

Introduction

Fungal balls are a non-invasive form of fungal rhinosinusitis characterized by dense fungal debris within an obstructed sinus cavity.^{1,2} Isolated sphenoid involvement is uncommon, and chronic blockage may lead to mucocele formation as retained secretions expand and remodel surrounding structures.^{2,3} Although benign, these processes can cause significant symptoms due to their proximity to critical neurovascular anatomy. Management centers on endoscopic removal of fungal material and wide drainage of any associated mucocele to restore ventilation and prevent recurrence.¹⁻³

Case Presentation

A 76-year-old man presented with a 14-month history of debilitating, predominantly left-sided retro-orbital headaches. He had no focal neurologic deficits. Imaging obtained during headache evaluation revealed an incidentally discovered left sphenoid sinus mass with associated skull base erosion.

Computed tomography demonstrated extensive posterior, superior, and lateral bony erosion of the sphenoid sinus. Further imaging showed an anterior sphenoid lesion with mixed density and a posterior lesion consistent with a fungal ball and mucocele (Fig. 1, Fig. 2, Fig. 3, Fig. 4, Fig. 5).

Given the severity of symptoms and radiographic findings, the patient was taken for endoscopic surgical management.

Surgical Management

The inferior portion of the superior turbinate in the sphenoethmoidal recess and the basal lamella of the middle turbinate were resected. Extensive scarring of the sphenoid outflow tract was noted without a patent ostium (Fig. 6). The recess was cauterized below the natural ostium, and a Cottle elevator was used to deflect tissue inferiorly. The sphenoid face was drilled at the level of the rostrum.

Upon entering the sinus, purulent material was identified (Fig. 7) and suctioned; a greater flow was cultured. Fungal debris was removed with suction (Fig. 8), and the Kerrison was used to enlarge the sinus inferiorly. Copious purulence and amorphous material were irrigated and suctioned using a curved suction. Residual debris in the lateral and superior sinus was cleared with a J curette and curved suction. Complete removal was emphasized due to high recurrence risk of the fungus ball.

A cavity posterior to the fungus ball at the clivus was probed, releasing clear fluid consistent with a mucocele (Fig. 9). Valsalva confirmed cessation of flow, with no evidence of CSF leak. Following complete clearance, a Merocele sponge was placed.



Fig 1. Soft tissue window showing the heterogeneity within the sphenoid sinus, typical of fungal balls



Fig 2. Bone window showing extensive neoosteogenesis as a reaction to the fungal ball

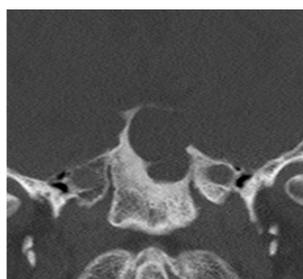


Fig 3. Bone window showing a mucocele with bony erosion superiorly and laterally.

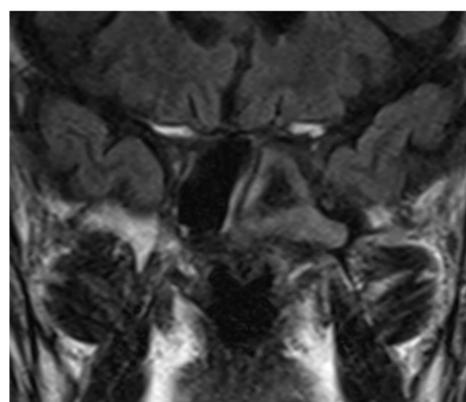


Fig 4. MRI of the sphenoid sinus with central hypointensity typical of a fungal ball

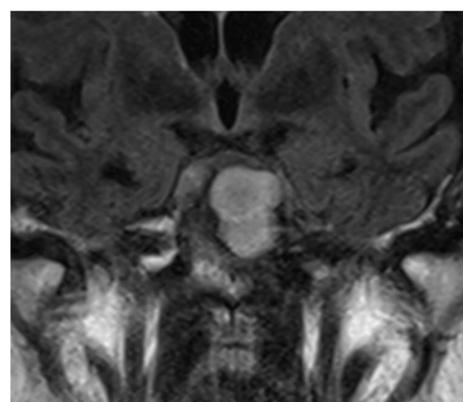


Fig 5. MRI with homogeneous signal intensity of the sphenoid mucocele



Fig. 6 Scarred sphenoid opening without a visible patent ostium.



Fig.7. Purulent material within the sphenoid sinus prior to suctioning.

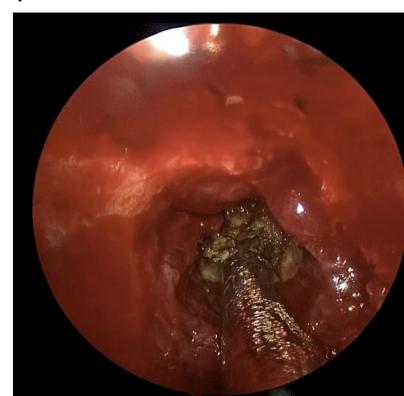


Fig 8. Removal of fungal debris using curved suction instrument.



Fig. 9 Clear fluid release from posterior mucocele cavity.

Conclusions

At one-week follow-up, the sphenoid sinus was patent and the patient reported complete resolution of headaches. This outcome highlights the effectiveness of thorough surgical debridement in cases of complex sphenoid disease. Early postoperative recovery further supports the importance of complete clearance to prevent recurrence.

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