PHILIPPINE JOURNAL OF OTOLARYNGOLOGY-HEAD AND NECK SURGERY VOL. 29 NO. 2 JULY – DECEMBER 2014

Transorbital Removal of Foreign Body in the Sphenoid Sinus

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ABSTRACT

Objectives: To report a case of foreign body lodged within the sphenoid sinus and its extraction.

Methods:

Design: Case Report
Setting: Tertiary Government Hospital
Patient: One

Results: An 11-year-old girl was hit in the eye by an unknown object from an improvised slingshot. She had loss of vision of the left eye and headache without loss of consciousness. A plain craniofacial Computed Tomography (CT) scan showed a round opaque foreign body abutting the left sphenoid sinus, left posterior ethmoid cells and medial aspect of the left orbital region with adjacent soft tissue densities extending into the apparently ruptured, irregular left globe. The left posterior part of the lamina papyracea was not visualized probably fractured or ruptured. Transorbital enucleation of the left eye and endoscopy-assisted removal of the foreign body (a glass marble) were performed with no intra – operative and post – operative complications.

Conclusion: Foreign body of the sphenoid sinus is a rare condition. Adequate imaging is important for localization and planning the optimal surgical approach. Endoscopic guidance may aid in extraction.

Keywords: *Sphenoid sinus foreign body, Computed Tomography (CT), Endoscopic-guided, transorbital approach*

The sphenoid sinuses lie deep within the skull and behind the ethmoid air cells. The orbit, frontal and maxillary sinuses are the most commonly involved structures with penetrating foreign bodies.[1] Foreign body of the sphenoid sinus is a rare condition and most of the documented cases are shrapnel wounds.

We describe a non-shrapnel foreign body lodged within the sphenoid sinus.

CASE REPORT

An 11-year-old girl was hit in the left eye by an unknown projectile from an improvised slingshot leading to loss of vision and accompanying left-sided headache without loss of consciousness.

Physical examination after one month revealed a ruptured left globe. There was no light perception in the left eye while the right had 20/20 vision. *(Figure 1)* No visible entry wound or scar was seen. The neurologic examination was otherwise normal.

A plain craniofacial CT Scan revealed a round opaque foreign body abutting the left sphenoid sinus, left posterior ethmoid cells and medial aspect of the left orbital region with adjacent soft

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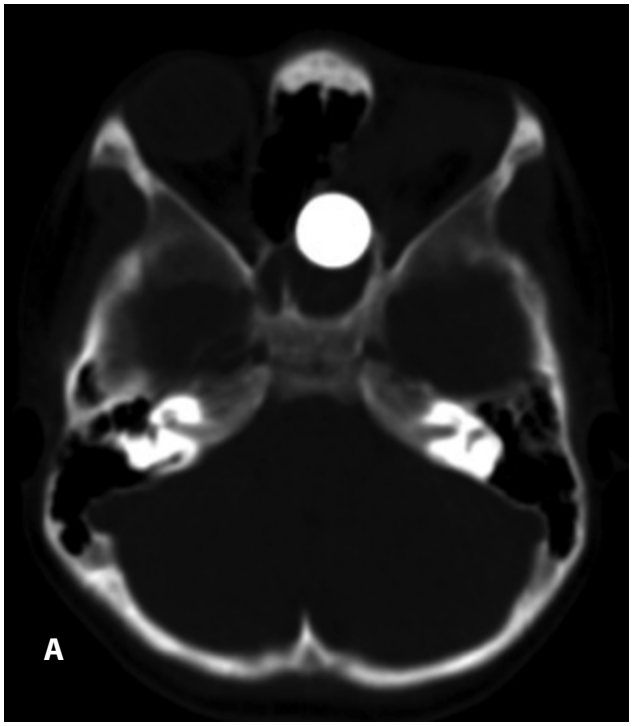
Philipp J Otolaryngol Head Neck Surg 2014; 29 (2): 19-21

tissue densities extending into the apparently ruptured, irregular left globe. The posterior part of the left lamina papyracea was not visualized probably fractured or ruptured. *(Figure 2)*

Following enucleation of the left eye, a 1.5 cm diameter glass marble was removed via endoscopy-assisted transorbital approach. *(Figure 3)* There were no intra – operative and post – operative complications.

Figure 1. Ruptured globe of the left eye of the patient

Figure 3. Glass marble removed within the sphenoid sinus



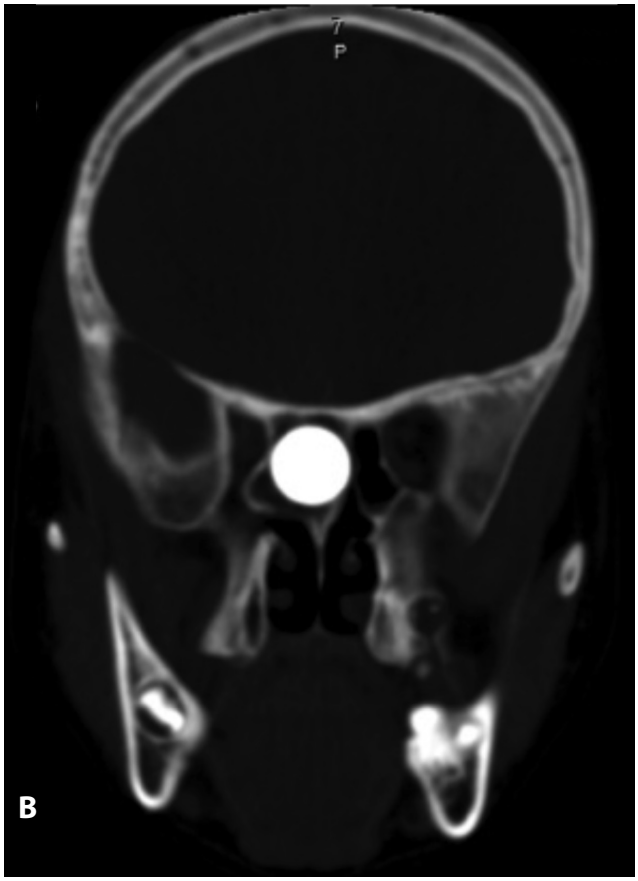


Figure 2A. Axial and **B.** Coronal plain craniofacial CT scan views of the patient showing the opaque foreign body

DISCUSSION

Paranasal sinus foreign body injuries have a lower incidence compared with facial injuries.[2] One study documented four sphenoid sinus foreign bodies out of 26,000 war wounds.[3] Thus, foreign body lodged in the sphenoid sinus is a rare condition. Most were due to shrapnel wounds and air gun pellets.[1-8] In this case, a glass marble was the projectile from an improvised slingshot. It entered the medial aspect of the left orbital area, lodging within the left sphenoid sinus while fracturing both the left lamina papyracea and posterior ethmoid air cells. The exact point of entry and trajectory of the foreign body were not identified primarily due to the one-month delayed consult.

The main and most important diagnostic procedure available is CT scan of the head which can localize the foreign body as well as demonstrate bone fragments and other lesions. Coronal CT sections provide good views of the sphenoid and adjacent paranasal sinuses and possible intracranial penetration. Magnetic resonance imaging (MRI) is a usually less informative diagnostic procedure for adequate imaging of bones.[8] Lastly, CT scans can guide the surgical approach for extraction. Craniofacial CT scan in our patient revealed the opaque foreign body within the sphenoid sinus. The left lamina papyracea was not visualized which indicated prior rupture or fracture. The left frontal and maxillary sinuses had mucosal thickening suggesting sinusitis. The CT scan was helpful in localizing the foreign body and revealing involvement of other structures such as bones and sinuses. It also showed that the foreign body could not be removed trans-nasally, favoring transorbital approach.

With the relatively low rate of these injuries, there are no standard methods of diagnosis and management.[9] A multidisciplinary ophthalmic, neurosurgical and otorhinolaryngological treatment approach is recommended.[1] Enucleation of the left eye was performed because the globe was already ruptured and the left eye was blind. Of the different approaches used for removal of foreign bodies within the sphenoid sinus, endoscopic guidance was employed in most reported cases of air gun pellets.[5-6, 9] A metallic foreign body was removed via a transmaxillary sublabial approach.[2] In this case, endoscopic-guided removal of foreign body was done using a transorbital approach. The patient did not develop any intraoperative and post-operative complications.

In summary, adequate imaging is important for localization and planning the optimal surgical approach for sphenoid sinus foreign bodies. Endoscopic guidance may aid in their extraction.

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