

Sellar Abscess Following Endoscopic Sinus Surgery: A Case Series

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Abstract

Sellar abscess is an uncommon finding that can be attributed to iatrogenic causes. Here we report our experience with two cases of intracranial abscesses following endoscopic sinus surgery (ESS). Neither patient had undergone sphenoid sinusotomy previously. Both patients developed symptoms of intracranial pathology within two weeks of their primary ESS, and both presented to us within five weeks of ESS with visual changes and systemic symptoms. MRI was performed which revealed fluid densities within the sella extending into the cavernous sinus in one case, and in the other case, a parasellar fluid density within the cavernous sinus was revealed. An endoscopic approach to drain the abscesses was employed for both patients. In both cases, cultures yielded polymicrobial growth. Complete resolution of symptoms were seen within six weeks for both patients. Although rare, sellar abscesses can occur following endoscopic sinus surgery, resulting in significant morbidity and risk for mortality.

Introduction

Sellar abscess is an uncommon finding and can sometimes be attributed to an otolaryngologic cause such as sinusitis, mastoiditis, or an otogenic source (1). In particular, sellar abscess can present in a variety of ways. Whole body symptoms due to hormonal imbalance and infection as well as specific symptoms due to involvement of local structures are common at presentation (2). The well protected and secluded anatomical location of the sella leaves only several modes of origin for primary abscesses. These include hematogenous spread to the pituitary gland, extension of a neighboring infection, and transphenoidal seeding by iatrogenic cause or congenital defect (3). While transphenoidal seeding by iatrogenic cause, especially transphenoidal pituitary surgery, has been commonly reported, sellar abscess following endoscopic sinus surgery (ESS) has not (4,5). Parasellar abscess is another form of intracranial abscess that is in close proximity to the sella but predominantly presents with focal symptoms from mass effect to the structures running through the cavernous sinus (6). Although some symptoms are the same or similar, parasellar abscess and cavernous sinus thrombophlebitis are distinct entities. Here we present two cases of intracranial abscesses soon after ESS; one sellar abscess and one parasellar abscess. We postulate specific reasons for the cause of each case and review the current literature.

Methods

Following approval from Thomas Jefferson University's Institutional Review Board, we reviewed our institution's endoscopic skull base surgery experience between 2012 - 2016 for sellar and parasellar abscesses. The medical records were reviewed for initial presentation, imaging, procedures, and outcomes.

Case 1

Age/Sex	Presentation	Diagnosis	Outcome
63/F	CNIII Palsy, Left Dilated Pupil, Hypotensive	Sellar Abscess	Complete resolution at 6 weeks

Table 1. Summary of case 1 including age/sex, presentation, diagnosis, and outcome.

Case Description

A 63 year-old female with a history of lupus (not on immunosuppression) underwent ESS at an outside institution for pansinusitis. Approximately two weeks after ESS she developed a left sided headache, left ptosis, and diplopia. On presentation to our institution, she reported "dizziness" and "lightheadedness" as additional symptoms. A CT sinus with contrast showed a left cavernous sinus defect. MRI imaging revealed a 1x1 cm intrasellar collection in continuity with a smaller .5x.5 cm left parasellar collection within the cavernous sinus. Operative management was pursued after a failed trial of IV antibiotics. The abscess was decompressed via sphenoid sinusotomy. Intraoperative cultures revealed a polymicrobial infection. She was put on IV antibiotics for four weeks. At six weeks, MRI imaging showed no evidence of recurrent infection with good aeration of the left sphenoid sinus. Her cranial nerve three palsy completely resolved without any diplopia.

Case 1 Imaging

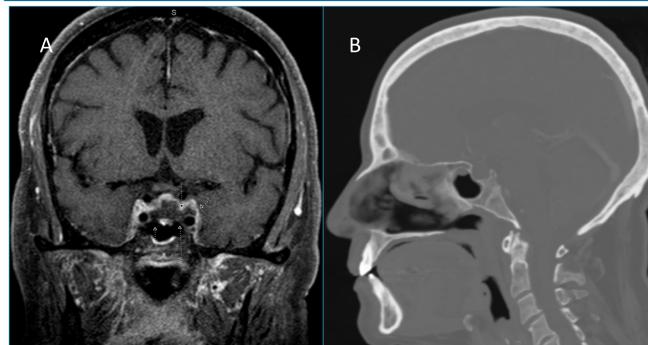


Figure 1. Imaging of case 1. A. Coronal T1W MRI showing hypointense lesion within sella extending to the left cavernous sinus. B. Sagittal CT showing an intact sella with no dehiscence or erosion of bone. Sphenoid sinus shows mucosal thickening.

Case 2

Age/Sex	Presentation	Diagnosis	Outcome
28/M	Headache, Diplopia, Fever, Neck Pain	Parasellar Abscess	Complete resolution at 4 weeks

Table 2. Summary of case 2 including age/sex, presentation, diagnosis, and outcome.

Case Description

A 28 year-old male with a history of AIDS and chronic sinusitis underwent ESS at an outside institution for sinusitis thought to be the source of his bacteremia. After persistent headaches, fevers, diplopia, and new onset neck pain he was eventually transferred to our institution out of concern for invasive fungal sinusitis. MRI brain and orbits showed extensive paranasal sinus disease with left cavernous sinus abscess extending to the left superior orbital fissure and evidence of pachymeningeal enhancement. Upon opening the medial aspect of the cavernous sinus there was spontaneous egress of purulent material consistent with infection. Aspiration and irrigation was carried out until gross purulence had been evacuated. Cultures revealed polymicrobial growth. He was treated with IV antibiotics for six weeks. At one month, the patient felt well with no headache, neck stiffness, or vision changes.

Case 2 Imaging

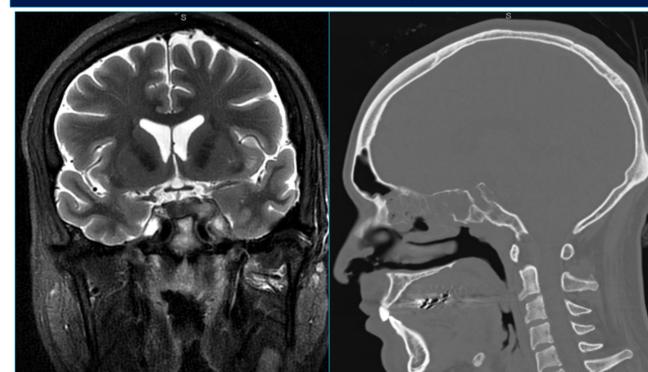


Figure 2. Imaging of case 2. A. Coronal T2 MRI showing hyperintense signal within the left cavernous sinus. B. Sagittal CT showing bony erosions of the sella tuberculum and clivus. Sphenoid sinus reveals complete opacification.

Discussion

Determining the source of a sellar or parasellar abscess can be difficult. In these cases, abscesses as a complication from ESS is feasible. In our first case, the sphenoid sinus had not been previously opened during the initial ESS procedure at the OSH. It is possible that residual disease led to local spread of infection to the sella, or inadvertent iatrogenic seeding may have occurred without detection. The second case, a parasellar abscess following ESS was thought to have been caused by inadvertent direct seeding of microbes from the initial procedure. Direct spread of infection may occur during instrumentation of the sphenoid sinus or presumably if residual sphenoid disease is left to progress. Very few studies report sellar, parasellar, or other intracranial abscess as a complication of ESS (8).

Conclusions

ESS has long been considered a safe procedure, but there are risks and the occasional complication. Sellar and parasellar abscess can result from endoscopic sinus surgery in different ways. If the sphenoid sinus is not adequately addressed, or alternatively if the sphenoid sinus seeded during routine limited ESS, microbial infection may lead to spread of the infection to the sella or cavernous sinus.

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