Perforating trauma with the presence of a foreign body in the cervical region: case report

Trauma perfurante com presença de corpo estranho na região cervical: relato de caso

Traumatismo perforante con presencia de un cuerpo extraño en la región cervical: caso clínico

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ABSTRACT
The escalating incidence of urban violence has positioned physical aggression as a predominant catalyst for head and neck injuries, constituting a significant etiological factor in mortality. Indeed, half of all deaths associated with harm involve the head and neck region. The current report elucidates a specific case stemming from physical aggression, wherein a 52-year-old male manifested post-incident swelling on the left side of the jaw. Clinical examination unveiled the presence of a cylindrical foreign body, subsequently identified as a wooden skewer, situated between the mandible and hyoid bone. Successful surgical intervention was conducted to remove the foreign object. This case accentuates the critical importance of precise diagnostic procedures and meticulous surgical planning in instances of neck trauma.

Keywords: aggression, maxillofacial surgery, foreign body, foreign body reaction, head and neck injury.

RESUMO
A escalada da violência urbana tem posicionado a agressão física como um catalisador predominante de lesões de cabeça e pescoço, constituindo um importante fator etiológico de mortalidade. De facto, metade de todas as mortes associadas a lesões envolvem a região da cabeça e pescoço. O presente relato elucida um caso específico decorrente de agressão física, em que um homem de 52 anos de idade manifestou edema pós-incidente no lado esquerdo da mandíbula. O exame clínico revelou a presença de um corpo estranho cilíndrico, posteriormente identificado como um espeto de madeira, situado entre a mandíbula e o osso hioides. Foi realizada uma intervenção cirúrgica com sucesso para remover o objeto estranho. Este caso acentua a importância crítica de procedimentos diagnósticos precisos e de um planeamento cirúrgico meticuloso em casos de trauma cervical.

Palavras-chave: agressão, cirurgia maxilofacial, corpo estranho, reação de corpo estranho, lesão da cabeça e pescoço.

RESUMEN
La creciente incidencia de la violencia urbana ha situado a las agresiones físicas como un catalizador predominante de las lesiones de cabeza y cuello, constituyendo un factor etiológico significativo en la mortalidad. De hecho, la mitad de las muertes asociadas a lesiones afectan a la región de la cabeza y el cuello. El presente informe esclarece un caso específico derivado de una agresión física, en el que un varón de 52 años manifestó una inflamación posterior al incidente en el lado izquierdo de la mandíbula. El examen clínico reveló la presencia de un cuerpo extraño cilíndrico, posteriormente identificado como una brocheta de madera, situado entre la mandíbula y el hueso hioides. Se llevó a cabo con éxito una intervención quirúrgica para extraer el objeto extraño. Este caso acentúa la importancia crítica de los procedimientos diagnósticos precisos y la planificación quirúrgica meticulosa en los casos de traumatismo cervical.

Palabras clave: agresión, cirugía maxilofacial, cuerpo extraño, reacción a cuerpo extraño, traumatismo craneoencefálico.
1 INTRODUCTION

As per the World Health Organization, injuries stand as a prominent global cause of mortality, with head and neck injuries contributing to 50% of these fatalities (1,2,3). The elevated incidence of facial injuries is attributed to the substantial exposure and limited protection of this anatomical region, resulting in profound trauma with consequential esthetic, functional, and psychosocial ramifications (4). Males are disproportionately affected due to higher engagement in combative situations, vehicular accidents, and participation in contact sports (3,5).

Traditionally, traffic accidents predominated as the leading cause of head and neck injuries; however, the implementation of public policies has curtailed their prevalence. In contrast, the surge in urban violence has emerged as a primary instigator of head and neck injuries, influenced by cultural, socioeconomic, and geographic factors (3,4,6,7,8).

Physical aggression can yield injuries of varying severity, encompassing lacerations, bone fractures, and the retention of foreign bodies (7). Such injuries may result in challenging-to-control hemorrhages and diverse levels of head trauma, potentially leading to fatal outcomes (9). Consequently, the management of cases involving penetrating wounds demands a meticulous and sequential approach to prevent airway obstruction and hemorrhage (9).

Penetrating injuries involving sharp objects in the head and neck region constitute a minute fraction, accounting for 0.4% of all head trauma cases. The management of penetrating injuries presents a multifaceted challenge due to the diverse materials comprising these objects and the inherent risk of complications during extraction (10). This paper presents a case involving a victim of physical aggression with a foreign object penetrating the submandibular region in close proximity to the external carotid artery.

2 CASE REPORT

A 52-year-old male patient, J.G.A.M., sought the Oral and Maxillofacial Surgery and Trauma service of an emergency care ward with a history of physical aggression 11 days earlier and the complaint of facial swelling having emerged three days earlier (Figures 1 A and B). The patient reported being under the effects of alcohol and having lost consciousness at the time of the injury. The physical examination revealed a volumetric increase in the left masseteric region, with hyperemia and a nodular lesion measuring approximately 30 mm, without purulent secretion and asymptomatic. An increase in the ipsilateral submandibular lymph nodes was found, without
the presence of possible infectious focal points and no mobility in the jaw that might suggest a fracture. The aspiration puncture was negative for purulent secretion.

Figure 1 A and B - Volumetric increase in masseteric and cervical region.

Computed tomography revealed a cylindrical hyperdense foreign body measuring 73 x 3 mm in the submandibular region extending from the buccinator muscle to the hyoid bone, with no knowledge on the part of the patient regarding the finding (Figures 2 and 3).

Figure 2- Three-dimensional reconstruction showing foreign body (wooden skewer) in submandibular and cervical region extending from buccinator muscle to hyoid bone in close proximity of facial artery and superior thyroid artery.

Source: Compilation by the author.
The patient was sent to the surgery ward. Under general anesthesia, submandibular access was performed on the left side. The foreign body was located and a small access was made in the region of the buccinator muscle (superficial extremity of the object) and submandibular. The object was carefully removed with forceps. The object was a wooden skewer commonly used for barbecue meat (Figures 4 and 5). No abnormal bleeding was observed after removal. Sutures were performed and medication was prescribed, including an antibiotic (cefalexin). The patient was maintained in hospital for observation for 24 hours. A reduction in swelling was observed, with preserved cervical and mandibular movements. The patient was discharged and followed up for 30 days, with no occurrence of complications (Figures 6 and 7).
Figure 4 - Surgery under general anesthesia with submandibular and buccinator access on left side, in which foreign body was located.

Source: Compilation by the author.

Figure 5 - Careful removal of foreign body with forceps.

Source: Compilation by the author.
Figure 6 - Patient with good prognosis after successful removal of foreign body and complete regression of swelling.

Source: Compilation by the author.

Figure 7 - Patient in postoperative period with no complications or damage to anatomic structures.

Source: Compilation by the author.

3 DISCUSSION

Facial injuries can affect soft and hard tissues and can involve the teeth, bones, paranasal sinuses, eyes, blood vessels and, in more severe cases, even the brain. In the last 40 years, facial trauma has become an important object of research, as such injuries are preventable but are
Considered a public health problem with a considerable demand for treatment and related to numerous morbidities (11,12).

The major causes of facial trauma are traffic accidents and physical aggression, with the male sex and the middle third of the face affected more (11,12). Facial trauma, especially that resulting from physical aggression, has a considerable negative impact on the physical homeostasis of the organism and can have emotional and social consequences for victims and their families (13). Interpersonal violence has become one of the major causes of facial trauma and is related to social, cultural and environmental factors, such as poverty, social isolation, the abuse of alcohol and other drugs and access to firearms (14). In the present case, the patient was under the effects of alcohol and became involved in a fight, but could not recall the occurrence and was unaware of the presence of the foreign body. Eleven days after the incident, the patient sought care due to the significant increase in volume on the left side of the face, which demonstrates the negative influence of excessive alcohol intake and its consequences.

The possibility of the presence of a foreign body should be considered in cases of a history of trauma with signs of persistent inflammation or infection and healing difficulty. In the present report, the patient had late onset inflammatory signs, such as edema, hyperemia and the absence of healing. A detailed patient history and careful physical examination are fundamental. This step of the clinical examination is as important as the surgical process, as it has a direct impact on the proper diagnosis and successful resolution of the case and is crucial to the obtainment of information on the kinematics of the injury, time elapsed since the event, local aspects and other concomitant injuries involved (15).

Complementary imaging exams are essential to the detection of foreign bodies and the determination of the proximity to adjacent structures. Computed tomography, magnetic resonance and ultrasonography can be used in this diagnostic process depending on the location and composition of the material. In the present case, tomography in different windows (hard/soft tissue) and the use of three-dimensional reconstruction combined with the clinical history were essential in establishing the diagnosis and, consequently, the adequate planning of the safe removal of the object (16,17).

Soft tissue injuries to the face can be contusions, cuts, perforations or abrasions as well as a combination of these injuries. The present report illustrated a case of a perforating injury produced by a wooden skewer capable of passing through the skin and underlying tissues.
Perforating injuries are characterized by a circular surface with regular or non-regular edges, with an entry orifice, trajectory and often an exit orifice. Perforating injuries are classified as puncturing (e.g., nail), penetrating (in a natural cavity of the organism) and transfixing (passing through an organ or segment) (18).

Injuries to the neck region are classified in three main zones. Zone I corresponds to the region from the clavicles to the cricoid cartilage. Zone II corresponds to the lower edge of the cricoid cartilage to the angle of the mandible. Zone III corresponds to the angle of the mandible to the base of the skull (6). Zone II was the most affected in studies conducted by Neto & Dedivitis (2011) and Barros et al. (2015), accounting for 74% and 61% of cases, respectively (9,19). In the present case, Zona II on the left side was affected, which is also in agreement with the literature in terms of the affected side (20).

An important point to discuss is the main risk factors of injuries to the head and neck region, which often involve or occur in close proximity to noble structures, such as airways, blood vessels, glands, nerve, esophagus. Neck trauma can be penetrating or non-penetrating. With penetrating injuries, the object must pass through the platysma muscle, as occurred in the present case. In such cases, it is important to verify and stabilize the airway and control possible hemorrhage of large vessels (carotid, subclavian and jugular arteries), which are the main causes of death in penetrating neck injuries (9,19,21).

The present case is quite relevant, as few such reports are found in the literature. The wooden skewer was situated in close proximity to the hyoid bone and its deepest extremity was situated near the external carotid artery, having passed between the lingual and facial arteries, but with no direct damage to these structures or systemic repercussions. Such cases require considerable surgical skill due to the size, difficult access and viewing, adjacent noble structures and the organic porous composition of the object (wooden skewer), which poses additional challenges due to the large quantity of bacteria on the foreign body (15).

The most indicated treatment of a foreign body is its surgical removal, antibiotic therapy and follow-up. The intraoperative period in such cases is a very delicate moment during which the identification of possible local injuries should be prioritized and the possibility of the object breaking during removal must be considered, leaving remnants that can be the cause of infection even after a long period of time (22).
4 CONCLUSION

Penetrating neck injuries can be fatal if not diagnosed and handled correctly. The patient history, physical examination and complementary imaging exams are fundamental to the proper diagnosis and treatment, enabling the identification of the precise location of the foreign body as well as its size, composition, proximity to adjacent structures and the possible migration of the object.
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