

PRE-OPERATIVE RADIOLOGIC EVALUATION FOR ROUND WINDOW ACCESSIBILITY IN COCHLEAR IMPLANTATION

Background

Most challenging surgical step in a cochlear implantation surgery is the insertion of cochlear implant electrode influenced by anatomical variations seen in patients. The aim of our study is to provide a pre-operative imaging predictors of either rotated or posteriorly positioned cochlear affecting implant electrode insertion.

Methods

Images of temporal bone CT scan of eight patients who underwent cochlear implantation and intra-operatively found to have rotated cochlea or posteriorly positioned cochlea were analyzed. On an axial cut on CT scan that shows the full basal cochlear turn and round window niche, a line from posterior edge of round window niche to posterior edge of basal turn was drawn. Another line from anterior edge of facial nerve to anterior edge of round window niche was drawn.

Results

In a normally orientated cochlea, the angle both lines drawn are found to be more parallel with angle less than 3° , an average of 1.948° . However in rotated or posteriorly positioned cochlea, the angle of those two lines are above 3° , with an average of 3.41° . This is consistent in all eight patients whom we have operated on with rotated or posteriorly positioned cochlea.

Conclusion

These imaging predictors on the pre-operative temporal bone CT scan may be useful in predicting abnormal cochlea with difficult round window accessibility.