

54 3D- RECONSTRUCTION OF THE TEMPORAL BONE IN  
COCHLEAR IMPLANT SURGERY

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High resolution CT-imaging is a routine part of the pre-operative evaluation of prospective cochlear implant patients. We have used image analysis techniques to produce three-dimensional (3D) reconstructions of the temporal bone from serial CT-scans. These images have proved very useful in the examination of the temporal bone prior to implant surgery.

To evaluate the accuracy of our 3D reconstruction system the CT- scan images of six cadaver temporal bones from children of different age groups were recorded, digitized and transferred onto our IBM AT- compatible microcomputer. We selected eleven anatomical and surgical landmarks relevant for cochlear implant surgery in children and measured the distances between them using our reconstruction program. These data were compared with direct anatomical measurements from the same bones. Preliminary results show close correlation between the two sets of data.

The 3D image can be rotated and specific anatomical landmarks highlighted, providing the surgeon and researcher with a rapid and accurate method to examine a patient's temporal bone prior to cochlear implantation. The application of the technique will be discussed.

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