

STUDY OF THE EXTERNAL APERTURE OF THE VESTIBULAR AQUEDUCT AS A LANDMARK FOR LABYRINTHINE PRESERVATION BY THE TRANSMEATAL RETRO-SIGMOID SUBOCCIPITAL APPROACH (Abstract)*. Thesis. São Paulo, 1995.

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When trying to conserve the remaining hearing in certain cases, it is considered important to keep the labyrinth intact during the opening of the posterior meatal wall in the acoustic neurinoma surgery. The external aperture of the vestibular aqueduct has been evaluated as a landmark to help in the preservation of the labyrinth by the suboccipital retrosigmoid transmeatal approach.

Dry and wet temporal bones, patients harbouring acoustic neurinomas and high-resolution computerized tomography (CT) scans were investigated. The correlations between the external aperture of the vestibular aqueduct, the porus and the transverse crest were observed before and after opening the posterior meatal wall. Measurements were taken between these structures. Cadaveric head dissections were carried out to expose the external aperture of the vestibular aqueduct together with the exit of the endolymphatic sac. The posterior meatal wall was drilled away, but not up the external aperture. Finally, the vestibular aqueduct, *crus commune* and posterior semicircular canal were opened to ensure that they had not been previously injured, and to make sure that there was still bone between the lateral meatal end and the labyrinth. The same landmark has been used in surgical cases in an attempt to preserve the labyrinth, and also has been studied in bone window CT scans.

There was a consistent correlation between the lateral meatal end, the external aperture of the vestibular aqueduct and the labyrinth. The distance of the porus to the external aperture of the vestibular aqueduct was never shorter than the distance of the porus to the transverse crest. The external aperture of the vestibular aqueduct was usually lateral to the perpendicular projection of the meatus fundus in the posterior surface of the petrous bone, and an appropriate angle was offered to avoid the postero-medial part of the labyrinth when this landmark is in direct line of sight. If the posterior meatal wall is not opened up to the external aperture of the vestibular aqueduct the labyrinth could be preserved. The results of the surgical cases have shown that in all patients the labyrinths were preserved, and the tumors were completely removed.

By the high-resolution CT scans of the temporal bones made preoperatively one can estimate the degree of cerebellar retraction needed to obtain a safe angle to approach the posterior meatal wall and the lateral meatal end, and the amount of this wall that can be drilled out without entering the labyrinth.

The present study suggests that the external aperture of the vestibular aqueduct can be used as a safe landmark to help in labyrinthine preservation while drilling the posterior meatal wall by the suboccipital retrosigmoid approach.

KEY WORDS: acoustic neurinoma, vestibular aqueduct, semicircular canals, hearing preservation, labyrinthine preservation, surgical approach, cranial nerves.

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