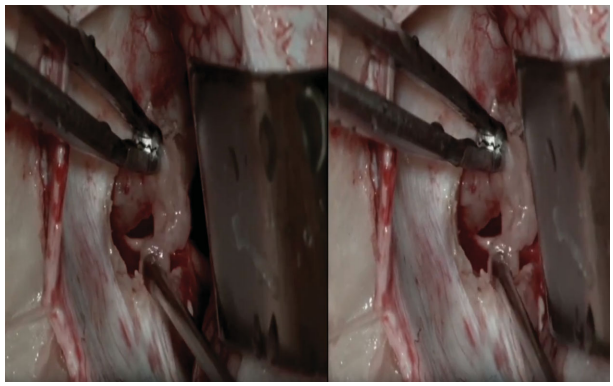
Microsurgical Resection of Vestibular Schwannomas, Presentation of Cases in 3D: 3-Dimensional Operative Video



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Vestibular schwannomas are the most common benign tumors of the pontocerebellar angle,[1,2] their microsurgical complexity is related to their size and neurovascular relationships. The purpose of this work is to analyze the clinical, anatomic characteristics, microsurgical treatment, and the postoperative results according to the Hannover gradual scale in 4 patients with vestibular schwannomas. The 4 patients gave their consent to the procedure and all consented to the use of their surgical videos, preoperative and postoperative studies, and postoperative pictures.

Case 1: A 39-yr-old woman, with left ear hearing loss. Magnetic resonance imaging (MRI) showed small Intracanalicular schwannoma (T1 classification by Hannover). Microsurgery was performed and resection through a retrosigmoid approach[2,3] with anatomic and functional preservation of the facial and cochlear nerve.

Case 2: A 40-yr-old woman, with left ear hypoacusia. MRI showed an extrameatal schwannoma reaching the brainstem (T3b Hannover classification). The complete resection through retrosigmoid approach were performed.

Case 3: A 69-yr-old woman, without hearing in the right ear. RM: Medium schwannoma (T4a classification of Hannover). Microsurgery was performed with anatomic and functional preservation of the facial nerve.[4-6]

Case 4: A 32-yr-old woman, without hearing in the left ear. In addition, cerebellar syndrome and headache. RM: Large schwannoma (T4b classification of Hannover). Surgery was performed, anatomic preservation of the facial nerve, with moderate paresis in the postoperative period.

Microsurgical resection with functional preservation of the facial and cochlear nerve is the main objective[7] when addressing this pathology.

KEY WORDS: Vestibular schwannomas, Cerebellopontine angle, 3D microsurgery, Retrosigmoid approach

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Disclosures

The authors have no personal, financial, or institutional interest in any of the drugs, materials, or devices described in this article.

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COMMENTS

This is a beautiful microsurgical series of vestibular schwannomas of different sizes (T1-T4b according to the Hannover Classification), operated via a retrosigmoid approach in sitting position. The surgeons are commended for the precise surgical technique they applied and for the very good results they achieved in these cases. The videos show clearly the advantages of the (semi)-sitting technique, such as: clean surgical field with much less blood and fluids, and virtually no use of bipolar coagulation, which means less risk of hyperthermic trauma to the nerves. While these advantages are evident for large tumors, they are less evident for smaller tumors. We use semi-sitting position for T3 and T4 tumors, but for T1-2 tumors we use supine position, thus avoiding unnecessary pneumocephalus. The facial nerve results achieved in the cases #1-3 are outstanding. We would encourage the authors to include results of audiometric studies in future presentations.

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While I personally would likely use the retrosigmoid approach in only 1 of these cases (the second), this video obviously shows what is possible with a technically excellent and experienced surgeon. This is an important piece of information for any less-experienced or less-technically-competent neurosurgeon contemplating resection of a vestibular schwannoma. There are 2 points to be made. First, many decisions regarding patient management are currently made based more upon inadequacy than anything else, and, second, these operations, when performed improperly, have an expectation of real harm. It is understood that every case has risk, some cases are more favorable than others, and that every surgeon can be humbled by a vestibular schwannoma at any time. If a surgeon does not have cases that progress smoothly like this at least some of the time, that surgeon should question whether they should be carrying out this type of surgery at all.

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