

Abstracts – MEMRO 2006, Zurich July 27–30, 2006

4th International Symposium on Middle Ear Mechanics in Research and Otology

11.8

Demonstration of aeration pathways in the human epitympanum

*D. Morris^{1,2}, R. van Wijhe^{1,2}, K. Kirkpatrick¹, S. Levine³, C. Northrop³,
B. Manohar^{1,2}, Halifax; Canada^{1,2}, Boston; USA³*

Aims: Aeration of the human epitympanum is a contentious area of study with conflicting opinions being held. It is hoped that a better understanding of the aeration pathways of the epitympanum, will bring some explanation of retraction pocket formation, the direction of spread of attic cholesteatoma and the development of recurrent disease after surgical treatment.

Methods: Histological preparations of serially sectioned human temporal bones were reconstructed in 3-D using the Amira (R) software package to show detail of Prussak's space, the associated mucosal folds and aeration pathways. This was correlated with clinical photographs from cadaveric dissections and injection studies of gel introduced by needle puncture into Prussak's space to simulate an expanding cholesteatoma.

Results: A number of common patterns of aeration pathway were demonstrated. It is proposed that certain patterns may be more likely to give rise to retraction and may also be responsible for the direction of spread of cholesteatoma once it has formed. **Conclusion:** These novel techniques are valuable in demonstrating attic fold anatomy and have allowed aeration pathways to be assessed in detail. It is hoped that this information will prove clinically relevant to the otologic surgeon considering tympanoplasty.