Endoscopic Removal of Ethmoidal Foreign Body

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Introduction

Foreign bodies in the ethmoidal sinuses pose a challenge due to the complex anatomy of these paranasal sinuses and due to the close proximity of important structures like the orbits, the cribriform plate, dura, and adjacent important structures like arteries and nerves. An additional difficulty lies in cases of blast injuries, as they usually cause destruction of soft tissue and bone, thereby distorting the local anatomy. With the advent of CT scans, assessment has improved considerably [1].

Nasal endoscopes have improved in the last two decades with better rod lenses and fibreoptics. These have enabled us to see the intranasal structures better and led to endoscopic guided surgery such as functional endoscopic sinus surgery (FESS). Once familiar with this approach, surgeons could confidently attempt to carry out other procedures endoscopically, like the removal of foreign bodies [2]. Though not yet a common procedure, endoscopic removal has been documented for foreign bodies of the ethmoid [3] and more frequently of the maxillary sinus [4].

Case Report

A 21 year old serving soldier sustained injury to the face due to an artillery shell blast during enemy fire in a forward area. He had bleeding from the nose but had no history of vomiting, unconsciousness or visual complaints. He was found to have a penetrating injury of the nose, due to a shell splinter fragment, which was lodged in the ethmoid sinuses. He was initially operated at a Forward Surgical Centre and wound debridement was done, but the splinter fragment could not be located. He was then evacuated to a Command Hospital.

At the Command Hospital, the patient was stable, but had persistent epistaxis. Examination of the patient showed that the shell splinter must have entered through the right ala of the nose and penetrated through the nasal septum, distorting it. Both nasal fossae were filled with blood clots. The shell fragment could not be seen. Radiological investigation (Fig.1) and CT scans showed a metallic foreign body, 1.2cm x 0.8cm in size, lodged in the left middle ethmoid sinuses, just beneath the cribriform plate. CT scan also showed associated soft

tissue injuries and blood clots seen filling the left nasal fossa (Fig.2).

One week after the injury, the patient was taken up under general anaesthesia for removal of the foreign body. It was decided to initially make an attempt using nasal endoscopy. Should this not succeed, an external ethmoidectomy approach was planned. The left nasal fossa was cleared of clots but the foreign body could not be reached from the left, due to the distorted nasal septum. The endoscope was then passed from the right nasal passage and through the septal wound. In this way, the foreign body could be visualized in the roof of one of the left ethmoid sinuses. A forceps was passed alongside the endoscope and the foreign body was gripped under vision and removed. Bleeding was minimal, as our request for controlled hypotensive anaesthesia was ably provided for by our anaesthetist colleagues. Anterior nasal packing was done.

The patient recovered well symptomatically. However, on review after two months, he still had a deviated nasal septum and a nasal septal perforation. Septoplasty and repair of the perforation was done under local anaesthesia. On subsequent review, after six months, the patient had recovered well and was asymptomatic.

Discussion

The ethmoid sinuses are a complex group of paranasal sinuses surrounded by important structures. Foreign bodies entering them not only damage the surrounding tissues but also act as a source of infection and therefore have to be removed. Localisation of foreign bodies and assessment of the extent of other injuries has been made easier due to CT scans [1]. Deep seated foreign bodies should ideally be removed by an open procedure under guidance by image intensifier [5]. Now, with improved endoscopes, endoscopic removal may be tried, but only by ENT surgeons accustomed to nasal endoscopy and FESS, and only if the foreign body can be completely visualized endoscopically. If there is any doubt as to the location, or if the object cannot be clearly visualized, blind attempts should not be made so as to avoid damage to the surrounding structures such as the dura or the optic nerve. In such cases it is better to try an open

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Fig. 1 : Lateral skull radiograph depicting radio opaque irregular foreign body lodged in the ethmoid sinus

approach. Bleeding may also pose a problem during endoscopic surgery, as even a small amount of blood at the end of the scope blocks vision and prevents further surgery. Endoscopic removal is less traumatic, avoids a major surgery and is quicker. Following endoscopic procedures patients recover sooner and have less complaints, compared to those after a major surgery.

References

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Fig. 2 : Coronal CT scan, 5 mm thick sections, showing a metallic foreign body, 1.2 cm x 0.8 cm, in the left middle ethmoid sinus, lying beneath the cribriform plate, which appears to be intact. Soft tissue/clots seen in the left nasal cavity left ethmoid sinus and lining the left maxillary sinus

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Erratum

Please refer MCQs published in April 2004 issue of MJAFI at page 149. Question 10 should read "In a patient suffering from an infective corneal ulcer what should not be given". The error is regretted.