

# CASE REPORT ON A CHILD WITH A PENETRATING ORBITAL INJURY FROM WOOD

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## ABSTRACT

**Background:** Penetrating orbital injury is relatively infrequent in life, these injuries can be globe involving or globe sparing and it can also be sight threatening and life threatening if not promptly managed.

**Intervention:** Patient was in supine position under general anaesthesia in conjunction with the ENT surgeons wood was removed.

**Conclusion:** It is commoner in young males, where wood/ Sticks are the common agents. We present a 9 year old male with a wooden penetrating injury to the nasal aspect or the orbit accidentally from his younger sibling.

**Key words:** penetrating, orbital, injury, wood.

## INTRODUCTION

Penetrating orbital injury is relatively common during civil life. These injuries can be globe sparing affecting mainly the orbital structures or globe involving, they can also be sight or life threatening.<sup>1</sup> Intraorbital and periorbital foreign bodies may occur after direct trauma, metal injuries, splinter injuries in wood workers and occupational accidents and may be responsible for one out of every six orbital injuries.<sup>2</sup> Penetrating eye injuries is common in children 0-16years (42%) followed by adults  $\leq 30$ years (41.6%).<sup>2</sup> These injuries occurring in children are mostly accidental however it can occur as a result of assault.<sup>1</sup> Wood/stick injuries was found to be the common cause of penetrating orbital injury (41.2%).<sup>3,4</sup> Young men are seen to be at relatively higher risk of wooden intraorbital foreign body.<sup>5</sup> Prompt treatment of these injuries with removal of the foreign body and administration of antibiotics is important to prevent loss of vision and other complications that may lead to loss of life.<sup>2</sup> This case report provides the management of a 9-year old boy who had orbital injury caused by a piece of wood which penetrated the left orbit through the lower lid nasally accidentally.

## CASE REPORT

A 9 year old child (I. M) from Wase Plateau State North Central Nigeria, was rushed to the hospital on the 7<sup>th</sup> of December 2019 by the mother who was also the informant. She admitted that the patient was injured in the left eye with a piece of stick while playing with his younger brother. Patient was said to have fallen to the ground face down driving the piece of further into the globe. The patient experienced excruciating pain. As a result of the injury, the eye bled with subsequent swelling of the lids, and difficulty in opening the eye due to the presence of wood. However, there was no drainage of jelly-like substance from the eye, no bleeding from the nose and no convulsion.

Examination of the patient revealed a young child in great pains, and bleeding from a swollen left eye with a stick in situ, lodged around the left nasal orbit close to the nasolacrimal sac (fig 1). Though the lids were swollen and tender, however it was possible to gently separate the lids and visual acuity was taken with the child being able to count finger at a meter. The conjunctiva was also noticed to be chemosed.



**Figure 1** piece of wood logged in the left inferior orbit.



**Figure 2** piece of wood logged in the left inferior orbit.



**Figure 3** after removal of the wood from the orbit globe intact.

Otolaryngologist, Paediatrician and Neurosurgeons reviewed the patient to determine his clinical status, and the involvement of other surrounding structures but all was found to be normal. Investigation done were random blood sugar, hemoglobin level, urea and electrolyte were

all within normal range. Others included orbital X-ray, which was poorly defined. Unfortunately the parents could not afford the cost of a CT scan. Ocular ultrasound scan done showed the globe to be normal. The anesthesiologist reviewed and certify patient fit for general anesthesia.

Pre-operative treatment included intramuscular anti-tetanus serum (1500 IU), intravenous fluid, paracetamol, metronidazole and ceftriaxone. Child was kept NPO for 6 hours and an informed consent was obtained for the exploration and foreign body removal under general anesthesia.

## PROCEDURE

With the Patient under anesthesia routine cleaning and draping was done, with the use of an artery forceps the wood was held firmly and pulled out gently, leaving a dead space leading into the maxillary sinus. This was irrigated with saline and filled with chloramphenicol. The outer wound was sutured using Vicryl 6-0, subconjunctival dexamethasone 4mg and gentamicin 40mg given with 5% povidone iodine instilled into the conjunctiva sac. Patient was placed on systemic and topical antibiotics, antifungal topical medications, analgesics and chymotrypsin for 5 days. Child was discharged after 5 days with significant improvement in vision to 6/6, resolved chemosis and no restriction in ocular motility.

## DISCUSSION

Orbital trauma can be blunt or penetrating. Penetrating orbital injuries can be through the skin and bone into the orbit, through the lids and sometimes through the interpalpebral fissure.<sup>1</sup> It has been reported that different material can penetrate the orbit such as glass, arrow, wood and metals.<sup>6</sup> Penetrating orbital injuries represent a small but very complicated portion of head injury because of the close proximity to many vital structures and any penetrating orbital injury will require a multidisciplinary follow-up. Surprisingly, in many of penetrating injuries to the orbit, clinical signs are not immediately apparent.<sup>7</sup> Penetrating orbital injuries depends on the nature of the object missile or non-missile, orientation and depth of penetration. Because the orbital is quadrilateral pyramid, these objects can penetrate the medial, lateral, superior, or inferior rim. Less commonly, extraorbital penetration can occur, in *Jos Journal of Medicine, Volume 15, No. 1, 28-31*

which an object enters the orbit from the posterior aspect (i.e. penetrates the neck and enters the orbit)<sup>7</sup>. The globe is at risk of damage from penetrating orbital injury and these objects also have the tendency of causing brain injury as they can extend to the cranial cavity. Though some studies showed some penetrating orbital injury with globe sparing.<sup>6</sup> Accurate localization of these intraorbital foreign bodies is important to evaluate the severity of the ocular lesion and to determine further management approach.<sup>2</sup> Computer tomography (CT) scanning, ultrasound biomicroscope (UBM), and B-scan ultrasonography are widely used procedures in the assessment of intraorbital foreign body.<sup>2</sup> CT is considered the first-line imaging methodology, and most sensitive method for characterizing ocular trauma in patients with a suspected intra orbital foreign body,<sup>8</sup> non-contrast CT scanning is the preferred imaging modality for determining the course of the penetrating object and the extent of tissue injury. MRI is useful when the penetrating object is wooden because the foreign object can easily be differentiated from the surrounding tissue. With CT scanning, dry wood has a similar density to air and wet wood has a similar density to adjacent tissue.<sup>7</sup> Although in this case we could only do a plain x-ray that was poorly defined for localizing the foreign body and an ocular B-scan that showed the globe to be intact. Wooden intra-orbital injury can be in various forms this was reported in a study where pencils were seen to be the commonest form accounting for 39%, tree branch/ plant matter 35% and other treated wood 26%.<sup>5</sup> A study done in North western Nigeria showed penetrating orbital/ocular injuries to account for 4.2%.<sup>9</sup> A full radiological work up should precede removal of orbital foreign body removal and should be removed in controlled environment though rare fatal hemorrhage has been reported in uncontrolled environment. Early administration of antibiotic therapy upon admission of patient is necessary in preventing infections in these category of patient, those who do not suffer orbital bone fractures can should be treated conservatively.<sup>7</sup> Though there was no infection noted in our patient probably because

patient presented immediately and intervention was given within 24 hours with antibiotic cover. Surgical intervention becomes necessary when the foreign object is retained in the orbit or there are bone fractures, CSF leaks, intracranial hematoma, or vascular injuries.<sup>7</sup> Any surgical plan requires a multidisciplinary effort involving the ophthalmologist, neurosurgeons, otolaryngologists, maxillofacial surgeons and radiologist for proper care.<sup>7</sup> Orbital cellulitis has been reported to occur as a complication in some cases,<sup>10</sup> also sympathetic ophthalmitis<sup>7</sup>. Penetrating orbital injuries and postoperative complications include CSF leaks, traumatic aneurysm, cavernous fistula, cerebral abscess and meningitis. The risk for abscess formation increases exponentially when the penetrating object is organic<sup>7</sup>.

## CONCLUSION

Penetrating injuries should be evaluated and treated immediately, depending on the material causing the injury, the direction of injury and location of the material, severe vision loss can occur. Early presentation and treatment of this orbital injury was crucial in preventing complications like periorbital and orbital cellulitis or endophthalmitis and loss of sight to this our patient.

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