



COMPARTIVE STUDY TO EVALUATE THE RESULTS OF THE ENDOSCOPIC VERSUS MICROSCOPIC MYRINGOPLASTY AT A TERTIARY CARE HOSPITAL, GUNTUR

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ABSTRACT

INTRODUCTION: Minimally invasive ear surgery i.e transcanal endoscopic ear surgery is better than the conventional microscopic ear surgery, it has high degree magnification and wide angle panoramic view where as in microscope scotopic view, it is used to visualize the hidden areas, eg sinus tympani, facial recess, hypotympanum..etc.

Aims and Objectives:

- To assess the graft uptake in endoscopically assisted myringoplasty and microscopic myringoplasty.
- To assess the subjective cosmetic outcomes after six weeks of surgery.

MATERIALS AND METHODS: 50 patients with COM inactive Tubotympanic type of disease, visiting the Department of Otorhinolaryngology, Government General Hospital, Guntur were included. The approval of the Ethical Committee and informed consent of the patient was obtained.

Study design: prospective study and Study period: 2 years.

Study location: Department of Otorhinolaryngology, Government General Hospital, Guntur, Andhra Pradesh.

Study group: Patients with COM inactive tubotympanic type with dry central perforation.

Sample size: 50 cases.

RESULTS: In total 50 cases, 92% graft uptake rate observed in endoscopic approach, 88% graft uptake observed in microscopic approach group, p value of the study is <0.0005. From the above study concludes that endoscopy study had better graft uptake rate and minimal post-operative complications.

Conclusion: Regarding the outcome of surgery, success rate of endoscope assisted tympanoplasty is comparable to the microscope assisted tympanoplasty. Only advantage of endoscope assisted tympanoplasty is that it provides a wide angled magnified view by which all the corner of middle ear cavity can be visualised for any residual disease.

KEYWORDS : CSOM, Endoscopy, Tympanoplasty

INTRODUCTION

Chronic Suppurative Otitis Media (CSOM) is a wide spreading disease of the developing countries. Treating Chronic Suppurative Otitis Media surgically by Tympanoplasty is one of the common procedures in the branch of otorhinolaryngology.

Myringoplasty and Tympanoplasty are defined as surgical procedures that are used for repair of the Tympanic Membrane (TM) and middle ear.

Myringoplasty is the repair of the perforation of the tympanic membrane when middle ear space, its mucosa, and ossicles are free of disease.

Tympanoplasty implies not only reconstruction of TM, but also eradication of the disease in middle ear cleft such as chronic infection, cholesteatoma, ossicular chain problem, etc.

Initially full and split-thickness skin graft is used, followed by canal wall skin, vein, perichondrium, and temporalis fascia grafts are used for TM repair. Temporalis fascia remains the most commonly used material now.

Common problems encountered in reconstruction of the TM are inadequate exposure to vital area of tympanic cavity like sinus tympani, difficulty in removing all squamous epithelium from middle area to be covered by graft, epithelial pearl formation, development of disease sequelae like tympanosclerosis, appearance of cicatricial tissue, blunting of anterior canal recess, post-op migration of graft from malleus handle, retraction of graft and graft rejection.

The goal of any procedure is to produce a new tympanic membrane that will function as closely to the original.

The introduction of an operating microscope significantly enhanced the surgical result by improving the accuracy of the technique. But operating microscope provides a magnified image in a straight line extending from the objective lens.

Hence surgeon can't visualize the deep recesses of the middle ear in a single operating field. Using a microscope, initially per meatal overlay technique is done and it is gradually changed to post aural or end aural underlay technique because of the disadvantage of per meatal approach through microscope. This is overcome by the use of the rigid endoscope.

The use of the rigid endoscope in the management of dry central perforation of the tympanic membrane represented a significant advance in middle ear surgery. It replaces the operating microscope in examination and surgery of the tympanic membrane perforation.

The proximity vision provides the possibility of an all-round vision just by rotating the angled scope thus deep anterior canal wall, anterior recess, anterior marginal perforation, sinus tympani, facial recess, hypotympanum, and attic are visualized. Minimal invasive surgery is the advantage of the endoscope.

Therefore, in the present study we compare the outcome of myringoplasty by the microscopic method and endoscopic method.

MATERIALS AND METHODS:

The study was conducted in the department of otorhinolaryngology Tertiary care Hospital, Guntur, a.p india over a period of two years [2018-2020]. The study was a prospective study.

Inclusion criteria:

Patients within the age group of 15 to 45 years.

Patients with small, medium, large, subtotal dry central perforations of the tympanic membrane.

Intact middle ear conduction mechanism.

Adequate cochlear reserve.

Exclusion criteria:

Age less than 15 years and more than 45 years.

Patients with tympanosclerosis, ossicles chain disorders, presence of cholesteatoma & retraction pocket.

Patients with (SNHL). Patients with complication of c.o.m

Patients with allergic rhinitis ,chronic rhinosinusitis and associated with any systemic diseases are excluded.

The study was started after getting the institutional ethical clearance, A study of total 50 patients aged between 15-45 years were selected as per inclusion and exclusion criteria, informed and written consent were obtained from all groups of patients. The patients were by simple randomization with single blinding method into two groups based on the surgical procedure they received .

In each group 25 underwent endoscopic myringoplasty and rest of the 25 cases underwent microscopic myringoplasty.

Patients were admitted day before surgery,detailed history taking and clinical examination were done and recorded in a customized proforma.

All of them were subjected to pure tone audiometry to document the pre-operative hearing status.

It was done as per the method outlined by American speech and Hearing association.A-B[gap] at frequency 500Hz,1Hz,2Hz were note,hearing loss is calculated.

All surgeries were undertaken at local anaesthesia using 2%xylocaine with 1:100000 dilution adrenaline by the same surgeon of the unit.

Endoscopic tympanoplasty was done by transcanal route and microscopic tympanoplasty was done by postauricular route.

In endoscopy tympanoplasty,pediatric 2.7 mm rigid ,zero degree,18 cm, long Hopkins rod endoscope with camera and monitor was used during surgery.

In microscopic tympanoplasty ,250mm zeiss microscopic unit was used.

Through postaural route temporalis fascia was harvested,from the same incision, in postaural approach,where as in endoscopy harvest from the separate incision above the pinna.

Post auricular incision given at post auricular groove ,below 1cm,in both technique an canal wall skin incision at 12clock to 6o clock position given and elevate tympanometal flap, and enters into the middle ear.

In endoscopic group,with thirty degree endoscope was used to visualize the entire middle ear cavity and getting sure of no residual disease in tympanum,temporalis fascia kept in underlay technique and stabilized with gel foam,and reposision of tm flap.

All the pateints in both groups were followed for minimum 6weeks,for pta and 6months for graft uptake and wound healing.

RESULTS;

Out of 50 cases 36 were females(72%) and 14 were males (28%) underwent microscopic and endoscopic myringoplasty ,the above observation showed that female patients prepondance over the male patients,the majority of the age group is in the second and third decays of life(table1).

The youngest age group is 18 years and older age group is 45

It were observed that among 50 cases ,small perforation seen 6% and medium sized perforation were 62% and remaning were subtotal perforations.(table2)

Time taken for the microscopic myringoplasty(more than 3hrs) when compared to endoscopic group is less than 3hours.

Graft uptake rate in 6months duration around 88% in microscopic myringoplasty group and 92% rate seen in endoscopic group shown in (table 4).

Hearing improvements rates were better in endoscopic than microscopic group.

At the end of 6 months all (100%) patients in the endoscopic group procedure there was no scar as it was done transcanal,but in

microscopic group post op scar and some cases delayed wound healing observed and post pain is also seen.

TABLE 1.AGE DISTRUBUTION

| AGE GROUP | No. of Patients | Percentage |
|-----------|-----------------|------------|
| 18-20 | 08 | 16% |
| 21-30 | 20 | 40% |
| 31-40 | 12 | 24% |
| 41-45 | 10 | 20% |
| Total | 50 | 100% |

The majority of patients were in the age group of 21-30 years (40%). The youngest patient in the study was 18 years old and oldest was 45.

TABLE 2.SEX DISTRUBUTION

| SEX | No. of Patients | Percentage |
|--------|-----------------|------------|
| Male | 14 | 28% |
| Female | 36 | 72% |
| Total | 50 | 100% |

This study showed 14 patients were males (28%) and females were 36 (72%).

Table-3 Type Of Peforation Based On Size On Otoendoscopy

| Size of perforation | No. of patients | Percentage |
|---------------------|-----------------|------------|
| Small | 03 | 6% |
| Medium | 31 | 62% |
| Sub-total | 16 | 32% |

Table-4 Correlation of type of surgery with graft uptake rate

| Type of surgery | No of cases | Graft uptake | Percentage |
|---------------------------|-------------|--------------|------------|
| Microscopic myringoplasty | 25 | 22 | 88% |
| Endoscopic myringoplasty | 25 | 23 | 92% |
| Total | 50 | 45 | 90% |

Among 50 cases 25 treated by endoscopic myringoplasty method graft uptake is 92% (23 cases) and 88% (22 cases) in microscopic myringoplasty. Overall success rate is 90%.

DISSCUSSION;

The study was undertaken with the objective of determine the merits and demerits of the endoscopic compared with microscopic group in myringoplasty surgery.

While operating the patients with microscope ,tortuous external canal and bony overhangs hampers the view of filed of operation ,because of which we need to manipulate the patient head frequently.

Some times canaloplasty also required,this was inturn increase post op time,in endoscopy this problem negotiated thus endoscope brings surgeon eyes to tip of the scope.

Moreover with angled scopes it is possible to visualize other structure like sinus tympani ,anterior epitympanum,facial recess which are difficult with microscope.

By avoiding the postaural incision in endoscope group,there is less dissection of normal tissue ,less intraoperative pain and better cosmetic results.

Regarding graft uptake rate 88% were observed in microscopic group and 92% were observed in endoscopic group totally 90% graft uptake rate seen in 50 patients similar to the observation by . **Vartanin¹⁰ et al(1993)** for microscopic group and in endoscopic study similar to **E.lguindy⁸(1993)** and **Tarabichi⁷(2010), Anupraj² (2001)**, but there was no significant difference between two groups.

Study conducted by Harugog³. AS, Mudhol RS, Godhi A9 on a comparative study of endoscope assisted myringoplasty and microscope assisted myringoplasty done between 2003 to 2006 concluded that surgical outcome of endoscope assisted myringoplasty was comparable to that of the conventional microscope assisted myringoplasty. But in terms of cosmetic ground the patients in endoscope group had better result. In this study it was observed that the results are at par with the work of previous worker. Objective analysis revealed that in endoscope group none (0%) of the patients had a visible scar, whereas in the microscope group, 21 (70%) patients had a cosmetically acceptable sca **Discussing the demerits:-** The biggest disadvantage is that, endoscopic ear surgery is a one handed technique.

Surgeon has to hold the scope in one hand during all the time while only one hand is free to operate. At time of excessive bleeding it becomes extremely difficult to operate as only one hand is free. Moreover blood soils the tip of endoscope which obscures the surgical field. Thus tip of endoscope has to be cleaned frequently, where as in microscopic technique both hands are free to operate. Thus procedure is easily performed in microscopic technique. Similar observation was made in studies of Tarabichi⁷ and Karhuketo¹. TS, Endoscopes provide monocular vision which leads to loss of depth perception so one has to be extra careful, while close to vital structures and positioning of the graft. This difficulty may be overcome by experience.

CONCLUSION;

In this study, the success rate of endoscope assisted myringoplasty was comparable to that of microscope assisted tympanoplasty. In terms of cosmetic and post-operative recovery, endoscope produced superior results without added expenditure. Loss of depth perception and one handed technique are some of the disadvantages of the endoscope that can be easily overcome with practice. Endoscope is ideal for ear surgery camps held in remote places. Finally it can be concluded that the type I tympanoplasty by endoscopic technique had a definite and important role in ear surgery.

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