

# Evaluation of the outcome of myringoplasty in active versus inactive chronic otitis media without cholesteatoma

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## Abstract:

**Background:** Myringoplasty is a procedure used to seal(reconstruct) a perforated tympanic membrane using a graft material by underlay or overlay techniques . Temporalis fascia is the commonly used graft material.

**Aim of study:** to evaluate the difference in outcome of myringoplasty in cases of active and inactive chronic otitis media without cholesteatoma.

**Patients and Methods:** a prospective study of 54 cases of myringoplasty in adult age group whom age ranges from (20-40 years) and the duration of the disease ranges from (6-24 months). All patients were complaining of chronic otitis media without cholesteatoma assessed clinically, audiological and radiologically, all cases operated under general anesthesia and temporalis fascia grafting (underlay technique) via post-auricular incision.

**Results:** twenty six (48.2%) patients had an active chronic otitis media without cholesteatoma while the remaining twenty eight (51.8%) patients had an inactive chronic otitis media without cholesteatoma those with an active disease 21 (80.8%) cases have successful closure of the perforation while in those 28 cases with an inactive disease 24 (85.7%) cases have successful closure of the perforation.

Factors of gender, age, side of the perforation, duration of the perforation, and the pre-operative management for the active ears had no significant effect on the outcome of myringoplasty, P values = 0.5, 0.1, 0.9, 0.5, 0.6, 0.6 and 0.7 respectively which are > 0.05.

The overall percentage of success of grafting was 83.3% and the failure of grafting was 16.7%.

**Conclusion:-** The activity of the middle ear (infection) has little impact on the success rate of closure of tympanic membrane perforation.

**Key words:** myringoplasty, active and inactive chronic otitis media.

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## Introduction:

The repair of the tympanic membrane dates back for more than a century. In 1878 Berthold successfully closed a perforation with full thickness skin. Periosteum (Claros, 1959), vein (Shea, 1960), all proved of value. In 1959 Ortegren tried out fascia as a graft material, this tissue rapidly gained widespread acceptance and is preferred by the majority of otologists for myringoplasty.

<sup>(1)</sup> Tympanoplasty refers to any operation involving reconstruction of the tympanic membrane and/or the ossicular chain. Myringoplasty is a tympanoplasty without ossicular reconstruction<sup>(2)</sup>, within the more limited surgery of tympanic membrane many different approaches to myringoplasty have been described<sup>(3)</sup>. Tympanic membrane perforation may result from acute otitis media, chronic otitis media or trauma .Ears with chronic perforation without cholestaoma may chronically or intermittently infected <sup>(4)</sup>. Chronic mucosal otitis media (without cholesteatoma):classified to Active(perforation with otorrhea):-There is chronic

inflammation within the mucosa of the middle ear and mastoid,with varying degrees of oedema.

Inactive (dry perforation):-There is a permanent perforation of the pars tensa, but the middle ear and mastoid mucosa is not inflamed.<sup>(5)</sup>

## Patients and Methods:

A prospective study of 54 cases of chronic otitis media without cholesteatoma in adult age group whom age ranges from (20-40 years) and the duration of the disease ranges from (6-24 months) were managed at the otorhinolaryngology department at Al-Kadhymia teaching hospital from September 2010 to May 2012. Twenty six (48.1%) cases have an active infection in the middle ear with a permanent perforation of tympanic membrane ,while 28 (51.8%) cases have a permanent perforation of tympanic membrane without active infection in the middle ear.Full otorhinolaryngological examination done to all patients including microscopic examination of the ear with audiological assessment (Audiometry with or without tympanometry).Fifty percent of the patients with active ears

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were managed 2 weeks preoperatively by aural toilet with microscopical suction clearance and topical antibiotic and steroid ear drops, while the other 50% were not. operations done under general anesthesia ,with the aid of microscopic excision of the rim of the perforation with scraping of the mucosa on the undersurface of the remaining tympanic membrane near the perforation. Post-auricular incision done, temporalis fascia taken and dried, tympanomeatal flap elevated ,cortical mastoidectomy had been done in selected cases , Gelfoam then put in the middle ear, temporalis fascia grafting (underlay technique) done, reflection of the tympanomeatal flap back to its position, gelfoam put over the tympanic membrane and BIPP (bismuth iodoform paraffin paste) wick put in the external ear, closure of the post-auricular incision, dressing. All patient received parenteral antibiotic in the form of Cefotaxime for

3 days then change to oral for further 4 days, removal of BIPP was done in the 7 th day , Follow up continued for 6 months , weekly in the first month and monthly for next six months .

**Results:**

The patients whom age were between 20-30 (24.6±3.1) years had successful grafting of 87.5% and those whom age were between 31-40 (35±2.7) years had 71.4% success rate, there is no significant of age on the succes rate of myringoplasty in which the P values = 0.1 which are > 0.05.

In this study we didn't found any statistical relation between the duration of the perforation,pre operative management,activity of middle ear and its relation to the success rate of grafting (Table1,2,3).

**Table(1)The duration of the perforation and its relation to the success and failure rates of grafting:**

Duration of the perforation (mean±SD)	No.	%	Success	%	Failure	%	P value
6-12 (8.8±2) months	25 (13 active) (12 inactive)	46.3	20 (10 active) (10 inactive)	80	5 (3 active) (2 inactive)	20	* > 0.05
13-24 (20.8±2) months	29 (14 active) (15 inactive)	53.7	25 (12 active) (13 inactive)	86.2	4 (2 active) (2 inactive)	13.8	
Total	54	100	45	-----	9	-----	

\* P value = 0.5

**Table (2): The pre-operative management and its relation to the success and failure rates of grafting in patients with active chronic otitis media without cholesteatoma:**

Pre-operative management	No	%	Success	%	Failure	%	P value
+ve	13	50	11	84.6	2	15.4	* > 0.05
-ve	13	50	10	76.9	3	23.1	
Total	26	100	21	-----	5	-----	

\*P value = 0.6

**Table(3)The activity of the middle ear and its relation to the success and failure rates of grafting:**

Middle ear activity	No.	%	Success	%	Failure	%	P value
Active COM* without cholesteatoma	26	48.2	21	80.8	5	19.2	** > 0.05
Inactive COM* without cholesteatoma	28	51.8	24	85.7	4	14.3	
Total	54	100	45	-----	9	-----	

\*Chronic otitis media.

\*\*P value = 0.7

Table 4 showed that there is higher success rate of grafting of our patients.

**Table(4)Graft taking rate:**

Graft taking rate	No.	%
Successful closure	45 (21 active) (24 inactive)	83.3
Failure of closure	9 (5 active) (4 inactive)	16.7
Total	54	100

**Discussion:**

The patients whom age were between 20-30 (24.6±3.1) years had successful grafting of 87.5% and those whom age were between 31-40 (35±2.7) years had 71.4% success rate, there is no significant of age on the succes rate of myringoplasty in which the P values = 0.1 which are > 0.05. Nadol, Joseph B. in their study also concluded that there is no significant effect of age on the outcome (success) of myringoplasty.<sup>(6)</sup> LinYC et al in their study the overall success rate was 87.3% at the last visit using multivariate analysis sex,age,size of perforation did not affect the success .<sup>(7)</sup> In current study the patients in whom the duration of the perforation were between 6-12 (8.8±2) months had successful grafting of 80% and those in whom the duration of the perforation were between 18-24 (20.8±2) months had 86.2% success rate from that we conclude that there is no significant effect of duration of the perforation on the success rate of myringoplasty in which the P value = 0.5 which is > 0.05. Sharma DK et al in their study also concluded that age, duration of the disease had no bearing on graft take in this study.<sup>(8)</sup>In current study the patients with active chronic otitis media without cholesteatoma that were managed 2 weeks pre-operatively by aural toilet with microscopical suction clearance, topical antibiotic and steroid ear drops had successful grafting of 84.6% and those with active ears that did not managed pre-operatively had 76.9% success rate, from that we conclude that there is no significant effect of the pre-operative management on the success rate of myringoplasty in which the P value = 0.6 which is > 0.05. Tong et al. found that the success rate of myringoplasty in closing the tympanic membrane in 101 patients was not increased by topical ofloxacin for two weeks preoperatively in patients with active chronic otitis media without cholesteatoma (83 percent in antibiotic group versus 89 percent in controls)<sup>(9)</sup>. Kotecha et al. reported that the use of preoperative antibiotics had no influence on graft take rate.<sup>(10)</sup> In current study the patients with active ears had successful grafting of 80.8% while those with inactive ears had 85.7% success rate from that we conclude that there is no significant

effect of the activity of the middle ear at time of surgery on the success rate of grafting in which the P value = 0.7 which is > 0.05. Ordonez LE .et al show that inflammation at time of surgery had no significant difference in result.<sup>(11)</sup>Bruz J et al show that the condition of middle ear mucosa and number of otorrhea per year were not significantly to repair tympanic membrane perforation.<sup>(12)</sup> In current study the success rate of grafting was 83.3% and the failure rate was 16.7%. Onal K et al show the overall take rate of myringoplasty was 71% .<sup>(13)</sup> .SaKagam M et al the overall rate of closure was 95.7%<sup>(14)</sup> Bruz J et al show the closure rate was 65% .<sup>(12)</sup> Mills R et al show the success rate of closure of the perforation at 6 months after surgery were 83% for inactive and 82% for active ear.<sup>(15)</sup>

**Conclusion:**

The activity of the middle ear (infection) has little impact on the success rate of closure of tympanic membrane perforation.

**Auther contribution:**

Muhanned Moussa Alwan.: data collection  
Firdaws Fadhil Ridha: Writing statistic and discussion  
Raed A.Khefi: Supervision

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