CASE REPORT

Endoscopic transmaxillary drainage of an infratemporal fossa abscess

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SUMMARY

Infratemporal fossa abscess is a rare and challenging condition to diagnose and manage. A few reported cases have been mostly due to odontogenic infections and were managed by external or intraoral drainage. This is the first reported case of an infratemporal fossa abscess that was successfully managed by endoscopic drainage via a transmaxillary approach.

BACKGROUND

The infratemporal fossa is described as a skull base space bounded superiorly by the greater wing of sphenoid and temporal fossa; anteriorly by the posterior wall of the maxillary sinus; medially by the lateral pterygoid plate; laterally by the mandibular ramus; and posteriorly by the deep lobe of the parotid gland; it opens inferiorly into the parapharyngeal space.¹ It contains important structures such as the maxillary artery and the mandibular nerve, and communicates with the orbit and cranium through surrounding foramina. Infections in this space have been found following maxillary sinusitis, maxillary sinus fracture, temporomandibular arthroscopy, dental infection and tooth extraction.² The most common method to drain the abscess appears to be via a sublabial incision and dissection along the posterior buttress of the maxilla.^{2,3} This is the first reported case of endoscopic drainage of an infratemporal fossa abscess through the posterior wall of the maxillary sinus.

CASE PRESENTATION

A 47-year-old Asian woman presented to our clinic with symptoms of right painful facial swelling for 1 week, which was gradually increasing in size. She did not report of fever, pus discharge in the mouth or toothache. There was no recent history of ingestion of any foreign body or tooth extraction. She was previously treated at another institution with antibiotics and pus aspiration from the facial swelling, but her condition failed to resolve.

On examination, the patient had limited mouth opening. The right parotid gland was swollen and tender. No neck nodes were palpable. There was no pus discharge from the right parotid duct and neither was there any dental caries.

INVESTIGATIONS

CT scan performed at the previous institution showed a swollen right parotid gland with an abscess in the right infratemporal fossa (figure 1). The abscess wall was noted to be abutting the posterior wall of the right maxillary sinus.

Figure 1 CT scan showing abscess cavity in right infratemporal fossa.

TREATMENT

A generous middle meatal antrostomy was performed under general anaesthesia to visualise the right maxillary sinus. It was normal with no polyps or pus. A sublabial incision and anterior maxillary wall antrostomy was performed. Using access afforded by the anterior and medial maxillary antrostomy, endoscopes and instruments were introduced into the maxillary sinus. The posterior wall of the maxillary sinus was thinned out and easily removed. Thick pus drained out from the infratemporal fossa once the wall was breached (figure 2). Pus was sent for culture and a piece of the abscess wall was sent for histopathological examination (figure 3). The cavity was flushed with a copious amount of saline solution and packed with povidone soaked ribbon gauze which was brought out into the nasal cavity through the middle meatal antrostomy.

OUTCOME AND FOLLOW-UP

The ribbon gauze pack was removed on the following day. The patient was able to eat a normal diet. She was discharged with antibiotics and analgesics. She still had limited mouth opening 1 month post-operation. Nasal endoscopy showed the maxillary sinus to be clear and the posterior wall to have healed well.

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Figure 2 Pus seen draining out from the posterior wall of the right maxillary sinus.

Repeat CT scan did not show any residual collection but the right pterygoid and masseter muscles and parotid gland were still enlarged (figure 4). Pus culture was negative and histopathology of the abscess wall was reported as negative for malignancy or tuberculosis.

She was sent for physiotherapy to improve her mouth opening. One-year postoperation, she currently has a normal mouth opening, and recent nasal endoscopy showed a patent middle meatal antrostomy with a clear right maxillary sinus.

DISCUSSION

A search of MEDLINE using the key words 'infratemporal fossa abscess', 'infratemporal space abscess' and 'infratemporal abscess' revealed 11 case reports for a total of 14 cases reported to date (last search performed in December 2012). Out of these, 10 were secondary to dental pathology, 1 case occurred in an immunocompromised patient, another following maxillary sinusitis, another following maxillary sinus fracture and 1 following temporomandibular joint arthroscopy. Our patient did not have any dental problems or sinusitis. However, her parotid gland was swollen and tender and could have been the source of the infection.

In our patient the abscess was clearly visible on CT scan confirming the diagnosis. In other reported cases, diagnosis had been delayed because initial CT scan did not show any abscess.² In the early cellulitis phase, CT scan will show homogeneous

Figure 3 Right infratemporal fossa visible through incision in the posterior wall of the right maxillary sinus.

Figure 4 Postoperative CT scan showing the absence of abscess.

swelling of the soft tissue with loss of the fat plane.⁴ These features are frequently missed leading to delayed diagnosis.

Most of the reported cases were treated with intraoral incision and drainage of the abscess. Endoscopic drainage through the posterior maxillary wall has not been reported to date. However, endoscopic removal of benign tumours encroaching into the infratemporal fossa has been reported.⁵ In that report, adequate access to the infratemporal fossa was provided by performing an endoscopic medial maxillectomy. In addition, a septal flap was raised so that an assistant could insert additional instruments through the opposite nostril.

Another technique of endoscopic access to infratemporal fossa has been reported using an incision in the temporal region and dissecting subperiosteally down into the fossa.⁶ This technique needs specialised endoscopic equipment and requires visualisation into the fossa using angled endoscopes which tends to distort the anatomy and requires considerable expertise. Endoscopic access to the infratemporal fossa has also been described for treatment of invasive fungal sinusitis.⁷

In our patient, adequate access to the infratemporal fossa was provided by a small anterior maxillary antrostomy and middle meatal antrostomy using regular endoscopic sinus surgery instruments, including bone rongeur, Freer elevator, backbiting forceps, sickle knife, straight suction and artery forceps.

Learning points

- ▶ The diagnosis of an infratemporal fossa abscess should be suspected in patients presenting with fever, facial swelling and trismus.
- ▶ CT scan should be carefully evaluated to avoid missing early features of an abscess formation.
- ▶ Some of these abscesses may safely be drained via endoscopic approach, without the need for extensive intraoral incisions and external dissection.

Anterior maxillary antrostomy has been criticised for causing complications like facial oedema, oroantral fistula, maxillary sinusitis and nerve injuries.⁸ However, most of these problems are caused by the huge openings made during Caldwell-Luc surgery and will not occur when a small opening is made, which would be just adequate to pass the endoscope and another instrument through.

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