



ORIGINAL ARTICLE

Endoscopic Transpterygoid Approach and Skull Base Repair After Sphenoid Meningoencephalocele Resection. Our Experience[☆]



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KEYWORDS

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Transpterygoid

Abstract

Introduction and objectives: Cerebrospinal fluid leaks associated to meningoencephaloceles of the sphenoid lateral recess are rare entities. A congenital bony defect at this level results in the persistence of Sternberg's canal, or a lateral craniopharyngeal canal, which is supposed to be the origin of these lesions. Our objective was to show that the endoscopic transpterygoid approach is an effective technique for their treatment.

Methods: We present a series of 5 cases of meningoencephaloceles of the sphenoid lateral recess treated with endoscopic sinus surgery (4 women and one man; mean age = 59, range 37–72 years). Cerebrospinal fluid rhinorrhoea was present in all of them and they all underwent a transpterygoid approach with reconstruction of the skull base. We describe the surgical technique and review the literature.

Results: No complications were observed during surgery or the postoperative period. After a mean follow-up of 81 months, only one recurrence was seen.

Conclusions: The transpterygoid approach has proven to be effective for the treatment of meningoencephaloceles of the sphenoid lateral recess. Providing wide access to identify the defect, followed by meningoencephalocele ablation, is the key for successful surgery.

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PALABRAS CLAVE

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Cirugía endoscópica
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Fístula de líquido
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Meningoencefalocele;
Receso lateral
de esfenoides;
Transpterigoideo

Abordaje endoscópico transpterigoideo y reparación de base de cráneo tras resección de meningoencefalocele esfenoidal. Nuestra experiencia

Resumen

Introducción y objetivos: Las fístulas de líquido cefalorraquídeo asociadas a meningoencefalocelos del receso lateral de esfenoides son entidades muy infrecuentes. Un defecto óseo congénito a este nivel da lugar a la persistencia del canal de Sternberg o canal craneofaríngeo lateral, supuesto origen de estas lesiones. Nuestro objetivo es exponer que la cirugía endoscópica nasosinusal con abordaje transpterigoideo es una técnica efectiva para su tratamiento.

Métodos: Presentamos cinco casos de meningoencefalocelos de receso lateral de esfenoides tratados con cirugía endoscópica (4 mujeres y un hombre, edad media = 59, rango 37-72 años). Todos presentaban rinoliquorrea y en todos se realizó un abordaje transpterigoideo con reconstrucción de la base de cráneo. Realizamos una descripción de la técnica quirúrgica y una revisión de la literatura.

Resultados: Ninguno tuvo complicaciones intra o postoperatorias y solo se registró una recidiva, con una media de seguimiento de 81 meses.

Conclusiones: El abordaje transpterigoideo es efectivo para el tratamiento de meningoencefalocelos de receso lateral de esfenoides. Realizar un amplio acceso para identificar el defecto, seguido de la ablación del meningoencefalocele es la clave para una cirugía exitosa.

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Introduction and Objectives

Intranasal meningoencephalocele (MEC) is a protrusion of intracranial content, including meninges and brain tissue, through a defect in the base of the skull towards the nostrils or sinuses. It is a very rare lesion, with an approximate incidence of 1 per 35,000 persons, and are more common in the anterior skull base.^{1,2} Sphenoid sinus (SS) MEC are a very rare entity and can be arise spontaneously or have an acquired cause (traumatic or postoperative).

Depending on their location, they can be divided into medial or parasellar (through the superior or posterior wall of the SS) and lateral (towards the lateral sphenoid recess [LSR]); these last are the most infrequent.¹⁻⁴

Spontaneous lateral SS MEC originate from a congenital defect of the skull base, the result of an incomplete or premature fusion of the bone components involved in the complex ossification process of the sphenoids.^{5,6} This gives rise to a canal lacking bone covering, covered only by connective tissue, which is called the lateral craniopharyngeal canal or Sternberg's canal.⁷⁻⁹

The persistence of Sternberg's canal is sometimes associated with an extensive pneumatisation of the sphenoid sinus (a condition that provokes a thinning of the LSR roof) and elevated intracranial pressure; the presence of this canal can cause the appearance of spontaneous lateral MEC linked to a cerebrospinal fluid fistula.^{5-8,10}

This type of lesions requires surgical treatment to repair the defect and prevent potential intracranial complications. The location of the defect in the skull base determines the type of endoscopic approach required and, in the case of the lateral sphenoid sinus recess, the transpterygoid (TP) approach has been shown to be the most appropriate pathway.^{1,3,6,8,10-12}

We present our experience in 5 cases of MEC treated using endoscopic TP approach. Likewise, the studies published are analysed and compared with our results.

Methods

We present a series of 5 diagnosed cases of LSR MEC and detail their characteristics in [Table 1](#). All of them showed unilateral watery rhinorrhoea as the presenting symptom and its analysis was positive for Beta-2 transferrin or Beta-trace protein. There was a history of prior head injury in 2 cases and 1 case presented meningitis 1 month after the rhinorrhoea began.

All patients received preoperative a computed tomography (CT), a study that revealed a bone defect in one or the other lateral wall of the SS ([Figures 1-3](#)). In all cases sinonasal endoscopic surgery using TP approach and reconstruction of the skull base were performed ([Figure 4A and B](#)).

Results and Surgical Technique

The same surgical technique was performed for all 5 MEC cases: sinonasal endoscopic surgery using TP approach to access the LSR.

In the premedication phase, before anaesthesia induction (some 30 minutes before the beginning of the surgery), the patient received an intrathecal injection of 0.5-1 ml of 5% fluorescein.

The nostril was first decongested with surgical patties and vasoconstrictor. The operation began with removal of the middle turbinate, from which the mucoperiosteal flap to be used in closing would be obtained. Next, a wide half meatotomy, complete ethmoidectomy and sphenoidotomy

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