Introduction: The retrotympanum (facial recess and sinus tympani) is involved in a high percentage (48%) of cases of cholesteatoma. This subsite of the mesotympanum presents particular challenges in terms of access for removal of disease. Approaches suggested have included posterior tympanotomy (Janssen) and endoscopic transcanal (Tarabichi).

Method: The operation is described in detail using photography, diagrams and video material. The surgical principles are to use:

- visualization of the facial nerve at the 2nd genu.
- skeletonization and mobilization of chorda in its course through the bone down towards its branching off facial nerve above the stylomastoid foramen.
- the principle that chorda is always superficial and anterior to facial nerve.
- that if bone is removal only superficial and anterior to chorda, the facial nerve cannot be injured.

We report the use of this technique in a series of 247 cholesteatomas involving the facial recess and sinus tympani. A literature search shows that Farrior (1968) described some aspects of this approach.

Results: This surgical approach provides adequate access to this difficult anatomic area for cholesteatoma visualization and removal – far better than posterior tympanotomy. It provides binocular vision and the possibility of using both hands, unlike the endoscopic approach. In our series, adequate access was provided in 99% of cases – in only 2 cases was there any doubt about complete removal of the invasive sac. In no case was there injury to the facial nerve.

Conclusion: Retrotympanotomy from anterior, mobilizing and using chorda tympani for guidance, is a safe and reliable way of removing cholesteatoma from the facial recess and sinus tympani.

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Free Papers (F862)

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Can we reduce rates of residual cholesteatoma by improving the clarity of the operative field? A multivariate analysis

Presenting Author: **Gavin le Nobel**

Gavin le Nobel[1], Sharon Cushing[2], Blake Papsin[2], Adrian James[2]

[1]*University of Toronto,* [2]*Hospital for Sick Children*

Learning Objectives: 1) to demonstrate the influence of impaired surgical field clarity due to intraoperative bleeding on development of residual cholesteatoma. 2) To emphasize the importance of implementing methods to minimize surgical site bleeding, such as hypotensive general anesthesia.

Introduction: Sites within the middle ear and mastoid with limited visualization are more frequently implicated in residual cholesteatoma. We hypothesize that other factors leading to compromised surgical field visualisation may similarly affect rates of residual cholesteatoma. The objective of this study was to evaluate whether impairment of surgical site visualisation from intra-operative bleeding contributes to the risk of residual cholesteatoma.

Methods: Data were collected prospectively on a consecutive series of children having intact canal wall surgery for cholesteatoma at an academic pediatric hospital. Clarity of surgical field was assessed intra-operatively on a six-point rating scale and categorized as minimally compromised (grades 0-I) or significantly compromised (grades II-V). Presence of residual cholesteatoma was assessed at follow up clinical encounters, second stage procedures, and with MRI.

Results: Surgery was completed on 224 ears, during which 82 (37%) had minimal visual field compromise from bleeding. Residual cholesteatoma was identified in 38 (17%) of ears, with only 8 (9.8%) in cases with minimal bleeding at first surgery, and 30 (21%) in cases with significant bleeding. Predictors of residual disease on univariate regression analysis included severity of bleeding ($p = 0.029$), extent of cholesteatoma ($p < 0.001$), years of surgeon's experience ($p = 0.0045$). Age and type of cholesteatoma were not found to be significant. Multivariate regression analysis demonstrated that the most robust predictor was extent of cholesteatoma ($p < 0.001$).

Conclusions: Impairment of surgical field visualization from intraoperative bleeding is one factor that contributes to the presence of residual cholesteatoma. These findings support the use of techniques, such as hypotensive general anesthesia, that minimize surgical site bleeding and improve surgical field visualization.

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Free Papers (F862)

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Over a hundred endoscopic ear surgery cases; surgical outcomes of a starting practice

Presenting Author: **Maarten de Wolf**

Maarten de Wolf[1], Chris Coulson[2]

[1]*Academic Medical Center, Amsterdam, The Netherlands,* [2]*Department of Otorhinolaryngology, Queen Elizabeth Hospital, Birmingham, United Kingdom*

Learning Objectives:

- Basic principles of endoscopic ear surgery.
- Surgical results from a starting endoscopic ear surgery practice including cholesteatoma and tympanoplasty.

Introduction: Endoscopic ear surgery offers an unparalleled view of the middle ear thanks to the wide-angle field of view and is increasingly gaining popularity amongst ENT-surgeons worldwide. However, the transition from operating with the microscope to the endoscope is challenging,

primarily due to operating one-handed, but also adjusting to the different view achieved with the endoscope.

Methods: This study shows a preliminary retrospective overview of a consecutive series of all endoscopic ear surgery cases performed by one ENT-surgeon since starting his EES practice two years ago.

Results: Hundred and five consecutive patients were included in the study group, including 46 cholesteatoma cases, 52 type 1 tympanoplasties and 7 PORP ossiculoplasties. No major adverse events or incidences were noted. In 3 cases the endoscopic approach had to be converted to a microscopic post auricular approach for complete removal of cholesteatoma. Overall, 9 out of the 105 surgeries (8.6%) resulted in a postoperative residual perforation. In one case recurrence of cholesteatoma was noted 21 months post operatively. Overall average follow-up time was 6.4 months (range 1–20 months).

Conclusions: Results demonstrate that a surgeon can pick up the necessary skills relatively quickly and achieve acceptable success rates while delivering the reduced morbidity associated with EES.

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Retraction Pocket (N863)

ID: 863.1

The role of endoscopy in retraction pockets

Presenting Author: **Presutti Livio**

Presutti Livio
University Hospital of Modena

Background: It is well known that Eustachian Tube (ET) plays a crucial role in maintaining middle ear aeration and atmospheric pressure. Usually inflammatory middle ear chronic disease is related to ET dysfunction due to poor tympanic ventilation. Although middle ear aeration is certainly related to ET function, other anatomic factors play an important role in ventilation of these spaces. Actually epitympanum aeration is strictly dependent to the ventilation pathways; if the tensor fold and the lateral incudo-malleal fold are complete the only ventilation pathway to the epitympanum is through the tympanic isthmus. In such cases when an isthmus blockage occurs the ventilation of epitympanum may be impaired and the only gas exchange would comes from the mucosa of mastoid cells. This scenario describe a selective epitympanic disventilative syndrome, possibly not related to ET impairment.

With introduction of the endoscope in middle ear surgery, anatomy of middle ear spaces has become wider and clearer due to a better magnification and to the possibility to look "behind the corner" and to better understand the ventilation pathways, particularly in patients with retraction pockets.

Materials and methods: From December 2008 to December 2015, 470 tympanoplasty were performed with exclusive endoscopic approach; All patients candidate to ear surgery underwent to high resolution CT-scan, audiometric and impedenzometric evaluations. Inclusion criteria in our study were patients affected by not-self cleansing attic retraction pocket. Subjects affected by a disease of the epitympanic compartments (not self cleansing retraction pockets of the attic; epitympanic cholesteatoma) and with type A tympanogram were included in present study.

Exclusion criteria: subjects affected by a disease involving the protympanic, the mesotympanic and the retrotympanic region, or patients who previously underwent middle ear surgery.

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Retraction Pocket (N863)

ID: 863.2

Paediatric retraction pocket: prevention and treatment

Presenting Author: **Nicola Quaranta**

Nicola Quaranta
University of bari

Learning Objectives: To discuss the classification, preventio and treatment of pediatric retraction pockets.

Tympanic membrane retraction pocket (RP) is defined as an inward displacement of the TM from its normal position. It is characterized by partial collapse of the meso or epitympanic spaces, which correspond clinically to a retraction of a portion of the TM in its pars tensa (PT) or pars flaccida (PF). Even if several classification have been proposed, there is not a consensus in the treatment of this condition. The available classification systems will be reviewed as well as the medical and surgical treatment proposed.

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Retraction Pocket (N863)

ID: 863.3

Retraction Pockets: Overview and Randomized Study

Presenting Author: **Maurizio Barbara**

Maurizio Barbara[1], Edoardo Covelli[2], Luigi Volpini[2]
[1]Sapienza University Rome, [2]Sapienza University NESMOS Department Rome Italy

Background: The attitude of treatment of retraction pockets (RP) depends on several factors that include age of the patient, stage of the disease and patient's compliance. Silent forms usually do not need any surgery, although the presence of predisposing factors (craniofacial malformations, for example) and/or the young age could indicate a preventive surgical procedure. For the advanced stages, where periodical cumulation of debris occurs, surgery would seem to be mandatory.