

JOINT EVENT

11th International Conference on**Tissue Engineering & Regenerative Medicine**

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4th International Conference on **Synthetic Biology and Tissue Engineering**

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**Harvey Coates***The University of Western Australia, Australia***Initial results of a pilot trial of tissue engineered myringoplasties in Western Australia**

Background: A traumatic tympanic membrane perforation (TMP) often regenerates spontaneously, but only heals in two layers, where the absence of the central, firm and elastic layer can lead to retraction pockets and cholesteatoma. The currently available myringoplasty requires theatre time, sophisticated equipment and general anesthetic. Furthermore, outcomes are variable and inconsistent. Thus, new strategies in reconstruction of TM are desperately needed.

Objective: To evaluate the safety and efficacy of new tissue engineering myringoplasty techniques using basic fibroblast growth factor (b-FGF) alone, or in combination with a variety of scaffolds, in adults and children.

Methods: This is a prospective cohort study, designed into 4 groups: topical use of b-FGF alone; topical use of b-FGF in combination with gelatin sponge (Gelfoam®); topical use of b-FGF in combination with silk fibroin scaffold (TymPaSil®) and; topical use of b-FGF in combination with collagen scaffold (Celgro®). To date, 18 adults and 12 children have been recruited from the Otolaryngology departments of two major Western Australian Hospitals. Patients were randomized in the first 3 groups, being the latter (Celgro®) in final stage of safety assessment. The procedure is a modification of the technique devised by Kanemaru, et al. The surgeries were performed under local anesthesia in adults and under general anesthesia in children. Serial video-otoscopy and audiometry was performed post-operatively and outcomes and results determined. Inclusion suitability for the study involved the application of defined inclusion and exclusion criteria and informed consent.

Results: Overall there was a success rate in patient terms of 83%, with the success rate in children similar. However, in terms of treatment, the children required 1.3 treatments, on average, and the adults 1.0. The major reason for the reduction in the success rate in children was related to post-operative infection or non-compliance with water precautions. In those patients with pre-operative hearing loss there was a 90% improvement in hearing. There was no safety issues related to the procedure.

Conclusion: We are reporting the safety and efficacy of b-FGF combined with different scaffolds, in an effective and short procedure with comparable success to conventional myringoplasty, in both adults and pediatric patients.

Biography

Harvey Coates, AO is a Paediatric Otolaryngologist and Clinical Professor in the School of Pediatrics and Child Health at the University of Western Australia. He trained at the Mayo Clinic, USA and has several research degrees and over 100 publications. His research is in otitis media in Aboriginal children and his team discovered the first middle ear biofilm as well as intracellular bacteria and NETs in the middle ear. His most recent research has been to trial tissue engineered myringoplasty in children, a major issue in Australia where over 100,000 people have chronic suppurative otitis media (CSOM). He has been awarded many community honors for his work with Aboriginal children's ear disease.

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