

CASE REPORT

SPHENOID SINUS (SS) ANTERIOR MEDIAL TEMPORAL LOBE ENCEPHALOCELE (AMTLE) WITH SPONTANEOUS CSF RHINORRHOEA: A CASE REPORT

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ABSTRACT: Cranial encephaloceles are the herniation of intracranial meninges and brain tissue through a defect in the cranium or skull base. These are rare conditions with an incidence of approximately 1 in 35,000 people, and are more common in the anterior cranial fossa than those in the middle one.^{1,2} Temporal lobe herniation through a middle fossa defect into the lateral recess of the Sphenoid Sinus is even rarer than its medial representation. Intrasphenoidal encephaloceles are extremely rare findings³. Spontaneous, or primary, CSF fistula is a separate entity with no underlying cause of the CSF leak. Spontaneous CSF leaks are usually associated with a co-existing encephalocele of variable size⁴. We present a case of spontaneous CSF rhinorrhoea in a sphenoid sinus Anterior Medial Temporal lobe encephalocele herniating through a clinically silent lateral Craniopharyngeal canal.

KEYWORDS: Anterior Medial Temporal lobe encephalocele, Basal encephalocele Lateral Craniopharyngeal canal, Lumbar drainage device, Spontaneous CSF rhinorrhoea

CASE REPORT: A 54-year-old female presented to our outpatient department with chief complaints of spontaneous watery nasal discharge through right nostril associated with refractory headache & recurrent neck stiffness since 6 months. $\beta 2$ transferrin test & diagnostic nasal endoscopy were suggestive of CSF rhinorrhoea arising from sphenoid sinus. HRCT PNS (high resolution computed tomography of paranasal sinuses) revealed a 1cm x 1cm bony defect in the lateral wall of sphenoid sinus with soft tissue protruding through it (Figure 1). MRI (Magnetic Resonance Imaging) showed herniation of temporal lobe through the defect with subtle features of encephalomalacia of the adjacent temporal lobe (Figure 2). Endoscope-assisted transnasal approach was performed for surgical repair of CSF rhinorrhoea & excision of the temporal lobe encephalocele. To start with a vascular pedicled mucosal flap of the nasal septum mucoperichondrium and mucoperiosteum based on the nasoseptal artery i.e. the Hadad flap was harvested endoscopically. After harvesting the Hadad flap, endoscopic Sphenoidotomy was performed to remove the anterior wall of the sphenoid sinus. Then, a 30-degree angled endoscopic view clearly demonstrated the lesion as a pulsating membranous tissue bulge in the lateral recess of the sphenoid sinus (Figure 3). The herniated brain tissue along with meninges protruding through a small round bony defect 1cm x 1cm was identified and the exact site of CSF leak located. The herniated brain tissue along with its meninges was carefully resected. The resection stump was sealed with a biological glue-soaked autologous fat and the bony defect was with sealed with tragal cartilage, tensor fascia lata, biological glue & the Hadad flap. A lumbar

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drainage device catheter was put in the subarachnoid space at the L4–L5 intervertebral space and was advanced till T12-L1. The Lumbar drain management protocol of draining to a specific volume method was followed. An average amount 8-10 cc of CSF was drained per hour to maintain a relatively low CSF pressure at the operated site. The post-operative period was uneventful. The post-operative follow up was done for six months & no recurrence was found.

DISCUSSION: The sphenoid bone is formed by the fusion of primordia of different embryonic origins. The orbito-sphenoid and the basi-post-sphenoid derive from the cephalic mesoderm whereas the alisphenoid and the basi-pre-sphenoid are from neural crest cell origin⁵ (Figure 4). The complexity of its development and non-fusion of some of its parts may lead to formation of abnormal foramina. If the posterior portion of the fusion of the greater wings of the sphenoid bone with its body is incomplete, it creates a lateral craniopharyngeal canal. In the presence of a lateral recess of the SS, the lateral craniopharyngeal canal can communicate with the SS after its pneumatization, acting as a possible site of origin of congenital encephaloceles.⁶

Wilkins has categorized Temporal lobe encephaloceles into 5 types i.e. Lateral, Posterior, Anterior, Anterior inferior & Anterior medial.⁷ An Anterior medial temporal lobe encephalocele protruding in the lateral sphenoid sinus is one of the most unusual types of basal temporal lobe encephalocele. The temporal lobe encephaloceles in the lateral sphenoid sinus may present with a variety of clinical features, such as CSF rhinorrhoea, recurrent meningitis, headache, seizure, and some somatic complaints.⁸

The repair of temporal lobe encephaloceles in the lateral recess of the sphenoid sinus can be approached either via transcranial, transfacial or endoscopic transnasal route. In the present case, the endoscopic transnasal approach was performed to excise the temporal lobe encephalocele & to repair the CSF leak. The Hadad flap is a versatile and reliable reconstructive technique for large dural defects of the anterior skull base cerebrospinal fluid leaks.⁹ Endoscopic transnasal approach is an effective, less invasive and do not require a large external incision and temporal lobe retraction, minimizing brain manipulation. The lumbar drainage catheter in subarachnoid space at T12-L1 gives an access to monitor the CSF pressure. There are three types of drain management protocols: draining at a specific level, draining to a specific volume, and draining at a specific pressure to monitor CSF pressure. In our case, draining to a specific volume protocol was used to maintain relatively low CSF pressure.

CONCLUSION: Anterior Medial Temporal lobe encephalocele in the lateral recess of the sphenoid sinus is a rare entity which must be suspected in patients who present with spontaneous CSF rhinorrhoea. The Anterior Medial Temporal lobe encephalocele herniates through a clinically silent lateral Craniopharyngeal canal into the lateral recess of the sphenoid sinus. The endoscopic transnasal approach that provides a wide angled or side angled view has a great advantage in the treatment of sphenoid sinus encephaloceles over conventional transcranial and transfacial approaches. Placement of a lumbar drainage device (LDD) is a useful adjuvant tool for postoperative monitoring of CSF pressure to maintain a relatively low CSF pressure at the operated site.

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Figure 1: shows the bony defect in the lateral wall of sphenoid sinus with right medial temporal lobe protruding through it .

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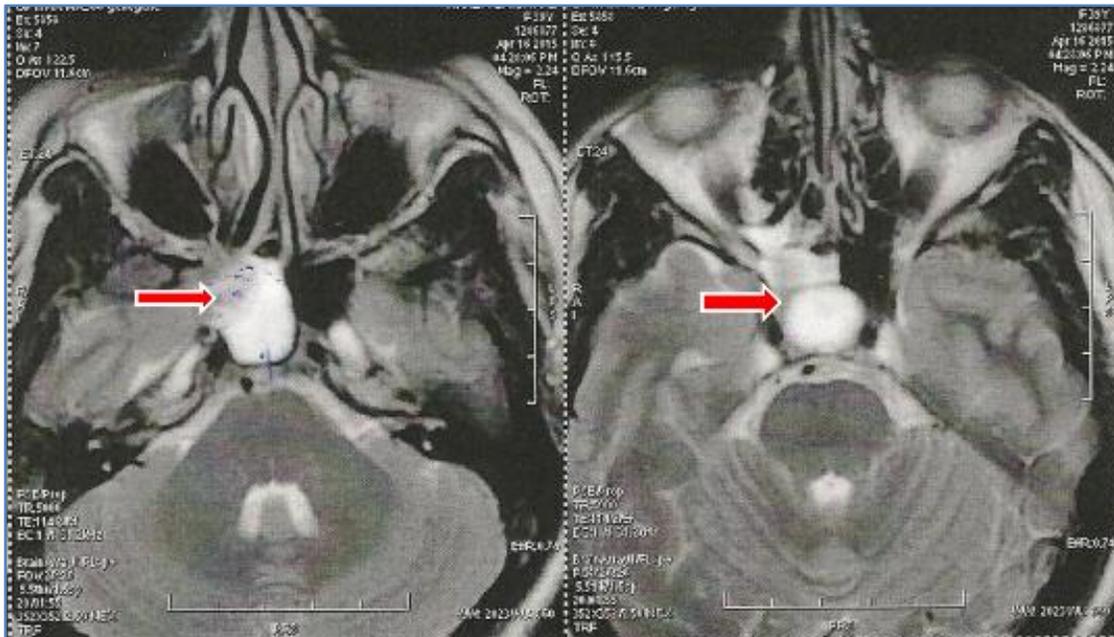


Figure 2 : shows herniation of temporal lobe through the lateral wall of rt. Sphenoid sinus with CSF fistula .

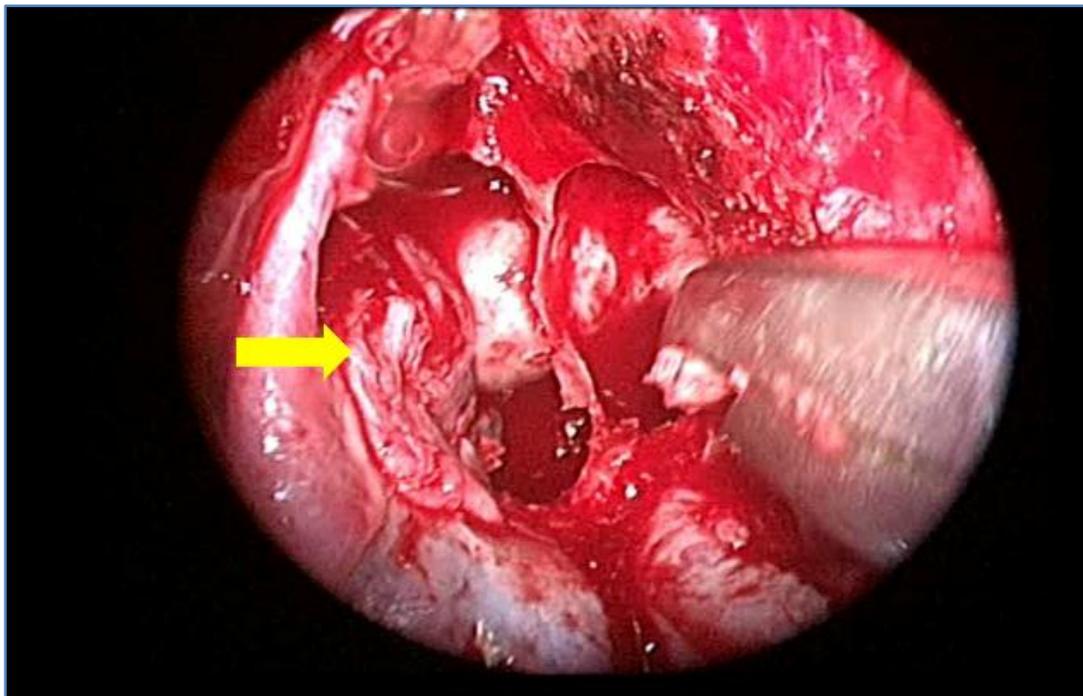
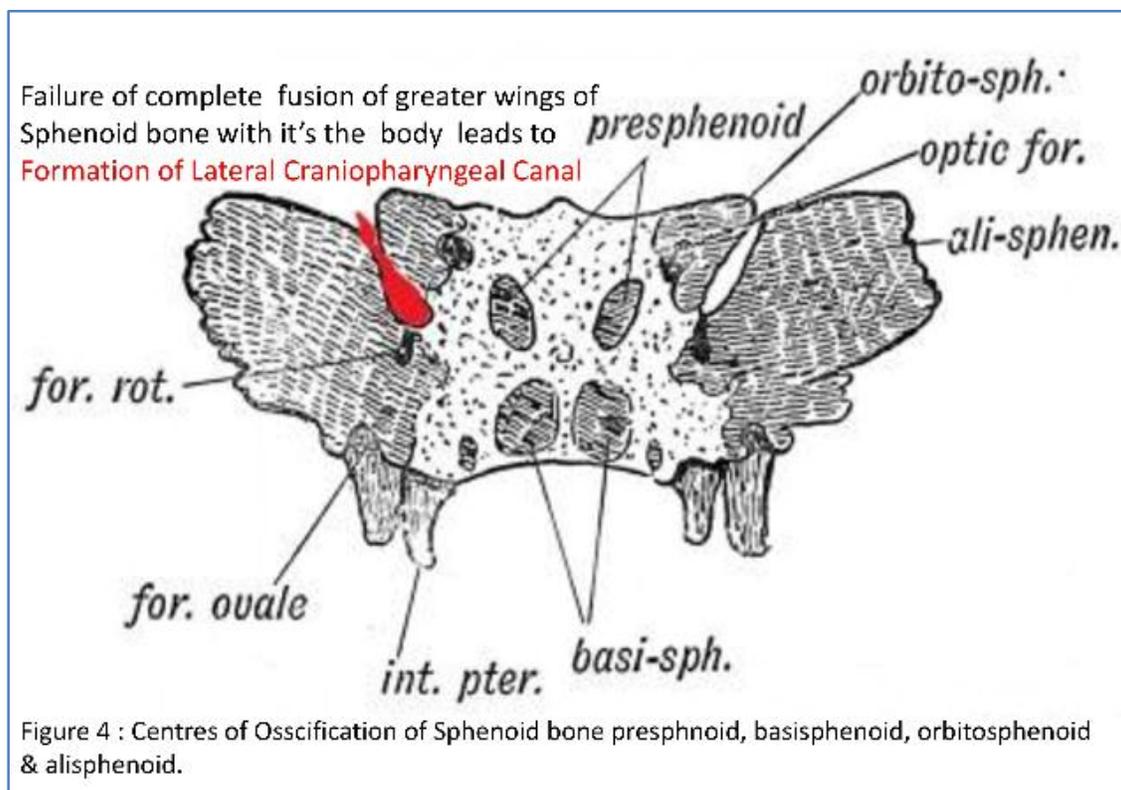


Figure 3 : Anterior medial Temporal Lobe Encephalocele along with meninges in Sphenoid Sinus .

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