Original Research Article

Graft materials used in myringoplasty; Our experience

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Abstract

Aim: To compare the hearing improvement and the graft take-up in patients with inactive mucosal type chronic otitis media undergoning myringoplasty surgery using two types of the graft materials. **Materials and methods:** Total of 84 patients were taken for the study. Myringoplasty was in all the patient under GA Both temporalis fascia and conchal perichodrium were used in equally divided groups All patients were compared for both hearing improvement and graft take-up post operatively after 3 months. **Results:** The reduction of air-born gap in the group receiving temporalis fascia was 9.68 dB and the average reduction of air-bone gap in the patients receiving conchal perichondrium was 8.41 Db. According to these this study temporalis fascia, achieved the maximum hearing improvement. Also the failure rate of grafts with temporalis fascia was less (7%) compared to conchal perichondrium with a failure rate of 15% **Conclusion:** According to our experience the temporalis fascia graft is better than cochal perichondrial graft for closure of perforations in inactive mucosal type of chronic otitis media with central perforation. The study showed the maximum hearing improvement and minimal the failure rate in group receiving temporalis fascia graft. The hearing improvement was better in anterior type of perforations, than in posterior or large central perforations in the present study.
Key Word: Ear diseases; myringoplasty;temporalis fascia; conchal perichodrium

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INTRODUCTION

Myringoplasty is a surgical procedure of closure of tympanic membrane perforation. Myringoplasty surgery involves the use of a graft as a scaffold for the epithelium to grow over the graft and close the perforation. The aim of the myrongoplasty surgery is to eradicating middle ear disease and also to improve hearing by the closure of tympanic membrane perforation by grafting. The success of myringoplasty is related to of graft take-up and hearing improvement. The patients with inactive mucosal type of chronic otitis media usually have a very good chance of obtaining good results following myringoplasty surgery. The graft take up may be expected to have 95 to 98% –up and 90 to 95% chance for hearing gain to within 20dB of bone conduction level in such patients. The success of graft take-up and hearing outcome depends on the type of the grafts used for myringoplasty. Temporalis fascia is the most commonly used graft material for the repair of tympanic membrane perforation. In the present study two autologous graft namely temporalis fascia and perichondrium (conchal) are used as graft material for myringoplasty. The goal of present study is to compare graft take up and hearing restoration by myringoplasty in patients with inactive mucosal type chronic otitis media using either the temporalis fascia or the conchal perichondrium graft.

MATERIALS AND METHODS

The present study was conducted at Sree Balaji Medical College, Department of ENT from April 2016 to April 2018. The study population includes 84 patients who had visited the department of ENT with inactive mucosal type chronic otitis media with a dry central perforation. Selected patients were randomly divided in to two groups,

i.e. receiving either temporalis fascia graft or conchal perichondrium graft. The investigations carried out to assess the patients for the study includes examination under microscope, pure tone audiogram, diagnostic nasal endoscopy, Xray paranasal sinuses, chest X-ray, routine blood investigations, ECG. Examination under microscope is done to confirm the diagnosis and the inactive of chronic suppurative Otitis meida by observing the mucosa of the middle ear and the presence of any discharge or any retraction pocket. Pure tone audiogram was done to establish the pre operative air –bone gap and to rule out any sensori-neural hearing loss. Myringoplasty was done in all patients under GA by post aural approach using operative microscope. The same operative procedure was followed in both groups. Both temporalis muscle fascia graft and perchondrial graft is harvested through the post aural incision for closure of tympanic membrane perforation in the study groups.

Postoperative care

All patients were kept with nil per oral for 5 hours post operatively. Plain was managed with Inj.Ketorolac i.m. Sutures were removed on the 7th day. Patient's are advised to continue antibiotics anti-inflammatory drugs for 10 days. Follow-up is at 3 weeks, 6 weeks and 12 weeks. By 6 weeks, the grafted drum has thinned considerably and takes on the appearance of a normal tympanic membrane.

Follow up

The graft takes up and hearings are assessed at 12th week postoperatively.

RESULTS

Over all 84 patients were included in the study. Of these 84 patients 42 received temporalis fascia graft for closure of tympanic membrane perforations and 42 received conchal perichondrium graft for closure of tympanic membrane perforations. The age of the patients in the study varied from 18 -50 years. Patients age group and graft used is presented in the selected patient type of perforations was central. The perforations were classified as anterior, posterior and large central perforation in relation to the handles of malleus. The pure tone audiogram in selected patients showed air conduction (AC) threshold range at 22.7-47.8 dB and range of bone conduction threshold at 6.5-9dB. The average air bone gap was in the range of 20-41.5 dB. The graft take up was judged by the end of the 12 weeks by otoendoscopy examination and examination under microscope. The graft take up was considered success with the absence of residual perforation and vascularity of the graft. The failure of graft take up was considered if there was any residual perforation. Regarding the hearing improvement the air-bone gap reduction was consider in the two groups of selected patients. The average reduction of air-born gap in the patients received temporalis fascia was 9.69 dB and the average reduction of air-bone gap in the patients received conchal perichondrium was8.40dB. According to this study, temporalis fascia graft, which is commonly used graft material for myringoplasty, showed the maximum hearing improvement and minimal the failure rate. The failure rate of grafts with temporalis fascia was minimal (7%) compared to conchal perichondrium with a failure rate of 15%.

DISCUSSION

The mean age of the patients undergoing myringoplasty in selected group was 28.8 years. All of these patients had complaints of discharging ear of varied duration. Dry ear for at least 3 months and varied degree of hearing loss was the major criteria for inclusion of the patients in the present study. At the end of 12 weeks following surgery successful closure of perforation was 94% and hearing improvement was 83% in anterior type central perforation. The hearing improvement was better in anterior type of perforations, than in posterior or large central perforations. To check whether there was any significant difference between the mean hearing gain in the group receiving temporalis fascia and conchal perichondrium the student t-test for independent samples was applied. The t value was calculated as 4.432. The p value was calculated as 0.000 thus the t test implies that there was significant difference between the mean hearing gain in the both groups. The t test in comparing between mean hearing gain in successful graft take-up and failed graft take-up showed that there was significant difference between the mean hearing gain in the groups successful graft take up and groups failed graft take –up and difference obtained is not due to any chance. The gain in A-B gap, graft used and graft take-up the F values was calculated as 19.653 using ANOVA. This showed that the gain in A-B gap and graft take –up was better in the group receiving temporalis fascia as graft material than the group receiving conchal perichondrium as the graft material.

CONCLUSION

According to our experience the temporalis fascia graft is better than cochal perichondrial graft for closure of perforations in inactive mucosal type of chronic otitis media with central perforation. The study showed the maximum hearing improvement and minimal the failure rate in group receiving temporalis fascia graft. The hearing improvement was better in anterior type of

perforations, than in posterior or large central perforations in the present study.

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REFERENCES

1. Jung Timthy.T.K.and Jonathan Hanson:Classification of otitis medical and surgical principles;Otolaryngology Clinics of North America;vol.32:number 3;june 1999;page369-380.
2. Saha Ashok K.,Munsi D.M.,Gosh S.N:Evaluation of improvement in hearing in Type-I Tympanoplasty and its influencing factors;Indian Journal of Otolaryngology and Head and Neck Surgery;vol.58,no.3,Oct.-Dec. 2005,253
3. Saminullah,Chandra K.:combined effect of Eustachian tube function and middle ear mucosa on Tympanoplasty;Indian Journal of Otology,vol.12,Sept.2006:26-27
4. Sade J.:Myringoplasty:Long term and short term results in a training program;Journal of Laryngology and Otology;95:653-65.
5. Perkins R.:Grafting materials and methods in reconstructive ear surgery;Ann Otol Rhino Laryngol;1975 Jul-Aug;84:518-26.
6. Gupta V, Gupta A, Sivarajan K. Chronic suppurative otitis media; An aerobic microbiological study. Indian Journal of Otology 1998; 4(2): 79-82.
7. Loy AHC, Tan AL, Lu PKS. Microbiology of chronic suppurative otitis media in Singapore. Singapore Med J 2002; 43(6):296-299.
8. Rao BN, Reddy MS. Chronic suppurative otitis media– A prospective study. IJO & HNS 1994; 3(2):72-77.
9. Vijaya D, Nagarathnamma T. Microbiological study of chronic suppurative otitis media. Indian Journal of Otology 1998; 4(4): 172-174
10. Rizer Franklin M.:Overlay Vs underlay Tympanoplasty.Part II:The study;Laryngoscope;107;(Dec.1997):26-36.
11. Raj A.,Mehar R.:Endoscopic transcanal Myringoplasty-A study;Indian Journal of Otolaryngol Head Neck Surgery (Jan-Mar 2001)53:47-49
12. Indorewala ST:Dimensional stability of free fascia grafts:Clinical application;Laryngoscope2005;115:278-282.
13. Mohamed Al Lackany,Nadia Nassif Sarkis:Functional results after Myringoplasty and type-I Tympanoplasty with the use of different Graft Materials;Journal of the Medical Research Institute,2005;vol.26,no.4:369-374.
14. Gupta P.,Prajapati BJ.,Gupta More Y.,Mehta R.,Sinha V.:Different types of graft materials in Type-I Tympanoplasty;Indian Journal of Otology;vol.13,Sept.2007, 9-11
15. Singh BJ.,Sengupta A.,Sudip D.,Ghosh D.,Basak B.,A comparative study of different graft materials used in Myringoplasty;Indian Journal of Otolaryngol Head Neck Surgery (April-June 2009)61:131-134
16. Lin YC, Wang WH, Weng HH, Lin YC; Predictors of surgical and hearing long-term results for inlay cartilage tympanoplasty: Arch Otolaryngol Head Neck Surg. 2011 Mar;137(3):215-9.

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