

Case Report

A nearly missed foreign body in frontal sinus: case report

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Received: 04 November 2019

Revised: 02 January 2020

Accepted: 03 January 2020

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ABSTRACT

Foreign body in paranasal sinus is rare. Very few cases have been reported of lodgement of foreign body in paranasal sinuses. Garces and Norris reported that 70% of these foreign bodies usually appeared after maxillofacial traumas and 30% appeared during or after dental procedures of maxilla. Foreign bodies are less common in the frontal sinus as compared to maxillary sinus. This is a case of foreign body in frontal sinus in an eighteen-year-old gentleman after a road traffic accident.

Keywords: Foreign body, Frontal sinus, Trauma

INTRODUCTION

The occurrence of foreign body in paranasal sinus is extremely rare. Symptoms are vague and usually discovered after extracranial and intracranial complications or by occasional radiology image.¹ We would like to highlight the detection of foreign body by aid of radiology imaging and complications that may occur following frontal sinus fracture.

CASE REPORT

An eighteen-year-old gentleman was involved in a high impact road traffic accident which caused his face to hit the windshield. The patient was triaged in emergency and trauma department, and full assessment was done. Clinical examination revealed a deep laceration wound over left supraorbital measuring 12×2 cm in which toilet and suturing was done. There were no other major injuries.

Computed tomography brain scan demonstrated fracture of the anterior table of frontal sinus with large fragmented hyperdense object with attenuation value

range from +1712 Hounsfield unit to +1719 Hounsfield unit seen within the frontal sinus which is suggestive of foreign body (Figure 1).



Figure 1: Computed tomography scan showing foreign body seen over left frontal sinus.

The patient was subjected for wound exploration under general anaesthesia. Foreign body was seen with direct visualization upon opening the suture (Figure 2). Presence of foreign body in frontal sinus confirmed with image intensifier. All foreign bodies were removed and identified as glass from the broken windshield (Figure 3). Patient recovered well post trauma and is on surveillance for late complications of frontal sinus fracture.



Figure 2: Foreign body seen upon direct visualization.



Figure 3: Removed foreign body-broken glass from the windshield.

DISCUSSION

Foreign bodies in the paranasal sinuses may be the result of maxillofacial trauma or after dental procedures involving maxilla. The maxillary sinus was affected in 75% cases and the frontal sinus in about 18%. Involvement of the ethmoid or sphenoid sinus is rare.¹ A great variety of foreign bodies can be found in the paranasal sinuses. These may include wood, cotton, gauze, bullet, shrapnel, glass pieces, and bone wax.²

Radiology imaging techniques aids in the diagnosis. In this case, we were able to detect foreign body through computed tomography (CT) imaging. The Hounsfield unit (HU) is a relative quantitative measurement of radio density. It was named after Sir Godfrey Hounsfield, recipient of the Nobel prize in Physiology or Medicine in 1979, for his part in the invention of CT, as it had immediate recognition as a revolutionary diagnostic instrument. The Hounsfield unit, also referred to as the CT unit, is then calculated based on a linear transformation of the baseline linear attenuation coefficient of the X-ray beam, where water is arbitrarily defined to be zero Hounsfield Units and air defined as -1000 HU.³

All medical practitioners must have a high index of suspicion upon reviewing trauma cases involving the head and neck region to avoid missed foreign body.

We would also like to highlight the management in frontal sinus fracture cases. Frontal sinus fractures account for 5 to 15% of all craniofacial fractures related to trauma. Whereas the indications for an invasive procedure had been much broader in the past, it has become more common to treat these fractures conservatively, due to improved imaging modalities, the advent of endoscopic surgical treatment of the nasofrontal outflow tracts, and the improved understanding of frontal sinus physiology. In looking at the CT scan, three elements must be critically evaluated: the anterior table, the posterior table, and the nasofrontal outflow tracts.⁴

There are several indications for surgical intervention with frontal sinus trauma. The first, and perhaps the most obvious, is severe displacement of the anterior table. The potential for postoperative contour deformities warrants reduction and stabilization of these fracture fragments. Posterior table involvement is perhaps more controversial. The concern with displacement is twofold. First, displaced posterior table fragments may cause a cerebrospinal fluid (CSF) leak through a tear in the dura. The other concern is entrapment of mucosa within the intracranial space which can lead to mucoceles.⁵

Complications with frontal sinus fractures tend to be seen late, and most of this centre around the development of a mucocele due to retained sinus mucosa. Thus, it is important for all patients with frontal sinus fractures to have a proper follow up.

CONCLUSION

Foreign body in frontal sinus is rare. However, all medical practitioners must have a high index of suspicion to avoid missed foreign body in frontal sinus. Proceed for radiological imaging to aid in the diagnosis. Lastly, a continuous surveillance in patients with frontal sinus fracture is important to detect and avoid late complications.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: Not required

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Cite this article as: Azwan NAB, Shanmugam RKS, Teng KY. A nearly missed foreign body in frontal sinus: case report. *Int J Otorhinolaryngol Head Neck Surg* 2020;6:425-7.