Anatomy, Imaging

PC-01

TOPOGRAPHICAL RELATIONSHIPS AMONG THE FACIAL NERVE, CHORDA TYMPANI NERVE AND ROUND WINDOW WITH REFERENCE TO THE SURGICAL APPROACH.

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The topographical relationships among the facial nerve (FN), chorda tympani nerve (CT), and round window (RW) in temporal bone specimens were analyzed morphometrically in order to examine which route is widest through the facial recess between the facial nerve and chorda tympani nerve during cochlear implant surgery and in order to establish some criteria to assist in the evaluation of the best surgical approach. Two lines, i.e., the FN-RW line and CT-RW line, were speculate as limitations of a visual field for this surgery. According to the relative position of these structures, including the posterior wall of the external auditory canal and an inserted pin-gage that indicates the hypothetical widest approach route, the relationships were classified into five types. Most frequently, the widest approach route through the facial recess did not point directly at the RW, but at the basal turn at the promontory. Moreover, this approach route crossed the FN-RW line in a posterior to anterior direction and the CT-RW line frequently crossed the posterior wall of the external auditory canal.

PC-02

A COMPARATIVE STUDY OF PHASE-CONTRAST AND CONVENTIONAL X-RAY IMAGING IN HUMAN TEMPORAL BONE SAMPLES.

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This study compared a new x-ray modality, phase-contrast radiography, with conventional radiography for imaging in human temporal bones and also investigated its potential application in the development of electrode arrays for advanced cochlear implants. Nucleus standard electrode arrays and peri-modiolar Contour™ electrode arrays were implanted into the cochleae of 10 human temporal bones. Both conventional and phase-contrast radiographs were taken of each temporal bone. The phase-contrast radiographs showed significant improvements over conventional radiographs in the detail of temporal bone images. These improvements included enhanced contrast at the edge of canal type features, inherent image magnification, higher spatial resolution, and ability to use detectors such as Imaging Plates. The results demonstrate that phase-contrast imaging can have important advantages in visualisation of anatomical details of both the inner ear structures and the microelectrode. It can provide a clearer definition of electrode location in relation to cochlear walls. This study demonstrates the feasibility of applying phase-contrast radiography to studies of the human temporal bone. However, its usefulness in the imaging of larger objects or perhaps even with patients in a clinical setting will require further investigation.
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