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TREATMENT OPTIONS FOR SMALL SIZE PERFORATIONS: FAT GRAFTING OR CHEMICAL CAUTERIZATION

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KEYWORDS :

INTRODUCTION:

Central perforation in pars tensa can either be due to disease process of middle ear or because of trauma. In maximum number of times traumatic perforations use to heal by itself if ear is kept dry for a particular period of time. Similarly perforations of infective aetiology (tubotympanic disease) can also be healed if the causative factor (Eg: eustachian tube dysfunction) is improved. Failing to heal these perforations become permanent and presents with off and on discharge with hearing loss of various degrees. Many times small perforations (2-3 mm) are asymptomatic or very minimally symptomatic so that it is overlooked by patients and ENT specialists also.But this inactive disease can become symptomatic and progress into active form, thus it should be treated actively. The main aims of treatment are to decrease the chance of infection through perforation and stop the disease process by maintaining continuity of tympanic membrane and to improve hearing as well.

From Historical period perforation has been tried to treat.The first reported attempt was done by Marcus Banzer (1640) using ivory tube covered with pig's bladder. Chemical cauterization using silver nitrate ($AgNO_3$) was introduced by Roosa(1876). Ringenberg (1962) first performed fat myringoplasty using lobule fat.

Use of irritant oil, fibrin glue, fat plug and CO_2 laser are some other techniques which have been tried to repair the perforation. Depending on the requirement and choice of the patient a particular intervention is performed.

The present study gives comparative results between two methods i.e. chemical cauterization and fat grafting for management of small size perforations of pars tensa.

Aims & objectives:

1) To manage small size perforations with minimal intervention.
2) To search for good technique in non-operative patients.
3) To compare the results of fat grafting and chemical cauterization.

MATERIALAND METHOD:

The study was conducted in Hamidia Hospital associated with Gandhi Medical College, Bhopal for the period of 2 years.Total 49 patients with 60 small size perforation (<2-3 mm) were selected and divided into two groups of 30 perforations each.Group one was subjected for chemical cauterization and group two for fat grafting. After procedure a short course of antibiotic, antihistaminic and antibiotic ear drop was prescribed. Follow up was done on weekly basis for 4 weeks. Healing of perforation and tympanic membrane mobility were checked and documented as successful procedure. Result compiled tabulated and summarised.

Inclusion criteria:

1) Small size central perforation (size 2-3 mm) or involving < 25% of tensa.
2) Dry ear for atleast 6 weeks.

Exclusion criteria:

1) Atticoantral disease.
2) Eustachian tube dysfunction.
3) Chronic/Allergic rhinosinusitis
4) Previous history of ear surgery.

Procedure:

A. Fat grafting: After cleaning of EAC 2% xylocaine with adrenaline is infiltrated in all quadrants of EAC and lobule. Lobule fat harvested and wound sutured using 4-0 silk. Margins of perforation freshened under microscope and fat kept over perforation in dumbbell fashion which was supported by medicated gel foam kept in middle ear and in EAC.

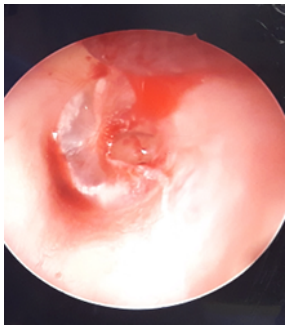

Fig.1 - Perforation with freshened margin.

Fig 2- Perforation repaired with fat graft.

B. Chemical cauterization: After cleaning EAC 4% xylocaine soaked cotton kept over perforation. Under microscope 50% Trichloroacetic Acid was applied directly over margins using Jobson Horne Probe. Care was taken to not to cauterize promontory or normal tympanic membrane.

All patients were instructed to avoid water entry into ear and followed up after 1 week.

RESULTS:

Total 49 patients with 60 perforations have been included (11 patients had bilateral disease).

1) The age of patients were between 15-55 years.
2) Among 60 perforations 50 were because of disease process and 10 were of traumatic aetiology.
3) Out of 49 patients, 18 had only blocking sensation, followed by no complaints (16), diminished hearing (10) and others like tinnitus/ discharge or auto phony(05).
4) Out of 30 perforations, who underwent fat grafting 26 perforations healed giving 86.67% success rate.
5) Total 4 perforations did not heal making failure rate 13.3%.
6) 3 out of 4 perforations (residual) patients developed URI after fat grafting and one (1) of them had allergic rhinitis history, which might be the cause of failure.

7) Out of 30 perforations which had undergone chemical cauterization, 22 healed giving success rate of 66.67%.
8) While 6 failed the procedure and 4 patients did not come for follow up, which were again included in failure cases(33.3%).
9) Minimum 2 sittings and maximum 4 sittings were given for chemical cauterization.
10) Patients who did not come back for follow up after 4th sitting were included into failure cases.
11) All failed cases (residual perforations) were finally undergone myringoplasty after a particular period of time.

DISCUSSION:

Berthold was the first to use full thickness to repair perforation and coined the term "Myringoplasty". Trichloroacetic acid was first time used by Okuneff. Joynt used both chemical cauterization and paper patching and showed improved results.

In our study we found that both techniques are good enough to treat small size perforations. Success rate of fat my ring oplasty is 86.6% while of chemical cauterization it is 66.6%. With proper selection of cases and better post-intervention precaution and care success rate can be further improved.

In 1997 Kuljit S. Uppal[1] et al found 78% success rate with chemical cauterization. In 2007 Goldman N.C [2] found 64% success rate for the same.Similarly T.Shanti et al[3] in 2012 found 73.75% result after chemical cauterization.Shambaugh and Glasscock[4],(Shambaugh's surgery of ear), also shows 64% success rate in chemical cauterization. These all studies' results resemble or are very near to results of our study (66.6%)

T.H.Udaipurwala[5] in 2010 got 95.2% efficacy in fat myringoplasty. Vikas Sinha et al[6] found 94% success rate in fat myringoplasty. Similarly in our study we got 86.6% results which is very near to previous studies.

Mahendra Debnath et al[7] in 2013 found 83.3% results in chemical cauterization and 90.9% results in fat grafting, while in our study it is 66.6%and 86.6% respectively. Dr.Sunil Bhadauriya et al[8] in 2012 found chemical cauterization 68 % in treating central perforations.

The high failure rate of chemical cauterization might be because of defaultered patients who did not come for follow up.

CONCLUSION:

Although myringoplasty or typanoplasty are ideal techniques for the management of central perforations, non-invasive or minimal invasive procedures are also good options for treatment. Fat grafting and chemical cauterization both are easy, cost effective and good techniques with acceptable results. They can be performed in OPD basis also.

Fat grafting gives better results in comparison with chemical cauterization. It can be done under local anaesthesia in single sitting only.

On the other hand chemical cauterization is also useful technique with good results. The only drawback of this technique is multiple sittings which is mandatory for acceptable results.

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