

A study of graft uptake rate of myringoplasties in Bir Hospital

L.K. Yadav¹, J. Pradhananga²

¹ Senior Consultant ENT, Head and Neck Surgery, ²Medical Officer, Department of ENT, National Academy of Medical Sciences, Bir Hospital, Kathmandu, Nepal

Abstract

Chronic suppurative otitis media-tubotympanic type is one of the commonest ear diseases in the practice of otolaryngology. It mainly occurs in the people with poor socio-economic conditions hence, its magnitude is immense in remote areas of Nepal where poverty prevails the most and in people who do not have access to health facilities. The main features of this disease are ear discharge lasting more than three months, hearing loss, and perforation of the tympanic membrane. The aim of this study is to evaluate the graft uptake rate of patients who underwent Myringoplasties for Chronic Suppurative otitis media tubotympanic type. The total number of patients in the study was 129. Age of the patients varied from 13 to 45 years. Myringoplasties were performed on these patients. They were followed up at one week for stitch and ear pack removal, and then at four weeks to see for graft uptake. The graft uptake rate was found to be 81.4 %. There were no significant complications, except that few patients complained of pain at the site of incision for harvesting the graft. This study showed that myringoplasty has good success rate.⁷ and can be carried out safely for closure of tympanic membrane perforation in cases of chronic suppurative otitis media tubo-tympanic type.

Keywords: Chronic suppurative otitis media-tubotympanic type, graft, myringoplasty.

Introduction

The attempts to close tympanic membrane perforation dates back to the 16th century using various materials such as pig's bladder membrane, skin, vein, etc. with little success till 1958, Heerman began using *Temporalis fascia*, which is the standard graft material today.¹ Myringoplasty is repair or reconstruction of tympanic membrane perforation, which became popular during the 1960's with higher percentage of successful closure using *Temporalis fascia* graft, and is the standard

practice these days to close the tympanic membrane perforation. The main indication of myringoplasty is chronic suppurative otitis media-tubotympanic type, which is characterized by discharge lasting more than three months, hearing loss and perforation of tympanic membrane.² The aim of the surgery is to prevent recurrent ear discharge and to improve hearing. Myringoplasties were performed in tympanic membrane perforations of various sizes and involving different quadrants which could influence the success rate.³ Surgery has been the mainstay of treatment for chronic suppurative otitis

Correspondence: L.K. Yadav

E mail: lalkydv@hotmail.com

media-tubotympanic type because the size of the perforation gradually increases with recurrent infection and discharge and hearing gradually deteriorates thereby. A success was defined as a dry and intact tympanic membrane at least one month after the operation.⁴

Materials and methods

This is a prospective study carried out in the Department of ENT, Bir Hospital, Kathmandu, from May 2008 to May 2010. The number of patient involved in this study was 129. The patients selected for surgery underwent per meatal myringoplasties with underlay technique using *temporalis fascia* graft. Surgery was performed only on dry ears. The surgery was done under both general and local anesthesia. General anesthesia was used for apprehensive patients and those under 15 years of age. An Olympus operating microscope was used for surgery. The average duration of surgery was 75 minutes. All the operations were performed by the same surgeon. The patients were followed up in one week after surgery for ear pack and suture removal, and then at four weeks to see for graft uptake.

Results

The age of the patients in this study ranged from 13 to 45 years. The majority of patients were in age group 21-30 years (46%), followed by 11 to 20 years (35%), 31 to 40 years (12 %) and 41 to 50 years (7 %) (Table 1). The male to female ratio was almost equal 1:1.26 with slight female dominance. The ratio of operated right and left ear was 1:1.15. 51 cases were operated under local anesthesia and 78 under general anesthesia.

Table 1. Age and sex wise distribution

Age group	Male	Female	Total
11-20	24	21	45
21-30	24	36	60
31-40	6	9	15
41-50	3	6	9
Total	57	72	129

On otoscopic examination four weeks after operation it was found that 105 patients had graft uptake which turns out to be 81.4 %.

Discussion

There is marked diversity in the reported success rate for achieving an intact tympanic membrane following myringoplasties.⁵ Controversies exist about factors thought to influence surgical outcomes. The graft uptake rate in this study was 81.4 %. Various similar studies have shown varying results regarding the success rate. Karela et al⁶ have found a graft uptake rate of 91.5 % at three to six months. Brown et al⁴ found the success rate of 74 %. Skotneska et al⁷ reported the success rate of 91.5 %.

In the study by Lee et al³ the success rate for small perforation was 74.1 % and for large perforation was 56.0 %, showing that small perforations have more favorable outcome. Similarly, Rehman et al⁸ reported success rate of 80.0 % which compares favorably with this study. They also found the success rate for underlay technique to be 84.0 % and for overlay technique 76.0 %. Success rate using temporalis fascia graft was 83.3 % and using tragal perichondrium was 71.4 %.

Yadav et al⁹ reported a success rate of 80.0 % in a study of endoscope assisted myringoplasties.

Khtoum et al¹⁰ in a retrospective analysis of 38 cases found the success rate to be 85.7 %. Makaya et al¹¹ reported a graft uptake rate of 88.0% at three months and 84.0% at six months. Umapathy et al¹² reported a success rate of 90.0 %. Karkanavatos et al¹³ reported a success rate of 83.3 % which also compares favorable with this study. Biswas et al¹⁴ reported a graft uptake rate of 85 %. Harvinder et al¹⁵ quoted a success rate of 65 % using amniotic membrane as graft, and 56.7 % using temporalis fascia as graft. Shaikh et al¹⁶ reported a success rate of 81%, male to female ratio of 2:3, and age range of 18 to 40 years, all of which compares favorably with this study.

In a study carried out in 124 patients, Raghavan et al¹⁷ reported a success rate of 97.23 % in 106 new patients and 77.78 % in 18 revision cases. Wasson et al¹⁸ reported a success rate of 80.8 % which also compares favorably with this study. Thus, the review of previous articles on graft uptake by various authors and this study show that the graft uptake rate in most of the studies carried out in different parts of the world ranges from 55 – 90 % and some of the studies show an uptake rate exceeding 90 %.

Myringoplasty employing underlay technique using *temporalis fascia* graft is an excellent surgical procedure to close tympanic membrane perforation with high success rate. Though the skill of surgeon is important factor for the success of the operation, there are other factors which can influence the surgical outcome. Among these are size of the perforation, surgical technique, graft material, eustachian tube function, previous myringoplasty

and smoking history.^{7,17} Besides, respiratory infection and graft infection can also reduce success rate. In this study, one of the patients with graft failure gave history of blowing trumpet one week after the operation. Another patient who had graft failure had multiple tympanic membrane perforations suggesting tubercular infection. Some other patients who had graft failure got their dressings done in local clinic with possibility of improper aseptic technique of dressing.

Because of these reasons it is not possible to guarantee 100% success rate to any patient, though the surgical procedure has excellent success rate.

Conclusion

Chronic suppurative otitis media tubo-tympanic type is very common disease in the context of Nepal. The disease is easily diagnosable. Myringoplasty should be performed in these patients to render the ear dry and prevent further hearing loss, as the success rate of graft uptake is more than 80%.

References

1. M.E. Glasscock. Surgery of the Ear. 4th edition. Philadelphia. WB Saunders 1990:334-48
2. R.P. Mills. Management of chronic suppurative otitis media. Booth JB. Scott-Brown's Otolaryngology. 6th edition. Vol.3. Mumbai, Butterwrth-Heinemann 1997:10;1-9.
3. P. Lee, G. Kelly, R.P. Mills. Myringoplasty. Does the size of the perforation matter? Clinical otolaryngology and allied sciences. 2002;27(5):331-4.

4. C. Brown, Q. Yi, D.J. McCarty, et al. Success rate following myringoplasty at the Royal Victoria eye and ear hospital. *Australian journal of otolaryngology*. 2002;**29**:606-11.
5. R. Aggrawal, S.R. Saeed, K.J.M. Green, Myringoplasty. *The journal of laryngology and otology*. 2006;**120**:429-32.
6. M. Karela, S. Berry, A. Watkins, et al. Myringoplasty: surgical outcomes and hearing improvement. *European achieves of Otorhinolaryngology*. 2008;**265**:1039-42.
7. B. Skotniska, P.E. Hassmann. Myringoplasty in children – success factors. *Otolaryngol Pol*. 2008;**62**:65-70.
8. H. Rehman, N. Ullah, S. Muhammed et al. Factors influencing the success rate of myringoplasties. *J. postgrad Med Inst*.2007;**21**:117-21.
9. S.P.S. Yadav, N. Aggrawal, M. Julaha et al. Endoscope assisted myringoplasty. *Singapore Med J*. 2009;**50**:510.
10. N.A. Khtoum, M.A. Hiari. Myringoplasty in children, retrospective analysis of 35 cases. *Brazilian Journal of Otorhinolaryngology*. 2009;**75**:371-4.
11. I.K. Makaya. Myringoplasty results in a district hospital in Botswana. *Trop. Doct*. 2006;**36**:176-7.
12. N. Umopathy, P.J. Dekkar. Myringoplasty. Is it worth performing in children. *Arch Otolaryngol Head and Neck Surg*. 2003;**129**:1053-5.
13. A. Karkanavatos, S. De, V.R. Srinivasam et al. Day-care myringoplasty: five years experience. *J. Laryngol Otol*. 2003;**117**:763-5.
14. S.S. Biswas, M.A. Hossain, M.M. Alam et al. Hearing evaluation after myringoplasty. *Bangladesh Journal of Otorhinolaryngology*. 2010;**16**:334-8.
15. S. Harvinder, S. Hassan, S. Sidek, et al. Underlay myringoplasty: comparison to human amniotic membrane to temporalis fascia graft. *Med J Malaysia*. 2005;**60**:585-9.
16. A.A. Shaikh, M.A.S. Onale, S.M. Shaik, et al. Outcome of tympanoplasty type I by underlay technique. *JLUMHS* 2009;**8**:80-4.
17. U. Raghavan, D.S. Malki, N.A. Mahommed. Myringoplasty success rate in new and revision patients. *J. Laryngol Otol* 2000;**114**:174-7.
18. J.D. Wasson, C.E. Papadimilriou, H. Pau. Impact of perforation size in closure and audiological improvement. *J. Laryngol Otol*. 2009;**12**:1-5.