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SHORT TERM VERSUS LONG TERM GRAFT UPTAKE RATES FOLLOWING MYRINGOPLASTY IN CHRONIC OTITIS MEDIA- MUCOSAL TYPE.

Objective:

The objective of study is to compare overall success rate of myringoplasty after 6 weeks and 4 months following surgery.

Materials and Methods:

Retrospective analytical study was done at Lahan Ear Hospital, Nepal. All the data were collected from the operative notes of Lahan ear hospital which were done in-between August 2010 to October 2012 for a period of 26 months. All Myringoplasty were done under local anesthesia using either temporalis fascia or Tragal cartilage. Outcome measured was the graft uptake rate at the end of 6 weeks and end of 4 months.

Results:

Total of 978 patient underwent Myringoplasty during the period of 26 months. The mean age was 24.4 years, minimum age who underwent surgery was 15 years and maximum age was 60 years. 571 patients completed 6 weeks follow up and only 419 patient completed 4 months follow up. The overall graft uptake rate was 82 % and 78 % by the end of 6 weeks and 4 months respectively.

Conclusion:

The overall graft uptake rate was 82 % by the end of 6 weeks which further decreased to 78% by the end of 4 months.

key words: Graft uptake, Myringoplasty, Temporalis fascia

INTRODUCTION:

Myringoplasty is one of the very common surgery in our practice. It is the surgery to close the perforation of pars tensa of the tympanic membrane. Myringoplasty was first introduced by Berthold¹ in 1878, who used a thick skin graft, while Wullstein² and Zollner³ further developed the procedure and used a split skin graft. By the 1980s, most otologists were convinced that a graft of mesodermal origin, such as perichondrium, fascia, vein, or fat tissue was advantageous in myringoplasty. The graft material most commonly used for the surgery is temporalis fascia. The tragal cartilage and tragal perichondrium are also used as a graft by some surgeons. Almost all of the time surgeon and patients are concerned about the success of myringoplasty. Several factors may affect the outcome of myringoplasty such as the site and size of the perforation, technique (underlay versus overlay), experience of the surgeon, condition of the other ear, type of graft used, age of the patient and condition of the operated ear (dry versus wet). The benefits of successful myringoplasty include prevention of middle ear infections and ear discharge, improvement in hearing, ease of hearing aid usage and elimination of the need to take water precautions when showering, washing hair or swimming. In addition to that it has been suggested to protect against long-term middle ear damage by preventing the progression of ossicular pathology and preventing the migration of squamous epithelium around the margins of the perforation with possible consequent cholesteatoma formation. Many of the time surgeon are happy after looking at tympanic membrane which heals completely after few week of surgery. Late failure is always a issue to be worried by a surgeon. Failure after a long period have been

considered due to initial failure to heal, reperforation, or formation of a non-cleaning atelectatic pocket.⁴ The objective of study is to compare overall success rate of myringoplasty after 6 weeks and 4 months following surgery.

MATERIAL AND METHODS:

It was a retrospective study done at Lahan Ear Hospital, Nepal. All the data were collected from the operative notes of Lahan ear hospital which were done in-between August 2010 to October 2012 for a period of 26 months. Since all myringoplasty were done under local anesthesia patients below 15 years were excluded. Rest of the cases done during that period of time were included for the study. All Myringoplasty were done under local anesthesia by consultant ENT Surgeon. The external auditory canal was cleaned and injected with 2% lidocaine with 1:200,000 epinephrine at four quadrant. Graft material were either tragal cartilage or the temporalis fascia which was harvested from tragus and deep layer of temporalis fascia respectively. The approach to middle ear depends upon the site of perforation and surgeon's choice. Different surgeon have used varieties of approaches like permeal, postaural and endaural. An incision is made along the edge of the perforation and a ring of epithelium was removed. A strip of mucosal layer was removed from the inner side of the perforation. Adrenaline soaked cotton ball was placed in the middle ear. Next, a medially-based tympanomeatal flap was created with radial incisions at 12 o'clock and 6 o'clock (ie, superiorly and inferiorly) that either connect directly or via a semilunar incision in the posterior canal just medial to the bony-cartilaginous junction. When the annulus was reached, the tympanotomy was made such that the instrument of

choice (eg. round knife, gimmick, sickle knife, pick) lifts the annulus while hugging the bony groove from which the fibrous annulus can be dissected. The fibrous annulus was then dissected circumferentially with care not to injure the ossicles, the chorda tympani nerve or residual drum. The flap was then positioned, usually anteriorly, such that the perforation is exposed. The middle ear and ossicles were inspected and palpated to confirm ossicular continuity. Middle ear disease like granulation tissue, tympanosclerosis and adhesions were completely removed. The middle ear was carefully packed with the gelfoam. Packing the mesotympanum and hypotympanum was important, although excess packing was avoided near the ossicles so as to prevent adhesions. The graft was placed medial to handle of malleus and was tugged below the anterior margin of remnant tympanic membrane. In cases of cartilage myringoplasty, the cartilage was either fashioned as a palisade and placed over the gel foam or was fashioned as a bucket handle technique. The tympanomeatal flap was laid back down over the graft. Pieces of gelfoam were placed along the tympanic membrane and graft. The external auditory canal was also packed with ribbon soaked BIPP. Mastoid pressure dressing was placed at the end of the procedure. All patients received oral antibiotics for 1 week till the external auditory canal pack was removed. Then they were advised to put antibiotic steroid ear drop for a 3 weeks and evaluated for graft uptake at 6 weeks (short term) and 4 months (long term). While doing simple underlay myringoplasty, all the cases were done under local anaesthesia with 4% xylocaine soaked cotton ball placed over tympanic membrane to block tympanic plexus. All the cases were done via permeal approach. Tympanomeatal flap was not elevated in this technique in contrast to conventional myringoplasty. External auditory canal was cleaned first followed by freshening of the perforated margin of tympanic membrane. Next step was to put the gel foam inside the middle ear enough so that it would support the graft. Finally the harvested temporalis fascia was flooded into the defect so that it would touch the remaining tympanic membrane in order to support growing epithelium over the graft.

RESULTS:

Total of 978 patient underwent myringoplasty during the period of 26 months from August 2010 to October 2012. They were operated by different surgeons using either temporalis fascia or tragal cartilage to repair the drum. Among them 385 were male and 593 female. The mean age was 24.4 years, minimum age who underwent surgery was 15 years and maximum age was 60 years. Table 1 shows the overall graft uptake rate following myringoplasty at 6 weeks and 4 months postoperatively. As shown in Table 1 only 571 completed 6 weeks follow up and 419 patient completed 4 months follow up. As shown in table 2, only 85 patient completed 6 weeks follow up following simple underlay myringoplasty and 10 patient revisited the hospital after 4 months of period.

Table 1: Showing long and short term graft success rate.

	Graft taken up	Graft not taken up	Total
6 weeks follow up	469 (82%)	102 (18%)	571
4 months follow up	327(78%)	92 (22%)	419

Figure 1: Gender distribution

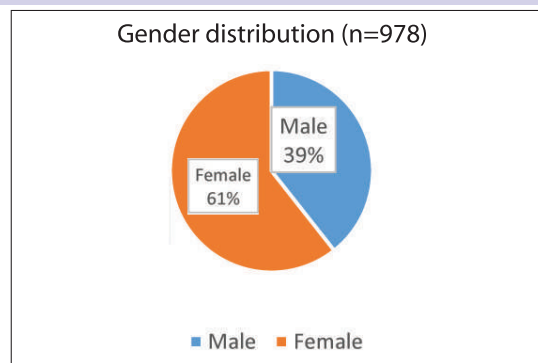


Table 2: Graft success rate following Simple Underlay Myringoplasty (SUM).

	Graft taken up	Graft not taken up	Total
6 weeks follow up	75(88%)	10(12%)	85
4 months follow up	9(90%)	1(10%)	10

DISCUSSION:

Several factors may affect the outcome of myringoplasty such as the site and size of the perforation, technique (underlay versus overlay), approach (endaural versus postaural), experience of the surgeon, condition of the other ear, type of graft used, age of the patient and condition of the operated ear (dry versus wet).⁵ Most of the time we are focused on short term result and forget or ignore the long term outcome following the myringoplasty. Hence, this retrospective study was conducted to look at our own result in our setup where many of the time following up a patient for longer duration is problematic. In this study even at 6 weeks time following surgery only 571 out of 978 i.e 59% patients turned up for follow up, which further decreased to 419 i.e 43% by the end of 4 months period. Failures after tympanic membrane repair have been considered due to initial failure to heal, reperforation or formation of a noncleaning atelectatic pocket.⁴ Acceptable long-term results (90% success or better) are difficult to achieve, even by experienced surgeons. Revision surgery is less successful than initial procedures.⁴ In this study the success rate of myringoplasty was 82 % at end of 6 weeks which further dropped to 78 % by the end of 4 months. Hence we don't know further deterioration of the success rate in later years and it can be the new horizon for further research in our setup where follow up is difficult many of the time. Sheehy and Glasscock⁶ concluded that late perforations with fascia repair were a rarity, Vartiainen

et al.⁷ have indicated that one half of their failures (5.3%) occurred late-after 8 months of follow up. Tos, however, found late perforations occurred seldom and reported 3.4% of perforations occurred after 2 years.⁸ In this study difference between early and late failure is only 4% which is acceptable but major drawback is again the long term follow up. On extensive literature review, study done by Nardone M et al published in *Otology and Neurology* in 2011 seems to have longest follow up following Myringoplasty. He followed up 1000 myringoplasty over a period of 10 years. The overall recurrence rate (Kaplan-Meier survival analysis) in a 10-year follow-up showed the graft uptake to be 85% 1 year after the operation, 81% after 2 years, 80% after 4 years, and 78% after 10 years.⁹

On analysis of SUM cases separately, 156 patient underwent SUM out of that only 85 (54%) completed 6 weeks follow up and 10 patients (7%) completed 4 month follow up. The long term graft uptake rate (90%) is more than short term uptake rate (88%). It may be because of very small group of patients which completed the 4 months follow up. Many of the SUM may be missing in long term follow up. Overall follow up of our patient were 59% by the end of 6 weeks and 43 % percentage by the end of the 4 months. This particular data shows that we need to develop better system for monitoring the outcome of surgery in long run.

CONCLUSION:

The overall graft uptake rate was 82 % by the end of 6 weeks which further decreased to 78% by the end of 4 months. The graft uptake rate was comparable to other studies but the follow up period was not long enough. Hence we need to develop a better way to follow up the patient for longer period of time from our existing health system in order to obtain real scenario of our surgeries in the future.

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