representative cases and short-term results with mean follow-up period of 23 months.

Study design: Retrospective chart review

Patients: Thirteen cases of recurrent cholesteatoma out of consecutive 388 middle ear surgeries in Keio University Hospital between January 2012 and March 2015 were enrolled. The average age of the cases was 48 years old with a range of 25–76 years. The mean follow-up period was 23 months (ranging from 10 months to 33 months). The operation was 2nd time in 8 cases, 3rd time in 4 cases, and 4th time in 1 case.

Results: Dry ear was achieved in all the cases in average 5.5 months after surgery and no further infection was observed. Postoperative air-bone gaps were less than 40 dB in 5 patients and 20 dB in 4 patients. No re-recurrence was observed during the observation period.

Conclusions: A canal wall down tympanoplasty with soft posterior meatal wall reconstruction for recurrent cholesteatoma provides good short-term results. Longer observation period is needed to confirm the effectiveness of the surgical procedure.

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Endoscopic versus Open Surgical Management of Patulous Eustachian Tubes

Presenting Author: **A. E. Louise McMurran**

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Learning Objectives:
Presenting features of Patulous Eustachian Tubes
Surgical management of Patulous Eustachian Tubes

Introduction: A variety of surgical techniques have been used in the management of Patulous Eustachian Tubes, however the long-term efficacy and safety of these methods remains uncertain. We highlight this issue using the the case of an 84 year old man with bilateral Patulous Eustachian Tubes who has had multiple surgical procedures over a two year period.

Methods: The patient presented with bilateral autophony, tinnitus and hearing loss. The diagnosis was confirmed by observation of tympanic membrane movement on respiration at otomicroscopy. Initial surgical management involved endoscopic reduction of the Eustachian tubes, first by injection of calcium hydroxylapatite and cautery to the torus tubarius, and followed by insertion of fat into the Eustachian tube with suturing when symptoms recurred. Further symptoms prompted more invasive surgical management with transtympanic occlusion of the Eustachian tubes with conchal cartilage.

Results: Endoscopic injection of fillers and cautery to the Eustachian tubes did provide symptomatic benefit in this patient's case, though the effects were short lived. Insertion of fat and suturing endoscopically was difficult practically and did not produce long-term symptom control. Open ear surgery with placement of tragal cartilage into the Eustachian tube performed initially on the right followed by the left four months later has led to complete resolution of symptoms. The patient did, however, develop bilateral middle ear effusions with conductive hearing loss, requiring myringotomy and grommet insertion.

Conclusions: Endoscopic surgical techniques for reducing patulous Eustachian tubes may provide symptomatic benefit with few ill effects, but have limited long-term efficacy. Transtympanic occlusion with cartilage is presented is an alternative approach with an improved outcome.

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Changing lives of hearing impaired patients in rural north india through concept of trained ear care workers with the vision of hearing for all by 2030

Presenting Author: **Rohit Mehrotra**

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Learning Objectives: By introducing the concept of **ear care workers** who identify patients having hearing loss by organizing regular ear health camps in rural areas of Kanpur district. If this concept is implemented throughout India, a significant reduction in deafness could be achieved. Those patients who could be benefited from surgery or hearing aids are treated accordingly at low cost with a vision of **hearing for all by 2030.**

Introduction: Hearing loss is the most common sensory deficit in humans today. As per WHO estimates in India, there are approximately 63 million people, who are suffering from Significant Auditory Impairment; this places the estimated prevalence at 6.3% in Indian population.

Materials and Methods: This is an ongoing study. Patients with history of hearing loss were identified by ear care workers through our regular ear health camps in rural areas of Kanpur district. Ear care workers were trained at our base hospital. Patient requiring conservating treatments were treated at the camps. Patients who required surgery or hearing aids were brought to our clinic, subjected to clinical ENT examination, Otoscopy and pure tone audiometry. Surgery was performed, or hearing aids were provided and patients were followed up at regular interval.

Results: 142334 people were screened in the year 2014 in which 10248 suffered from hearing loss. Prevalence of hearing loss was 7.2%. 9310 patients were managed conservatively. Surgery was performed in 506 cases and hearing aid was provided to 432 cases.

Conclusion: This study emphasizes that through the introduction of concept of ear care workers, a large number of unprivileged patients with treatable causes of hearing loss can be provided with appropriate, cost effective and early treatment.

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Ossicular Implants (Prosthesis) – from Infancy to Maturity

Presenting Author: **Mario Milkov**

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Learning Objectives: The idea of ossicular chain reconstruction emerges and develops as a result from the creation of Wulstein and Zollner's concept of tympanoplasty. Initially, doing the ossicular reconstruction a transposition of incus mainly is performed. Bone or cartilage material has been used as a material. In 1956 Wulstein reported the use of a vinyl-acrylic device as acoustic transmitter between the mobile footplate and the tympanic membrane graft. However, the results were poor. Shea moved from the concept of a graft to that of a bioprosthesis. Shea first began a successful series of ossicular reconstructions. Shea first implanted Teflon prosthesis on a 48-year-old female patient who had widespread otosclerosis, throughout the oval window rim and footplate. As a result, the patient's hearing improved. Today the implantation of ossicular prostheses to replace non-functional and pathologically altered ossicular chain is a well-accepted surgical technique. The limited graft applications in the reconstructive auditory-chain surgery stimulated the search for new prosthetic medical device. Several questions are of paramount interest for solving this problem: 1. Biomaterial selection for the ossicular implants (prosthesis) construction; 2. Design of the ossicular implants (prosthesis); 3. Validation of the ossicular implants (prosthesis); 4. Monitoring of the patients with implanted ossicular prostheses. In modern otosurgery, a large variety of biomaterials were made use. None of them is, however, useful for any applications. In general, the biomaterials used for ossicular chain reconstruction should possess a good biocompatibility and biostability. They must be well osteointegrated, with minimal risk of ankylosis. Surface properties, particularly structural characteristics, critically influence the quality of the implant-biological interface. The biomaterials need to be easily processed and retain their shape already acquired. A proper sound transmission requires biomaterials of low mass and high hardness. None of them is, however, useful for any applications. In the literature available, usage of different animals for biomaterial validations has been reported. In experiments on the guinea pigs bulla mastoidea model, introduced in the experimental medical practice from Assoc. Prof. Mario Milkov, MD, Ph.D., gold, Teflon, hydroxyapatite, and ceromer were used convincing us in the good qualities of the guinea pig to serve as a model for testing the ossicular prostheses.

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Diagnosis and successful surgical treatment of pediatric cholesteatoma: a case report and literature review

Presenting Author: **Stefan Mirchev**