Acta Otorrinolaringol Esp. 2012;63(3):194–199

Acta Otorrinolaringológica Española

www.elsevier.es/otorrino

ORIGINAL ARTICLE

Results in the Surgical Treatment of Giant Acoustic Neuromas☆

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Received 8 July 2011; accepted 18 November 2011

KEYWORDS
Acoustic neuroma;
Facial nerve;
Schwannoma;
Neurinoma

Abstract
Introduction and objectives: To compare the results obtained in the resection of 21 giant vestibular schwannomas via retrosigmoid (RS) and combined retrosigmoid/translabyrinthine (RS/TL) approaches with respect to intra- and postoperative complications, facial nerve preservation and postsurgical sequelae.
Methods: This was a retrospective study of 21 patients who underwent a resection of a giant vestibular neuroma according to the Tos & Thomsen Scale (greater than or equal to 4 cm) in a tertiary care centre in the period between 2000 and 2008. We present the most significant characteristics of the series studied and the analysis of the advantages and inconveniences of each approach. We also analyse the results regarding facial nerve function preservation.
Results: We highlight the absence of mortality in the 21-patient group. There were no important intraoperative complications. Total resection of the lesion was achieved in the 87% of the cases, with facial nerve preservation of 73% using the combined RS/TL approach, in comparison to 40% using the RS. Facial nerve function after two years was acceptable or good in 67% (including those with heteronerve anastomosis). A global percentage of 14.3% of cerebrospinal liquid fistula was observed, as well as 9.5% of meningitis.
Conclusions: The results of the study demonstrate that the combined retrosigmoid translabyrinthine approach for giant schwannoma treatment offers increased facial nerve preservation and lower morbidity, constituting an important option in the treatment of this kind of tumours thanks to a multidisciplinary approach.

☆ Please cite this article as: Giordano AI, et al. Resultados en el tratamiento quirúrgico de los neurinomas del acústico gigantes. Acta Otorrinolaringol Esp. 2012;63:194–9.

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2173-5735/$ – see front matter

PALABRAS CLAVE
Neurinoma del acústico;
Nervio facial;
Schwannoma;
Neurinoma

Resultados en el tratamiento quirúrgico de los neurinomas del acústico gigantes

Resumen
Introducción y objetivos: Comparar los resultados obtenidos en la resección de 21 schwanomas vestibulares gigantes, mediante vía retrosigmoidea y combinada retrosigmoidea/translaberíntica en cuanto a complicaciones intra y postoperatorias, preservación del nervio facial y secuelas posquirúrgicas.
Métodos: Se realiza un estudio retrospectivo de 21 pacientes a los que se practicó resección de neurinoma vestibular gigante según la escala de Tos & Thomsen (igual o mayor a 4 cm), en un hospital de tercer nivel en el periodo entre 2000 y 2008. Se presentan las características más significativas de la serie estudiada, y se analizan las ventajas e inconvenientes de los distintos abordajes, comparando los resultados obtenidos. Asimismo, se analizan los resultados en cuanto a la preservación de la función del nervio facial.
Resultados: Destaca la ausencia de mortalidad en el grupo de 21 pacientes estudiado. No hubo complicaciones intraoperatorias importantes. Se consiguió la resección total de la lesión en el 87% de los casos, con una preservación anatómica del nervio facial del 73% en el abordaje combinado retrosigmoideo/translaberíntico, respecto a un 40% en el retrosigmoideo. La función del nervio facial a los dos años fue aceptable o buena en un 67% (incluyendo los resultados de las anastomosis heteronerviosas). Se observó un porcentaje global del 14,3% de fístula de líquido cefalorraquídeo y un 9,5% de meningitis.
Conclusiones: nuestros resultados demuestran que el abordaje combinado retrosigmoideo translaberíntico para el tratamiento de schwannomas gigantes ofrece mayor preservación del nervio facial y disminución de la morbilidad, siendo una importante opción en el tratamiento de estos tumores, gracias a un enfoque multidisciplinar.

Introduction

Acoustic neuroma is one of the most common intracranial tumours (8%–10% according to some series) and represents up to 90% of cerebellopontine angle tumours.[1] It can cause a wide variety of symptoms related to mass effect due to its growth, with the classic triad being tinnitus, ipsilateral hearing loss and vertigo and instability. The diagnostic study is based on an MRI scan.

The treatment of choice is surgery with curative intent, since this is a benign tumour.[2] Although there are other alternatives, such as radiosurgery, they are only indicated in specific cases.

Surgical treatment, according to a series of conditions determined by each individual patient and tumour, may be approached by different routes (translabyrinthine, middle fossa, retrosigmoid, etc.). Surgery is not without potential risks and complications, even vital, with the main one being facial nerve injury.[3–6,26]

Facial nerve injury, as well as injury of other cranial nerves (CN) and vascular structures, is determined by tumour size. Thus, we can observe that the morbidity and mortality associated with surgery increases significantly in large and giant tumours.

There is a certain degree of controversy in the literature in relation with this type of tumour, and the surgical treatment of choice has not been fully defined.[4–16]

Classically, the neurosurgical view regarding the treatment of vestibular schwannoma (VS) advocates a retrosigmoid (RS) approach. The advantages of this technique are mainly the possibility of preserving hearing, greater exposure of the cerebellopontine angle and better visualisation of the lower cranial nerves. Its disadvantages include the cerebellar retraction required and a limited exposure of the internal auditory canal.

Compared with the retrosigmoid approach, the translabyrinthine (TL) approach enables full exposure of the internal auditory canal, which facilitates early identification of the facial nerve and provides access to the cerebellopontine angle without cerebellar compression. Its disadvantages include cophosis resulting from the approach itself and reduced exposure of lower cranial nerves.

Finally, different authors in the literature[10,11,19–22,24] advocate a combined surgical approach (TL/RS) as the best treatment option for large and giant tumours of the cerebellopontine angle, since it provides a combination of the advantages offered independently by each approach. These include a wider working area at the level of the cerebellopontine angle,[23] which enables the surgeon to obtain a better visualisation of the tumour and adjacent neurovascular structures, facilitating the work of dissection and reducing the risk of intra- and postoperative complications.

Methods

We performed a retrospective study of patients diagnosed and treated for VS at Bellvitge University Hospital between the years 2000 and 2008. In total, we obtained a group of 124 patients, of which 21 presented a diagnosis of giant vestibular schwannoma at the time of diagnosis according to the Tos & Thomsen scale. These are defined by having a size greater than or equal to 4 cm.