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**Learning Objectives:** Surgical training is constantly evolving with greater emphasis placed on simulation. In particular, the understanding of complex three-dimensional anatomy in temporal bone dissection necessitates significant additional training outside of the operating theatre. While virtual reality systems have been developed recently, cadaveric dissection remains the gold standard for simulation.

Several variations of temporal bone holder have been developed but all have limitations. The ideal temporal bone holder should remain stable in multiple orientations but also adjust easily. It should not obstruct the surgical view and should simultaneously provide adequate drainage of bony debris.

The temporal bone holders that are currently commercially available for both ENT departments and temporal bone laboratories, are expensive and have scope for refinement. With this in mind we have produced an extremely cheap alternative that allows trainees to maintain a stable surgical position and facilitate excellent surgical orientation.

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## ID: IP138

### The Management of Petrous Bone Cholesteotoma: A Challenging Clinical Entity

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**Learning Objectives:** 1. To demonstrate that petrous bone cholesteotomas are a complex clinical entity. 2. To show that patients with this condition often present late with significant morbidity present prior to intervention 3. To describe our clinical outcomes following surgical intervention in the context of the current literature.

**Introduction:** Cholesteotomas occurring or extending medial to the otic capsule and labyrinth are regarded as petrous bone cholesteotomas (PBC). Important anatomical structures within this area makes the management of these cases demanding. We report our experience and outcomes following surgery.

**Methods:** Case notes of patients who underwent PBC surgery over an 11 year period (2003–2014) were retrospectively analysed.

**Results:** 23 patients were identified. Median age 50 years (range 19–81). The commonest symptom was hearing loss (78.3%) with facial nerve dysfunction (69.6%) and disequilibrium (26.1%) being experienced by many. 12 (52.2%) patients had a facial nerve palsy prior to operative intervention. 11 (47%) had previously undergone ear surgery with 7 (30.4%) being for cholesteotoma. 1 (4.3%) patient had multiple episodes of meningitis and 1 (4.3%) had developed a cerebellar abscess prior to operative intervention. Preoperatively, 6 (26.1%) had a “dead” ear with 5 (21.7%) having a profound hearing loss.

In our series, 14 (60.9%) patients had a total petrosectomy with closure of the ear canal, eustachian tube and obliteration of the cavity with an abdominal fat graft. The remaining had subtotal petrosectomy (4), revision petrosectomy (3) or a combined middle fossa and trans-mastoid approach (2). Operative findings confirmed extensive disease in most cases with facial nerve (56%), dural (39%), vestibular (26%), cochlear (21%) and carotid (13%) involvement being encountered. 9 patients had post-operative complications including: wound infections (3), post aural fistula (2), facial palsy (2) and dead ear (2). Within an average follow up period of 43 months, there was 1 (4.3%) recurrence.

**Conclusion:** In our series, PBC had often become advanced prior to intervention, despite advances and increased availability of imaging techniques. Extensive PBCs are difficult to “cure” by surgery but we show good control rates with little increased morbidity from intervention.

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### A Comparison of Operative Time Outcomes in Endoscopic and Open Tympanomastoid Surgery

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**Learning Objectives:** Initial concerns regarding increased operative times when developing a novel EES practice are unfounded and should not deter otologists from becoming proficient at this technique.

**Introduction:** Endoscopic Ear Surgery(EES) has recently developed from being an adjunct to traditional microsurgery to becoming the principle methodology in select cases. Surgical use of the endoscope provides a wider field of view, increased depth of field and the ability to directly visualise ‘hidden’ areas of the middle ear.

Prolonged operative time is often considered a drawback when developing a novel application for minimally invasive surgery. There is limited data on the specific operative time of endoscopic tympanomastoid surgery compared to a conventional open approach.

**Methods:** Single-surgeon (senior author), retrospective case review of procedure time (retrieved from theatre computer logs) for patients undergoing tympanoplasty, or primary tympanomastoid surgery for cholesteatoma, during a period of transition from conventional open to a principally endoscopic ear surgery practice.

**Results:** 109 patients (7–85yrs) underwent tympanoplasty/primary cholesteatoma surgery. Entirely endoscopic technique in 22/42 tympanoplasty and 29/67 cholesteatoma procedures. Mean operative time for endoscopic tympanoplasty was 77.7 mins.(range 41–126 mins.), for open procedures 95.3 mins.(range 50–120 mins.). Endoscopic approach was quicker compared to open surgery ( $p = 0.031$ ). In mastoid surgery the mean surgical time was 154 mins.(range 91–205 mins.) for the endoscopic technique and 169 mins. (64–259 mins.) for open surgery. There was no significant difference between these two groups ( $p = 0.082$ ).

**Conclusion:** Operative time is not a drawback when transitioning from a conventional open to predominately EES otology practice. For tympanoplasty procedures it is significantly faster utilising the endoscopic approach. Endoscopic mastoid surgery has similar time to conventional techniques.

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##### Lemierre's syndrome: a difficult diagnosis

Presenting Author: **AE Louise McMurrin**

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**Learning Objectives:** We aim to identify early features common to cases of Lemierre's syndrome to facilitate prompt diagnosis and treatment.

**Introduction:** Lemierre's syndrome is an uncommon, but potentially deadly, complication of common infections of the throat and ear involving thrombophlebitis of the internal jugular vein. Oropharyngeal and auricular infections are some of the most commonly presenting illnesses so physicians must be aware of this diagnosis. However it may be easily missed as early signs are often subtle and non-specific.

**Methods:** We highlight the difficulty faced in the diagnosis of Lemierre's by presenting the case of a 15 year old boy admitted with sepsis from chronic otitis media, alongside a review of the literature.

**Results:** As seen with our patient, a common theme in cases of Lemierre's is late diagnosis. He was found to have septic

pulmonary emboli on CT pulmonary angiogram after developing breathlessness. From our literature review, the features that can aid early recognition include; headache, neck ache, tenderness over sternocleidomastoid muscle, trismus, chest crepitations and Fusobacterium grown from blood cultures. Later signs include dyspnoea, desaturations, pleuritic chest pain and other signs of septic pulmonary emboli which prompt chest imaging.

**Conclusions:** Due to the potentially fatal consequences of Lemierre's syndrome, a high index of suspicion should be applied to patients with oropharyngeal or ear infections where symptoms do not settle with 24 hours of antibiotics or where pain, trismus or chest symptoms and signs are seen. We recommend the use of CT or US to screen for IJV thrombosis earlier in the clinical course of these infections.

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##### Endoscope-assisted microsurgery for cholesteatoma removal

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**Learning Objectives:**

**Introduction:** Endoscopes can facilitate surgery within the facial recess, sinus tympani, and deep part of the round window niche, which are not fully visualized under an operating microscope. We investigated whether using endoscope-assisted dissection of cholesteatoma gave a lower incidence of cholesteatoma recurrence than using microscopic dissection only.

**Methods:** Four patients with middle ear cholesteatoma were operated on by using intact canal-wall techniques, canal-wall reconstruction techniques, or transcanal approaches assisted by endoscope-guided dissection. Eleven patients were operated on by using the same techniques but under an operating microscope alone. Comparison of group (A) microscopic surgery assisted by endoscope-guided dissection, with group (B) microscopic surgery only.

**Main Outcome Measures:** Rates of cholesteatoma recurrence, controlling for the site of the initial cholesteatoma and whether the tumor was detected by second-stage surgery or by non-echo-planar-imaging diffusion-weighted MRI.

**Results:** Five patients in group B (5/11, 45%) had cholesteatoma recurrences in a follow up of 1 year that needed to be surgically removed. No group A patients (0/4, 0%) developed cholesteatoma recurrences in that period.