

due to the unlimited availability and the alleged antibacterial, osteoconductive and osteopromotive properties. Here we report on the safety and efficacy of the use of S53P4 as obliteration material in cholesteatoma surgery.

**Methods:** Retrospective cohort study carried out in a secondary referral center. All patients were treated for cholesteatoma with tympanomastoidectomy and mastoid cavity obliteration using S53P4 granules between 2012 and 2015. Main outcome measures were procedure safety, cholesteatoma recurrence, and functional outcome (hearing levels and incidence of otorrhea).

**Results:** One hundred eleven patients (111 ears) were included. Mean age was 36 years (range 7–80). Eighteen patients were treated with canal wall up tympanoplasty. Ninety-three patients underwent a canal wall down procedure. Mean follow-up was 12.6 months. No wound infections occurred. Cholesteatoma recurrence was 9% (CWU: 17%, primary CWD: 8%, revision CWD: 0%). A dry ear was achieved in 96% of patients. No cases of perceptible hearing loss were encountered. Preparing and implanting the S53P4 granules was technically feasible.

**Conclusions:** S53P4 bioactive glass granules are safe and easy to use as a filler material in mastoid obliteration. Obliteration of the mastoid cavity with S53P4 granules resulted in less recurrences as compared to our previous results without obliteration

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## Free Papers (F632)

### ID: 632.5

#### Subtotal petrosectomy performed between 2005 and 2015 in a tertiary referral centre in the Netherlands: indications, outcome and follow-up

Presenting Author: **Tom Crins**

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**Learning Objectives:** Subtotal petrosectomy is a 'last resort' type of surgery where complex anatomy in pathologic ears makes surgery difficult. In case of cholesteatoma, residual disease remains an issue, but as long as patients lack any complaints, follow-up with diffusion-weighted MRI may be acceptable.

**Introduction:** In chronic otitis media (COM) (with or without cholesteatoma) a subtotal petrosectomy can be a 'last resort' surgical treatment after multiple prior surgeries. Subtotal petrosectomy can also be used as part of a lateral skull base procedure or as a first stage preparation before cochlear implantation. This study describes the results of subtotal petrosectomies performed in our center between 2005 and 2015, mainly focussed on COM.

**Methods:** All patients who underwent a subtotal petrosectomy in our centre between 01-01-2005 and 01-03-2015 were included in this retrospective chart review. Patient

characteristics, pre-operative complaints and indications for surgery were noted. The main outcome measure for COM patients was complete eradication of the disease and resolution of otorrhea. Complications and number of necessary revision surgeries were noted.

**Results:** A total of 56 patients (57 ears) were identified. Indications for subtotal petrosectomy were chronic otitis media (COM) with cholesteatoma (n = 28), COM without cholesteatoma (n = 12), prior to cochlear implantation (n = 4), oncology (n = 7) and 'other' (including 2 cases of liquorrhea) (n = 6). Of all COM cases (n = 40) 30 patients had otorrhea prior to surgery. After surgery otorrhea resolved in all 30 ears. In three out of four revisions residual cholesteatoma was found. Another 5 cases show a lesion with diffusion restriction on diffusion weighted MRI and are followed with sequential MRI's. Reported complications were transient infection (n = 7) and vertigo (n = 6). The median follow-up for all 40 COM cases was 18 months (0–106).

**Conclusions:** This study gives an insight into the results of subtotal petrosectomy in a tertiary referral centre in the Netherlands. Subtotal petrosectomy in patients with otorrhea resulted in a dry ear in all 30 cases. Residual cholesteatoma was proven in 3 out of 28 cases.

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## Free Papers (F632)

### ID: 632.6

#### Mastoid Cavity Obliteration Using BonAlive Bioactive Glass

Presenting Author: **Mark Adams**

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**Learning Objectives:** To review the rationale, technique & outcomes in mastoid cavity obliteration.

**Introduction:** Canal wall down (CWD) surgery is associated with lower rates of residual/recurrent disease. CWD surgery followed by mastoid cavity obliteration is one potential method of reducing the burden of managing the open cavity. We present our results using BonAlive® Granules for mastoid cavity obliteration.

**Methods:** Retrospective chart review and telephone survey.

**Results:** Between 2012–2015 we used this technique in a cohort of 20 patients; 16 male and 4 female. Mean age was 46 (median 47, range 32–67). Mean follow up was 19 months (median 15, range 7–46). Recurrence rate was 5% (1/20) of patients. In this case a small attic pearl was noted and this was managed on an out-patient basis. 10% (2/20) patients reported occasional discharge whereas in the remaining 90% (18/20) the ears were completely dry. We also conducted a telephone survey of patients using the Glasgow Benefit Inventory (GBI) with 18/20 patients responding. Mean GBI score was 63 (median 65, range 49–67). 16/18 patients responding to the GBI survey reported a net benefit from their procedure.

In 10% (2/20) patients the operated ear had a profound loss/dead ear pre-operatively. Audiological outcomes consisting of averaged thresholds at 0.5, 1, 2 & 4kHz were available for 15/18 of the remaining patients. Mean change in air conduction thresholds was 0db (median 0, range -25 - +25). Mean change in bone conduction thresholds was -2db (median -2, range -16- +15).

*Conclusions:* Mastoid cavity obliteration in our experience has been associated with excellent outcomes in terms of dry-ear rate and recurrence rate at median follow up of 15 months.

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### Basic and translational research in cholesteatoma and ear surgery (N633)

**ID: 633.1**

#### Cholesteatoma among school-age children and adults - hearing screening program and surgical possibilities

Presenting Author: **Piotr Skarzynski**

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*Learning Objectives:*

*Introduction:* Restoration of hearing in patients with hearing impairment due to cholesteatoma (and CWU or CWD surgery) with lack of the ossicles, after modified radical operations could be done with direct stimulation of the round window membrane or bone conductive solutions.

Congenital cholesteatoma may occur in different age groups. It can be located in many sites including the cerebellopontine angle, the inner ear, the mastoid, the petrosus apex, the middle ear, the tympanic membrane, the external auditory canal. From the clinical point of view it is very important to detect it as early as possible. Hearing screening in school-age children was performed in Poland and other countries from 2008 to 2015. The program was focused on children at the age of 7–12 years old. The main aim of the program was to detect hearing disorders, which were not observed by the parents or teachers.

The objective of that presentation is analysis hearing results obtained after surgical application of different implants in treatment of hearing impairment patients with chronic inflammation of the middle ear, especially after radical modified operations. Another objective is to present results of cholesteatoma detection in different screening programs among school children around the world.

*Material and Methods:* The selected group of patients were children and adults with chronic inflammation of the middle ear, after radical modified operations with destruction of the elements of the middle ear - tympanic membrane and ossicles. Group of patient analyzed in tht study was 29312.

We discussed the indications, contraindications and limitations of use of Vibrant Soundbridge in this group of patients.

*Results and conclusions:* Early detection, especially congenital cholesteatoma, is essential for very good results. There is many possibilities in reconstructive technique for hearing restoration. Each patient should be analyzed individually to different surgical way.

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### Basic and translational research in cholesteatoma and ear surgery (N633)

**ID: 633.2**

#### Imaging follow-up of patients after cholesteatoma surgery

Presenting Author: **Marcin Szymanski**  
Marcin Szymanski

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*Learning Objectives:* There are various techniques of cholesteatoma surgery but all of them carry the risk of residual or recurrent cholesteatoma development. Thus all the patients after cholesteatoma surgery require thorough follow-up and some patients a second look surgery. While open cavity surgery enables otoscopic recognition of cholesteatoma, the use of closed technique, obliteration of mastoid cavity or subtotal petrosectomy reduces the role of clinical examination in follow-up. Imaging modalities including HRCT and non-EP DWI MR is discussed in patients subjected to open or closed techniques, obliteration of the mastoid cavity or subtotal petrosectomy for removal of congenital and acquired cholesteatoma.

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### Basic and translational research in cholesteatoma and ear surgery (N633)

**ID: 633.3**

#### Combined model of intraoperative monitoring of ossiculoplasty efficiency by laser-Doppler vibrometry and auditory evoked potentials

Presenting Author: **Krzysztof Morawski**

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*Learning Objectives:*

*Objective:* To assess utility of combined electrophysiological and laser-Doppler Vibrometry (LDV) technique for intraoperative monitoring (IM) of air-bone gap closure (ABGC)