

Original Article

Comparative study of different approaches of myringoplasty in chronic otitis media

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Abstract

Objectives: To determine the best surgical approach of myringoplasty regarding healing of tympanic membrane and improvement of hearing.

Methods: This was a cross sectional comparative study carried out in the departments of Otolaryngology and Head-Neck Surgery of Bangabandhu Sheikh Mujib Medical University, Dhaka Medical College Hospital, Sir Salimullah Medical college Mitford Hospital and Shaheed Suhrawardy Medical College Hospital during the period of July'2009 to March 2011. A total number of 75 patients of age 15-45years having inactive mucosal chronic otitis media with central perforation were included in this study. All patients has undergone myringoplasty and patients were divided into three groups according to surgical approach such as postaural, transcanal and endaural. All patients were followed up postoperatively and all postoperative findings were recorded. The three groups were compared with regard to healing of tympanic membrane and improvement of hearing.

Results: The success rate in this study was 80% . graft take rate in postaural, transcanal and endaural approaches were 92.5%, 66.67% and 63.64% respectively. Improvement of mean air-bone gap in postaural, transcanal and endaural approaches were 19.04dB, 10.02dB and 11.36dB

Conclusion: Graft take rate and hearing improvement is significantly higher in postaural approach than other approaches.

Key words: Myringoplasty, chronic otitis media.

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Introduction

Chronic otitis media (COM) has been an important cause of middle ear disease. The prevalence of COM in Bangladesh, India and different countries of Africa were in between 2 and 17% among children¹. Chronic otitis media is still alarming in our country and day to day practical experience. Poor living condition, overcrowding, poor hygiene, malnutrition and inadequate health care all have been suggested as a basis for the widespread prevalence of chronic otitis media in our country it is the single most cause of hearing impairment in our rural population.²

Of five different sub types of chronic otitis media, inactive mucosal type is at the top of

the list. Inactive mucosal chronic otitis media is characterized by permanent perforation of the pars tensa but the mucosa of middle ear and mastoid are not inflamed.

Myringoplasty is defined as simple surgical repair of tympanic membrane perforation without ossicular reconstruction. The three principal indications for myringoplasty are (1) To prevent recurrent otorrhoea (2) To improve a conductive hearing loss resulting from non-healing perforation of tympanic membrane and (3) Desire to swim without having to waterproof the ear.

Now-a-days myringoplasty is one of the more commonly performed otolaryngological procedures in adults and children. However, there is still uncertainty about prognostic factors in myringoplasty and there are also significant variation is the reported success rates for achieving an intact tympanic membrane after surgery.

There are various factors that influence the success of myringoplasty. These factors are surgical approach, size and site of perforation, graft material, surgical technique, use of prophylactic antibiotic, condition of middle ear at the time of surgery, associated cortical mastoidectomy, age of patient and grade of surgeon.³ surgical approach is one important factor determining the prognosis of myringoplasty. When performing myringoplasty, otologists are faced with three choices concerning which approach is to be used during the intervention: postaural, transmeatal or endaural. The choice of an approach is, for many surgeons, often determined by their surgical mentors or personal preference. This is mainly due to lack of scientific evidence of outcome parameters of various myringoplasty techniques.⁴

The present study aims to compare different approaches regarding closure of the perforation of tympanic membrane. Hearing improvement after myringoplasty and various factors influencing surgical outcome were also

studied. As myringoplasty is a common surgical procedure so analysis of these factors may help in future selection and care of patients.

Objectives

To find out the best surgical approach of myringoplasty regarding healing of tympanic membrane and improvement of hearing.

Methods

Study design: Cross sectional study.

Place of Study: This study was carried out in the departments of Otolaryngology and Head-Neck Surgery of Bangabandhu Sheikh Mujib Medical University, Dhaka Medical College Hospital, Sir Salimullah Medical College-Mitford Hospital & Shaheed Suhrawardy Medical College Hospital, Dhaka.

Duration of study: July'209 to March'2011.

Study population: All patients who was admitted for myringoplasty in the Department of Otolaryngology and Head-Neck Surgery in tertiary academic hospitals (BSMMU, DMCH, SSMC & ShSMCH) Dhaka during the study period.

Sample size: 75

Sampling method: Purposive sampling.

Inclusion criteria:

1. Inactive mucosal chronic otitis media with central perforation.
2. Age between 15 to 45 years.

Exclusion criteria:

1. Active mucosal chronic otitis media
2. Active & inactive squamous chronic otitis media.
3. Inactive chronic otitis media with sensory hearing loss.
4. Age <15 years or age >45 years.
5. Extreme anterior perforation and subtotal perforation.

Methods

The clinical diagnosis of inactive mucosal chronic otitis media was established by a detailed history taking, clinical examination including otoscopic and microscopic examination and all findings were recorded.

All patients were undergone myringoplasty by well experienced senior surgeons and classified according to their surgical approach.

Patients were followed up post-operatively upto three months and thereafter if needed and all post-operative data was recorded. Outcome of myringoplasty was measured on the basis of condition of graft (Graft taken or failure) and post-operative hearing gain. Hearing improvement was assessed by closure of air-bone gap.

Data collection technique:

Relevant data was collected in a predesigned data collection sheet for each of the patient with chronic otitis media.

Data analysis:

All collected data were checked and verified thoroughly to reduce inconsistency. The numerical data were compiled and analysed by standard statistical test. P values <0.05 was considered as statistically significant.

Observation and Results:

Table I

Distribution of the study patients by age (n=75)

Age (years)	Total	Percentage
15-25	46	61.33
26-35	17	22.67
36-45	12	16.00
Total	75	100

Most of patient belonged to age 15 – 25 years. Mean of patient age was 25.66 years.

Table II

Distribution of the study patients on basis of surgical approach (n=75)

Surgical approach	No. of patients	Percentage (%)
Postaural	40	53.33
Transcanal	24	32
Endaural	11	14.67
Total	75	100

Most of patients underwent myringoplasty by postaural approach.

Table III

Distribution of patients according to graft take rate in relation to surgical approach (n=75)

Surgical approach	Number of patients	Graft taken	Graft taken rate(%)
Postaural	40	37	92.5
Transcanal	24	16	66.67
Endaural	11	7	63.64
Total	75	60	80

Graft take was higher in post aural approach. Difference between postaural and transcanal approach ($p < 0.01$) and postaural and endaural approach ($p < 0.05$) was statistically significant.

Table IV

Distribution of improvement of hearing after myringoplasty in relation to surgical approach (n=75)

Surgical approach	Improvement of mean air conduction threshold (dB)	Improvement of mean bone conduction threshold (dB)	Improvement of mean air-bone gap (dB)
Postaural	20.70	1.66	19.04
Transcanal	10.02	00	10.02
Endaural	14.28	2.92	11.36

Maximum improvement of mean air-bone gap was found in patient operated by postaural approach and minimum in transcanal approach. Difference between postaural & transcanal approach ($p < 0.001$) and postaural & endaural approach ($p < 0.001$) was statistically significant.

Discussion

This cross sectional study was carried out with an aim to compare different approaches of myringoplasty. The study findings were discussed and compared with previously published relevant studies.

Age of patient in this study ranges from 15-45 years. Mean age of patient was 25.66 years. The commonest age group of patient was 15-25 years (61.33%).

Myringoplasty was done in all (75) cases through one of three approaches i.e. postaural, transcanal, and endaural to see the surgical outcome. 40 patients (53.33%) were operated by postaural approach, 24(32%) by transcanal approach and only 11(14.67%) were operated by endaural approach. The criteria of success applied were the restoration of an intact tympanic membrane with no evidence of middle ear disease and improvement of hearing. Intact tympanic membrane and normal hearing within 6 or more months of operation were described as criteria of success in another study.⁵ Based on above fact, 60 (80%)

patients had successful myringoplasty in this study which was similar to another study.³

The success rate associated with various approaches i.e. postaural, transcanal, and endaural approach were 92.5%, 66.67%, 63.63% respectively. Postaural approach is significantly better than transcanal approach ($p < 0.01$) and endaural approach ($p < 0.05$) which is consistent with another study.⁶

Improvement of hearing threshold after myringoplasty in relation to surgical approach was 19.04 dB in postaural 10.02 dB in transcanal and 11.36 dB in endaural approach. Difference in hearing improvement between postaural & transcanal approach ($p < 0.01$) and postaural & endaural approach ($p < 0.05$) were statistically significant. The result of this series revealed that postaural approach is superior to other approaches which is similar to another study.⁷

It should be mentioned here that as the designed total number of cases were 75, so 25 patients were operated by each approach but due to scarcity of cases done in transcanal and endaural approach, the designed ratio was not possible to be maintained. We know postaural approach is more suitable for more anteriorly placed perforation and subtotal perforation. For more validity of study more anteriorly placed perforation and subtotal perforation were excluded from this study. As because, this

study was done at government hospitals, careful postoperative follow up was not always possible due to various real reason. Instead of all limitations postaural approach is more acceptable in comparison to other approaches.

Conclusion

It can be concluded from this study that graft take rate and hearing improvement is significantly higher in postaural than other approaches. So myringoplasty should be done through this approach unless otherwise indicated.

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