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### **Big Cholesteatoma: how to do it (1) (V647)**

**ID: 647.1**

#### **Combined Transotic – Infratemporal Fossa Approach type B for petrous bone cholesteatoma**

Presenting Author: **Enrico Piccirillo**

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**Learning Objectives:** Petrous Bone Cholesteatomas are very challenging lesions and require a thorough knowledge of skull base anatomy and surgical techniques for their management. Here we describe a unique case of a 44 year old male patient with a Massive Petrous Bone Cholesteatoma (according to the Sanna classification) encircling the petrous Internal Carotid Artery. This was excised using a Combined Transotic and Infratemporal Fossa Approach type B Approach to expose the anteromedial portions of the vertical tracts of the carotid. The cavity was closed by abdominal fat with a blind sac closure of the external auditory canal. The patient is free of disease after a 4 year follow-up.

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### **Big Cholesteatoma: how to do it (1) (V647)**

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#### **Modified Transcochlear Approach for Petrous Bone Cholesteatoma with sphenoid sinus extension**

Presenting Author: **Sampath Chandra Prasad**

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**Learning Objectives:** Petrous Bone Cholesteatomas with extensions to the sphenoid sinus are rare and pose a surgical challenge. Here we describe a unique case of a 54 year old male patient with a Massive Petrous Bone Cholesteatoma (according to the Sanna classification) extending upto the sphenoid sinus. This was excised using a Modified Transcochlear Approach (with posterior re-routing of the facial nerve) and the cavity was closed by abdominal fat with a blind sac closure of the external auditory canal. The patient is free of disease after a 4 year follow-up.

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### **Big Cholesteatoma: how to do it (1) (V647)**

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#### **Closed tympanoplasty in pediatric patient**

Presenting Author: **Anna Lisa Giannuzzi**

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**Learning Objectives:** Surgery for cholesteatoma is especially challenging in a pediatric population because of the need for hearing preservation. Hence canal wall up mastoideectomy in a single or two stages should be the approach of choice in the pediatric population. Here we describe the steps of canal wall up mastoideectomy in a difficult case of far anterior epitympanic cholesteatoma in a pediatric patient. The result was a complete removal of the disease and preservation of the ossicular chain. The patient is disease free 10 years on follow-up.

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#### **Embryology of the tympanic membrane and middle ear mucosa and its clinical relevance (K653)**

**ID: 653.1**

#### **Embryonic origin of the middle ear and its impact on function**

Presenting Author: **Abigail Tucker**

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**Learning Objectives:** The lining of the middle ear is of dual origin formed from the neural crest and endoderm in different parts of the cavity. The pars flaccida is not formed from endoderm but neural crest and ectoderm. The different tissues of the ear respond differently to ear infection. Lineage tracing experiments in the mouse can shed light on the origin of cholesteatomas.

The mammalian middle ear is a complex air-filled space housing the three middle ear ossicles, which transfer sound from the ear-drum to the inner ear. Recent lineage tracing experiments in the mouse have shown that during development this air filled space is created by the neural crest mesenchyme around the ossicles retracting back and transforming into an epithelium lining the roof (attic) and side (promontory) of the newly formed cavity. The rest of the cavity (hypotympanum) is lined by endoderm, continuous with the oral cavity via the Eustachian tube. The endoderm-derived epithelium is covered in a thick lawn of cilia, while the neural crest derived epithelial cells have a much simpler morphology. This dual origin extends to the tympanic membrane, where lineage tracing of the pars flaccida shows no endodermal contribution. This dual origin appears to be unique to mammals, evolving with the three ossicle middle ear. Defects in the cavitation process lead to defective barrier formation, leaving the middle ear susceptible to the development of middle ear problems such as otitis media and Cholesteatoma. In mice with otitis media the neural crest epithelium breaks down while the endodermally derived epithelium undergoes hyperplasia but retains much of its barrier function. We are interested in using our knowledge of the development of the ear using transgenic mice to try and identify the origins of high susceptibility to middle ear disease.