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ATYPICAL SELF INFLICTED GUNSHOT INJURY

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Ehrlson de Sousa Department of ENT, Goa Medical College, Bambolim, Goa - Corresponding Author

Sneha Sose Department of ENT, Goa Medical College, Bambolim, Goa

Kanhai Naik Department of ENT, Goa Medical College, Bambolim, Goa

ABSTRACT

Gunshot injuries to the neck and maxillofacial region are associated with high morbidity and mortality due to the complex anatomy and presence of vital structures in this region. We present a unique case report of a self inflicted accidental shotgun injury. It is indeed a rare finding that a bullet travels through the neck region and does not damage any vital structures.

KEYWORDS

Gunshot injury, neck, accidental.

Introduction

Gunshot injuries cause profound morbidity and significant mortality, especially if they occur in the neck. Majority of these injuries may be homicidal or suicidal, and in rare cases, may be accidental. The high density of vital structures in the neck makes injury to this region highly morbid and often fatal. The trachea, esophagus, carotid and vertebral arteries, cervical spine and spinal cord, phrenic nerve and brachial plexus are all vulnerable to injury with neck trauma. (Atluri P et al, 2006) Each of these is a vital structure, and any delay in diagnosis and treatment can have devastating consequences.(Bailey BJ et al, 2006)

Case report

A 29year old male presented to our hospital casualty after accidently sustaining a single self inflicted gunshot wound with an airgun to his right cheek, while cleaning his gun. He complained of pain below the right jaw and swelling over right cheek. On examination patient was conscious with normal vital parameters. Local examination revealed a circular puncture wound measuring 0.5cm x0.5 cm over the right cheek, 2cm above the mandible with surrounding edema. Tenderness was present in right submandibular region. Oral cavity, oropharynx, indirect laryngoscopy and cranial nerve examination were within normal limits. Xray and computed tomography showed a bullet below the angle of mandible around 1.5cm deep from the skin surface. Patient was taken up for surgical exploration of the neck under general anesthesia. Bullet location was intra operatively tracked using a C-arm. Right sternocleidomastoid muscle fibres were divided and bullet was visualized deep to the muscle just below the marginal mandibular nerve which was intact. Bullet was removed and wound was closed in layers. Patient was continued on injectable antibiotics for a few days and followed up with us for suture removal and 2 weeks thereafter during which time he remained asymptomatic.

Fig1: Entry wound of bullet on cheek

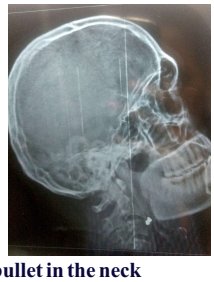

Fig 2: Xray showing bullet in the neck

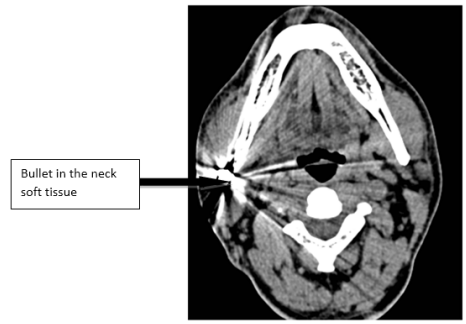

Fig 3: CT scan showing bullet in the neck

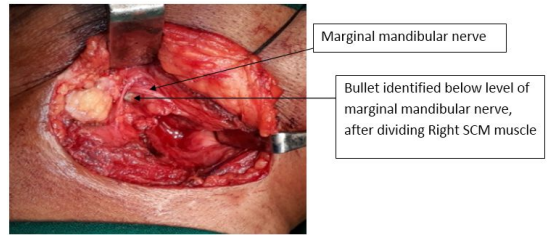

Fig 4: Intraoperative location of bullet

Discussion

Bullet wounds, in contrast to wounds caused by a blow or impact to the viscerocranium are characterized by an irregular path (Hess U et al, 2000), entry and exit wounds as well as a localized demolition of bones with associated clinical pathologies. The wounding capability of missiles is produced by the tremendous energy absorbed by the tissues. As a result of this energy transfer, cavitation (Stiernberg CM et al, 1992) and damage due to secondary projectiles can occur and extensive removal of debris may be required in such cases. Anatomy of neck plays a central role in evaluating and managing penetrating neck injuries. The location of the entry wound and the projectile path are the most important factors in causing significant injury or death following shooting. (Reiss M et al, 1998)

The platysma acts as an important superficial landmark and if it is violated, the chance of severe injury to deeper neck structures increases. Diagnosis of firearm injuries includes comprehensive X-rays of the areas involved which reveal radio opaque bullets or pallets. Emergency CT scan demonstrates mechanism of the injury. Immediate surgical exploration of the neck is required in the following instances, regardless of the site of injury—airway compromise, extensive subcutaneous hematoma, pulsatile hematoma, active bleeding, and shock. (Atluri P et al, 2006)

The lateral neck is divided into three zones; this system is useful in the evaluation and treatment of penetrating neck injuries.

Zone 1 extends from the clavicle to the cricoid cartilage and includes the thoracic inlet. This region contains the major vascular structures of the subclavian artery and vein, jugular vein, and common carotid artery, as well as the esophagus, thyroid, and trachea.

Zone 2 extends from the cricoid to the angle of the mandible and contains the common carotid artery, internal and external carotid arteries, jugular vein, larynx, hypopharynx, and cranial nerves X, XI, and XII.

Zone 3 is a small but critical area extending from the angle of the mandible to the skull base. This region contains the internal and external carotid arteries, jugular vein, lateral pharynx, and cranial nerves VII, IX, X, XI, and XII. (Bailey BJ et al, 2006)

As per the above zoning criteria, our case falls into a zone 2 injury. Despite it being in close proximity to important structures like the carotid artery and jugular vein, there was no injury to either of them.

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