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## Comparative study on microscopic myringoplasty and endoscope assisted myringoplasty in a tertiary care centre in Kanyakumari district

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### Abstract

**Objective:** To evaluate the efficacy of endoscopic myringoplasty and comparison with conventional myringoplasty.

**Materials and Methods:** Sixty cases of clinically diagnosed chronic supportive otitis media with dry central perforation were taken into account of which 30 cases were undergone endoscopic myringoplasty and 30 cases undergone conventional myringoplasty. All patients were followed up on 3rd, 7th, 15th day, 6th weeks, 3rd and 6th months after surgery.

**Results:** The tympanic membrane's perforation healing rate was 86% (26/30), in conventional group of myringoplasty and 83% (25/30) in endoscopic group of myringoplasty and average hearing gain in conventional group was 13.96 dB and in endoscopic group was 15.03 dB.

**Conclusion:** The surgical outcome of endoscope assisted myringoplasty in terms of graft uptake and hearing improvement was comparable to the conventional microscope assisted myringoplasty, but in terms of cosmesis and postoperative recovery patients in the endoscope group had better results.

**Keywords:** Chronic suppurative otitis media, endoscopic, myringoplasty

### Introduction

Tympanoplasty refers to any operation involving reconstruction of the tympanic membrane and/or the ossicular chain. Myringoplasty is a tympanoplasty without ossicular reconstruction. The most widely used and accepted method is underlay graft of temporalis fascia or sometimes perichondrium. The basic procedure is to excise the rim of the perforation so that there is a raw surface from which new tissue will grow. The introduction of the operating microscope has enhanced the outcome of myringoplasty by improving the accuracy of the technique. The operating microscope provides a magnified image in a straight line; hence the surgeon cannot visualize the deep recesses of the middle ear in a single operating field. With the introduction of the endoscope into other branches of surgery, there have been attempts at its utilization in otology. The first published description of imaging of the middle ear by endoscopy was by Mer et al. in 1967.

### Aims and Objectives

To determine the advantages and disadvantages of endoscope as compared to microscope in myringoplasty surgery and to compare the results of both groups.

### Materials and Methods

Total of 60 cases were taken, 30 cases for each group

### Inclusion Criteria

- Patients having small, medium and large dry central perforation of tympanic membrane.
- Patients not having evidence of active infection of nose, throat and para nasal sinuses

**Exclusion Criteria**

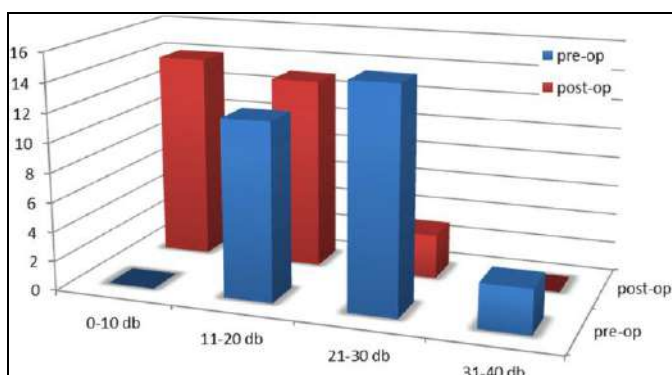
- Patients having hearing loss of sensori neural type or mixed type.
- Ossicular abnormality in pre-op or during surgery.
- Patient with clinical and radiological evidence of atticointal disease.
- Patients with history of previous surgery for chronic otitis media.

**Methodology**

- History
- Otoscope examination
- PTA – ELCON 3N3 Multi
- Operated under local anesthesia with temporal facia-underlay technique
- Follow up in 7<sup>th</sup> and 14<sup>th</sup> day with PTA at 12- 14 weeks Post-Op

**Results and analysis**

- 60 cases were examined, dividing into two groups and each group containing 30 cases were selected for the study
- 40 males and 20 female
- **Age**            **MM**                    **EAM**
- 15–25            12 (40 %)            07 (25 %)
- 26–35            09 (30 %)            13 (42 %)
- 36–45            05 (17 %)            08 (26 %)
- Above 45        04 (13 %)            02 (7 %)
- **Sex**            **MM**                    **EAM**
- Male            18 (60 %)            22 (73 %)
- Female          12 (40 %)            8 (27 %)
- Endoscope assisted myringoplasty required an average 96.32 min (range of 80–120 min) and microscopic myringoplasty required an average of 136.09 min (range of 110–160 min).
- At 6 months follow up 26 (88 %) patients had a successful outcome in the endoscope group and 27 (90 %) patients had a successful outcome in microscope group.
- Differences between two groups were not statistically significant in terms of success rate and complication rate (wet ear).



**Table 1:** Postoperative stay in hospital

Duration (days)	Conventional myringoplasty	Endoscopic myringoplasty
0-1	2	9
2-3	4	12
>3	14	9

**Discussion**

- This study was undertaken with the objective of determining the advantages & disadvantages of endoscope when compared to the conventional operating microscope in

myringoplasty surgery.

- Variations of external auditory canal like stenosis, tortuosity bony overhangs etc. hamper the view of tympanic membrane when visualized through microscope. Therefore a need to manipulate the patients head or the microscope repeatedly to visualize all the parts of tympanic membrane. Sometimes, in spite of manipulation, tympanic membrane will not be fully visualized and can alopasty has to be done.
- By avoiding post aural incision in Endoscopic Myringoplasty there is less dissection of normal tissues, less intra operative bleeding, less incidence of post operative pain and better cosmetic result.
- Avoiding post aural route also reduces chance of auricular displacement and asymmetry of pinna.
- positioning the graft was much easier and faster with the endoscope
- Unlike the microscope, the endoscope is easily transportable and hence is ideal for use in ear surgery in camps conducted in remote places.
- The disadvantage of endoscopic ear surgery is one handed technique
- Even a small amount of blood can totally obscure the view of operative field. Meticulous haemostasis is therefore a must in endoscopic ear surgery.
- Arm fatigue by the weight of the scope.
- Endoscope provides monocular vision which leads to loss of depth perception compared to the binocular vision provided by microscope and this will be noticed more by a beginner.

**Conclusion**

- The wide angle, telescopic, magnified view of the endoscope overcomes most of the disadvantages of the microscope.
- Success rate of endoscope assisted myringoplasty was comparable to that of microscopic myringoplasty. In terms of cosmosis, The scar by endoscopic myringoplasty is invisible.
- 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 in camps held in remote places.

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Not available

**Conflict of Interest**

Not available

**Financial Support**

Not available

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