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Endoscopic management of spontaneous meningoencephalocele of the lateral sphenoid sinus

Clinical article

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Object. Spontaneous meningoencephaloceles of the lateral sphenoid sinus are rare lesions that are hypothesized to result from persistence of the lateral craniopharyngeal canal. Prior reports of the management of this lesion have been limited by its relative rarity. The objective of this paper is to report the theoretical etiology, surgical technique, and outcomes in patients undergoing endoscopic repair of spontaneous meningoencephalocele of the sphenoid sinus.

Methods. The authors conducted a retrospective review of a multiinstitutional series of 13 cases involving patients who underwent endoscopic repair of spontaneous meningoencephalocele of the lateral sphenoid sinus. The surgical technique and pathophysiological considerations are discussed.

Results. The clinical manifestations included CSF rhinorrhea (85%), chronic headache (77%), and a history of meningitis (15%). The endoscopic approaches to the lateral sphenoid sinus were transnasal (39%), transpterygoid (23%), and transethmoid (39%). Two patients (8%) had postoperative CSF leaks, one of which closed spontaneously and one of which required revision endoscopic closure. All patients were free of leak at most recent follow-up. One patient experienced postoperative meningitis in the early postoperative period.

Conclusions. Endoscopic endonasal closure is an effective modality in the treatment of spontaneous meningoencephaloceles of the lateral sphenoid sinus. If the sphenoid sinus has extensive lateral pneumatization, adequate exposure may require a transpterygoid approach. *(DOI: 10.3171/2009.7.JNS0842)*

Key Words • cerebrospinal fluid leak • encephalocele • sphenoid sinus • endoscopic sinus surgery • meningoencephalocele • skull base

Meningoencephaloceles of the sphenoid sinus are rare and most commonly occur as a result of trauma, iatrogenic injury, or skull base erosion from inflammatory or neoplastic disorders. Spontaneous lesions are exceedingly rare and have been theorized to result from either increased ICP or preformed developmental pathways.[1,9,26] Progressive erosion of the skull base in patients with increased ICP and well-pneumatized sphenoid sinuses may result in focal areas of dehiscence and herniation of intracranial contents. Sometimes, an incompetent diaphragma sellae causes the suprasellar arachnoid cistern to prolapse inside the sellar cavity, a radiological condition termed "primary empty sella," which is usually asymptomatic.[22] "Empty sella syndrome" is the pathological variant of a radiologically verified empty sella.[15] Errors in the embryological development of the sphenoid bone may also result in congenital defects of the skull base and may present in adulthood as an incidental neuroimaging finding of meningoencephalocele or symptomatically with CSF rhinorrhea and meningitis. The development of the sphenoid bone is complex and involves the fusion of multiple cartilaginous precursors into a single osseous structure. Incomplete fusion of the precursor of the greater wing of the sphenoid with the presphenoid and basisphenoid areas can result in a persistent channel termed the lateral

Abbreviations used in this paper: ICA = internal carotid artery; ICP = intracranial pressure.