

Management of Small Central Perforation of Tympanic Membrane– A Comparative Study Using Different Techniques.

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Abstract:- Small central perforation (Those central perforations which are less than 5 mm or 25% of pars tensa) associated with chronic suppurative otitis media of safe variety needs to be treated as early as possible to prevent recurrence and associated morbidity. Emphasis is given to surgically repair of these perforations at the earliest possible time .

However managing small central perforation is a challenging task. A conventional Myringoplasty is at times too big a surgery for this small lesion and patching of small perforation is also associated with some limitation i.e. multiple sittings. In this prospective study we have compared 3 different techniques in the management of these perforations, The age range is 15-60 years. The 3 different techniques namely conventional Myringoplasty, Fat plug or tissues Myringoplasty and patching were compared.

We have selected cases for each of the 3 techniques and compared the results. The results were analyzed in terms of gain in hearing, duration of surgery and graft success rate.

Keywords: Small central perforation, myringoplasty, fat plug myringoplasty, and paper patching.

Date of Submission: 11-01-2019

Date of acceptance: 24-01-2019

I. Introduction

Chronic suppurative otitis media of safe variety presenting with persistent discharge and hearing impairment is one of the commonest presentation in developing country like ours. Lack of awareness, ignorance, poor socio economic conditions and inaccessibly to health care in remote areas makes this disease more prevalent in our society. This reduces the work days and school attendance in adult and children populations. Presence of discharging ear is also associated with social stigma, A safe perforation denies an individual to participate in aquatic sports and employment in armed forces. However, timely intervention by conservative methods and surgical measures, these perforation can be easily closed. Simple repair of these perforations is called myringoplasty which close the perforation and improves the hearing. Different techniques have been described in literature with their respective outcomes. In perforation of medium and larger size, the surgical techniques are straight forward. (except subtotal perforation) However, problem arises in decision making while dealing with small central perforation (i.e those perforations involving <25% of pars tensa) A conventional myringoplasty involves harvesting of graft for repair of small perforation results in increased cost in terms of preoperative investigations, medications and hospital stays. Another simple technique is paper patching which is a easy, economical and can be carried out as an daycare procedure.

There is another technique called TISSUE MYRINGOPLASTY OR FAT PLUG MYRINGOPLASTY for dealing with small central perforation.

This technique is simple and easy to perform and requires no hospital stay and less medical expenditures. It can also be used to treat residual perforations following a conventional myringoplasty .

II. Aims And Objectives

1. To analyse the outcome of Chemical cauterisation/ paper patching , fat plug myringoplasty and conventional myringoplasty in management of small central perforations of tympanic membrane (< 5mm)
2. To evaluate the results of the 3 techniques and compare their outcome in term of gain in hearing, duration of surgery and graft success rate.

III. Materials And Methods

This study was carried out in ENT department of Assam Medical College, Dibrugarh, Silchar Medical College, silchar, Gauhati Medical College, Guwahati and Tezpur Medical College, Tezpur in different period of time.

The period of the study was from the year June 2005 till June 2017. The Patients were in the age group ranging from 15 years to 60 years having central perforation less than 25 percent of pars tensa. A total of 1233 cases were selected in this study.

IV. Exclusion Criteria

1. Patient of CSOM of Atticoantral variety
2. Associated diseases of Nose and paranasal and of nasopharynx
3. Moist or wet ears
4. Perforation >5mm or >25% of pars tensa
5. Eustachian tube dysfunction.

Hearing assessment was done before surgery and 1½ months after surgery. All the cases were done under local anaesthesia and sedation with Fortwin and Phenargan .

V. Myringoplasty

Conventional procedure was undertaken per meatal approach. Temporalis fascia as graft material and underlay technique. Patient under local anaesthesia and sedation. A horizontal incision made 2 cm above the superior attachment of auricle. Temporal fascia harvested. Incision closed in layers

The margin of the perforation is made raw. Tympanomeatal flap elevated, the annulus dislocated. The graft is placed medial to the flap. Abgel placed medial to the graft in the tympanic cavity. The tympanomeatal flap repositioned. The external auditory canal packed with medicated abgel.

VI. Chemical Cautery

The margin of perforation is made raw by application of trichloroacetic acid/ silver nitrate and the perforation was covered with thin paper foil.

VII. Fat Plug/ Tissue Myringoplasty

The margin of the perforation is made raw with the sharp needle. Fat plug is harvested from the lobule of the auricle and teased. The middle ear cavity is filled with abgel and the fat lobule is plugged in the perforation resembling a dumbbell. The external auditory canal is filled with medicated abgel.

VIII. Result And Observations.

In our study 1233 patients underwent closure of small central perforation (< 5mm or 25% of pars tensa) .The above patients were identified according to the selection criteria. This study consisted of 735 male and 498 female patients.

They belonged to age group between 16 years to 60 years. Of 1233 cases, 114(9.24%) had bilateral perforations and had undergone fat plug myringoplasty / chemical cautery in the same sitting. Adequate fat was collected from one lobule.

All the cases had conductive deafness. 756 cases (61. 31%) had mild conductive loss and 477 cases (38.68 %) had moderate loss . 55 cases (4.46%) had persistent perforation as a result of trauma rest gave history otitis media in the past . All the cases was followed regularly till 6 months after surgery.

Chemical cautery was performed in 395 cases, tissue myringoplasty was performed in 413 and 425 cases were operated by conventional myringoplasty.

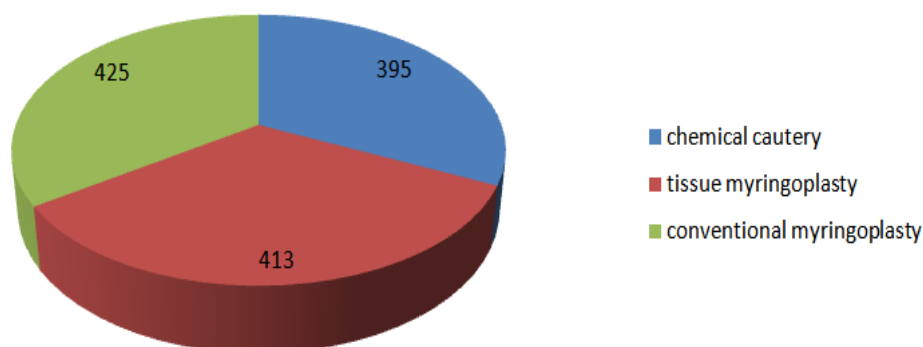


Fig.1

In the group that had chemical cautery, closure was achieved in 311 cases (78.73 %). Those who had fat plug Myringoplasty 354 patients had healed tympanic membrane perforation (85.71 %), 356 patient who underwent conventional underlay Myringoplasty had closure of perforation (83.76 %).

Those cases who had residual perforation after undergoing any of the above procedure were planned for fat plug Myringoplasty/ chemical cautery at a later date. The average gain in hearing was 5 dB.

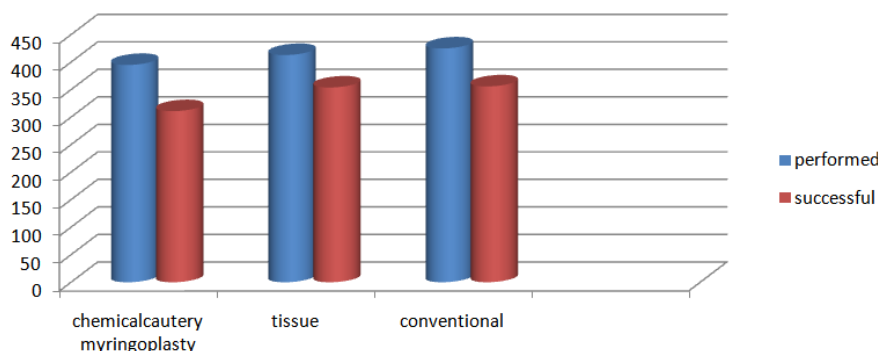


Fig.2

IX. Discussion

William Wilde in 1848³ reported use of silver nitrate to encourage tympanic membrane perforation closure. However, Roosa in 1876 first introduced office chemical Myringoplasty. Derlacki⁵ used Trichloroacetic acid in 1950 to close small perforation and reported good results. These procedure later came to be known as Derlacki⁵ procedure. He reported 80.4% success rate at otologic professional associate at Chicago. From our study it was found that these 3 procedures showed improvement in postoperative closure and hearing threshold. Our study show 78.73% success rate in patients with chemical cautery, 85.71% in fat plug Myringoplasty and 83.76% in conventional Myringoplasty in agreement with 80%-92% reported in other studies. Dursun E.⁶ et al reported that there is no statistically significant difference in closure rates between paper patch, Fat and Myringoplasty. Nelson C. Goldman⁸ reported success rate of chemical cauterisation in 82.7% cases similar results were also reported by Louies F. Scarmella⁹ (84.23%) Deddens¹¹ et al (1993) described adipose Myringoplasty as a simple cost effective technique. Success rate in their study was 89% Mitchell¹² et al (1996) presented a study in 370 children over a period of 6 years. Successful closure was achieved in 349 i.e. 92%. Reviewing the present study with literatures available, we found that there is no statistically significant difference in tympanic membrane closure rates between techniques with regard to size. The three techniques are found to be feasible for small tympanic membrane perforation.

X. Disclosure

- Competing interest of conflict – none
- Sponsorships – none
- Funding – none

XI. Conclusion

From the study we conclude that there is no significant difference in the results of myringoplasty that are performed with various types of graft materials for small type of central perforations. Also in patients coming from remote areas conventional myringoplasty is better and patients with failure with conventional myringoplasty can go for fat plug myringoplasty in OPD basis.

Acknowledgement

We are grateful to the Principal cum chief Superintendent of the Assam Medical College, Dibrugarh, Silchar Medical College, silchar, Gauhati Medical College, Guwahati and Tezpur Medical College, Tezpur for allowing us to conduct the study.

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Rupam Borgohain. “Management of Small Central Perforation of Tympanic Membrane– A Comparative Study Using Different Techniques.” IOSR Journal of Dental and Medical Sciences (IOSR-JDMS), vol. 18, no. 1, 2019, pp 29-32.