Results: Bone conduction thresholds showed no significant change over all in the implanted group. In few patients with mobile footplate some loss of bone conduction was observed. The mean free field thresholds were 43 +/−7 dB (0.5–4 kHz) and the monosyllabic word score was 67 % at 65 dB presentation level compared to conventional hearing aids with 24 %. Speech intelligibility in noise was 2.1 dB SNR in the OLSA Matrix test (S0N0) three month after activation.

Conclusion: Codacs provides an effective treatment for patients with MHL.

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Emerging Technologies (1) (R641)

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Fully Implantable Hearing Aids

Presenting Author: **Philippe Lefebvre**

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Learning Objectives: 30% of the population over 65 years of age is hearing impaired, corresponding to 7% of the general population. At the present time, this frequent handicap can only reduced by the use of hearing aids allowing to deliver higher sound energy to the inner ear. These prosthesis have undergone tremendous improvement over the last few years in particular on the electronic and aesthetic aspects. In this presentation, we will review the progresses which have been made on implantable hearing devices transmitting the sound energy directly to the ossicular chain in the middle ear.

Semi implantable devices are composed of an external part containing the microphone, the battery and the electronic transferring the information transcutaneously to the internal receiver which activates the transducer attached to the ossicular chain.

In the fully Implantable Hearing Device, the subcutaneous microphone picks up ambient sounds, converts them into an electrical signal, amplifies the signal according to the wearer's needs, and sends it to an electro-mechanical transducer. The transducer tip is mounted in a laser-drilled hole in the body of the incus and translates the electrical signal into a mechanical motion that directly stimulates the ossicles and enables the wearer to perceive sound. The implanted battery is recharged daily via an external charger and the wearer can turn the implant on and off with a hand held remote control.

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Implants in chronic ear disease – new advances

Presenting Author: **James Ramsden**

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Learning Objectives: Chronic ear disease poses a challenge to hearing restoration. There is often a tension between controlling the disease and restoring hearing. Outcomes of CSOM surgery in the long run have mixed hearing results and patients often must be phlegmatic about their hearing deficits. New technologies in hearing and vestibular devices can alleviate the deficits but are sometimes difficult to apply to patients with disordered anatomy from chronic ear disease. Hearing aids, BAHA and middle ear implants are the mainstay of hearing rehabilitation, but new options include totally implantable middle ear implants, active stapedectomy devices (CODACS) and vestibular implants. In this session I will discuss where the newer devices fit in to the treatment options, and Prof Lenarz, Prof Lefebvre and Mr Donnolly will outline in more detail specific emerging technologies.

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In this session I will discuss where the newer devices fit in to the treatment options, before the co-presenters will outline in more detail specific emerging technologies.

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Surgical aspects of vestibular implantation

Presenting Author: **Neil Donnelly**

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Learning Objectives: Implantable vestibular prostheses are currently being developed in order to restore balance to patients with severe bilateral vestibular hypofunction. This presentation will examine the key research findings to date and examine on going challenges.

Implantable vestibular prostheses are being developed with a view to restoring balance to patients with severe bilateral vestibular impairment that are not responsive to currently available treatments. Electrical stimulation of nerve fibres in the vestibular system in animal and human experiments has been shown to evoke eye movements which mimic the vestibular ocular reflex (VOR).

An important technical issue faced in implanting a vestibular prosthesis is ensuring optimal positioning to provide electrical stimulation to the nerve fibres. The ideal test of this would be performed intra-operatively at the time of implantation to allow precise placement, and adjustment if required.

The aims of this clinical trial were to systematically record both the ECAPs and electrically evoked eye movements obtained by electrical stimulation of the semicircular canals in