

**Results:** Mean age at surgery was 10.9 years. Single stage surgery was performed in 124 ears (46.3%) (62.9% for cholesteatomas and 32.3% for retraction pockets). Second-look patients (53.7%) included 93.8% of staged surgery. Audiometric results were available for 222 ears at 1 year and for 78 ears at 5 years. Closure of the average air-bone gap (ABG) to within 20 dB was achieved in 62.2% of ears at 1 year. The mean (SD) preoperative and 1-year postoperative ABGs were 25 (11.8) dB and 18.9 (10.3) dB, respectively. Anatomical results were satisfactory in 87.3%. No cases of extrusion, resorption, or displacement of the cartilage were encountered. No statistically significant difference was found between audiometric results at 1 and 5 years. Multivariate analysis showed a significant negative correlation between preoperative and postoperative ABGs and between postoperative otitis media with effusion and postoperative ABG ( $P_{.05}$ ).

**Conclusions:** Cartilage block ossiculoplasty is a reliable technique for partial ossicular replacement. Long-term hearing outcomes remain stable and satisfactory. Preoperative ABG and postoperative otitis media are the predictive factors of the hearing outcome.

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### Congenital Cholesteatoma Associated With Congenital Ossicular Anomalies

Presenting Author: **Qiang Du**

Qiang Du<sup>1</sup>, Yasheng Yuan<sup>2</sup>, Fanglu Chi<sup>2</sup>

<sup>1</sup>Eye, Ear, Nose and Throat Hospital, Fudan University, Shanghai, China, <sup>2</sup>Department of Otolaryngology and Skull Base Surgery, Eye & ENT hospital of Fudan University

**Objective:** The purpose of this study is to describe and analyse the clinical features of congenital cholesteatomas associated with congenital ossicular anomalies.

**Method:** The clinical data of eight non-syndromic patients who were diagnosed congenital cholesteatomas associated with congenital ossicular anomalies were reviewed retrospectively. The clinical data included sex, age, symptoms, signs, audiological results, temporal bone computed tomography scan, intraoperative findings, management, pathological findings and follow-up results.

**Results:** In three cases, external ear anomalies were accompanied. In one case, an atretic plate replaced a normal tympanic membrane. In seven cases, the cholesteatoma was in the postero-superior tympanum. Only in one case, the cholesteatoma was in the anterior-superior tympanum. The ossicular anomalies were mainly incus and/or stapes anomalies. In seven cases, the ossicular chain was reconstructed after removal of the cholesteatoma. In the other case, reconstruction of the ossicular chain had been given up because of the absence of the oval window. In three cases, the hearing ability had improved. In two cases, hearing ability did not

change. All these five cases had no evidence of recurrent or residual cholesteatoma. The other three cases had been lost contact.

**Conclusion:** Congenital cholesteatomas associated with congenital ossicular anomalies is rare. The cause seems to be developmental abnormalities of the first and the second branchial arches.

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### Transcanal Endoscopic Approach for Holotympanic Cholesteatoma

Presenting Author: **Manuela Fina**

Manuela Fina

Assistant Professor, University of Minnesota

**Learning Objectives:** This narrated eight minutes video lecture demonstrates the surgical anatomy and the surgical steps involved in eradication of a holotympanic cholesteatoma through an exclusive transcanal endoscopic approach with preservation of the middle ear space and mastoid antrum and avoidance of a radical mastoidectomy.

**Objective:** This narrated surgical video illustrates the transcanal endoscopic approach to a holotympanic cholesteatoma with extension in the sinus tympani and Eustachian tube. This video demonstrates the advantages of the endoscopic approach to visualize and gain access to disease in anatomical subsites that traditionally would have required a posterior tympanotomy and a radical mastoidectomy.

**Methods:** A pre-operative endoscopic exam and a CT scan of the temporal bone were obtained for surgical planning and assessing extension of the cholesteatoma. The surgery was performed under general anesthesia. Rigid 0 and 30 degree endoscopes, 3 mm in diameter and 14 cm in length were used and connected to a three chip video camera and high definition monitor. The surgical procedure was performed working from the images on the monitor.

**Results:** The holotympanic cholesteatoma was removed utilizing a transcanal endoscopic approach by direct visualization and removal of the disease from the retrotympanum, epitympanum, periantral mastoid cells and protympanum. Reconstruction of the tympanic membrane and attic defect was performed with a composite tragal cartilage graft. The mastoid antrum was not involved and was preserved intact.

**Conclusions:** Endoscopic ear surgery is a valuable surgical technique and offers wide field visualization of the retrotympanic space, attic, periantral mastoid space and protympanum. In this video a transcanal endoscopic approach is utilized to access and remove cholesteatoma involving the sinus tympani and the Eustachian tube with mastoid preservation and avoidance of a radical mastoid cavity.