Case Report

Journal of College of Medical Sciences-Nepal, Vol-13, No 3, July-Sept 017

ISSN: 2091-0657 (Print); 2091-0673 (Online)
Open Access

Self-Inflicted Orbito-Cranial Gunshot Injury: Case Report

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DOI: http://dx.doi.org/10.3126/jcmsn.v13i3.17080

Orcid ID: orcid.org/0000-0003-1458-3705

Article received: March 29th 2017
Article accepted: Oct 10th 2017

ABSTRACT

The eye may be injured by various penetrating and non-penetrating injuries like sticks, pencils, rods, gunshot and chopsticks. Self-inflicted gunshot injuries have been rarely reported in literature. This case is interesting in multiple aspects which include poverty, lack of education and the failure of government to ensure control of the use of firearms in Nepal. We report a case of self-inflicted gun injury which was managed successfully.

Key words: Craniofacial; gunshot injuries; orbital fractures; penetrating injury

Citation: Roka YB, Bhattarai NR. Self-Inflicted Orbito-Cranial Gunshot Injury Case Report. JCMS Nepal. 2017;13(3):363-5.

INTRODUCTION

The eye may be injured by various penetrating and nonpenetrating injuries like sticks, pencils, rods, gunshot and chopsticks.[1-3] The orbital roof and the squamous temporal bone is the weakest point of the anterior and middle cranial fossa respectively through which the injury occurs. The cerebral injury is usually ipsilateral to the orbital injury with few contralateral injuries also being reported.[4] Self -inflicted gunshot injuries are usually suicidal in nature but we report a case secondary to accidental injury.

CASE DESCRIPTION

A 19 year old male presented to the emergency 12 hours later with history of accidental gunshot injury to the right eye. He had assembled a homemade rifle and was using it for hunting when he sustained injury to the eye. There was loss of consciousness for 30 minutes, loss of vision in the right eye, bleeding from the wound which was associated with severe headache and few episodes of vomiting. He had undergone a computed tomogram (CT) scan of head and orbit in a nearby center before being referred to this hospital. On examination he was conscious with Glasgow coma score (GCS) of 15. The visual acuity on right eye was no perception of light and 6/6 on the left eye. There was echhymosis, swelling of upper and lower eyelids. The lower eyelid was lacerated 2 mm lateral to the lower punctum (Figure 1). There was full thickness central corneal perforation with total prolapse of the intraocular contents. There were no other neurological deficits.

The CT scan showed a metallic foreign body in the right temporal fossa with fracture of the lateral wall of the orbit and smaller bone fragments in the temporal lobe (Figure 2A & B). He underwent emergency right temporal craniotomy. Intraoperatively there was a large bullet in the temporal fossa with fracture of the temporal bone, dural tear of 3X4 cm, multiple intracerebral bone fragments with contusion (Figure 3). The bullet was removed followed by contusectomy and dural repair

done by vascularized temporal fascia reinforced by temporal muscle. This was followed by evisceration of the right eye, lower eyelid laceration repair and closure of the posterior orbital floor with free tissue graft.

Postoperatively he is recovering well with the postoperative scan showing complete removal of the bullet along with the bone fragments and good repair of the defect. He has been planned for right eye prosthesis after 8 weeks.

DISCUSSION

Orbito-cranial (OC) gunshot injuries are uncommon in civilian practice and amount for only 0.6% even in war injuries. In a series of 60 missile injuries reported from India there were only 15 cases with orbitocranial injuries.[5] In civilians it is usually a part of suicidal or homicidal injury to the face. Self-inflicted gunshot injuries have been rarely reported in literature. This case is interesting in multiple aspects which include shortage of resources in the mountains, lack of education regarding the government rules and safety involved in firearm use and the failure of government to ensure control of the use of firearms in Nepal leading to the make and use of such weapons in Nepal. The Arms and ammunition act of 1962 forbids the ownership, buy or sale of firearms in Nepal by civilians without permission from concerned government official.[6-8] The guilty can be punished with imprisonment from Three Years up to Seven Years or with fine from Sixty Thousand Rupees upto One Hundred Forty Thousand Rupees.[6-8] This patient had made a homemade rifle using metallic pipes and iron chunks for the bullet. The primary purpose was to drive away monkeys/animals which feed on the crops in the hills.

The majority of the cases reported have cerebral injury ipsilateral to the orbit with few rare cases of contralateral injuries. The orbital roof is the weakest point through which the majority of OC injuries occur. The usual presentation is partial or complete loss of vision along with headache or seizure. The frontal or temporal bone along with the scalp may be involved in the injury. CT with 3D reconstruction will show the defect site, size and the severity of intracerebral injury. Beta-tracer protein has also been used to check the presence of CSF leak around the wound.[1] Craniotomy and removal of the metallic body along with a water tight dural repair is a must to prevent subsequent cerebrospinal fluid orbitorrhoea. The cranial fossa can be reinforced with pericranium to further strengthen the repair. Antibiotic cover is needed to cover gram positive and anaerobic organisms.[9] The bone fragments, if any must be removed as much as possible without damaging the surrounding tissue. The role of extent of bone removal and residual bone leading to abscess later on is still a debate.[10-13] The eye injury if minor can be repaired or it need to undergo evisceration if the globe is already perforated.

Figure 1. Picture showing the complete destruction of the right eye with extensive ecchymosis. There is dark staining of the entire scalp and face.

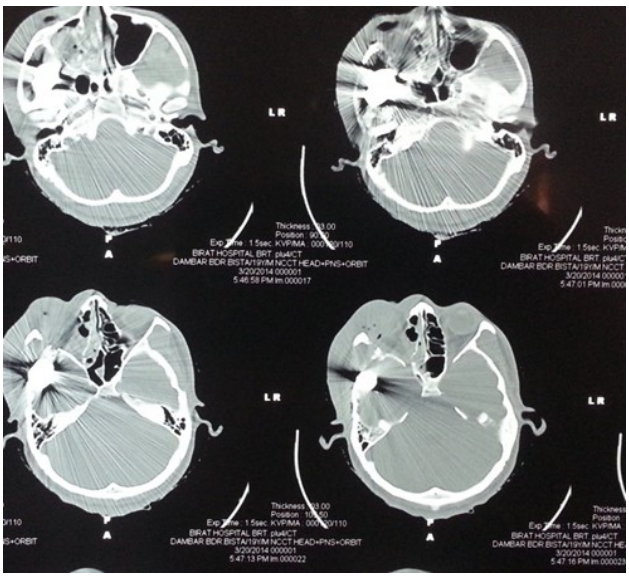

Figure 2.A CT head and orbit showing a large metallic body in the right temporal fossa along with contusion and smaller bone fragments. There is destruction of the eye ball suggesting it as the entry point (A). 3D reconstruction showing the defect in the orbital wall through the bullet trasversed (B).

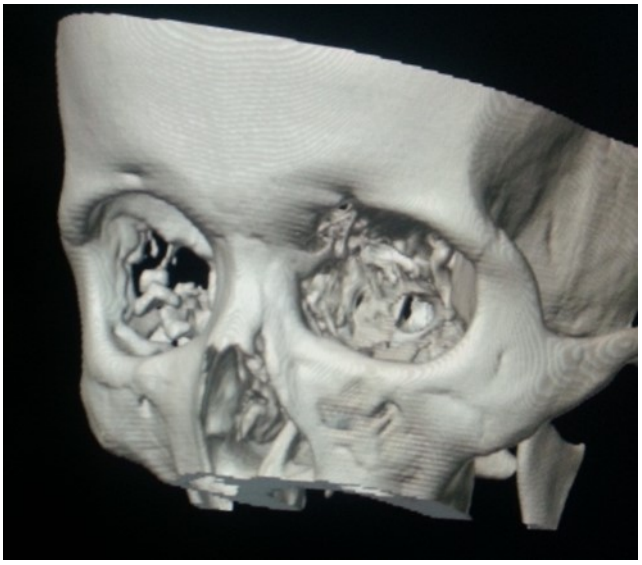

Figure 2 B

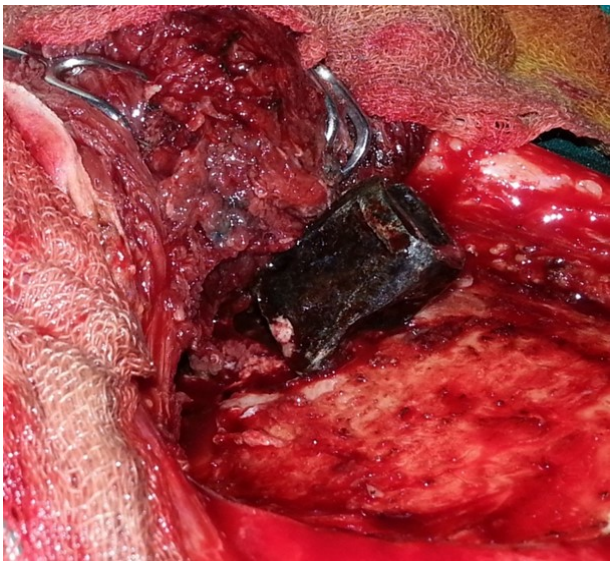

Figure 3. Introperative picture showing the large bullet along with dural tear and fracture of the temporal bone.

CONCLUSION

This case highlights the extent of poverty, lack of education and government failure to control the making/licensing of guns in Nepal thereby leading to the manufacture of homemade weapons which can lead to serious injury to the user. This also a rare case of survival in self-inflicted orbito-cranial injury.

Conflict of interest: None declared

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