Endoscopic management of difficult tympanic membrane perforations

anterior, marginal and large perforations

Natasha Pollak, MD, MS

Associate Professor
Department of Otolaryngology – Head & Neck Surgery
Lewis Katz School of Medicine, Temple University
Philadelphia, Pennsylvania, USA
I have no conflicts of interest to disclose.

No, within the last 12 months I have not had any type of financial arrangement or affiliation with commercial interests related to the content of this continuing education activity that requires disclosure.
Repair of anterior, marginal and sub-total perforations is technically challenging and complication rates are higher.

Endoscopic approach to anterior perforations is superior to the traditional microscopic approach.

Anterior marginal perforations present a particular challenge. We review techniques to address them, adaptable to the endoscope.

Surgical decision-making is reviewed for endoscopic management of subtotal drum perforations.
Endoscopes allow the surgeon to complete more work transcanal, reducing the need for postauricular incisions.

Preserve as much normal anatomy as possible, by minimizing dissection of bone and soft tissue.

Postauricular approach: 69% have pinna paresthesia, 26% have it for 8 months or more, 3% are constantly aware of the paresthesia and are distressed. (Frampton, 2011)
Tseng CC, Lai MT, Wu CC, Yuan SP, Ding YF. Endoscopic transcanal myringoplasty for anterior perforations of the tympanic membrane. JAMA otolaryngol head neck surg, 2016.

Retrospective review of 59 tympanoplasties for anterior perforations
No control arm, results compared to historical controls
Success rate: 93%
All cases completed without need for postauricular incision and without need for canalplasty.
Marginal perforations
Surgical planning

Postauricular approach or transcanal?
Underlay or overlay (lateral graft)?
Which grafting material to use, or a combination of graft tissues?
How to address the anterior sulcus?
How to address any malleus atelectasis?
Techniques for addressing anterior marginal perforations

- medial-lateral graft
- window shade technique - Calcaterra 1972
- loop overlay
- hammock
- Kerr method – Primrose and Kerr 1986
Anterior marginal perforations

Window shade technique  - Calcaterra
1972

Swing door – Park 2018
Anterior marginal perforations

Window shade technique - Calcaterra
1972

Swing door – Park 2018
Anterior marginal perforations

Window shade technique - Calcaterra
1972

Swing door – Park 2018
Kerr method – Primrose and Kerr 1986

Graft has an anterior tag

Pull tag through a small tunnel under the anterior annulus to prevent graft from falling away anteriorly, without extensive undermining that produces anterior drum blunting.

Anterior marginal perf – underlay technique – MUST use anterior tucking
Large sub-total perforations

Same level of difficulty as anterior marginal perforations.

Suitable for endoscopic repair

Same principles are used when addressing large perforations.
Same principles are used for repair

Underlay vs overlay (medial vs lateral graft)
Ossiculoplasty at the same time or staged?
How to address atelectatic ossicles?
In lateral graft techniques, how to avoid anterior angle blunting, graft lateralization, and how to ensure contact with malleus?
In medial graft techniques, now to avoid failure in anterior angle.
Large sub-total perforations
Thank you