

## **Abstract EFAS/DGA 2007**

### **Implantable hearing systems: Common denominators and future developments - a clinical perspective**

Häusler, R. , Stieger, C., Kompis, M.

Department of ENT, Head and Neck Surgery, Inselspital, University of Berne, Switzerland

Implantable hearing systems are a dynamic area of development. When compared to conventional hearing aids, implantable systems hold the promise of substantial improvements regarding sound quality, speech recognition, sound distortion, reduced feedback, better cosmetic appearance and less discomfort due to absence of ear canal occlusion. The most important component of an implantable hearing system is the output transducer – the equivalent of the loudspeaker in conventional hearing aids – providing a direct mechanical interface to the human ear. The majority of today's available implantable hearing systems are only partially implantable with an implanted mechanical interface and an externally worn microphone and energy source, the information being transmitted by a percutaneous connector (BAHA, DACS) or by a transcutaneous coil system (MED EL Vibrant Sound Bridge, DDHS Sound tech. Classical MET Otologics, new transcutaneous DACS). The coupling to functional ear structures is usually on the level of the ossicles, the MED EL Vibrant Soundbridge equipped with a floating mass transducer can alternatively be positioned directly to the membrane of the round window. The DACS system is up to now the only one which is directly coupled to the inner ear liquid on the principle of a power driven stapes prosthesis. Latest developments are fully implantable systems including the energy source and the microphone such as the Carina and the Envoy. In these systems an accumulator is charged by a transcutaneous external energy source. The main characteristics of the presently available implantable hearing systems are presented and various advantages and problems with respect to indication and the surgical implantation procedure are discussed. A catalogue of requirements for implantable hearing systems is presented.

