Outcomes Following Endoscopic Stapes Surgery

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KEYWORDS

• Endoscopic • Stapes • Stapedotomy • Stapedectomy • Outcomes
• Endoscopic ear surgery

KEY POINTS

- With experience, endoscopic stapes surgery is an effective alternative when compared to microscopic stapes surgery, with similar complication rates and audiometric outcomes.
- To date, 56.0% to 86.7% patients have had closure of their air bone gaps to under 10 dB HL following endoscopic stapes surgeries.
- Postoperative dysgeusia and pain scores appear to be improved in endoscopic stapes surgeries compared with microscopic approaches.

Video content accompanies this article at http://www.oto.theclinics.com.

INTRODUCTION

The first published case of use of an endoscope in the middle ear was in 1967, when it was used to visualize the middle ear and the integrity of the ossicular chain through a myringotomy incision.[1] With technological improvements leading to enhanced image resolution, as well as recognized acceptance of endoscopes within the field of rhinology, there has been greater implementation of endoscopes in otologic and neurotologic procedures. Now, almost 50 years after the first endoscopic description of the middle ear, surgeons are utilizing endoscopes to evaluate and remove cholesteatomas,[2–4] place cochlear implants,[5] remove vestibular schwannomas,[6] and assist with repairing dehiscent superior semicircular canals.[7] Although many of these applications are limited to a few scattered case reports, several endoscopic cholesteatoma studies have highlighted the role endoscopes play in identifying residual disease. Given the endoscope's wide angle of view and improved visualization of structures parallel to the microscope,[8] it is not surprising that there are several reports describing the role of endoscopes in stapes procedures. This article provides a summary of

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Otolaryngol Clin N Am 49 (2016) 1215–1225
http://dx.doi.org/10.1016/j.otc.2016.05.012 oto.theclinics.com
0030-6665/16/$ – see front matter

endoscopic stapes surgery, highlighting the variety of techniques and perceived advantages, as well as audiometric and patient outcomes (Fig. 1).

SURGICAL TECHNIQUE

An endoscopic stapedotomy or stapedectomy is essentially the same technical procedure as with a microscope, but a few subtle differences do exist. Although some surgeons infiltrate the ear canal with 2% lidocaine in 1:100,000 epinephrine or 0.25% Marcaine in 1:200,000 epinephrine, others place cotton balls soaked in 1:2000 or 1:5000 epinephrine for approximately 5 minutes.[9] Regardless of the technique, hemostasis is paramount to all endoscopic ear surgery, with the surgeon

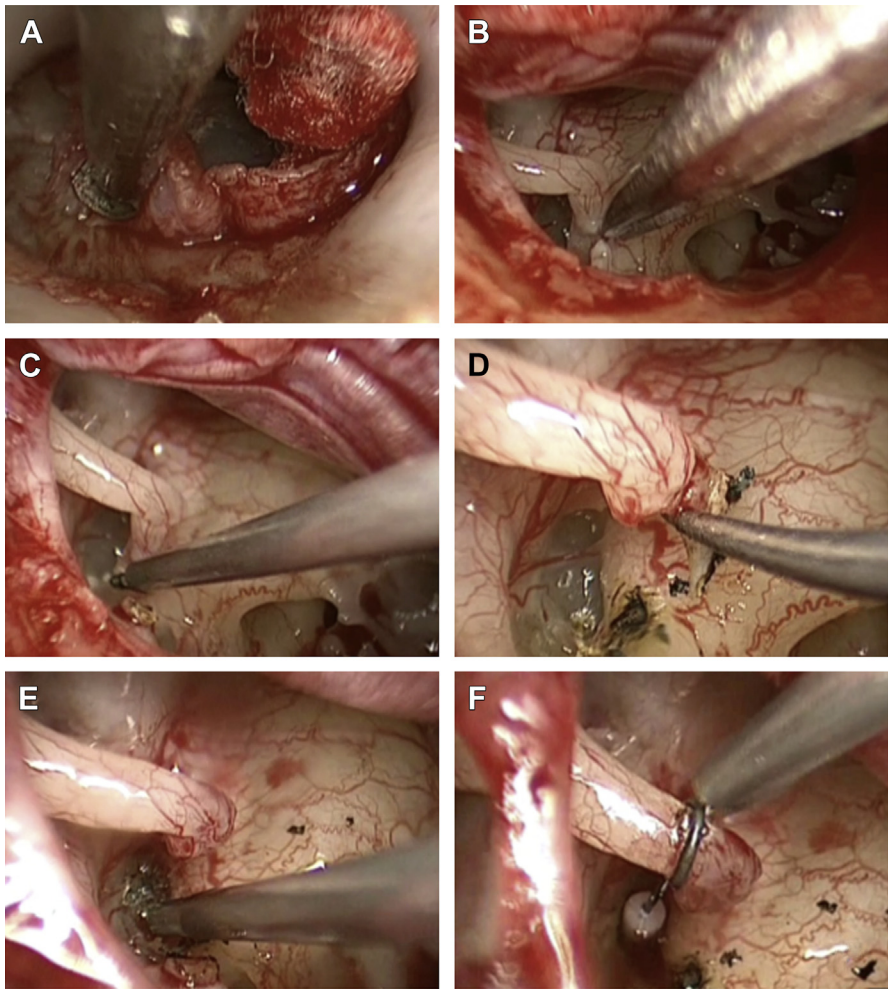

Fig. 1. Panels A–F demonstrate the various steps of a stapedotomy, while highlighting the visualization obtained with an endoscope. (*A*) Elevating the flap, in this case, utilizing a custom suction elevator. (*B*) Sectioning the stapedial tendon, in this case, with microscissors. (*C*) Lasering the posterior stapes crus. (*D*) Downfracturing the stapes superstructure. (*E*) Lasering the footplate to create a fenestra. (*F*) Utilizing the laser to crimp a Nitinol prosthesis.