AN ANTIBACTERIAL SEAL AND FIXATION DEVICE FOR COCHLEAR IMPLANTS IN YOUNG CHILDREN

Markus C Dahm MD, Robert K Shepherd PhD, H Lee Seldon PhD MD, Graeme M Clark PhD FRACS

Department of Otolaryngology, Melbourne University, Victoria, Australia
HNO-Klinik, Medizinische Hochschule, Hannover, Deutschland

Concerns associated with cochlear implantation in young children include intracochlear spread of infection along the electrode array during otitis media, and electrode extraction caused by skull growth post-implantation.

New biomaterials were used to seal and secure the electrode at its entry point into the cochlea. Hydroxyapatite was deposited around the outside of an electrode cuff and it bonded well to the surrounding bone of the otic capsule. The electrode cuff accommodated variable insertion depths with the help of a new, silicone based hydroscopic polymer.

Preliminary results, including experimental testing of the device in an animal model of pneumococcal otitis media, indicate protection of the implanted cochlea against the spread of infection. Electrode leadwire displacement is prevented by fixation of the array at its entry point.

This concept may play an important role in the development of a safe cochlear implant design for children under two years of age, who are expected to benefit most from early auditory rehabilitation.

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Author/s:
Dahm, M. C.; Shepherd, R. K.; Seldon, H. Lee.; Clark, Graeme M.

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