

Transcanal Endoscopic Management of Attic Cholesteatoma: Surgical Steps from a Case Report

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Abstract

This case report describes the case of a patient affected by an attic cholesteatoma treated by a totally transcanal endoscopic approach. Each surgical step of this minimally invasive technique is explained. The functional and anatomical results during follow-up are described.

Keywords: Endoscopic ear surgery; Cholesteatoma; Attic cholesteatoma; Transcanal ear surgery; Mini-invasive ear approach.

Introduction

Transcanal Endoscopic Ear Surgery (TEES) is a mini-invasive technique, used increasingly by otologists all over the world. More and more studies have proved the feasibility of this approach for many ear diseases including the cholesteatoma. The aim of this clinical report is to describe the surgical steps for the management of an attic cholesteatoma and the result for the patient.

Case presentation

We report a case of a 46-year-old man, presenting left otorrhea and a progressive hearing loss. An ear endoscopy showed an attic cholesteatoma (Figure 1). An audiogram showed he had a mild conductive hearing loss on medium and low frequencies. On the CT scan the cholesteatoma occupied anterior, lateral and medial attic, giving a lysis of the head of malleus and of the incus, no lysis of the fallopian canal, of the tegmen tympani were observed. The posterior extension of cholesteatoma was the aditus ad antrum without passing the lateral semi-circular canal. So, there were no radiological findings contraindicating a TEES. The patient accepted to be operated by this mini-invasive approach. We used Storz endoscopes of 0 and 45°, with 3 mm calibre and 14 cm length, and a full HD video.

Surgical steps: Infiltration of the external auditory canal by xylocaine and adrenaline 1% solution. A wide tympanomeatal flap was incised from 9 to 7 o'clock, a certain distance from the cholesteatoma. Cottonoid soaked in adrenaline diluted with physiological solution was used to control the bleeding. The anulus was elevated reaching the corda tympani and we accessed to the middle ear in its inferior part as shown in Figure 2. Cholesteatoma was identified just above the stapedius tendon (Figure 3) and incudo-stapedial joint was disarticulated (Figure 4). The scutum was enlarged by a curet and a 2 mm diamond burr to reach the limits of the disease (Figure 5). The tympano-meatal flap was protected by a silicon sheet. The head of malleus was cut (Figure 6) and the cholesteatoma was removed in one bloc including incus and the head of the malleus (Figure 7). All the attic, sinus tympani and aditus ad antrum were inspected minutely with a 45° endoscope, showing no residual disease. The atticotomy was reconstructed by several slices of tragal cartilage. The last piece of cartilage had its own perichondrium on the external surface. Ossiculoplasty was performed with cartilage. The tympano-meatal flap was replaced and an absorbable ear packing was applied. A non-resorbable packing of the external auditory canal was added.

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The non-resorbable and absorbable packing were removed at one week and one month after surgery respectively in outpatient service. The attic was correctly reconstructed by the cartilage and perichondrium grafts. There was a conductive hearing loss improvement on audiogram.

During follow up the ear drum was found to be stable and dry as shown on Figure 8. The patient complained of a non-disabling tinnitus only. CT scan at one year after surgery showed no anomalies with a good aeration of the attic. A diffusion-weighted MRI non-EPI showed no relapse of the cholesteatoma at 2 and 3 years after surgery (Figure 9).

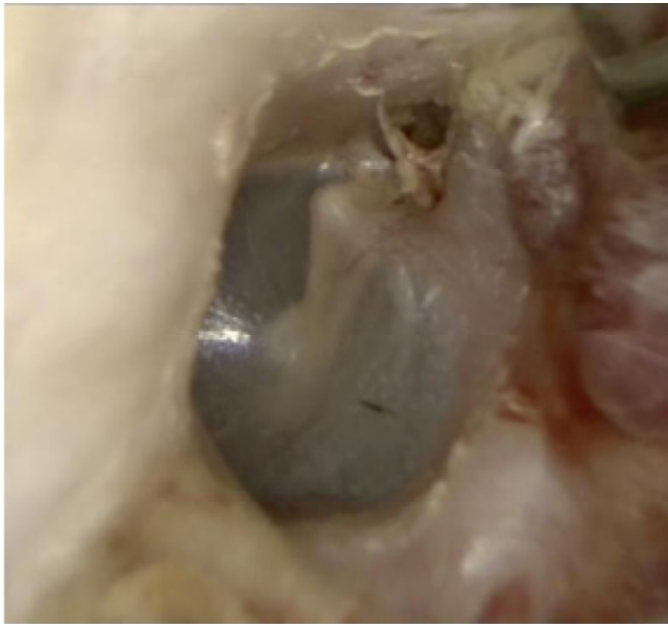


Figure 1: Attic cholesteatoma (left ear).

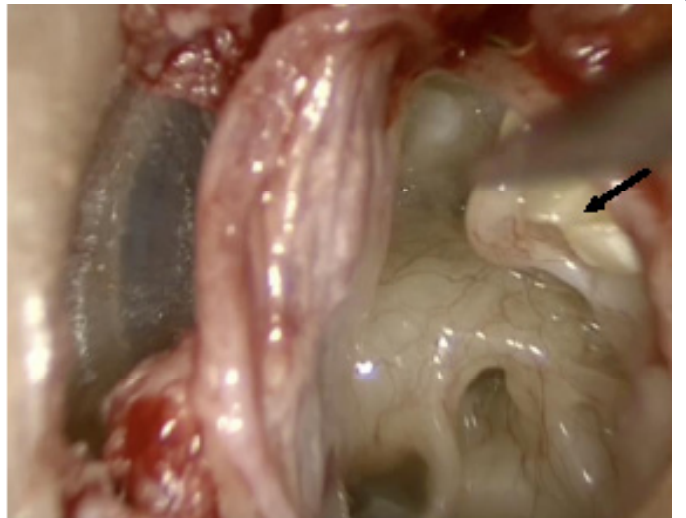


Figure 3: Inferior part of cholesteatoma (arrow).

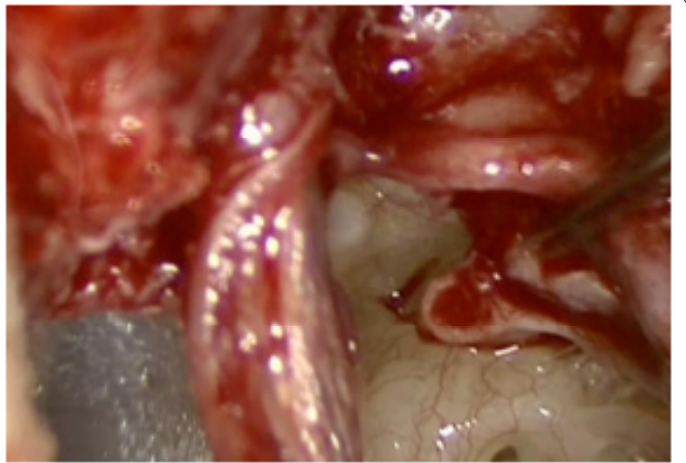


Figure 4: Incudo-stapedial joint was disarticulated to continue the removal of the cholesteatoma without risk of trauma on the inner ear.

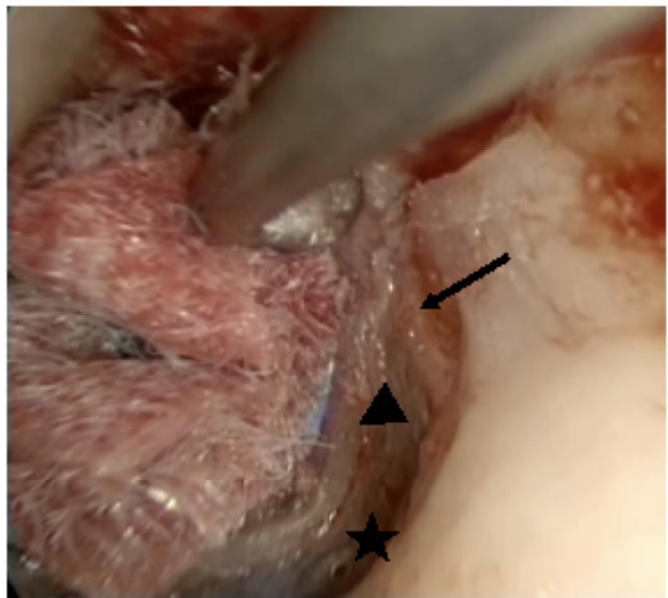


Figure 2: Corda tympani (arrow), anulus (arrowhead), area to access in the middle ear (star).

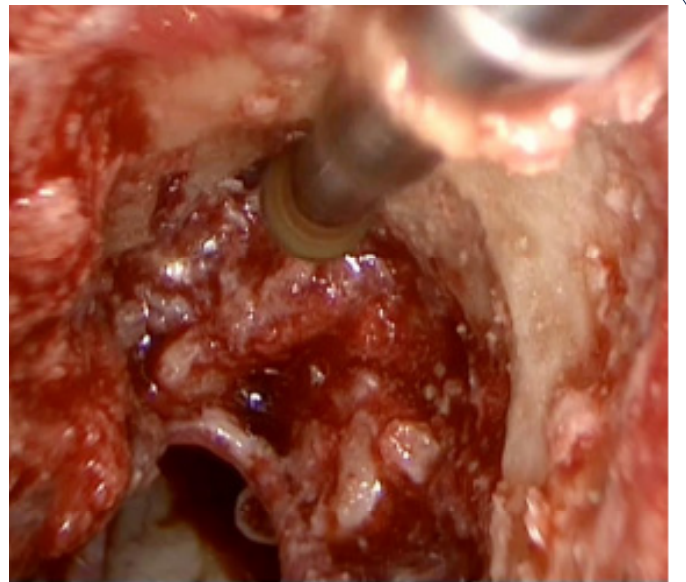


Figure 5: Atticotomy with a diamond burr.

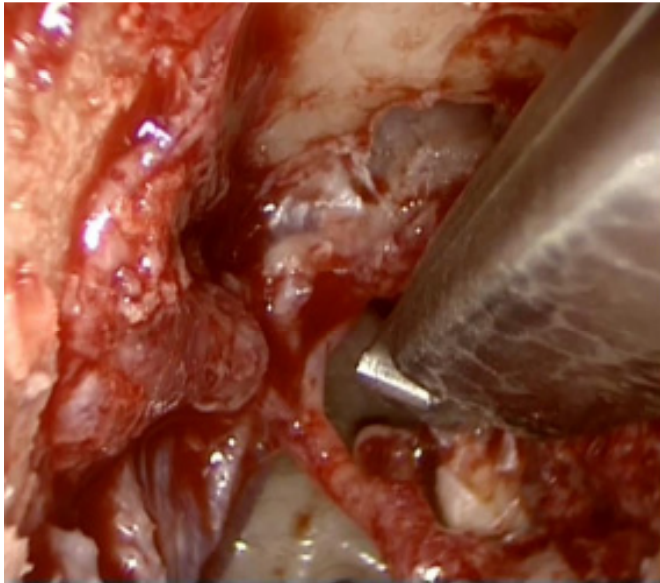


Figure 6: Cutting head of malleus.



Figure 8: Endoscopy 6 months after surgery showing a stability of the attic reconstruction by cartilage.

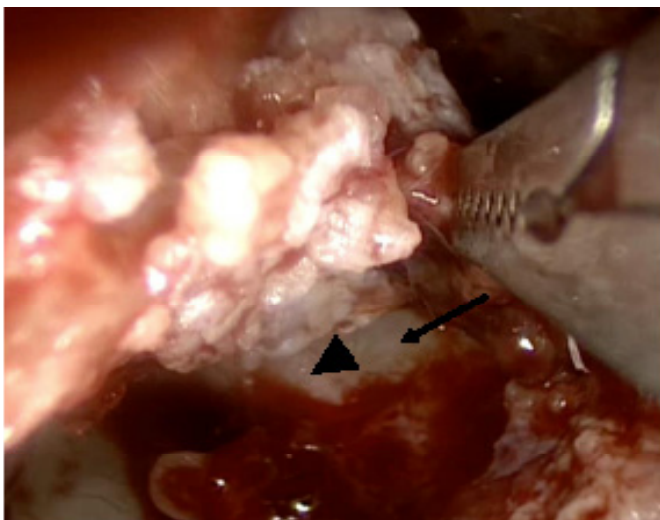


Figure 7: Once the posterior limit of the cholesteatoma was reached its removal was started. Lateral semicircular canal (arrow), second portion of the facial nerve (arrowhead).

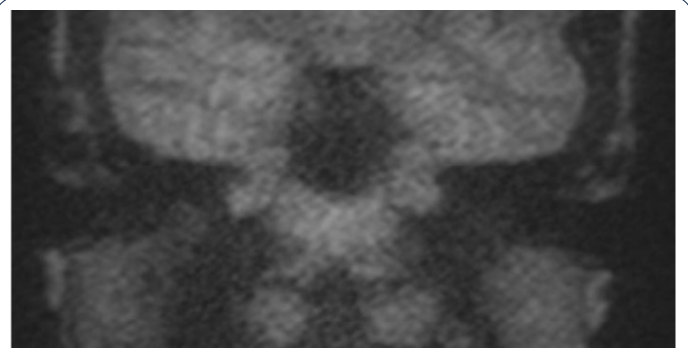


Figure 9: MRI, coronal view passing from the attic showing no recurrence of the cholesteatoma 3 years after surgery.

Discussion

The role and the utility of the endoscopic ear surgery for management of cholesteatoma has been widely discussed over the past twenty years. Tarabichi M showed in several studies that a transcanal endoscopic approach gives a wide field of view despite a transcanal approach under microscopic view [1]. El-Messelaty et al. reported on the value of endoscopy as an adjunct in cholesteatoma surgery and documented a reduced risk of recurrence when the endoscope was used [2]. The reduction in residual disease was further confirmed by Yung MW [3] and Ayache S [4]. Marchioni D and Presutti L described how opening the tensor fold during endoscopic management of cholesteatoma allows a good aeration of the attic [5].

According to the experience reported by all these authors, the case reported here confirms that TEES for attic cholesteatoma is a mini-invasive technique allowing good functional and anatomical long-term results.

Conclusion

This case report showed that attic cholesteatoma can be totally managed by a transcanal endoscopic approach with very good results, confirming that this technique is safe and advantageous for our patients.

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