



MYRINGOPLASTY AS A DAYCARE PROCEDURE: ENDOSCOPIC VERSUS MICROSCOPIC METHOD

Dr. Vijay Yoginath	Assistant Professor, Department of ENT, Sri Sidhartha Medical College, SSAHE, Tumkur, Karnataka
Dr. Suni Iqbal*	Assistant Professor, Department of ENT, Sri Sidhartha Medical College, SSAHE, Tumkur *Corresponding Author
Dr. Vidya Shree K.M	Assistant Professor, Department of ENT, Sri Sidhartha Medical College, SSAHE, Tumkur
Dr. Jothi Swarup R	Professor and HOD, Department of ENT, Sri Sidhartha Medical College, SSAHE, Tumkur

ABSTRACT **Background:** Chronic suppurative otitis media (CSOM) is a major cause of preventable conductive hearing loss in developing countries. Myringoplasty is a well-established surgical procedure for tympanic membrane perforation. With the growing popularity of minimally invasive techniques, transcanal endoscopic myringoplasty has emerged as an alternative to the conventional microscopic approach. However, limited data exist comparing both techniques specifically as daycare procedures. To compare the anatomical, functional, and perioperative outcomes of endoscopic versus microscopic myringoplasty performed as daycare procedures. **Materials and Methods:** A prospective comparative study was conducted in the Department of ENT from January 2025 to January 2026. 60 patients with inactive tubotympanic CSOM and central perforation were randomly allocated into two equal groups: Group A (microscopic myringoplasty, n=30) and Group B (endoscopic myringoplasty, n=30). All surgeries were performed under local anesthesia using temporalis fascia graft by the underlay technique. Outcomes assessed included graft uptake, air–bone gap (ABG) gain, operative duration, hospital stay, and complications. Results: Graft uptake at 3 months was 96.7% in the endoscopic group and 93.3% in the microscopic group ($p=0.55$). Mean ABG gain was 17.4 dB in the endoscopic group and 17.2 dB in the microscopic group ($p=0.95$), indicating comparable hearing improvement. The mean operative time was significantly shorter in the endoscopic group (78.7 minutes) compared to the microscopic group (101.3 minutes). All patients in the endoscopic group were discharged on the same day, whereas 13 patients in the microscopic group required overnight observation. **Conclusion:** Both endoscopic and microscopic myringoplasty are safe and effective as daycare procedures with comparable graft uptake and hearing outcomes. However, the endoscopic technique offers advantages of shorter operative time and reduced hospital stay, making it a more efficient option for daycare surgical settings.

KEYWORDS : Chronic Suppurative Otitis Media, Myringoplasty, Endoscopic Ear Surgery, Microscopic

INTRODUCTION

Chronic suppurative otitis media (CSOM) remains a significant cause of conductive hearing loss in developing countries. Persistent tympanic membrane perforation predisposes to recurrent ear infections and further hearing impairment.

Myringoplasty is the surgical repair for tympanic membrane perforation; which is a well-established procedure in the management of chronic suppurative otitis media (CSOM). It aims to reconstruct the tympanic membrane when the ossicular chain and middle ear mucosa are intact. Traditionally it is performed under an operating microscope via postauricular, endaural, or transcanal approaches. Microscopic myringoplasty was regarded as the gold standard surgical procedure because of its binocular vision and depth perception [1]. Microscopic surgery provides excellent magnification, binocular vision, and the use of both hands for better surgical manipulation. Its main limitation is the straight-line view, which restricts visualization of hidden areas of middle ear[2]. However, recent advances in endoscopic ear surgery have led to increasing adoption of the transcanal endoscopic technique as it is a minimally invasive alternative [3]. While the operating microscope has been the traditional tool, endoscopic ear surgery provides wide-angle visualization and improved access to hidden recesses[4]. Unlike microscopes, endoscopes are easily transportable and can be used in ear surgery camps. However, the dilemma remains as which technique is better. There is a paucity in data regarding which technique is better as a daycare surgical procedure. Hence, the current study was done with the aim to compare the outcomes of endoscopic vs microscopic techniques of Myringoplasty as a daycare procedure.

MATERIALS AND METHODS

A comparative study was conducted in the department of otorhinolaryngology, Sri Sidhartha Medical College, SSAHE, Tumkur from January 2025 to January 2026. Ethical approval for the study was obtained from the Institutional Ethics Committee prior to commencement of the study. A total of 60 patients of Tubotympanic CSOM with central perforation were selected for this study and randomly allocated into two equal groups. Group A with 30 patients underwent microscopic myringoplasty, while Group B with 30

patients underwent endoscopic myringoplasty, both performed under local anaesthesia.

Inclusion Criteria

1. CSOM tubotympanic inactive for at least 6 weeks and intact ossicular chain.
2. Patients of age group between 18–60.

Exclusion Criteria

1. CSOM with active discharge
2. CSOM with cholesteatoma and complications
4. History of prior ear surgery
5. Narrow ear canal
6. CSOM with safe type with ossicular discontinuity

Detailed history, physical and clinical examination of ear, nose and throat and pre operative work-up was done on OPD Basis. Patients were admitted on the day of surgery. After taking written informed consent, Pre-Operative medications were given. All procedure were done under Local anesthesia. Temporalis fascia graft was taken in both groups. Endoscopic myringoplasty was done by using 0, 30, 45, and 70 degree Hawks Rigid endoscope 2.7 mm diameter and microscopic myringoplasty was done by using Zeiss microscope via transcanal route. Middle ear mucosa, ossicular chain integrity, eustachian tube opening, and round window reflex was confirmed in both groups. Graft placed by underlay technique in both groups. Patient was discharged on next day after surgery. Follow up was planned after 1 week of surgery for suture removal and after 1 month and 6 month for graft uptake. PTA was done at 3rd month to evaluate hearing improvement. The pre-operative and post-operative audiograms, air-bone gap closure, graft uptake, hearing gain, operative duration and hospital stay were compared in both groups.

RESULTS

In our study, out of total 60 patients; 28 were males (46.6%) and 32 were females(53.3%) showing an overall female preponderance. In the endoscopic group, out of 30 patients, 18 were males and 12 were females. In the microscopic group, out of 30 patients, 10 were males and 20 were females.

In the present study, the majority of patients were in the 31–45 years group (36 out of 60; 60%), followed by the 18–30 years age group (22 out of 60; 36.6%) and the 46–60 years group (2 out of 60; 3.3%). The mean age of presentation was approximately 33.4 years. Among patients aged 18–30 years, 15 underwent endoscopic myringoplasty and 21 underwent microscopic myringoplasty. In the 31–45 years group, 15 patients underwent endoscopic and 7 underwent microscopic procedures. Both patients in the 46–60 years group underwent microscopic myringoplasty.

In our study, graft uptake at 3 months was 96.7% in the endoscopic group and 93.3% in the microscopic group. Although the difference was not statistically significant ($p = 0.55$), graft success was high in both arms. These findings support that both approaches yield high and equivalent anatomical success. Mean air–bone gap gain in our study was 17.4 dB in the endoscopic group and 17.2 dB in the microscopic group with no significant difference ($p = 0.95$). This demonstrates a comparable functional improvement in hearing thresholds between the two techniques.

Regarding the mean operative time; it is significantly shorter in the endoscopic group (78.7 minutes) compared to 101.3 minutes in the microscopic group reflecting a clear time efficiency gain. The reduced operative duration in the endoscopic group contributed to earlier postoperative recovery.

All patients in the endoscopic group were discharged on the same day of surgery. In contrast, 13 patients in the microscopic group required overnight observation before discharge. Consequently, the mean duration of hospital stay was shorter in the endoscopic group compared to the microscopic group.

No major intraoperative or immediate postoperative complications were observed in either group. There were no cases of postoperative bleeding requiring intervention, facial nerve injury, or early graft displacement. No patient required readmission within the first postoperative week.

DISCUSSION

Myringoplasty remains a standard surgical procedure for inactive tubotympanic chronic suppurative otitis media (CSOM). With the increasing adoption of endoscopic ear surgery, its application in ambulatory settings has gained importance. The present study compared endoscopic and microscopic myringoplasty performed as daycare procedures and demonstrated comparable anatomical and functional outcomes, with added perioperative advantages in the endoscopic group.

The mean age of presentation in our study was 33.4 years, consistent with previous reports where CSOM commonly affects young and middle-aged adults requiring surgical intervention [5,6]. A slight female predominance observed in our series has also been reported in comparable tympanoplasty studies.

The graft uptake rate in our study was 96.7% in the endoscopic group and 93.3% in the microscopic group, with no statistically significant difference. Similar findings have been reported by Harugop et al., who demonstrated comparable graft success between endoscopic and microscopic techniques [7]. Raj and Meher also found no significant difference in anatomical outcomes between the two approaches [8]. A systematic review and meta-analysis by Tseng et al. further confirmed that endoscopic tympanoplasty achieves graft success rates equivalent to microscopic surgery [9]. These findings reinforce that the minimally invasive endoscopic approach does not compromise anatomical success.

Functional outcomes were also comparable, with mean air–bone gap (ABG) gain of 17.4 dB in the endoscopic group and 17.2 dB in the microscopic group ($p=0.95$). Previous comparative studies similarly reported equivalent postoperative ABG closure between the two techniques [7–9]. Thus, hearing restoration remains unaffected by the choice of visualization method.

A key finding of our study was the significantly shorter operative time in the endoscopic group. Reduced surgical duration with endoscopic tympanoplasty has been consistently reported in literature [7,8]. The transcanal approach avoids postauricular incision and extensive soft tissue dissection, contributing to procedural efficiency.

Importantly, all patients in the endoscopic group were discharged on

the same day, whereas a subset of patients in the microscopic group required overnight observation. The minimally invasive nature of endoscopic surgery, associated with reduced tissue trauma and postoperative discomfort, enhances its suitability for daycare settings. Tarabichi first highlighted the advantages of endoscopic middle ear surgery, particularly improved visualization of hidden recesses without additional incisions [10]. These technical benefits likely translate into improved ambulatory feasibility.

No major intraoperative or postoperative complications were observed in either group, confirming the safety of both approaches under appropriate case selection.

In summary, while both endoscopic and microscopic myringoplasty are safe and effective as daycare procedures with comparable graft uptake and hearing outcomes, the endoscopic technique offers advantages in operative efficiency and hospital stay, making it a preferable option in ambulatory otologic practice.

CONCLUSION

Endoscopic myringoplasty is a safe, effective, and minimally invasive alternative to the microscopic technique with comparable graft uptake and hearing outcomes as a daycare procedure. The higher rate of same-day discharge in the endoscopic group highlights its logistical advantage and reinforces its suitability as a true daycare surgical procedure.

Declarations

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Conflict of Interest: The author declares no conflict of interest.

Ethical Approval: Approved by Institutional Ethics Committee.

Informed Consent: Obtained from all participants.

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