

otologists and the patients they treat. It expands the utility of these devices in the community and in the developing world where diagnostic audiology services are scarce. We aim to review automated hearing testing systems which do not require testing in traditional sound treated booths. We will discuss the evidence supporting portable automated hearing testing systems which are available on the web and those that are independent applications for smartphones or tablet computers.

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## New diagnostic method in otology (N645)

**ID: 645.3**

### High Frequency Ultrasound and Optical Coherence Imaging in the Ear: The Future of Otologic Imaging?

Presenting Author: **Manohar Bance**

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*Learning Objectives:* 1. To review limitations in current imaging 2. To review the principles of high frequency ultrasound 3. To review the principles of optical coherence imaging 4. To illustrate uses of these technologies in otology.

Current imaging tools for the ear are limited in their resolution, and also have significant downsides, such as radiation, or interaction with metallic objects.

We have been developing new technologies based on very high frequency ultrasound (>40Mhz), and optical coherence tomography (OCT). These technologies have been developed in-house in our labs. We will present the present capacity of these devices, including in-vitro temporal bone measurements of anatomy, simulated pathology, and vibration measurements, as well as tracking cochlear implants during insertion. We also have in-vivo measurements using the OCT device. We will present possible uses, both in the middle ear, and in the cochlea and inner ear.

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## Hearing reconstruction in chronic ears (R646)

**ID: 646.1**

### Using cements for ossiculoplasty

Presenting Author: **Levent Sennaroglu**

Levent Sennaroglu

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*Learning Objectives:* Since 2004 we have been using glass ionomer cement during ossiculoplasty. In the beginning we were using cement only for incus defects between incus and stapes but later on cements are used in many other situations as well. Recently we compared ossiculoplasty results in different situations: 1-incus to stapes 2- malleus to stapes 3-incudoplasty + stapedotomy 4-malleus to incus In this presentation short video clips of each situation will be provided together with audiological outcome.

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## Hearing reconstruction in chronic ears (R646)

**ID: 646.2**

### Ten cases of cholesteatoma with labyrinthine destruction, skull base involvement and intracranial extension: management and long-term follow-up

Presenting Author: **Douglas Backous**

Christina Cobb, Douglas Backous

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*Learning Objectives:*

*Objectives:* We analyze the clinical presentation, imaging findings, and surgical treatment of 10 patients with acquired cholesteatoma with labyrinthine destruction, skull base erosion, or intracranial extension.

*Study Design:* A retrospective case series at a tertiary referral center.

*Methods:* From 1997 to 2015, 6 males and 4 females, age 12 to 73 (mean, 42.3), years were treated for acquired cholesteatoma with skull base or labyrinthine invasion. Two patients had no prior surgery while 8 had an average of two prior procedures. All 10 complained of hearing loss, 3 had otorrhea, 3 had acute facial palsy, 3 had otalgia and 2 presented with progressive imbalance. Follow-up ranged from 8 to 216 (mean, 76.6) months. Audiometric, CT and MRI findings are compared to intraoperative outcomes.

*Results:* At surgical exploration, 2 patients had cholesteatoma with destruction of the cochlea, 4 had skull base invasion and 4 had intracranial involvement. Five patients required temporal bone obliteration, 2 had radical cavities with exteriorization of the petrous apex, and 3 required modified radical cavities. One patient with VII palsy recovered to HB grade III. One patient with labyrinthine destruction maintained residual hearing post op. No patients had additional complications from their definitive surgical procedures.

*Conclusions:* Acquired cholesteatoma with labyrinthine destruction, skull base extension, and intracranial involvement can have surprisingly subtle presentations. Balancing disease exteriorization with preserving labyrinthine function requires prudent radiological workup and surgical planning. Disease eradication is often not possible. Long-term clinical follow-up with periodic imaging and aggressive debridement is often necessary for disease control.