

INTRA ORBITAL WOODEN FOREIGN BODY: A CASE REPORT

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ABSTRACT

Intra orbital wooden foreign body (IOWFB) injuries are common cause of visual loss. The diagnosis is difficult, it may be missed from the imaging perspective. A case series is reviewed between 2013 and 2017. Of the 4 cases, 3 were caused by tree branch and 1 by bamboo. The postoperative vision was improved in 75%, but not in 25% subjects due to optic nerve damage. To be strongly suspected intra orbital wooden foreign body when the intra orbital density below of the surrounding intra orbital fat on CT. All the intra orbital wooden foreign body were removed successfully without any complications.

Keywords: orbital trauma, wooden foreign body, CT

INTRODUCTION

IOWFB injuries is an important challenge for radiologists; this assessment is even more difficult when the orbital injury is associated with injuries involving multiple organs.¹ Trauma to the eye accounts for approximately 3% in my Hospital between 2013 - 2017. There were 15 cases, 4 by wooden injuries (26,7%), 3 by tree branch and 1 by bamboo. The distribution of injury were 25 % in superior, 25% in medial, 25% in lateral and 25% in posterior part. Ocular injuries are common cause of visual loss. It has been estimated that 90% of all ocular injuries can be prevented.² The structural and functional damage to the orbital contents caused by these objects, related to the size, location and the time elapsed after the injury. These objects can be metallic, nonmetallic or organic matter. Computed Tomography considered to be best choice in evaluating orbital trauma.³

CASE REPORT

We report a case of 77 year old woman presented to Emergency Room of Dr. Moewardi Hospital due to IOWFB injury in her left eye. Head Computed Tomography (CT) Scan in axial, coronal and sagittal section revealed the IOWFB appeared hypodensity penetrated in the left palpebral superior of fornix, conjungtiva bulbi, optic nerve then tore them, extended to the left ethmoidal wall with the depth of penetration is about 4 cm. Multiple fractures were found in frontal bone and the left side of ethmoidal sinus (Fig.1,2,3,4). Surgery was conducted by ophthalmologist to remove the IOWFB with the size of 6.7 x 1.3 cm (Fig.5,6). The eye globe in anterior chamber was still intact. The position of the lens was not displaced. The posterior segment of the eye globe without hemorrhage. This patient was diagnosed with full thickness palpebral laceration. The ophthalmologist performed palpebral suturing and reconstruction of the damaged area. The wooden stick was broken into 3 fragment in order to be able to remove it from the eye ball. Eye loupe was used to ensure that there was no debridement of the wooden foreign body inside. Then irrigation was done by using disinfectant solution. The tear was saturated in every layer with catgut. Finally

antibiotic eye ointment was applied. The patient was then evaluated in 24 hours and a week later, until 1 month. The outcome was good and there was no sign of infection. The patient recovered well after surgical and medical management in spite of her visual loss.

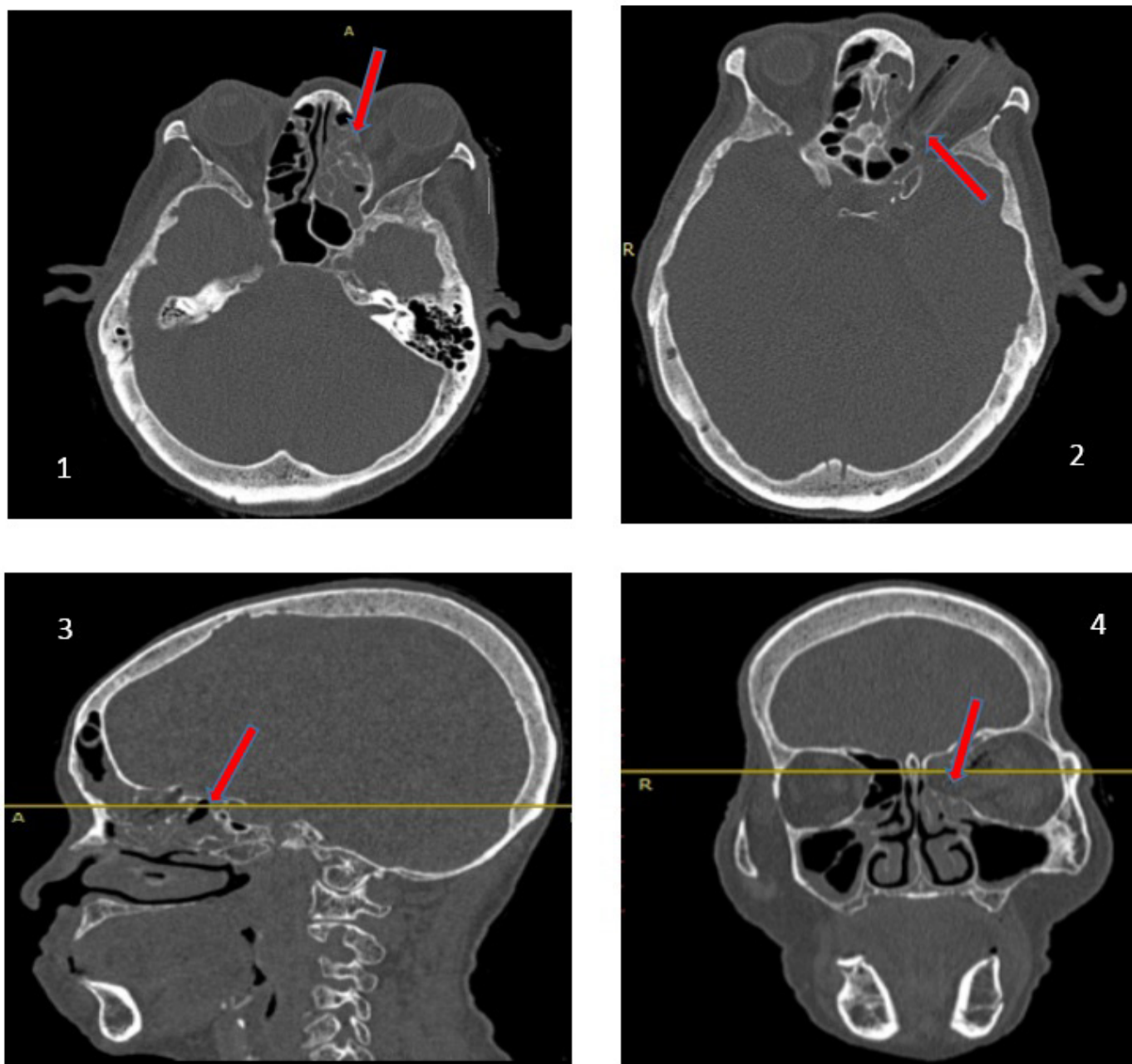


Fig. 1. Multiple fractures were found in frontal bone and the left side of ethmoidal sinus with hematosinus.

Fig. 2, 3, 4. Optic nerve injury who presented with multiple sinus paranales fractures. Axial, sagittal and coronal CT Scan showed a left orbital apex fracture with a bone fragment impinging on the optic nerve. The wooden may mimic air on CT Scan



Fig. 5 Intraoperative IOWFB was explored.



Fig. 6 The size of IOWFB: 6.7 x 1.3 cm; broke in 3 pieces

DISCUSSION

Penetrating ocular injury needs promptness in decision of action in emergency. The management of penetrating ocular injury varies widely based on its severity, extent and location of the injury. Some general principles in managing penetrating orbital injury: primary closure of the penetrating wound, remove any foreign body material, prevent feather or secondary injury to eye, perform anatomic and visual rehabilitation of the eye, protect the unaffected eye and finally do general rehabilitation to the patient.⁴

Plain radiography is usually the first supportive examination. It is inexpensive and easy access. However, it has a sensitivity of 64-78 % for fracture and very low sensitivity for soft-tissue injuries to the orbital contents. Ultrasonography (USG) can be very useful in evaluating the globe and its contents but it is contraindicated if ruptured globe is suspected.⁵ The wooden foreign bodies appear hypodense on CT image due to their low attenuation which can be mistaken for air.⁶ The radiologist should suspect a wood or organic foreign body if the low-attenuation collection seen on CT images. The attenuation of wood can also change over time as the water content of the foreign body changes. Bone window with parameters of 1000 HU width/-500 HU level and simultaneous axial and coronal imaging is certainly more effective for detecting IOWFB. Computed Tomography Scan considered to be best choice in evaluating orbital trauma. It can help radiologist make an accurate diagnosis and limit the amount of radiation exposure to the lens.⁶

Magnetic Resonance Imaging (MRI) may be difficult to perform in emergent condition. It is also contraindicated if metallic intra orbital foreign body is present. The use of MRI for the initial evaluation of orbital trauma is not recommended as well, although it may be useful. This modality can help the radiologist make an accurate diagnosis as well as limit the amount of radiation exposure to the lens.⁷

Prognosis for vision depends upon severity of initial penetrating injury. Penetrating ocular injury needs immediate action in emergency. Optic nerve injuries can result from either direct or indirect trauma.⁸ In this illustrated case, the optic nerve or its vascular supply is torn, thrombosed and compressed, and causing visual loss. The management of penetrating ocular injury varies widely based on its severity, extent and location of the injury.⁹

Final visual outcome relies on initial visual ability the presence of an afferent pupillary defect and infection. Proper surgical repairment, prevention of infection and sympathetic ophthalmitis in normal eye are important factors for optimal outcome.^{10,11}

CONCLUSION

The possibility of IOWFB should be strongly suspected when there is intra orbital density below that of the surrounding intra orbital fat on CT. If a foreign body is suspected, optimal management should be performed. Prior to the surgery imaging modalities should be maximally utilized, CT Scan considered to be the best choice. All the foreign bodies were removed successfully without any complications prior no infection, but vision was loss in 25% subjects due to optic nerve damage.

REFERENCE

1. Kubal WS. Imaging of Orbital Trauma. *RadioGraphics J RSNA* 2008; 28:1729–39
2. Bord SP, Linden J. Trauma to the globe and orbit. *Emerg Med Clin North Am* 2008; 26:97–123.
3. Gautam P, Shah DN. Orbito-Cranial Injury Caused by Penetrating Wooden Piece. *Journal of Institute of Medicine*, December 2013, 35:3
4. Al-Mujaini A, Al-Senawi R, Ganesh AA, Al-Zuhaibi S, Al-Dhuhli H. Intra orbital foreign body: clinical presentation, radiological appearance and management. *Sultan Qaboos Univ Med J* 2008;8(1):69–74
5. Arora S, Pyare R, Sharma P, Bhushan G, Thakar M, Ghosh B. Imaging of Intraocular Foreign Body. *Journal DOS Times*. 2014;19(9):51-5
6. Prabhu SM, Irodi P, George PP, Sundaresan R, Anand VK. Missed Intranasal Wooden Foreign Bodies on Computed Tomography. *Indian Journal Radiology and Imaging*. 2014; 24: 72-4
7. Specht CS, Varga JH, Jalali MM, Edelstein JP. Orbito cranial wooden foreign body diagnosed by magnetic resonance imaging. Dry wood can be isodense with air and orbital fat by computed tomography. *SurvOphthalmol* 1992; 36:341-4.
8. Phogat J, Gagneja V, Sachdeva S, Rathi M. Evaluation of a case of penetrating ocular injury. *Indian Journal of Clinical Practice*. 2012; 22(12):28-30
9. Yadav I, Maurya RP, Bhushan P, Singh MK, Singh VP, Sen PR. Unrecognized large wooden intra orbital foreign body. *Indian Journal of Clinical and Experimental Ophthalmology*. January-March 2015; 1(1):50-5
10. Lee JA, Lee HY. A Case of Retained Wooden Foreign Body in Orbit. *Korean J Ophthalmol*. 2002; 16:114-8
11. Tas S, Top H. Intraorbital wooden foreign body: clinical analysis of 32 cases, a 10-year experience. *Ulus Trauma Acil Cerr Derg*. 2014; 20(1):51-5