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Morphology of the tympanic membrane insertion into the temporal bone in humans

*I. Leuchter¹, A. Pollak², I. Hegyi³, A. Huber²,
Lausanne¹, Zurich^{2,3}; Switzerland*

The fibrous annulus of the eardrum is a rim of the pars tensa that binds the tympanic membrane to the inner surface of the tympanic bone. Despite of his importance on the vibratory properties of the tympanic membrane, the nature of his insertion is only partially described. Recently studies described the presence of contractile cells (myofibroblasts and smooth muscle cells) in the region of the fibrous annulus in animals and humans. The aim of this study is to better understand the morphology of the tympanic insertion and to confirm the presence of contractile elements. 7 specimens of human tympanic membrane (3 adult and 4 foetal) were studied. Techniques applied were electron microscopy and light microscopy using conventional and immuno staining techniques. We demonstrate the presence of contractile cells at the level of the interface tympanic membrane- fibrous annulus. In the adult these cells are rare and scattered and in the foetus they are numerous and richly interconnected. The finding of a real contractile rim in the foetus and its involution in the adults questions us on the role of these cells and their influence on the audition.