

**Foreign bodies in Head and Neck region: Review of cases.**

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**Abstract**

Foreign body impaction in the maxillofacial region is rare but is a common finding following trauma or assaults. Preoperative clinical and radiographic assessment, along with a good consideration of the nature of injury, size and location will provide the surgeon proper diagnosis to identify and retrieve the foreign materials completely. To treat this, the treatment modalities commonly followed are exploration, thorough debridement and removal of foreign body. This article brings out three cases of foreign bodies in maxillofacial region stating our experience for superficial and deep impacted foreign bodies.

**Key Words:** Impacted Foreign body, maxillofacial region, C-Arm, glass particles, gunshot injury.

**Introduction**

Foreign bodies infrequently encountered by oral and maxillofacial surgeons, but presents a diagnostic challenge to surgeon due to many factors such as the size of the object, the difficult access, and a close anatomic relationship of the foreign body to vital structures.<sup>1</sup>

Maxillofacial region has a complex anatomy with different systems. This region is full of different vents and tissue dead spaces in which foreign bodies could be concealed. These foreign bodies vary widely, could either be inanimate or animate objects, and often pose a diagnostic mystery. These bodies may be ingested,

inserted into the body cavity or deposited inside by a traumatic or iatrogenic injury. The identification of foreign body impaction is important, as it can be a source of persistent pain and infection which further migrate to adjacent vital regions.<sup>2</sup>

Here we have briefed three clinical cases of impacted foreign bodies in maxillofacial region with their treatment modality.

**CASE 1:**

A 46 year old male reported in our emergency department with a history of stab injury with a metallic sharp nail in the neck while working in field. He had

complaints of difficulty in neck movements and breathing. The patient was conscious, well oriented and hemo-dynamically stable on general examination.

On local examination, there was a 2 cm wound on right anterior part of neck, horizontally running backward across the skin crease with mild edema around the entry point (Fig. 1.1).



Figure 1.1: Showing wound of approx. 2 cm on neck indicating point of entry of metallic sharp nail.

As per history given by patient the impacted object was metallic in nature, thus contrast enhanced computed tomography (CECT) scan of the neck was done which revealed a hyper-intense shadow of about 2 cm x1 cm size embedded right lateral side of neck. Fortunately, metallic foreign body was not breaching any vital structures in the neck. So, transverse cervical approach under general anesthesia was planned to remove the metallic foreign body.

Intra-operatively, there was lot of edema in the soft tissues and it was difficult to identify the planes. Hence, we took benefit of C-arm to see the depth and trajectory of the metallic foreign body. Metallic foreign body was located after doing extensive dissection along with frequent finger palpation (Fig. 1.2).

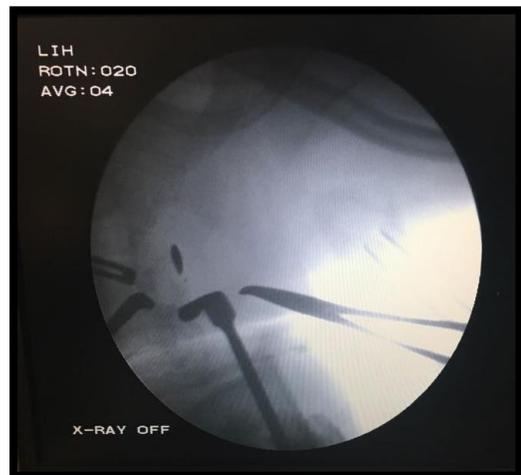


Figure 1.2: Showing intraoperative location of metallic sharp nail using C-Arm image



Figure 1.3: Showing removed metallic sharp nail.

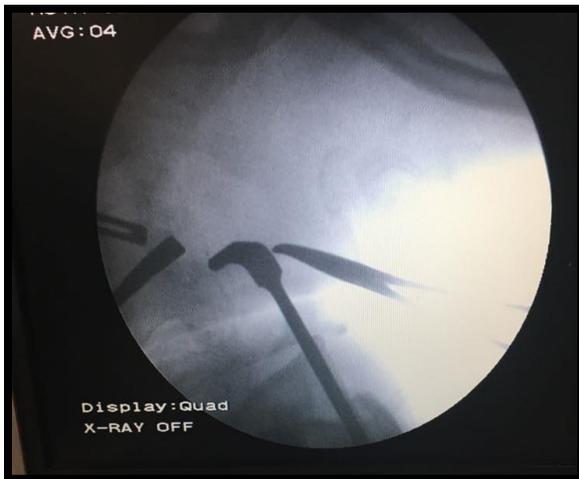


Figure 1.4: Showing intraoperative C-Arm image after removal of metallic sharp nail.



Figure 1.5: Showing immediate postoperative status of patient.

After exposing adequately metallic foreign body was then removed with an Allies tissue forceps (Fig. 1.3). (Fig. 1.4) shows intraoperative C-Arm image after removal of metallic sharp nail. Closure was done with 3-0 mersilk suture (Fig. 1.5). And patient was discharged after removing suction drain tube on 7th day.

**CASE 2:**

A healthy patient of age 48 years was admitted with a history of road traffic accident (RTA). Patient was professional driver and while driving he got hit by speeding vehicle from right side. The glass window was shattered by heavy impact and glass fragments stuck into right side of face of the patient. No history of unconsciousness, amnesias or vomiting given by the patient.

Patient was then taken to local hospital as profuse bleeding was present, where local debridement was carried out. At that point the doctor realized embedded glass fragments present all over the right side of the face, thus he referred the patient to our department (Fig. 2.1 A & B).



Figure 2.1: Showing pre-operative frontal profile.

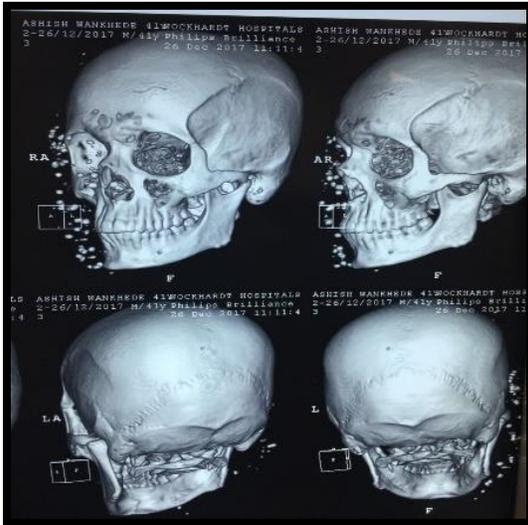


Figure 2.2: Showing 3D CT Images of Patient



Figure 2.3: Showing intra operative glass fragments removed

At hospital's emergency department, immediate CT, MRI was done showing no abnormalities like brain damage or any bone fracture segment. Close examination of neck showed no positive sign of hematoma or any lacerated injury. Clinical examination shows no injury to abdominal

or internal organs. 3D CT face was done which shows glass fragments of variable size particularly on right side of face (Fig. 2.2 A & B). Periorbital edema was seen around the right eye & no injury to eyeball. No significant intraoral finding seen.



Figure 2.4: Showing post-operative frontal profile of the patient.

Patient was immediately taken into operation room. Under GA, the glass fragments were removed. Intra operatively about 34 fragments were removed (Fig. 2.3). Larger wounds were closed with sutures (Fig. 2.4), wounds then irrigated thoroughly and dressing was given. Patient eventually was extubated and shifted in the ward. Post-operative recovery was uneventful and patient discharged on 5th day.

**CASE 3:**

A healthy 34 year old female patient reported to emergency department after gunshot injury, while patient was taking selfie with gun. Patient shot herself from very short distance. At the time of admission, she was conscious, well oriented and hemodynamically stable with all vitals in normal range.



Figure 3.1 – Showing pre-operative patient

After admission patient immediately underwent CT brain and MRI which showed no positive findings (Fig 3.2 & 3.4). On clinical examination, it was evident that bullet travelled the long course entered from anterior maxilla to posterior maxilla, passing back till base of skull followed the exit through infratemporal fossa (Fig 3.1). There was severe and gross edema seen. Lacerated wounds at the entry point of bullet were present. 3D CT of face revealed

multiple fractured segments at maxilla and zygomatic bone (Fig 3.3).



Figure 3.2, 3.3 and 3.4 - Showing pre-operative radiograph (CT scan, 3D CT Face, MRI)

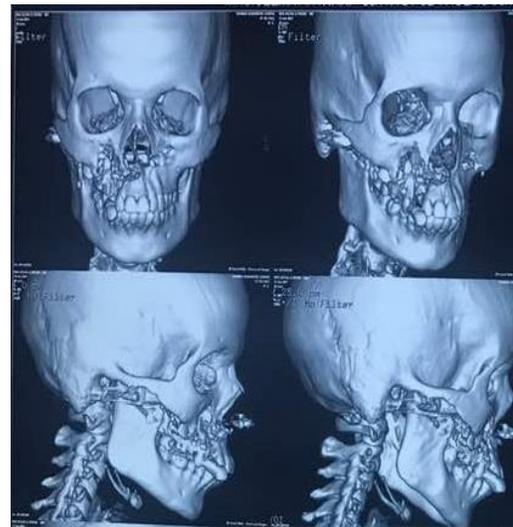


Figure 3.2, 3.3 and 3.4 - Showing pre-operative radiograph (CT scan, 3D CT Face, MRI)

Patient was immediately taken into operation room and under GA, initial debridement of the lacerated non-vital soft tissue carried out at all possible sites. Pre

auricular incision was given to explore the deep site of injury (Fig 3.3) and dissection carried out to trace the bullet (Fig 3.5 & 3.6) and was removed successfully (Fig 3.7 & 3.8).

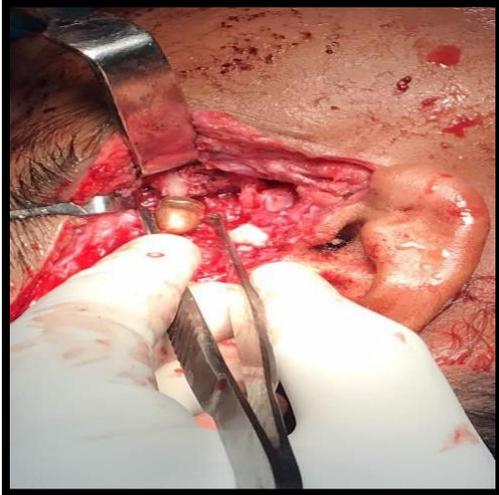


Figure 3.6, 3.7, and 3.8 – Showing intra operative removal of bullet.



Figure 3.9– Showing intraoperative distortion of zygomatic bone due to bullet injury and reconstruction of zygomatic bone.



Figure 3.10 - Showing post-operative patient.

Lateral access osteotomy was done through zygomatic bone. All the fractured segments are reduced & fixed. Fractured zygomatic bone was reduced and fixed with 4-hole plate (Fig 3.9). Wounds are closed in layers and thorough irrigation done. Patient extubated eventually and shifted to ICU followed by ward. Eventual recovery of the patient was good and discharge given on 7th day (Fig 3.10).

### Discussion

Foreign bodies may be ingested, inserted or deposited into a body cavity, as a result of traumatic or iatrogenic, blunt or penetrating injuries. The most common factors for impaction of these bodies are road traffic accidents, assault or falls and iatrogenic factors like self-harming habits. Objects like grit particles, wooden pieces,

glass, metals or even displaced tooth and its fragments may get embedded deep in facial tissue layers giving a challenge to the maxillofacial surgeon. Gunshot injuries as explained in this series causes deep impaction of foreign particles into deeper tissues, thus these injuries have more chances of residual foreign body and skips general examination.

Knowing the object causing the injury is very important to choose the type of imaging test. It is crucial to find the exact location of foreign body before its removal. Hence it is important to perform selective diagnostic imaging techniques, like plain radiographs, computed tomography (CT scans), magnetic resonance imaging (MRI), and ultrasound, depending on the location and composition of the foreign body. MRI cannot be done when metallic foreign body is present. Plain radiographs can hardly detect glass particle.<sup>3</sup> Contrast-enhanced and 3D CT examination gave more information about the exact location of the foreign body and the relationship between the foreign body and the surrounding vessels.<sup>4</sup>

Approximately one-third of all foreign bodies are missed on first clinical evaluation.<sup>5</sup> The mechanism of injury, size, shape, location and composition of the foreign body will influence its evaluation and removal. Metallic objects and glasses as foreign bodies are more frequent but they

are well tolerated by the body, whereas organic materials leading to more immediate inflammation causing more serious complications. Especially with the gunshot injuries delay in treating can lead to definitive limitations or even death as there may be a possibility of undiagnosed foreign particle latter causing infection.

Stabilization of patient, maintenance of the airway are utmost important. Patients should be monitored for evaluation of hemodynamic and neurologic state prior to surgical exploration. For the treatment of these cases protocol by Shinohara et al was followed, with following steps: access, foreign body removal, exploration of the wound, irrigation, and suturing, with tetanus prophylaxis and use of antimicrobials accordingly.<sup>6</sup>

As explained in the given cases the glass particle as superficial foreign bodies, can be properly removed with palpation and tactile sensation with the help of pre-operative images but deeper ones should be removed with caution. The gunshot injuries are more prone to residual foreign bodies and secondary infection. In the given case gunshot injuries were more damaging and needed thorough debridement and further reconstruction. Thus the case is followed as thorough debridement, removal of foreign particles and reconstruction. This case series accentuates the need for adequate

preoperative clinical and intraoperative exploration of wounds to identify and localize foreign bodies.

### **Conclusion**

Though foreign body impaction in maxillofacial region is uncommon but it is a possible hostile entity. In cases of foreign bodies, accurate radiographical evaluation with use of advanced techniques like C-Arm should be used whenever possible followed by early exploration and removal which reduces the chances of wound infection resulting in a favorable outcomes.

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### **Conflicts of Interest**

There are no conflicts of interest.

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