



## Penetrating knife in the maxillary sinus: Report of a rare case.

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### Abstract;

Presence of foreign bodies in the paranasal sinuses are not common findings. Many cases have been reported so far with foreign bodies like dental amalgam, chopsticks, gutta percha pellets, tooth, glue and even bullets. However, presence of foreign bodies in the maxillary sinus as a result of penetrating trauma is uncommon. Most of them have been the results of trauma after vehicle accidents, gunshot injuries and assaults. There are two treatment options – endoscopic and open surgical approach for the removal of sinus foreign bodies. We present a rare case of the transfacial penetrating injuries of maxillary sinus caused by a knife.

### Introduction;

Maxillary sinus foreign bodies account for about 50% of the foreign bodies in the paranasal sinuses. They usually have a dental origin <sup>(1)</sup> like tooth <sup>(2)</sup>, dental amalgam <sup>(3)</sup>, gutta percha points <sup>(4)</sup>, titanium implants <sup>(5,6)</sup>, dental bur <sup>(7,8)</sup>, dental paste <sup>(9)</sup> and dental impression materials<sup>(10)</sup>.

Non-dental foreign bodies like lead pencil <sup>(11)</sup>, broken handle of scooter <sup>(12)</sup>, plastic tubes <sup>(13)</sup>, bullet (radiopaque) <sup>(14)</sup>, rubber bullet <sup>(15)</sup>, air gun pellets <sup>(16,17,18,19)</sup>, ribbon gauze <sup>(20)</sup>, cigarette pipe stem <sup>(21)</sup>, bunch of hair <sup>(22)</sup>, glass <sup>(23)</sup>, piece of glass cylinder <sup>(24)</sup>, plastic chair glide <sup>(25)</sup>, sand <sup>(26)</sup>, stone <sup>(27)</sup>, wood <sup>(28)</sup>, matchstick <sup>(29)</sup>, ballpoint pen <sup>(30)</sup> penetrating metal bodies like metal door handle <sup>(31)</sup>, sewing needle <sup>(32)</sup>, base of wrist watch <sup>(33)</sup> and knife <sup>(34,35,36)</sup> have also been reported in maxillary sinus.

#### Case report;

A 43 year old lady in a state of shock was brought to the casualty with a foreign body in the left maxillary region in the early hours of morning. Otolaryngologist was called for. On questioning, she was involved in the altercation in which she was pinned down and stabbed in the left cheek region.

Physical examination showed whole blade of folded knife penetrating the left maxillary region leaving behind the handle outside (Fig.1). There was a punctured linear wound in the left cheek region measuring about 3 inches. Bilateral nose blockage and bleeding from both nostrils were noted.

Anterior rhinoscopic examination revealed the blade of knife across the floor, penetrating the septum. The patient had loss of vision in the right eye. Ophthalmologist's opinion was sought. They diagnosed her to have traumatic dislocation of lens and advised and she was advised conservative management. Posteroanterior, lateral and water's view radiography showed a large radiopaque object resembling a knife blade (2a, b,c).

It was decided to remove the foreign body immediately under general anesthesia. Using sub labial incision, upper lip, septum and cheek were elevated. The blade of knife has penetrated anterolateral wall of left maxilla, entered left maxillary sinus and pierced the medial wall of maxilla, traversed along the floor of the nose, penetrating the septum, through the right lateral wall of the nose and entered the right orbit causing dislocation of the lens. The knife blade was removed along the path of penetration and it was measuring about 4 inches in length (Fig. 3). Bleeding was controlled. The wound was irrigated thoroughly. Sublabial incision was closed. Linear wound in the left cheek region was closed. Patient received tetanus prophylaxis, antibiotics and decongestants. The wound healed well and she was discharged home on the fifth post-operative day (Fig.4). On subsequent follow up visits, the patient remained asymptomatic with a clear nasal airway.

#### Discussion;

The natural history of foreign bodies in the paranasal sinuses is only anecdotal and is unknown<sup>(37)</sup>. More than 50%of the foreign bodies are found in the maxillary sinus. Involvement of the frontal<sup>(38, 39, 40)</sup>, ethmoid<sup>(41, 42, 43, 44)</sup> and sphenoid sinuses<sup>(45)</sup> are nearly equal. Route of entry of foreign body is usually (i) Cheek, (ii) Lower eyelid, (iii) Lateral wall of nose and (iv) The mouth.

Foreign body in the maxillary antrum may present as an acute phenomenon or may remain silent for years<sup>(19)</sup>, some patients present with swelling in cheek, nasal regurgitation due to oroantral fistula. Some will have headaches, nasal stuffiness, purulent discharge, cheek swelling<sup>(21)</sup> and facial neuralgia<sup>(46)</sup>.

Potential complications related to foreign body includes recurrent sinusitis, rhinolith formation, cutaneous fistula, lead poisoning<sup>(18)</sup>, facial neuralgia, malignancies<sup>(1)</sup>, aspergilliosis, meningitis and chronic pain<sup>(31)</sup>. Mladina believes that metal foreign body should always be removed from the paranasal sinuses in order to prevent the possibility of development of chronic irritation or even malignancy<sup>(47)</sup>. They must be removed

surgically even when they are asymptomatic <sup>(48)</sup>. In our case the foreign body was a rusted knife blade and so we decided to remove the foreign body immediately.

The extent of penetrating injury is usually determined by physical examination and routine radiography. In this case, posteroanterior, lateral and water's view projections were sufficient and helped to locate the metallic object. For detection of plants or wooden foreign bodies, computerized tomography and magnetic resonance image are superior <sup>(3, 32, 43, 49)</sup>.

Open approaches are better suited in case of large foreign bodies or impacted foreign bodies <sup>(33)</sup>. Recently technical advances have made possible the use of endoscopic approach for the removal of the foreign bodies. This is useful for detecting and removing relatively small foreign bodies lodged in the paranasal sinuses <sup>(37,48,50,51)</sup>. Stereotactic guidance was used in some cases <sup>(18)</sup>. Advantages of endoscopic approach are non-invasive, decreased morbidity, decreased risk of tooth root injury and ability to fully visualise the sinus. Despite these advantages, open approaches are better suited for removal of large objects or those located anteriorly in the sinus. However, depending on the nature and location of the foreign body, combined approach may be necessary for removal of all the fragments <sup>(52)</sup>. In our case, we choose the open approach because of the large size of the knife blade.

#### Conclusion;

Sinus foreign bodies are rare findings. When they are discovered however, their removal is indicated, even if asymptomatic. Often otolaryngologists are called upon to remove them. Since foreign bodies in paranasal sinuses vary in size and location, otolaryngologists must be familiar with the different approaches for removing them. This paper is presented because of the unique nature of entry of foreign body through the maxilla to the opposite orbit.

Conflict of interest; None.

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Fig.1 Shows the patient with handle of the knife blade standing outside.





Fig.2a. Posteroanterior view showing the foreign body.



Fig.2b. Lateral view.

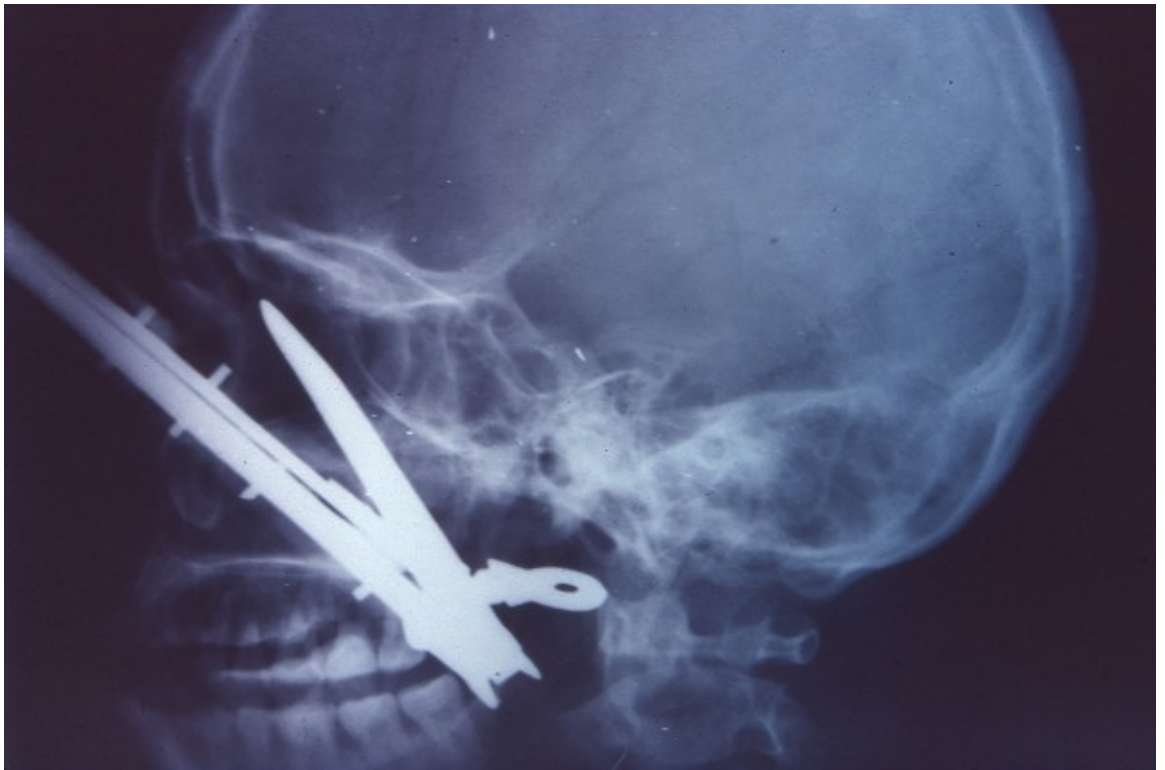




Fig 2c. Waters view

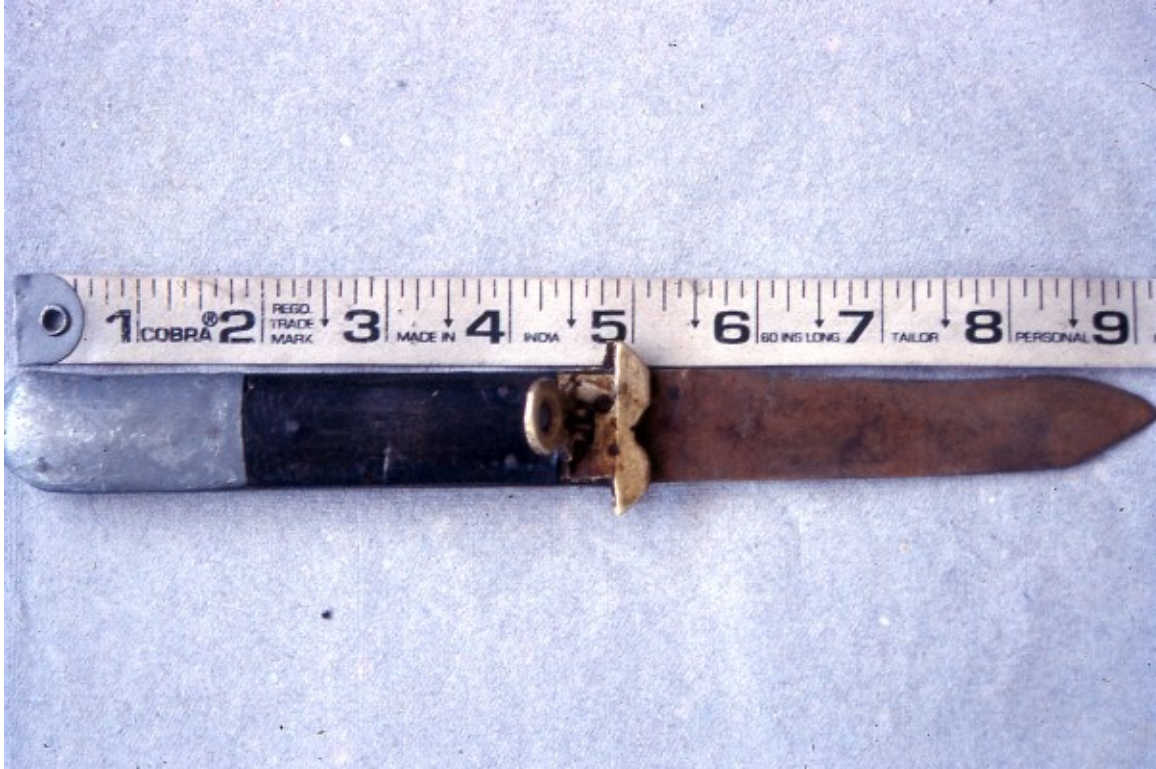


Fig 3. Shows the rusted knife blade measuring about 4 inches.



Fig 4. Shows the postoperative picture.

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