

Mucocele of the Sphenoid Sinus Presenting With Unilateral Visual Impairment A Case Presentation

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Abstract: Mucoceles of the sphenoid sinus are rare. They represent 1% of all paranasal sinus mucocoeles. Because of the close proximity with vital structures, early diagnosis and treatment of the disease is essential to prevent morbidity. A case of a sphenoid sinus mucocele with visual loss and video of the surgical drainage is presented along with a review of the literature.

Introduction: Mucoceles of the paranasal sinuses is a result of blockage of sinus ostiums. Mucoceles have the capability of expansion and can exert pressure on the surrounding vital structures. Sphenoid sinus mucocoeles constitute 1% of all paranasal sinus mucocoeles.¹ Because of the close proximity with vital structures early diagnosis and treatment of the disease is essential to prevent mortality and morbidity. The following is a literature review and case presentation of a sphenoid sinus mucocele presenting with unilateral visual impairment.

Case Report: A 45-year-old man was admitted to the ENT Department. He complained of visual impairment and pain in his left eye, recurrent headache, nasal drainage, facial pressure, diplopia and postnasal discharge. The symptoms began 2 years ago. Visual impairment was slow and progressively increased during the last six months. The past medical history was unremarkable.

On general examination, vital signs were within normal limits. Neurological examination was normal and there were no focal neurologic deficits. Ophthalmoscopy was normal bilaterally. Extraocular movements of the left eye were normal. Anterior rhinoscopic examination was normal. Nasal endoscopic examination revealed nasal polyposis in the region of the left middle meatus (Figure 1). The computerized tomography (CT) scan of the paranasal sinuses revealed sphenoid sinus expansion and nasal polyposis in the anterior ethmoid region. The magnetic resonance imaging (MRI) examination of the paranasal sinus revealed mucocele formation in the sphenoid sinus that encroached upon the left orbital cavity (Figures 2 and 3).

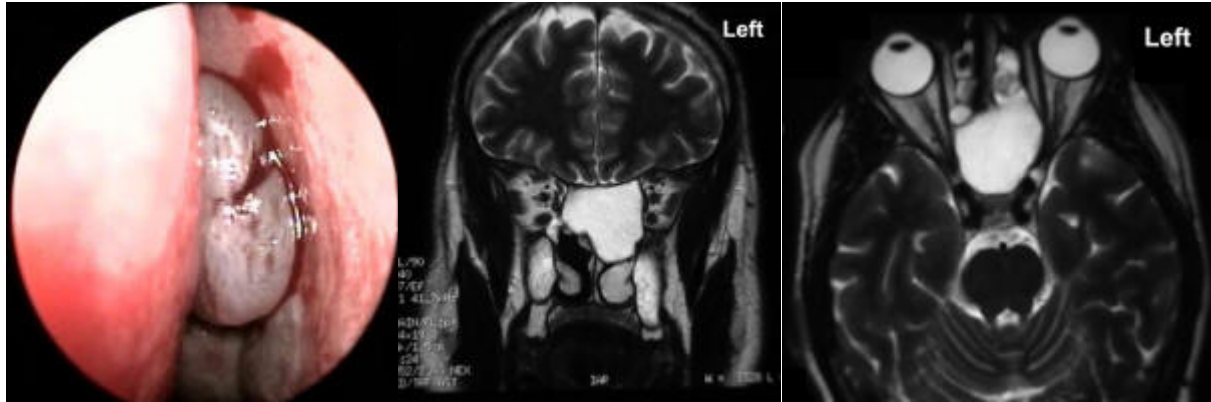


Figure 1

Figure 2

Figure 3

Urgent surgical intervention was performed. Endoscopic sinus surgery was done under general anesthesia. An uncinectomy, anterior ethmoidectomy and polypectomy were performed. The anterior wall of the sphenoid sinus was bulging into the nasal cavity. Biting forceps were used to remove the posterior nasal polyps and to enter the sinus by removing the bulging sphenoid mucosa. The fluid was removed with suction. The anterior wall of the sphenoid sinus and the anterior wall of mucocoele were widened to assure adequate drainage and inspect vital structures. Marsupialization of the mucocoele was completed. The area of the optic nerve and posterior wall of the sphenoid sinus was visualized (see video). The thin bony covering over the optic nerve and internal carotid artery was intact. There was no postoperative complications. The patient's symptoms resolved after surgery and he maintained asymptomatic one month after surgery.

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Discussion: A sphenoid sinus mucocoele is a rare entity. They represent 1% of all paranasal sinus mucocoeles.¹ A mucocoele is an epithelial-lined mucous containing sac which is capable of expansion. Males and females are equally affected. Mucocoeles are rare in the pediatric population because the sphenoid sinus completes its pneumatization about 12 years of age.² The etiology of mucocoeles is not clear. Mechanical obstruction of sinus ostia from trauma, nasal polyposis, allergic rhinitis, and chronic sinusitis is the most common cause of mucocoele formation.² In this case, nasal polyposis obstructed the ostia.

The sphenoid sinus has complex anatomical relations. The sinus has close proximity with the optic nerve, internal carotid artery, maxillary nerve, cavernous sinus, cranial nerves, III, IV and VI, the vidian nerve and the pituitary fossa.³ Clinical manifestations of the disease depends upon the degree of mucocoele expansion.

Diagnosis of a mucocoele is based on history, physical and imaging examinations. The sphenoid sinus is difficult to directly examine. Thus, CT scan and MRI examination of the paranasal sinuses are necessary. CT examination demonstrates the bony landmarks, anatomic variations of the paranasal sinuses and shows the enlargement of sphenoid sinus mucocoele. MRI examination reveals sphenoid sinus expansions in all directions.² The differential diagnoses include hypophyseal tumors, craniopharyngiomas, meningiomas, gliomas, and tumors of skullbase.³

The most commonly reported clinical manifestations are headache (89% of cases), decreased visual acuity (57%), oculomotor palsies (56%), and exophthalmos (25%).⁴ Some patients present with acute onset of significant visual loss.⁵ Sudden bilateral blindness has also been reported in the literature.⁶ Our patient had

a history of headache in the retro-orbital region for a year. Visual impairment slowly and progressively increased in the last six months.

There are two mechanisms that explain the visual impairment in sphenoid sinus mucocele. A gradual loss of vision is caused by circulatory disorder of the optic nerve caused by the gradual pressure exerted by a sphenoid mucocele.⁷ A sudden onset of visual loss is the result of spread of infection or inflammation from the mucocele to the optic nerve.⁸ In this patient, visual loss in the left eye was slow and progressive. The visual loss was precipitated by the increase in mucocele size causing compression of the optic nerve. The prognosis for the recovery of the visual loss is poor if the onset is sudden or if there is no light perception preoperatively.⁷

An external surgical approach was often used for the management of sphenoid mucoceles before endoscopic surgery techniques became available. Marsupialization by partial removal of the anteroinferior walls of the mucocele using an endoscopic endonasal approach has been the primary surgical choice.⁸ This approach prevents recurrences and complications. Prompt diagnosis of the disease can prevent development of serious mortality and morbidity.

Conclusion: Sphenoid sinus mucoceles, even though rare, must be kept in mind in patients presenting with visual disturbances, proptosis and headache. Large sphenoid mucoceles can be managed by endoscopic sinus surgery with drainage through the nasal cavity. This procedure can be performed on an out-patient basis with little patient morbidity. Follow-up is done in the surgeon's office where the patency of the surgical drainage can be periodically checked, and if necessary the sphenoid sinus cleaned, using the fiberoptic endoscope. Prompt investigation, diagnosis and early surgery is required to avoid permanent complications of the disease.

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