

*Learning Objectives:*

**Introduction:** Totally endoscopic ear surgery (TEES) facilitates cholesteatoma treatment giving enhanced visualization of middle ear recesses without the post-operative morbidity of open surgery. TEES is not as yet an acceptable option for all cases, or indeed all surgeons. This study reports on factors influencing the adoption of TEES in paediatric cholesteatoma by a single surgeon.

**Methods:** A paediatric cholesteatoma surgery database, maintained over an 11 year period, was searched to determine the proportion of cases completed by TEES or an open post-auricular approach each year. Comparison was made with factors potentially linked to the surgeon's ability to perform TEES including extent of cholesteatoma, patient age, availability of equipment and attendance at endoscopic courses.

**Results:** Of 649 surgeries 86 were by TEES and 37 by endoscope transcanal with microscope-guided assistance. The proportion of TEES cases per year increased from 1/75 (1%) to 35/57 (61%) over the last 7 years. Empirically, this increase correlated with acquisition of specialised instruments and attendance at courses. Overall, TEES cases were less extensive (median Mills stage: 1 versus 2;  $p < 0.001$ , MannWhitney) but similar in age (median 11.5 v 10.8 yr NS, MannWhitney). Over the last 50 open cases, extent of disease (54%), narrow ear canal (30%) and defect too large for reconstruction (12%) were noted as the commonest factors for utilising an open approach. Most recently, endoscopic canalplasty and non-autogenous grafts have further increased the range of TEES.

**Conclusions:** Cholesteatoma can be treated in a majority of children with TEES, but an open approach is still required when the ear canal provides inadequate access to the limits of the disease. The surgeon's ability to complete TEES is enhanced by appropriate training, acquisition of specialist instruments, motivation and experience. Development of surgical techniques is allowing a greater proportion of cases to be completed endoscopically.

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**ID: IP078**

### Extratympanic imaging of middle and inner ear structures of the mouse and rat model using optical coherence tomography(OCT)

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*Learning Objectives:*

**Background and Objective:** Noninvasive middle and inner ear imaging using Optical Coherence-Tomography (OCT) presents some unique challenges for real-time, clinical use in animals and humans. OCT has been used in other fields for obtaining high-resolution cross-sectional images of the tissue. The goal of this study was to investigate whether

OCT provides information about the middle and inner ear microstructures in both rats and mice by extratympanic approach.

**Materials and Methods:** Six BALB/c mice and Sprague Dawley rats were enrolled to the experiment, and to acquire an image of the entire tympanic membrane, the auricle and cartilaginous external auditory canal were removed, the swept-source OCT system was tested to identify the middle and inner ear microstructures. After that, the TM and bulla were removed to confirm whether more detailed middle and inner ear images might be obtained.

**Results:** It was possible to image through the tympanic membrane extratympanically and into the middle ear cavity involving several middle ear structures in both rats and mice. We could also obtain the inner ear images through the otic capsule and into the cochlea in the mice by extratympanic approach. However, the bulla should be removed to provide the inner ear structural images in the rats. The whole cochlea of the apical, middle and basal turn could be visualized and the bony thickness of the otic capsule covering the cochlea could also be measured simultaneously.

**Conclusions:** OCT is a promising technology to noninvasively assess middle ear and inner ear microanatomy in both mice and rats. These findings are meaningful because there were no previous report to describe the middle and inner ear structure looking by extratympanically. This imaging informations can be useful in the diagnosis of diseases of the middle and inner ear if it is clinically applied through further studies.

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### The Perioperative Strain Changes of Chronic Otitis Media Surgery

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*Learning Objectives:* chronic otitis media culture strain.

**Introduction:** The perioperative prophylactic antibiotic of chronic otitis media (COM) surgery is selected based on the result of preoperative bacterial culture. Learning objectives: To investigate the changes of strains of middle ear through COM surgery, we conducted bacterial culture before, during, and after COM surgery. Method: We analyzed the medical records of 156 patients who received COM surgery at Daejeon St. Mary's Hospital from March 2012 to September 2015. Preoperative bacterial culture was conducted with otorrhea or swap of middle ear mucosa, intraoperative culture was conducted with granulation tissue in either the middle ear or mastoid cavity, and postoperative culture was selectively conducted when otorrhea was developed after surgery. Results: Sixty cases of tympanoplasty only and 96 cases of both tympanoplasty and mastoidectomy were performed for 111 cases of COM-without-cholesteatoma and 45 cases of COM-with-cholesteatoma. The growths of