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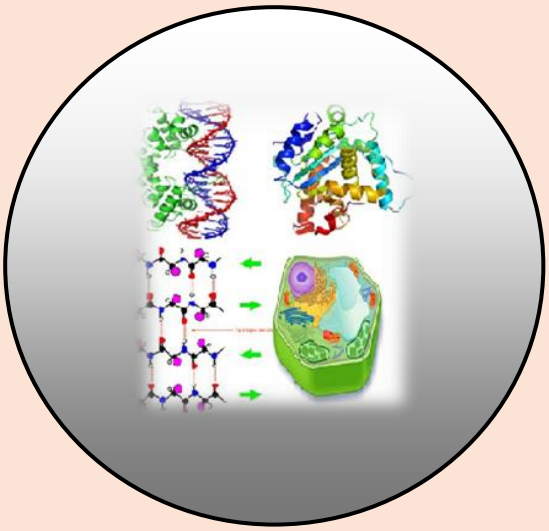

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RESEARCH PAPER

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Comparison of Graft Uptake between *Temporalis Fascia, Tragal Perichondrium* and Ear Lobe Fat

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ABSTRACT

CSOM is still a major ear problem in our country. Most common manifestations are hearing loss and recurrent otorrohoea followed by perforation, if ignored for long time may lead to dreadful complications. To compare the results of myringoplasty in the form of graft uptake and hearing improvement by using temporalis fascia, Tragal perichondrium and ear lobe as graft material. 60 patients, taken as subjects from ENT OPD SMGS Hospital, were divided in to 3 groups, having 20 patients in each group on the basis of using 3 graft, group a with temporalis fascia, group b with Tragal perichondrium and group c with ear lobe fat after doing pre-operative investigations. In our study, success rate in terms of graft uptake was 88% with temporalis fascia, 90% with Tragal perichondrium and 78% with ear lobe fat. Mean hearing improvement in GROUP A (12.44 ± 8.32db), in GROUP B (12.14 ± 8.55 db) and in GROUP C (6.88 ± 6.11db). Failure rate is 15%, 3 cases in GROUP A, 2 cases in GROUP B and 4 cases in GROUP C. Hence, it is concluded that the use of perichondrium is as successful in perforation closure and hearing improvement as temporalis fascia. Ear lobe fat has very much encouraging results in small perforations and is less time-consuming procedure, hence these graft materials can be used as alternative to temporalis fascia.
Keywords: CSO, Otorrohoea, Myringoplasty, Temporalis Fascia and Tragal Perichondrium.

INTRODUCTION

Chronic suppurative otitis media is an important middle ear infection since prehistoric times. CSOM is the commonest cause of mild to moderate hearing impairment in children and adults in developing country (Datta et al., 1995). Tympanic membrane is unique structure vital to sound transmission. CSOM may lead to tympanic membrane perforation and other causes of its perforation are infection, trauma or a sequel of tympanostomy tube insertion. About 88% of traumatic perforation of any size heal without intervention, the remainders require treatment (Saliba, 2008). Reconstruction of tympanic membrane using fascia or perichondrium aims to achieve anatomic and functional reconstruction of tympanic membrane. Myringoplasty is an operation used to repair and reconstruct the perforation in tympanic membrane.

Different surgical approaches, techniques and graft material are in practice. Most commonly employed graft materials are Tragal perichondrium with or without cartilage and temporalis fascia. Other materials like fat, periosteum and cadaveric dura as allograft and bovine tissue as xenograft are also used depending upon size of defect and availability of tissues.

Autogenous graft materials are the most popular grafts. They are also usually easily available, don't involve any immunological problems, are inexpensive and most important of all, there is no risk of HIV infection (Micro Toss).

Successrate is highly variable from centre to centre. Tragal perichondrium is mainlypreferred due to its easy harvesting techniques, decreased time consumption, minimal scarring and no significant post-operative morbidity. Tragal cartilage with perichondrium is preferred in case of large or anteriorly placed perforations or associated Eustachian tube dysfunction but at the cost of delayed hearing for 6 months.

Fat from ear lobule is used to plug small perforation with highly encouraging results. It is also minimally invasive and also useful in residual perforations because of antigenic properties of fat. The outcome usually is not altered with the surgical technique used ranging from *underlay, overlay or sandwich.*

Biological graft materials act as scaffolds of tissue matrix which are applied to seal perforation and this subsequently vascularizes in readiness for migration of fibroblasts and epithelium. Such abundance of material implicitly implies that there is no clear favourite and choice of graft depends on individual preference (Jyothi et al., 2007).

The study was undertaken to compare the results in the form of healing of perforation and hearing improvement using different autologous graft materials like temporalis fascia, Tragal perichondrium and ear lobule fat.

MATERIALS AND METHODS

The study was carried out on 60 patients admitted for myringoplasty as per selection criteria in the department of ENT, GMC, Jammu.

Selection criteria:

1. CSOM with central perforation, the ear should be dry for at least 3 weeks.
2. Mild to moderate conductive hearing loss.
3. Age >12 and <50 years' old
4. No other confounding disease or condition.

PROCEDURE: a written consent was taken and detailed clinical history was taken and recorded. All patients were examined clinically and following investigations were carried out: **tuning fork test, pure tone audiometry and x rays both mastoids, lateral oblique view, complete haemogram and urine routine.**

ANAESTHESIA: the surgeries were performed either under general or local anaesthesia. For local infiltration 1: 10000 adrenalines were used.

TECHNIQUE: 60 Patients were divided in to 3 groups:

GROUP A: 20 patients in which TEMPORA: IS FASCIA used as a graft.

GROUP B: 20 patients in which TRAFGAL PERICHONDRIUM is used as graft.

GROUP C: 20 patients in which EAR LOBE FAT used as a graft.

The myringoplasty was performed through endaural, aural or permeatal approach; **INLAY OR OUTLAY** technique is used.

HARVESTING TEMPORALIS FASCIA: after shaving and draping supra auricular incision. Skin and subcutaneous tissue were retracted to expose the white shining fascia covering temporalis muscle. Infiltration was done with xylocaine underneath the fascia, harvested according to the size of perforation. Wound stitched with 3-0 mersilk.

HARVESTING TRAGAL PERICHONDRIUM: after anaesthetizingTragal area, a deep skin incision was made on anterior lip of tragus and it is separated from the perichondrium. The perichondrium was reached and separated from underlying cartilage with the help of scissor/elevator. It was then harvested out and ditched using 3-0 mersilk.

HARVESTING EAR LOBE FAT: after anaesthetizing the ear lobe, 0.5 cm incision was given on medial surface and a skinless fat graft, 2 times larger than perforation was harvested and was covered with small piece if gel foam. Stitching was done with 3-0 mersilk.

Post operatively, patient was given: broad spectrum anti biotic, analgesics, anti-histamines and steroids, if needed.

Post-operative complications were noted. Stiches were removed after 7 days and EAC pack was removed after 10-14 days. Patients were observed for graft uptake and any complication after 4 weeks and 12 weeks after operation. PTA was done, 3 months after surgery to assess the hearing level and was compared with pre-operative audiogram.

DISCUSSION

In the present study, 60 patients were divided in to 3 groups with 20 patients each, with dry, safe and central perforation and mild to moderate conductive hearing loss and good Eustachian tube function were selected from ENT dept., GMC. The study was conducted from December 2017 to march 2018 Their age limit was 12-50 years.

In our study maximum patients lie in the younger age group, probably because they were more conscious about their hearing at this age. Remaining were middle aged, concerned about their social life.

In our study female predominance was seen. In GROUP A 13 (65%), in GROUP B11(55%) and GROUP C 12(60%) were females. In the study carried out by Zulkifal Awan et al (2008), there were 53.3% females and in the study by Konstandinidis etal (2010), male predominance was seen with 66.7% were males and 33.3% females.

In our study more number of patients were from rural background. Overall 39 (65%) were from rural background and 21(35%) were from urban background. In the study by BJ SINGH et al (2009) also there were more subjects from rural population (60%). The rural urban proportion seen in our study may be just reflection of the patients attending OPD in our hospital. Also, lack of awareness about the disease and its sequel and lack of proper referral and specialized centres from rural area are responsible for the higher proportion of patients from rural areas in our society.

There was slight more involvement of left ear in our society. In GROUP A, left ear was involved in 12 (60%), in GROUP B 11(55%), GROUP C 13(65%). Altogether, 36(60%) have left ear involvement.

More patients presented with longer duration of discharge for 1 -5years, in total 39(65%), and few 21(35%) had discharge of <1 year. This shows lack of awareness about the disease and its complications and lack of proper referral services in rural population may have delayed seeking of specialized care. All patients were adequately treated before surgery and had dry ear at least 3 weeks before surgery.

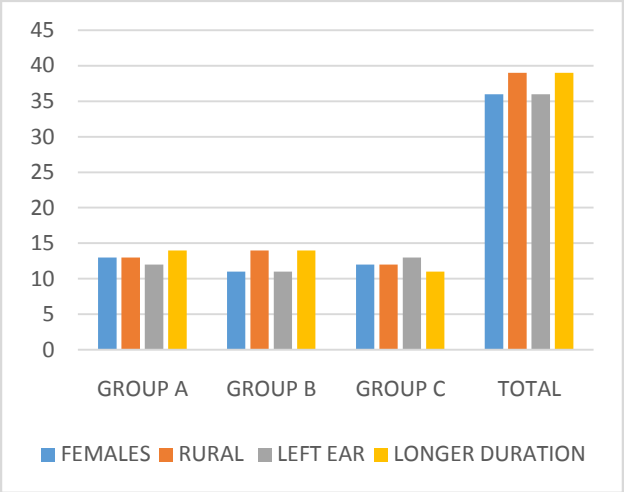
In the present study, majority of the cases were done under local anaesthesia, 2% xylocaine with 1:100,00o adrenaline was used. No significant problem was encountered with local anaesthesia. Only two cases were done at general anaesthesia as one was overanxious female. Some extra bleeding was seen in these cases as compared to local anaesthesia.

In our study, endaural, permeatal and post aural approaches were employed. Endaural approach was used in only 3 cases (05%), post aural in 18 cases (30%) and permeatal in 39 cases (65%).Permeatal approach was preferred in cases with wider external auditory canal and was used in all cases of group c, where endoscope was also used when required. While post aural approach better exposure and wider operative field and overcomes the problem of EAC or anterior prominent bulge. In our study, these approaches had equal outcome in terms of graft uptake.

Failure rate was 15%, 3 cases with temporalis fascia, 2 with Tragal perichondrium and 4 with ear lobe fat. Failure might be due to infection mainly and large perforation thereby getting poor blood supply and less attachment with rim of perforation margin or may be poor hygiene and inattentive post-operative advice.

In our study, the most common post-operative complication was the discharge from ear which was seen in 2 cases of GROUP A, 1 cases of GROUP B and 2 cases of GROUP C. The discharging ear post operatively responded to conservative management.

According to Singh BJ et al (2009) comparative study was conducted between different graft materials and success in terms of closure of tympanic perforation came out to be temporalis fascia 95 %, hearing 9.3 dB, ear lobe fat 90 %, followed by Tragal perichondrium 90% and areolar tissue 80 %. Overall success rate was 91% (Zhang et al., 2011).
According to Zhang et al (2011) composite cartilage graft had 100% success rate followed by Tragal perichondrium and temporalis fascia 95% each in terms of closure of tympanic membrane and hearing improvement (Zhang et al., 2011).
Zulkifal Awan et al (2005) had overall success rate of 84% using Tragal perichondrium without cartilage and in few cases with cartilage, temporalis and fat from ear lobule. individual success rate with each type of graft material was 85%, 75% and 100% respectively (Zulkifal Awan et al., 2008).
Mohamadand Nadia (2005) conducted a study that showed that tympanic membrane healing rates were (80 %) when they used fascial graft and it was better with perichondrial graft (88%) and best when composite graft (92.3%) was used (Mohamad Al Lakhnay and Nadia Nassif Sarkis, 2005).
V Sinha et al (2009) used fat graft as an office procedure as office procedure in small perforations and got 95% success rate (Vikas Sinha et al., 2010).
Jyoti P et al (2007) compared temporalis fascia and Tragal perichondrium and found Tragal perichondrium as better alternative for myringoplasty.



RESULTS

In our study, success rate in terms of graft uptake was 88% with temporalis fascia, 90% with Tragal perichondrium and 78% with ear lobe fat. Mean hearing improvement in GROUP A (12.44 ± 8.32db), in GROUP B (12.14 ± 8.55db) and in GROUP C (6.88 ± 6.11db). Failure rate is 15%, 3 cases in GROUP A, 2 cases in GROUP B and 4 cases in GROUP C.

CONCLUSION

Hence, it is concluded that the use of perichondrium is as successful in perforation closure and hearing improvement as temporalis fascia. It does not add to the operating time and does not carry any risk of atrophy or any other major complication. Ear lobe fat has very much encouraging results in small perforations and is less time consuming procedure, hence these graft materials can be used as alternative to temporalis fascia.

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