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Original research article

Temporalis fascia graft medial to malleus and lateral to malleus by otoendoscopy: Graft uptake

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Abstract

A variety of underlying pathologies can cause chronic otitis media (COM) including an episode of acute otitis media that results in perforation of the ear drum and does not settle for 3 months; a recurrent episode of acute otitis media in an ear with a perforation from a previous episode of acute otitis media; or an ear with a persistent perforation with active chronic otitis media with metaplastic changes to the mucosa of the middle ear and mastoid air cell system. Patients with COM mucosal who presented to ENT OPD, hospital who satisfy the inclusion and exclusion criteria were included in the study. Detailed history, general and ENT examination was done including otoendoscopy and tuning fork tests. Each patient underwent routine blood investigation and pure tone audiometry (PTA). There were 2 (12%) graft rejection in medial group and 1 (7.69%) graft rejection in lateral group. Graft was *in situ* in 88% in medial group and 92.31%in lateral group.

Keywords: Temporalis fascia graft, COM, graft uptake

Introduction

Otitis media is defined as-an inflammation of the middle ear without reference to etiology or Pathogenesis. Otitis media also implies concomitant inflammation, to a greater or lesser extent, of the mastoid air cell system, owing to its anatomic linkage to the middle ear cleft. Accordingly, otitis media is more correctly conceived of as an inflammatory disorder of the entire tympanomastoid compartment. COM is a major global cause of hearing impairment and this may have serious long term effects on language, auditory, cognitive development and educational progress [1].

The condition is considered-chronic if the tympanic membrane defect is present for more than 3 months. Thus a draining middle ear cavity that is associated with a perforation from acute otitis media would not qualify for this diagnosis if it responds to treatment within 3 months. Histologically, COM is defined as irreversible mucosal changes within the middle ear cleft. Chronic Otitis Media (COM) is defined as a permanent abnormality of the pars tensa or flaccida most likely a result of earlier acute otitis media, negative middle ear pressure or otitis media with effusion. COM equates with the classic term Chronic Suppurative Otitis Media that is no longer advocated as COM is not necessarily a result of the gathering of pus. On occasion, a permanent, central perforation of the tympanic membrane can remain dry, with only rare intermittent drainage, that is, inactive COM. More typically, chronic or recurrent mucoid otorrhea, that is, active COM is provoked by exposure of the tympanic mucosa to bacteria of the external auditory canal as well as of the Eustachian tube [2, 3].

A variety of underlying pathologies can cause COM including an episode of acute otitis media that results in perforation of the ear drum and does not settle for 3 months; a recurrent episode of acute otitis media in an ear with a perforation from a previous episode of acute otitis media; or an ear with a persistent perforation with active chronic otitis media with metaplastic changes to the mucosa of the middle ear and mastoid air cell system [4]. In adults, the majority of patients are likely to have COM with a perforation that will not spontaneously heal. Hearing impairment, aside from the disability from recurrent ear discharge, is the most frequent effect of COM. Hearing impairment due to otorrhea and a perforated ear drum will usually improve as the disease resolves. However, untreated COM may result in permanent hearing loss due to damage to the ossicles which transmit sound vibrations from the eardrum to the cochlea [5, 6].

Methodology

Data was entered into Microsoft excel data sheet and was analyzed using SPSS 22 version software. Categorical data was represented in the form of Frequencies and proportions. Chi-square test or Fischer's

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exact test (for 2x2 tables only) was used as test of significance for qualitative data. Yates correction was applied wherever chi-square rules were not fulfilled (for 2x2 tables only).
Continuous data was represented as mean and standard deviation. Independent t test was used as test of significance to identify the mean difference between two quantitative variables.
p value (Probability that the result is true) of <0.05 was considered as statistically significant after assuming all the rules of statistical tests.

Type of study
Prospective study conducted on patients who satisfied the inclusion and exclusion criteria.

Inclusion criteria
1. Patient undergoing type 1 tympanoplasty between age 12 years to 60 years.
2. Mild to moderate conductive hearing loss.
3. Mucosal disease.
4. Small to subtotal central perforation.

Exclusion criteria
1. Actively discharging ear.
2. COM with mixed hearing loss.
3. Total and marginal perforation.
4. Hearing loss of more than 60db.
5. Ossicular pathology.

Patients with COM mucosal who presented to ENT OPD, hospital who satisfy the inclusion and exclusion criteria were included in the study. Detailed history, general and ENT examination was done including otoendoscopy and tuning fork tests. Each patient underwent routine blood investigation and pure tone audiometry (PTA).
Before surgery a written informed valid consent was taken. Patients were operated under general anaesthesia after proper preanaesthetic evaluation.

Results

Table 1: Age Distribution between two groups

		Group					
		Medial		Lateral		Total	
		Count	%	Count	%	Count	%
Age	≤20 Years	5	29.41%	7	53.85%	12	40.00%
	21-30 Years	6	35.29%	4	30.77%	10	33.33%
	31-40 Years	4	23.53%	1	7.69%	5	16.67%
	41-50 Years	2	11.76%	1	7.69%	3	10.00%
	Total	17	100.00%	13	100.00%	30	100.00%

In Medial group, majority of subjects were in the age group 20-30 Years and in Lateral group, majority of subjects were in the age group <20 year.

Table 2: Mean Age Comparison between two groups

	Group					
	Medial		Lateral		Total	
	Mean	SD	Mean	SD	Mean	SD
Age	28.1	10.59	23.3	9.52	26.03	10.26

Mean age of subjects in medial group was 28.1±10.059 years and in lateral group was 23.3± 9.52 years. There was no significant difference in age distribution between two groups.

Table 3: Gender Distribution between two groups

		Group					
		Medial		Lateral		Total	
		Count	%	Count	%	Count	%
Gender	Female	8	47.06%	5	38.46%	13	43.33%
	Male	9	52.94%	8	61.54%	17	56.67%
	Total	17	100.00%	13	100.00%	30	100.00%

In Medial group, 47.06%were females and 52.94% were males and in Lateral group, 38.46% were

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females and 61.54% were males. There was no significant difference in gender distribution between two groups.

Table 4: Graft rejection Distribution between two groups

		Group						P value
		Medial		Lateral		Total		
		Count	%	Count	%	Count	%	
1st month otoscopy	Graft Rejected	2	12%	1	7.69%	3	10.00%	<0.001*
	Graft Insitu	15	88%	12	92.31%	27	90.00%	

There were 2 (12%) graft rejection in medial group and 1 (7.69%) graft rejection in lateral group. Graft was *in situ* in 88%in medial group and 92.31%in lateral group.

Discussion

The patients were divided into two groups i.e. group A consisting of patients undergoing type 1 tympanoplasty with placement of temporalis graft medial to malleus and group B consisting of patients undergoing type 1 tympanoplasty with placement of graft lateral to malleus. The age distribution of study population ranging from 12 to 50yrs. Majority of patients were in the age group of 20-30 years in the group A (35.29%) & <20years age group B (53.85%). None of the age group shows a significant association between closure of AB gap and the age.

There were 13 females and 17 males in the study. In our study success was measured in terms of graft uptake and hearing improvement.

In our study there was significant difference between postoperative hearing improvement in group A and no significant hearing improvement in group B.

In our study there was 2 graft rejection in group A (medial) whereas there was 1 graft rejection in case of group B (lateral).

The results are in par with other studies [7, 8].

Conclusion

- Most of our patients were 20-30years of age in the group A (35.29%) & <20years age group B (53.85%). In group A 47.06% were females and 52.94% were males, whereas in group B 38.46% were females and 61.54% were males. Age & sex were not a confounding factor for success rate of cases.
- The graft uptake rate was 88% and 92.31% in group A and group B respectively.

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