Acta Otorrinolaringol Esp. 2014;65(1):43–46

Acta Otorrinolaringológica Española

www.elsevier.es/otorrino

BRIEF COMMUNICATION

Combined Approach for the Treatment of Spontaneous Temporal Encephaloceles: Transmastoid Plus Temporal Minicraniotomy☆

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Received 26 March 2013; accepted 1 May 2013

KEYWORDS
Cerebrospinal fluid leak;
Encephalocele;
Minicraniotomy;
Transmastoid;
CSF otorrhea

Abstract Spontaneous encephaloceles are defined as brain herniations with no apparent cause. The aim of this paper is to describe the surgical technique performed in our department.

We reviewed the last 3 cases treated with combined approach (transmastoid plus minicraniotomy) with 2-layer closure.

In all cases the bone defects were located and successfully sealed. We had no postoperative complications. There were no relapses in our follow-up period.

The transmastoid approach has the advantage over the open approach with middle fossa craniotomy in that it locates the bone defect with no brain retraction. Nevertheless, it is not useful in large-sized, multiple or anterior defects. Due to those drawbacks, we think that the combined approach with temporal minicraniotomy is the best choice for this entity.

PALABRAS CLAVE
Fístula de líquido cefalorraquídeo;
Encefalocele;
Minicraneotomía;
Mastoidectomía;
Otolicuorrea

Abordaje combinado para el tratamiento de los encefaloceles temporales espontáneos: mastoidectomía + minicraneotomía

Resumen Los encefaloceles espontáneos son aquellos en los que no se puede determinar un origen. El objetivo del trabajo consiste en describir el tratamiento quirúrgico empleado.

Presentamos los 3 últimos casos tratados mediante abordaje combinado transmastoideo y minicraneotomía, y cierre con cartílago y pericondrio conchal.

En todos los casos se pudo acometer una correcta localización del encefalocele con un adecuado sellado del defecto óseo. No existieron complicaciones postoperatorias. No existieron recidivas en el periodo de seguimiento.

☆ Please cite this article as: Rama-López J, Rodríguez-Villalba R, Sarría-Echegaray P, Tomás-Barberán M. Abordaje combinado para el tratamiento de los encefaloceles temporales espontáneos: mastoidectomía + minicraneotomía. Acta Otorrinolaringol Esp. 2014;65:43–6.

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2173-5735/$ – see front matter

El abordaje transmastoideo tiene la ventaja de permitir la localización del defecto en la base del cráneo sin provocar morbilidad neurológica. Sin embargo, y sobre todo en defectos amplios o de localización más anterior no permite un correcto sellado del defecto óseo y/o un control de todo el volumen de tejido herniado. Debido a estas limitaciones creemos una buena indicación combinar el abordaje transmastoideo con la realización de una minicraneotomía temporal.

Introduction

An encephalocele is defined as the presence of brain tissue outside the cranial structures.[1] This is a rare disease with an approximate incidence of 1:35 000 cases. Temporary encephaloceles involve the herniation of the meninges and/or brain tissue inside the temporal bone including the petrous apex, tegmen tympani and the mastoids.[2] Depending on the type of herniated tissue a distinction must be made between meningoceles (herniation of the meninges only), meningoencephaloceles (meninges and brain tissue) and encephaloceles (brain tissue only).

They are classified as acquired and spontaneous. Spontaneous encephaloceles, which are the focus of this publication, are those for which no traumatic, neoplasic, inflammatory or iatrogenic origin can be found, and they represent approximately 20% of the total,[3,4] and they can be multiple. Over the years various physio-pathological mechanisms have been highlighted to explain their origin, although in these spontaneous cases they appear to be associated with benign intracranial hypertension.[5–8]

Clinically they can manifest as symptoms of persistent serous otitis media, conductive hearing loss, otoliquorrhoea or neurological symptoms such as epilepsy (due to irritation of the herniated brain tissue), headache, aphasia (due to the temporal area being affected) or alterations to the facial nerve (due to compression of the nerve or possible associated malformations).[3,4,9–11]

The object of this paper is to describe the surgical treatment used in the therapeutic approach to the last three cases treated in our department: a combined transmastoid approach, performing a temporal minicraniotomy to control an existing defect. The procedure is not the most commonly used to approach this disease; however it was our approach of choice for the treatment of meningo-encephaloceles as we consider that it is not excessively complex and enables excellent control of these lesions.

Methods

The three cases covered involve three women aged between 45 and 67 years of age.

They had no relevant clinical history of interest, or a history of additional otoneurological disease.

They presented with a watery discharge over several months, two of the patients had undergone the placement of transtympanic ventilation tubes. The third case was referred to our department from a different centre as she presented with pneumococcal meningitis, as she had a persistent headache and fever spikes despite appropriate medical treatment.

A preoperative study was performed on the three cases and high resolution CAT and MR imaging (Fig. 1).

In the first two cases, the bone defect had occurred only in the area of the mastoid antrum, whereas in the third case it was broader and extended from the antrum to the tympanic membrane anteriorly beyond the head of the malleus. Therefore the possibility of having to perform an excision of the ossicular chain with subsequent reconstruction had already been considered preoperatively.

A combined approach was used in the three cases performing a mastoidectomy and minicraniotomy and monitoring of the facial nerve. The procedure started using a classical retroauricular approach widening the incision to the temporal area. Firstly, a simple mastoidectomy was performed until the mastoid antrum was reached and the meningoencephalic herniation located. In the third case it was necessary to undertake a radical mastoidectomy as the herniation extended to the tympanic membrane.

Subsequently we proceeded to reduce the meningoencephalic tumour using bipolar cauterisation up to the edges

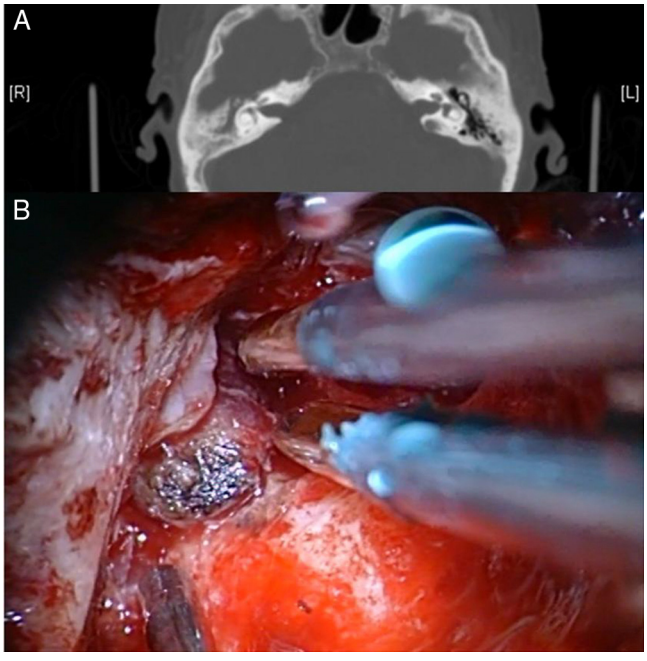

Figure 1 (A) CT axial cut showing the bone defect in the right ear. (B) Bipolar cauterization of the meningoencephalocele via transmastoid approach in the mastoid antrum and tympanic membrane.