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*Learning Objectives:*

*Introduction:* Patients with air bone gaps can be treated with bone conducting hearing aids. The disadvantages of the conventional and percutaneous systems are the obvious external fixation components or the biological and psychosocial problems of open implants. This project was set up to develop a semi-implantable transcutaneous bone conducting device, introduce it into clinical application and follow-up on the results.

*Material and Method:* The principle of this bone conducting device is the magnetic coupling between implanted and external magnets. After extensive lab tests it was introduced clinically in 2006. Since then there have been performed more than 300 implantations in Recklinghausen and more than 3000 worldwide.

*Results and Conclusions:* The operative technique is relatively simple. With the new “Up-Side-Down-Technique” bone does not have to be removed at all anymore. The 2.6 mm thin implants are hardly palpable. The hearing improvement is similar to other bone conducting hearing aids. This semi-implantable transcutaneous bone conduction hearing device is another option for patients with CSOM, air-bone-gaps, mixed hearing loss or single sided deafness.

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## Bone conduction hearing devices in CSOM (R764)

**ID: 764.3**

### Bone conducting hearing devices for chronic suppurative otitis media – which device should we should?

Presenting Author: **James Tysome**

James Tysome

Cambridge University Hospitals

*Learning Objectives:* To understand the factors influencing choice of BCHD in the context of a conductive or mixed hearing loss found in patients with CSOM.

*Introduction:* Bone conduction hearing devices (BSCD) are well established for use in patients with chronic suppurative otitis media (CSOM). The rationale for using BCHD over conventional hearing aids when surgical reconstruction is not effective will be discussed, the factors important in choosing between them discussed and the options available introduced. The remaining speakers in this session will describe these in detail.

*Methods:* Structured review of options for BCHD in CSOM including maximum power output (MPO) and feasibility.

*Results:* The MPD of BCHD varies and should be taken into account when choosing a device to use in patients with CSOM.

*Conclusions:* All BCHD are suitable for use in patients with CSOM that cannot otherwise be improved by middle ear surgery, although the device choice depends on the degree of conductive or mixed hearing loss, MPO as well as feasibility, availability and patient choice.

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## Bone conduction hearing devices in CSOM (R764)

**ID: 764.4**

### Outcomes of implantation and willingness of BAHA candidates to undergo BAHA implantation

Presenting Author: **Michal Luntz**

Michal Luntz, Amjad Tubia, Riad Khnifes, Amit Wolfowitz, Talma Shpak, Noam Yehudai

*Bnai Zion Medical Center, Technion – The Bruce Rappaport Faculty of Medicine, Haifa, Israel*

*Learning Objectives:* To evaluate hearing and medical outcomes with contemporary BAHA implants as well as willingness of BAHA candidates who suffer from chronic otitis media to undergo BAHA implantation.

*Introduction:* Osseo-integrated bone-anchored hearing implants are used in patients with conductive/mixed complex hearing loss, when other rehabilitation alternatives are not feasible.

*Methods:* The study included two groups of patients: 62 candidates with COM who were referred for BAHA during 2012–2015 and 34 BAHA implantees. Information in the first group was collected regarding the willingness of these individuals to receive a BAHA implant. In the second group, hearing thresholds before and after implantation were analyzed and patients were asked to complete a questionnaire regarding their habitual daily use of the system and medical issues related to the implant.

*Results:* Out of 62 BAHA candidates, only 21 (34%) decided on BAHA surgery. Of the 34 BAHA implantees, 30 (88%) are using their devices. Recurrent local infection surrounding the abutment have led 4 patients with older generation BAHA connect to stop using their device, and two of them had it surgically removed. The other two are scheduled for replacement to a BAHA attract device. Hearing outcomes with BAHA implants mirror bone conduction thresholds in the BAHA Connect group and are slightly below bone conduction thresholds in the BAHA Attract group. Pre-implantation thresholds with the BAHA Soft Band predict post-implantation BAHA Connect as well as BAHA Attract thresholds.

*Conclusions:* Hearing outcomes with BAHA implants are good and predictable. The only reason for non-use is medical issues concerning the abutment in older generations BAHA Connect systems. Despite excellent experience among BAHA users and professionals, these technologies

are still under-utilized, even in those for whom BAHA is the only hearing solution.

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## Diagnostic Dilemmas of CSOM (R766)

**ID: 766.1**

### Diagnosis and Treatment Strategy of Necrotizing Otitis Externa

Presenting Author: **Takashi Nakagawa**

Takashi Nakagawa

*Kyushu University Graduate School of Medical Sciences*

*Learning Objectives:* Although necrotizing otitis externa is life-threatening disease, it is difficult to be diagnosed and treated. Several points for diagnosis and the results of treatment would be reported.

Necrotizing otitis externa is osteomyelitis of skull base originated from the floor of external auditory canal. Most of them are optimizing infection, mainly DM. Main pathogen is *Pseudomonas Aeruginosa*. Although clinical features are clear, it is difficult to reach a correct diagnosis. Symptoms are sometimes masked by anti-biotics and analgesic drug. Severe pain, patient background such as DM, and granulation formation could be clue for suspicion. Both CT and MRI are useful for diagnosis and estimation for the extent of disease. Biopsy leads to definite diagnosis. First line of treatment is conservative approach. Appropriate antibiotics should be chosen and patient background disease would be controlled. Surgical intervention is useful when well-pneumatized mastoid is infected.

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## Diagnostic Dilemmas of CSOM (R766)

**ID: 766.2**

### Pathogenesis and diagnosis of Otitis media with ANCA-associated vasculitis (OMAAV)

Presenting Author: **Naohiro Yoshida**

Naohiro Yoshida

*Jichi Medical University Saitama Medical Center*

*Learning Objectives:* Antineutrophil cytoplasmic antibody (ANCA)-associated vasculitis (AAV) is histologically characterized by systemic necrotizing vasculitis and is clinically classified into two phases, systemic or localized. Recently, otological symptoms such as otitis media and hearing loss, not previously often associated with AAV, have been reported in AAV cases. Delayed diagnosis of AAV occasionally leads to progression to the irreversible phase; therefore, diagnosis at the early-localized stage is important for treating AAV. In this session, the current understanding of this newly proposed concept of OMAAV is discussed.

Antineutrophil cytoplasmic antibody (ANCA)-associated vasculitis (AAV) is histologically characterized by systemic necrotizing vasculitis and is clinically classified into two phases, systemic or localized. Recently, otological symptoms such as otitis media and hearing loss, not previously often associated with AAV, have been reported in AAV cases. By reviewed previous case reports, such disease was proposed to be categorized as “otitis media with AAV (OMAAV).”

Nationwide survey (total 235 cases) performed between December 2013 and February 2014 by the Japan otological society presented the following features: 1) otitis media following sudden progressive hearing loss almost in one month; 2) intractable otitis media not effected by antibiotics and tympanic tube insertion; 3) mostly PR3- and/or MPO-ANCA positive but 16% showed both ANCAs-negative; 4) occasionally clinical complications such as facial palsy (36%) or hypertrophic pachymeningitis (28%); 5) tympanic membrane showing a dull appearance similar to OME and vessel dilatation of tympanic membrane ‘OME type’, otitis media with granulation ‘OMG type’, or normal appearance only with sensorineural hearing loss; 6) effectiveness of corticosteroid and immunosuppressive therapy using cyclophosphamide or methotrexate. By analysis of these clinical features, four factors such as facial palsy, hypertrophic pachymeningitis, both ANCAs-negative phenotype, and disease relapse were related to an unfavorable clinical course for patient’s hearing and prognosis. Delayed diagnosis of AAV occasionally leads to progression to the irreversible phase; therefore, diagnosis at the early-localized stage is important for treating AAV.

In this session, the current understanding of this newly proposed concept of OMAAV is discussed.

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## Diagnostic Dilemmas of CSOM (R766)

**ID: 766.3**

### Clinical characteristics and diagnostic criteria of eosinophilic otitis media

Presenting Author: **Yukiko Iino**

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<sup>1</sup>Tokyo Kita Medical Center, <sup>2</sup>Jichi Medical University Saitama Medical Center

*Learning Objectives:*

*Introduction:* Eosinophilic otitis media (EOM) is an intractable otitis media characterized by the presence of a highly viscous yellow effusion containing eosinophils. It mainly occurs in patients with bronchial asthma and is resistant to conventional treatments for otitis media.

*Methods:* We reviewed 138 patients with EOM and 134 age-matched patients with common type of otitis media to analyze their clinical characteristics and to make diagnostic criteria of EOM.

*Results:* EOM predominantly affects females and occurs most often in patients in their 50s. EOM is often complicated by rhinosinusitis and nasal polyposis, which is called