

Osteo Dural Fistulae in the Lateral Wall of the Sphenoid Sinus

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Aim:

CSF fistulae that involves the lateral wall of the sphenoid sinus is a rare entity. This article has an objective to report a case of the reconstruction of the sphenoid sinus lateral wall osteo dural defect by a trans pterygoid endoscopic approach.

Case:

The case is about a 55-year-old woman(A.Z) who complained from CSF rhinorrhea during the last 4months in the origin of a unique episode of meningitis. Medical history didn't find any history of head trauma. CT scan of para nasal sinus has found an osteo dural defect in the lateral wall of the sphenoid sinus.

CSF fistulae was repaired by trans ethmoido-ptyergoidal or trans ethmoidal endoscopic approach. The surgical approach was successful with no residual CSF leak.

Discussion:

The endoscopic surgery by transethoido-ptyergoidal or transptyergoidal approaches is efficient to repair osteo dural defect in the lateral recess of the sphenoid sinus.

Conclusion:

The endoscopic transptyergoid approach offered an access to the lateral site of the sphenoid sinus. This approach is efficient procedure to manage CSF fistulae of the lateral wall of the sphenoid sinus.

Keywords: Rhinorrhea, osteo-dural defect, endoscopy, trans pterygoid approach, reconstruction.

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I. Introduction:

Osteo dural defect is a rare condition that causes CSF fistulae which can lead to recurrent meningitis in most cases. Traumatic origin of CSF fistulae was found in 80 – 90% of cases while the non-traumatic cases were found in 4 – 10% [1,2,3].

CSF fistulae and encephaloceles of the middle cranial fossa and particularly in the lateral recess of the sphenoid sinus is a rare condition. This affection is associated with obesity, in women, well pneumatized sinus and prolonged intracranial hypertension [4,5,6].

The endoscopic repair has become the adequate treatment of this affection with a success rate of over 90%. That was achieved by refining the reconstruction methods and mastering the intra cranial pressure [7,8,9].

The endoscopic endonasal trans ethmoido-ptyergoidal or transptyergoidal approach is ideally adequate for the osteo dural repair of CSF fistulae in the lateral wall of the sphenoid sinus [4,5,6,7,8,9].

In this article, we are reporting a case of a 55yo woman who was operated-on by trans-ptyergoidal approach that we are describing below.

II. Clinical case

The case is about a 55yo woman (A.Z) who complained from Rhinorrheain the last 4 monthsand was treated of an episode of meningitis in the department of infectious diseases. Her medical history did not mention any head trauma. Mrs A.Z didn't complain from any nasal obstruction, headaches, pain, olfactory or ocular malfunction.

The nasal endoscopy showed a clear liquid flowing through the right sphenoidal ostium.

The diagnosis of the osteo dural fistula was certain after isotopic transit and CT scan of the paranasal sinuses with thin multiplanar reconstruction of the bony structures.

CT scan of the paranasal sinuses showed a break in the rightlateral recess of the sphenoid sinus bone.

The patient was operated on under general anaesthesia. The endoscope 0° was introduced and we have observed a clear liquid flowing through the right sphenoid sinus ostium as well as the sphenopalatine recess.

The surgical procedure started with a partial resection of the middle turbinate, unicinectomy and antrostomy of the middle ostium with widening of the posterior wall of the maxillary sinus. The anterior ethmoidectomy is performed with resection of the basal lamella of the middle and superior turbinates as well as

the posterior ethmoidectomy. After that the anterior sphenoidectomy is achieved with identification of the sphenopalatin foramen followed by the ligation of the sphenopalatin artery with its branches. The medial aspect of the posterior wall of the maxillary sinus was partially removed. The upper part of the pterygoid process of the sphenoid bone was removed by Kerrison forceps.

The anterior sphenoidotomy is enlarged laterally revealing the osteo dural defect which can be identified by the presence of a small meningocele and the presence of CSF leak in the antero supero lateral aspect of sphenoidal sinus floor.

The meningocele was reduced in size by bipolar coagulation. Mucosa of the sphenoid sinus was removed. The osteo dural defect is reconstructed by a mucosal graft harvested from the middle turbinate and was inserted in "inlay" fashion and kept in place by the bone of the middle turbinate.

Visual assessment of the reconstruction did not show any CSF leak, fibrin glue is applied with a fibrillar haemostatic agent

Post operatively, the patient rest in dorsal decubitus with head elevated 15° – 30°. We suggest that the patient avoid leaning her head forward with the help of cervical collar.

The patient was put under antibiotics during her stay in the hospital. When she was discharged, we advised our patient to avoid leaning forward, handling weight more than 7 kilogrammes during the following weeks and even to avoid mouth opening when sneezing or coughing.

Six years after, we can conclude that our patient has completely recovered from her illness.

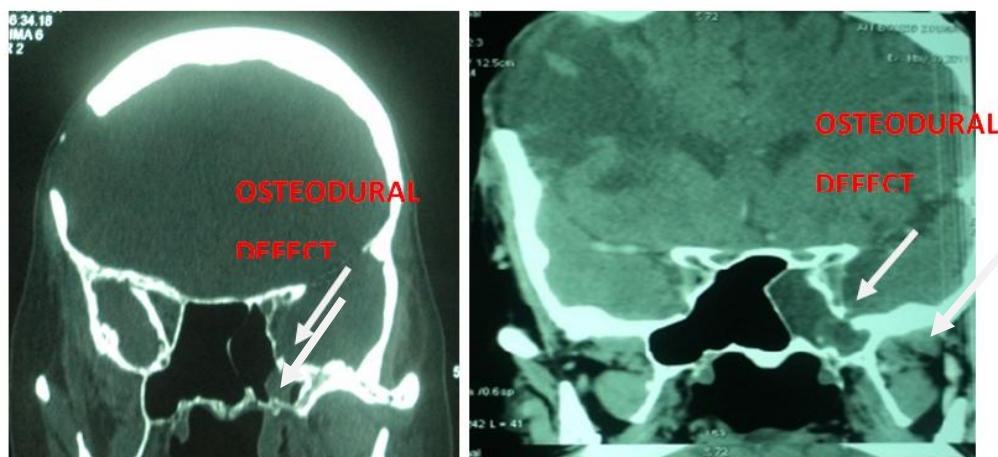


FIG :CT scan in coronal view showing the site of the osteo dural defect in the left sphenoid sinus wall .

III. Discussion:

CSF leak can have congenital, tumoral, traumatic or idiopathic origin. The spontaneous CSF leak is related to the abnormal congenital dehiscence of the Sternberg canal and altered by the increasing intra cranial pressure [1,2,4].

The non-traumatic origin of rhinorrhea is more common among adult women of more than 30-year-old of age with a sex ratio of 1:2 females. The CSF leak can have origin at any site including osteo dural defects in the cribriform plate in 35%, sphenoid sinus in 26%, the anterior ethmoid in 18% and the frontal sinus in 10% of cases. Whereas the posterior ethmoid and the inferior clivus are found in 9% and 2% respectively [2,4,5,6,7].

The diagnosis of an osteo dural fistula is established from the onset of a clear liquid running through the patient nostrils or after swallowing of a slightly saline liquid.

CT Scan is the best diagnosis tool to identify the defect in the skull base in 80% of cases.

The contributing factors to the development of the CSF fistula in the sphenoid sinus are the congenital, traumatic, tumoral and the increasing intracranial pressure [2,4,5,6,7].

The lateral wall of the sphenoid sinus is a rare location for CSF leak. When it happened, the CSF fistula is usually associated with obese women and a well pneumatized sinus as well as the spontaneous increasing intra cranial pressure [2,4,5,6,7].

The sphenoidal sinus lateral wall defect represents 9.8% of normal autopsies. Most of CSF fistulas tend to heal spontaneously in 7 to 10 days. Hence, the opened fistulas are associated with high risk of meningitis [10,11, 12, 13].

Advances in the mini invasive surgery helped the development of the endo nasal endoscopy of the skull base. The trans ethmoidal trans pterygoid endoscopic endonasal approach is the best therapeutic alternative in the management of Osteo dural defect in the lateral wall of the sphenoid sinus with a slight morbidity rate and 95% of success rate [12,13,14,15].

This approach helped the adequate exposition of the lateral wall of the sphenoid sinus with a partial resection of the middle turbinate and antero posterior ethmoidectomy as well as the opening of maxillary sinus. The sphenopalatine artery is identified and coagulated followed by the identification of the optic nerve prominence and the internal carotid artery [12,13,14,15].

The resection of the medial pterygoid process is necessary to achieve a proper exposition of the lateral wall of the sphenoid sinus.

Many grafts are usually used for the reconstruction of the osteo dural defect (fat, fascia, mucosae, bone, cartilage and synthetic material or combination these materials) after the resection of the sinus mucosae to speed up the cicatrization process with the help of fibrin glue [16,17,18,19].

However, surgery must keep the sphenoid sinus permeable to avoid post-operative mucocele [20].

The post-operative period is usually simple and the patient have to rest in bed with head elevated for about 15° - 30° in the next 5 days to avoid increasing intra cranial pressure which can lead to loosen the graft. Some restrictions need to be applied on the activity of patient post operatively [21]. Antibiotics are taken by the patient to prevent meningitis despite it is a classical matter of debate as antibiotics decrease significantly meningitis rate [21].

IV. Conclusion:

The lateral wall of the sphenoid sinus is a rare location of CSF leak. When it happened, the Leak is usually associated with obese women and a well pneumatized sinus and a spontaneous increased intra cranial pressure. The endoscopic surgery is the best therapeutic option for this affection with a slight rate of morbidity and high rate of success in 90% of cases

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