



MANAGEMENT OF GUNSHOT INJURY TO THE FACE – A CASE REPORT

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<p>Article Info <i>Received 15/11/2015</i> <i>Revised 27/11/2015</i> <i>Accepted 02/12/2015</i></p> <p>Key words: Gunshot; maxillofacial injuries; CT scan.</p>	<p>ABSTRACT Maxillofacial gunshot injuries are usually lethal and relatively uncommon in India. The severity of impact varies upon type of weapon and closeness of the shot. Management in terms of surgical exploration and removal of bullet or conservative management leaving bullet in situ, is still a matter of debate. Here we are reporting a case of 50 years old male having gunshot injury on face with entry wound at naso-jugular fold. A conservative management was approached in the view of computed tomography findings along with stable clinical and neurological status of the patient.</p>
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INTRODUCTION

Gunshot wounds (GSWs) are second only to road traffic accidents as a cause of injury and death, and overall, the eighth leading cause of death in the United States [1]. In India incidence of firearm injury is about 0.93% according to the United Nations office on drugs and crime 2000 [2]. Out of all gunshot injuries 14% result in maxillofacial injuries [1]. Although there has been an increase in the incidence of gunshot wounds to the face [3], maxillofacial injuries are still not as common as those to other regions of the body. [4,5]. Approximately 17% of patients with a GSW to the face have associated brain injuries, 8% have C-spine injuries, and approximately 13% have associated eye injuries [4,6]. Gunshot injuries to the neck and maxillofacial region often result in high morbidity and mortality due to the presence of various vital structures in this region. Facial gunshot injuries are also associated with devastating functional and aesthetic consequences. Depending on the type of firearm, the velocity of the projectile, the distance from which the patient is shot and tissue resistance are the factors that determine the severity of injury to the affected person [7].

After primary survey and initial resuscitation following standard principles of advanced trauma life support, the extent of damage is assessed following which individual based treatment plan can be execute. It has been a matter of debate that gunshot wounds and the bony injuries resulting from them in faciomaxillary region can frequently be managed conservatively [8], or should it be surgically explored. [9-11].

Case report

50 year male with alleged history of gunshot on the face reported to the Trauma Centre IMS, BHU, Varanasi, India. Patient complained of difficulty in talking and breathing. On primary survey patient had Glass Glow Coma Scale (GCS) -E4V5M6. Vitals were stable. Airway was patent, breathing was spontaneous. There was no active bleeding point. There was no neurological deficit. No other part of body was injured. Sutured laceration of size 8 cm was present on right naso-jugular fold. Computed tomography (CT scan) of the face and cervical vertebrae were done. CT scan of the face revealed entry point of the bullet was at right naso-jugular area, which



travelled through hard palate posteriorly (fig. 1), and got embedded, in body of third cervical vertebra (fig. 2). Air emphysema was noted in soft tissue (fig.3). There was no damage to vital structures and no major vessels were damaged. The Patient was evaluated clinically and possibility of risks from removal of bullet at c3 level was evaluated. It was decided to manage patient conservatively,

at this point, as surgical risk outweighed conservative management. Patient was kept under observation and on regular follow up to diagnose early signs that required surgical intervention. He was advised to take necessary precaution to avoid complications related to metallic nature of bullet.

Figure 1. CT scan of the face revealing path of the bullet

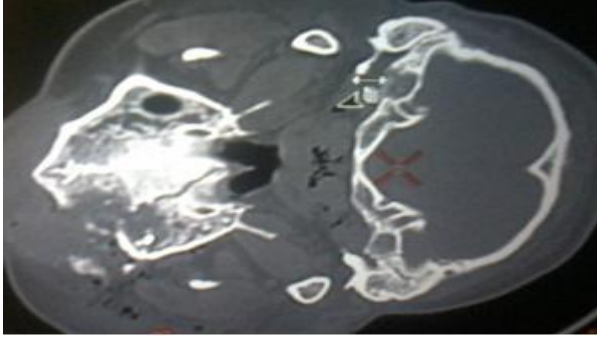


Figure 2. Bullet embedded in the body of third cervical vertebra

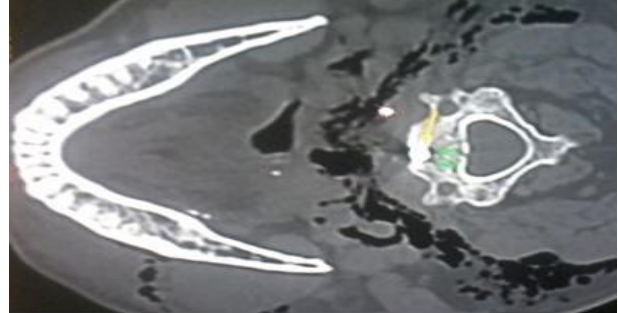
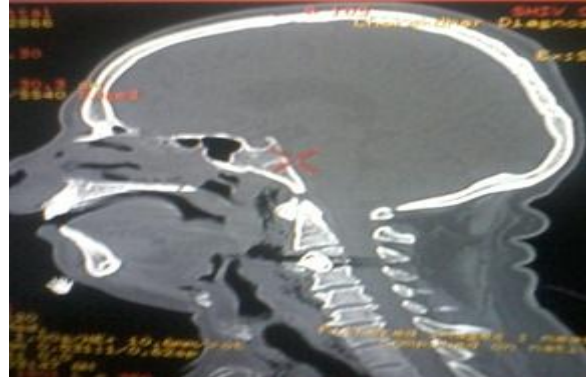


Figure 3. Air emphysema in soft tissue



DISCUSSION

On arrival victims of gunshot injuries are best managed by standard advanced trauma life support (ATLS) protocols. Even seemingly innocuous wounds deserve attention, given the erratic nature of the wounds. Loss of the airway is the single most likely cause of death in an isolated GSW to the face. When confronted with a patient with a facial GSW, surgeons should have a low threshold for establishing a definitive airway through intubation or a surgical airway if intubation is not possible. Life-threatening hemorrhage is unusual in civilian gunshot injuries.

Demetriades and colleagues [12] reported only 7.5% of patients with isolated gunshot wounds to the face to be in shock upon admission (systolic blood pressure < 90 mm Hg). In their report 70 patients (28.3% of the total) required angiography, and 10 of this required embolization. The most commonly involved vessels in these cases were the maxillary and facial arteries. Standard methods for epistaxis control such as Foley catheters or specially designed balloon catheters will control most midface bleeding. In cases of mandible fractures,

temporary reduction of the fracture may be required. Ligation of multiple vessels is required. In the stable patient, a complete examination is part of the secondary survey of ATLS.

Signs of tracheal injury, such as subcutaneous emphysema, stridor, hoarseness, dysphonia, or hemoptysis require urgent intervention. Following the ATLS protocol, standard cervical spine and chest radiographs should be obtained. These can be valuable for visualizing the bullet fragments and in gaining some insight into the path of the bullet. Spiral computed tomography combined with three-dimensional reconstructions allows the surgeon an unparalleled view.

Although it does not accurately demonstrate the amount of soft tissue damage, clinical inspection combined with three-dimensional imaging allows an accurate assessment.

Operative Procedure

Kazanjian and Converse [13] described their approach to gunshot wounds as three phases consisting of



initial debridement and suturing, immobilization of bony fragments with splints and ligatures, and, finally, reconstruction following healing of the soft tissue.

The development of rigid fixation techniques and their application to GSWs was an important advance. By allowing the early stabilization of bone segments, percolation of contaminated oral fluids was prevented, primary bone healing was made possible, and the effects of scar contracture were minimized. An approach using early stabilization of bone fragments with maxilla, mandibular fixation, external fixation, or internal fixation with reconstruction plates combined with conservative management of soft tissue is indicated. Obvious transection of the facial nerve requires repair.

In heavily contaminated wounds, repair should be delayed for 48 to 72 hours; given the possibility that grafts will be required to span damaged segments. Transected salivary ducts may be repaired or legated depending on the amount of damage. The parotid duct can be repaired over an intravenous catheter or polymeric silicone tubing, which is then sutured to the buccal mucosa.

Bone grafts are frequently required in the management of GSWs to the face, whether for replacement of true loss of bone (avulsive injuries) or in cases in which

comminuted and misplaced fragments need to be replaced or reinforced.

CONCLUSION

In conclusion we managed conservatively a case of bullet injury to the face, where bullet was stuck in the body of c3 cervical vertebra traversing through hard palate, with entry wound at naso-jugular fold. The decision of conservative management was taken after analyzing risks from surgical exploration. The patient is kept on close observation and regular follow-up.

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CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

STATEMENT OF HUMAN AND ANIMAL RIGHTS

All procedures performed in human participants were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. This article does not contain any studies with animals performed by any of the authors.

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