

**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.

doi:10.1017/S0022215116006290

### ID: IP133

#### Ossicular Implants (Prosthesis) – from Infancy to Maturity

Presenting Author: **Mario Milkov**

Mario Milkov<sup>1</sup>, Georgi Marinov<sup>1</sup>, Robert Guidoin<sup>2</sup>, Stefan Mirchev<sup>3</sup>, Hamaputra Vijayendra<sup>4</sup>

<sup>1</sup>Prof. Paraskev Stoyanov Medical University of Varna Faculty of Dental Medicine, <sup>2</sup>Laval University, Quebec, Canada, <sup>3</sup>Medical University of Pleven, Bulgaria, <sup>4</sup>Vijaya E.N.T. care Centre, Belgaum, India

**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.

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. Shea first began a successful series of ossicular reconstructions. 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. 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.

doi:10.1017/S0022215116006307

### ID: IP134

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

Presenting Author: **Stefan Mirchev**

Mario Milkov<sup>1</sup>, Stefan Mirchev<sup>2</sup>, Aleksandar Valkov<sup>2</sup>, Georgi Nikolov<sup>3</sup>, Boris Duhlenki<sup>3</sup>, Hamaputra Vijayendra<sup>4</sup>

<sup>1</sup>Prof. Paraskev Stoyanov Medical University of Varna Faculty of Dental Medicine, <sup>2</sup>Medical University, Pleven, Bulgaria, <sup>3</sup>Medical University of Pleven, Bulgaria, <sup>4</sup>Vijaya E.N.T. care Centre, Belgaum, India

**Learning Objectives:** Although relatively rare in childhood, cholesteatoma deserves a special attention by not only by general practitioners but also by specialists in different mutually related disciplines in the family of neurosciences and, particular, in neurootology.

**Introduction.** Cholesteatoma in childhood is difficult to diagnose in spite of substantial advances in diagnostic approaches. The delayed detection of this complicated pathology necessitates adequate surgical management.

**Methods:** We report a child aged eight years presenting with congenital cholesteatoma accompanied by peripheral facial nerve palsy. Management has been initiated by a neurologist and later on, an otorhinolaryngologist has been involved in the therapeutic team because of the failed drug therapy. According to parents' report, three years ago the child complained of gait disturbances attributed mainly to his overweight. A comprehensive physician's examination included preoperative audiometry and computer tomography, intraoperative monitoring system enabling safe cholesteatoma removal in the area of bone destruction at second genu level as well as pre- and postoperative electromyography.

**Results:** We successfully identified the degree of morphological damage and of the disturbed function. Besides, the prognosis concerning facial nerve restoration was clarified. On the seventeenth day after the surgical intervention, there was convincing electromyographic evidence of significant improvement of the facial nerve function and positive change of facial appearance as documented by pictures in 4-day intervals. A concise review of recent publications dealing with cholesteatoma diagnosis and surgery illustrated the socio-medical importance of this entity in childhood (e.g., A. T. Harris et al., *J Laryngol Otol.* 2016;130:235; M. S. Cohen et al., *Laryngoscope.* 2016;126:732; J. B. Hunter et al., *Otolaryngol Head Neck Surg.* 2016; Mar 1, etc.).

**Conclusion:** Scanty initial clinical symptoms along with poor otoscopic findings hamper considerably the early exact diagnosis of cholesteatoma. Interdisciplinary collaboration between neurologists, otorhinolaryngologists, radiologists and neurosurgeons could warrant the proper therapeutic behaviour in children with cholesteatoma.

doi:10.1017/S0022215116006319

**ID: IP135**

**Endoscope-i: transforming endoscopic technology and the delivery of patient care in ENT**

Presenting Author: **Nina Mistry**

Nina Mistry<sup>1</sup>, Jeyanthi Kulasegarah<sup>2</sup>, Ajith George<sup>3</sup>, Christopher Coulson<sup>2</sup>

<sup>1</sup>University Hospitals Birmingham NHS Foundation Trust, <sup>2</sup>University Hospitals Birmingham NHS Foundation Trust, Birmingham, UK, <sup>3</sup>University Hospitals of North Midlands NHS Trust, Stoke, UK

**Learning Objectives:** To raise awareness amongst ENT surgeons of the potential role that digital and mobile device technology such as the endoscope-i can play in enhancing the delivery of healthcare services to patients.

**Introduction:** Digital and mobile device innovation in healthcare is a growing market. The introduction of the endoscope-i, the world's first endoscopic mobile imaging system, allows the acquisition of high definition images and videos, without the need for expensive and bulky stack systems.

**Methods:** The endoscope-i system was first developed by the senior authors in conjunction with experts in the engineering and software development fields. The system combines the e-i Pro camera app with a bespoke engineered endoscope-i adaptor which fits securely onto the iPhone. The system is portable and allows high definition endoscopic imaging of the ear, nose and throat, with the facility to capture still images and videos.

**Results:** The endoscope-i has far-reaching applications but comes into its own in when examining the ear endoscopically. The assessment of a variety of pathology such as tympanic membrane perforations, retraction pockets and cholesteatoma can be undertaken efficiently and relayed immediately to the patient. Not only does this provide instant feedback to the patient during the consultation, thereby improving patient education, it also allows the documentation of findings via a secure app which can be stored as part of the patient's record of care, replacing the need for previous hand-drawn notes.

**Conclusions:** The use of endoscopic mobile imaging systems has the potential to transform the way that healthcare is delivered in ENT. The endoscope-i system provides a cost effective device that is accessible, easy to use and which makes diagnostics simpler and quicker. Although there are clear applications in the field of otolaryngology, the technology is also being used by other medical specialties such as anaesthetics and urology as well as in veterinary medicine and engineering.

doi:10.1017/S0022215116006320

**ID: IP136**

**The Novel Affordable Telford Temporal Bone Holder**

Presenting Author: **Alistair Mitchell-Innes**