

# Endoscopic Approach for Stapes Surgery

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## Introduction

Recent advances in optics have provided greater evolution with the concept of minimally invasive surgical procedures, and endoscopic approach allows higher magnification, permitting correct identification of the diseases [1-3]. Endoscopic surgeries have provided the field of Otology with many endoscopes with varying diameters and acceptable resolution. This technique is suitable for chronic otitis media, malformation of ossicles, traumatic damage, cholesteatoma, otosclerosis, and others [3].

Many previous studies validated the plausible advances in endoscopic ear surgeries, however, many of them, focused on anatomy or infective ear diseases. Daneshi & Jahandideh [1] conducted a study demonstrating the benefits of using endoscopic approach for stapes surgery, since it was necessary lesser dissection and shorter time of surgery, with comparable audiological and patients' satisfaction results [1]

Otosclerosis is characterized by a bone resorption and bone formation disease, first described by Valsalva in 1704. Surgical management is one of the therapeutic options, and started with stapes mobilization by Bousheron. Differential diagnosis includes ossicular malformations, oval or round window atresia, congenital cholesteatoma, middle ear tumors, or ossicular trauma [2]. Nevertheless, stapes surgery is still mainly performed using an operating microscope. Unfortunately, the limited number of papers regarding the outcomes of endoscopic stapes surgery precludes any amplification in its use.

Marchioni et al. [2] performed five endoscopic stapedotomies and one endoscopic stapedectomy (the one with a very complex malformed stapes). One case presented a low intraoperative gusher, and one case showed a persistent stapedia artery. In this same study, they submitted 12 patients to endoscopic correction of fixed stapes. Their mean air-bone gap was 34.4dB before surgery and 7.3dB after surgery (an improvement of 27.1dB), which demonstrates to be a very reliable tool for the diagnosis and treatment of stapes diseases [2]. In another study, 65 patients, from 4 different hospitals, underwent to endoscopic procedure, and 90% of subjects had a closure of their air-bone gap of less than 20dB [3,4].

Iannella & Magliulo [3] found similar audiological outcomes when compared endoscopic to conventional microscopic approach

[3]. Moneir et al. [5] found significant differences in preoperative and postoperative air-bone gap when compared two groups of patients submitted to different techniques (conventional microscopic versus endoscopic approach). Furthermore, they showed no differences between both techniques when compared audiological results [5].

Endoscopic stapes surgery can be attempted in all suspected cases of ossicular malformation, whereas permits a better identification of middle ear structures, facial nerve and stapes area, since traditional techniques may not always be sufficient for diagnostic and surgical management. Additionally, preliminary studies showed a decreased postoperative pain in endoscopic approach when compared with traditional technique [6]. Tympanic membrane tears, temporary facial nerve palsy, perilymphatic gusher, altered taste, dysgeusia, and accidental complete cut of the chorda tympani nerve are the possible intraoperative complications [4,5,7].

In conclusion, the few available studies have demonstrated that endoscopic stapes surgery is safe and provides similar audiological results when compared to the microscopic procedures.

## References

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