results were found in the study of Patil et al where graft uptake in the age group of 21 - 30 years was 89.65%, Kumar et al where graft uptake in the age group of 21 - 30 years was 87.5% and Singh et al where graft uptake in the age group of 21 - 30 years was 95%.

The probable cause for this is that younger people have got a better vitality and good healing properties .However statistically there was no difference between the age groups.

Similar opinion was expressed by Blanshard JD (1990) who opined that age at operation, size of perforation and prior adenoidectomy had no significant influence on the success rate or audiological outcomes

DURATION OF PERIOD OF DRYNESS

The causes for failures were analysed and the analysis revealed that duration of ears being dry for less than 10 weeks was seen in 75 % of failures. Other factors like size of perforation, age, presence of central pathology did not reveal any difference between the groups. Among the successful grafted patients, i.e. 51 patients , 3 patients had duration of dry ear < 10 weeks. This shows probably duration of dry ear of > 10 weeks favours successful graft uptake. However a larger study is required to prove this.

HEARING IMPROVEMENT

Measurement of A -B gap closure was taken as a guide to study the hearing improvement. Analysis of hearing improvement was done for cases with successful graft uptake

Table 18: Hearing improvement

	Temporalis fascia	Tragalperichondrium
Patil et al ⁽¹⁾ 2009 (n=120)	9.36 dB	10.92 dB
Singh B J et al ⁽²⁾ 2009 (n=100)	9.3 dB	8.5 dB
Kumar et al ⁽¹²⁾ 2013 (n=40)	9.5 dB	9 dB
Shetty A K ⁽¹⁾ et al 2013 (n=50)	15 dB	16.5 dB
Zhang et al ⁽³⁾ 2011 (n=117)	10.5 dB	12.5 dB
Present study (n=60)	9.81 dB	8.42 dB

The present study is comparable with the above studies showing hearing improvement for temporalis fascia better than tragal perichondrium but statistically not significant

- In our study mean gain in AB gap was not significantly different between the both graft materials used.

HEARING IMPROVEMENT IN GROUP A

- In group A i.e. patients operated with temporalis fascia:
- Out of 5 pts with A- B gap between 31 – 40 dB before surgery,
- Follow up after 3 months
- A- B gap of 0 – 10 dB – 0 patient
- A -B gap of 11 – 20 dB – 2 patient
- A -B gap of 21 – 30 dB – 3 patient

- Follow up after 6 months
- A- B gap of 0 – 10 dB – 0 patient
- A -B gap of 11 – 20 dB – 2 patient
- A -B gap of 21 – 30 dB – 3 patients
- Out of 14 pts with A-B gap between 21 – 30 dB before surgery,
- Follow up after 3 months
- A -B gap of 0 – 10 dB – 1 patient
- A -B gap of 11 – 20 dB – 8 patient
- A -B gap of 21 – 30 dB – 5 patient
- Follow up after 6 months
- A- B gap of 0 – 10 dB – 3 patient
- A -B gap of 11 – 20 dB – 9 patient
- A -B gap of 21 – 30 dB – 2 patient
- Out of 11 pts with A -B gap between 11- 20db before surgery,
- Follow up after 3 months
- A- B gap of 0 – 10 dB – 8 patient
- A- B gap of 11 – 20 dB – 3 patient
- A -B gap of 21 – 30 dB – 0 patient
- Follow up after 6 months
- A -B gap of 0 – 10 dB – 9 patient
- A -B gap of 11 – 20 dB – 2 patient
- A -B gap of 21 – 30 dB – 0 patient

HEARING IMPROVEMENT IN GROUP B

- In group B i.e. pts operated with tragal perichondrium:
- Out of 3 pts with A -B gap between 31 - 40dB before surgery,
- Follow up after 3 months
- A -B gap of 0 – 10 dB – 0 patient
- A -B gap of 11 – 20 dB – 0 patient
- A- B gap of 21 – 30 dB – 2 patient
- A -B gap of 31 – 40 dB – 1 patient
- Follow up after 6 months
- A -B gap of 0 – 10 dB – 0 patient
- A -B gap of 11 – 20 dB – 0 patient
- A -B gap of 21 – 30 dB – 3 patient
- Out of 20 pts with A- B gap between 21 - 30dB before surgery,
- Follow up after 3 months
- A -B gap of 0 – 10 dB – 10 patient
- A -B gap of 11 – 20 dB – 0 patient
- A -B gap of 21 – 30 dB – 10 patient
- Follow up after 6 months
- A -B gap of 0 – 10 dB – 2 patient
- A -B gap of 11 – 20 dB – 13 patient
- A -B gap of 21 – 30 dB – 5 patient
- Out of 7 pts with A- B gap between 11 - 20dB before surgery,
- Follow up after 3 months
- A -B gap of 0 – 10 dB – 6 patient

- A -B gap of 11 – 20 dB – 1 patient
- A -B gap of 21 – 30 dB – 0 patient
- Follow up after 6 months
- A -B gap of 0 – 10 dB – 7 patient
- A -B gap of 11 – 20 dB – 0 patient
- A -B gap of 21 – 30 dB – 0 patient

CONCLUSION

Myringoplasty is the most effective method for control of the tubotympanic type of CSOM disease. Both temporalis fascia and tragal perichondrium are excellent graft materials for closure of perforation of tympanic membrane and hearing improvement. Both tragal perichondrium and temporalis fascia provide viable autograft material. Both materials are mesodermal in origin which excludes the risk of iatrogenic cholesteatoma. There is no statistical difference in the graft uptake rates between the groups. There is no statistical difference in the hearing improvement between the groups. This study also revealed that shorter period of dry ears (< 10 weeks) the chance of graft failure (75%) was more. It is concluded that the minimum period of dry ears for successful graft uptake is more than 12 weeks. However this fact needs to be confirmed by a larger study.

ACKNOWLEDGMENT

The author is thankful to Department of ENT for providing all the facilities to carry out this work.

CONFLICT OF INTEREST

None

FUNDING SUPPORT

Nil

REFERENCES

1. Patil K, Baisakhiya N, Deshmukh PT. Evaluation of different graft material in type 1 tympanoplasty. *Indian J Otol* 2014;20:106-14.
2. B.J Singh, A. Sengupta: A comparative study of different graft materials used in myringoplasty. *Ind. Otolaryngol Head Neck Surg.* 2009;131-134.
3. Zhi Gang Zhang (2011) Three Autologous Substitutes of Myringoplasty: A Comparative Study. *Otology and Neurology.* 2011,32:1234-1238
4. Maheshwari A, Panigrahi R, Mahagen S .Comparison of Temporalis Fascia with Tragal Cartilage-Perichondrium (Composite Graft) as a Grafting Material in Type I Tympanoplasty: A Prospective Randomized Study. *Int J Sci Stud* 2015;3(1):29-34.
5. Singh B, Bala N Study of various grafts in closure of tympanic membrane perforation. *Sch. J. App. Med. Sci.*, 2015; 3(3G):1509-1515
6. Dabholkar JP, Vora K, Sikdar A. Comparative study of underlay tympanoplasty with temporalis fascia and tragal perichondrium. *Indian J Otolaryngol Head Neck Surg.* 2007;59:116-119
7. Jackler RK, Schindler RA. Role of mastoid in tympanic membrane reconstruction. *Laryngoscope* 1984; 94: 495-500.
8. Booth JB. Myringoplasty - Factors affecting results. Final report. *J Laryngol Otol* 1973;87:1039-84.
9. MS, Jones NS: Day care myringoplasty using tragal perichondrium. *Clin Otolaryngol Allied Sci.* 1995; 20(1): 12.

10. Al lackney M, Sarkis NN .Functional Results after Myringoplasty and Type1 Tympanoplasty With The Use of Different Graft Materials . J Med Res Inst 2005; 26:369-74
11. Shetty A K, Haritosh K, Saberwal A A, Dabholkar Y G“Temporalis Fascia versus Tragal Perichondrium -A Comparative study of Outcomes as Graft Material in Tympanoplasty.Journal of Evolution of Medical and Dental Sciences.2013;52:10172-10176
12. Kumar R, Suman R K. Comparative Study of Underlay Tympanoplasty with Temporalis Fascia and Tragal Perichondrium.IOSR Journal of Dental and Medical Sciences. 2014;13:89-98
13. SpirosManolidis. Closure Of Tympanic Membrane Perforations in Glasscock-Shambaugh Surgeries of ear, Hamilton, Ontario,2003;400-418.
14. Chhapola S and Matta I.Cartilage-Perichondrium : An Ideal Graft Material? Indian J Otolaryngol Head Neck Surg.2012;64(3):208-213