



Stab wound in maxillofacial region. A case report

Herida por impacto de arma punzocortante en la región maxilofacial. Reporte de un caso

Ana María Nieto Munguía,* Gloria Leticia Lara Fong,[§]
Luis Rodrigo Flores Flores[§]

ABSTRACT

Stab wounds in maxillofacial region are infrequent and rarely reported. These lesions can be life-threatening, especially in cases where major blood vessels are involved and resulting hemorrhage obstruct airways. Treatment must be of a multi-disciplinary nature: it begins at the trauma unit to provide airway maintenance, hemodynamic stabilization, and if necessary, neurological ophthalmological and vascular evaluation.^{1,2} This study presents the case of a lesion caused by a stabbing weapon. The lesion penetrated into the left orbit causing fracture of the orbit floor, proceeding to the soft palate, and did not damage important structures. The knife was removed through the entrance wound. Fracture was reduced with resorbable plates. No complications were observed either during or after surgery.

Key words: Knife injury, resorbable plates, orbital fracture.

Palabras clave: Herida por arma punzocortante, placas reabsorbibles, fractura orbitaria.

RESUMEN

Las lesiones por impacto de arma punzo cortante en la región maxilofacial son raras e infrecuentemente reportadas. Estas lesiones pueden poner en riesgo la vida del paciente, especialmente en aquellos casos en los que grandes vasos sanguíneos están involucrados y la hemorragia resultante obstruye la vía aérea. El tratamiento debe ser multidisciplinario, empezando en la Unidad de Trauma para proveer el mantenimiento de la vía aérea, la estabilización hemodinámica y de ser necesaria, la evaluación neurológica, oftalmológica y vascular.^{1,2} Este artículo presenta una lesión causada por un arma punzocortante que penetró la órbita izquierda causando fractura de piso de la misma, alcanzado el paladar blando sin daño a estructuras importantes. El arma punzo cortante fue removida a través de la herida causada, la fractura se redujo con placas reabsorbibles y no se observaron complicaciones durante y después de la cirugía.

INTRODUCTION

Lesions which penetrate or surround the orbit represent potentially life-threatening trauma. In a study conducted during World War II,³ a 12% mortality rate was found in 42 patients suffering maxillary-orbital wounds with intra-cranial extension.

Lesions of the orbits and face can be obvious. Nevertheless, diagnosis can become difficult due to the intense inflammation experienced by facial structures surrounding the orbits and patient's lack of cooperation when faced with trauma.

CLINICAL CASE

16 year old male patient attended the Pediatric Emergency Service of the Regional Hospital «Lic.

Adolfo Lopez Mateos» ISSSTE, Mexico City, due to a stab wound located in the left infra-orbital region caused by third party aggression. The patient was conscious, not presenting data of neurological deterioration or active hemorrhage. Airways were not compromised. He presented severe edema and ecchymosis in the orbital region which hindered occlusion of left eye. Intra-ocular exploration revealed upward

* Attached to Maxillofacial Surgery Service, Regional Hospital Adolfo López Mateos, ISSSTE.

§ Maxillofacial Surgeon, private practice.



Figure 1. Frontal view before surgery.

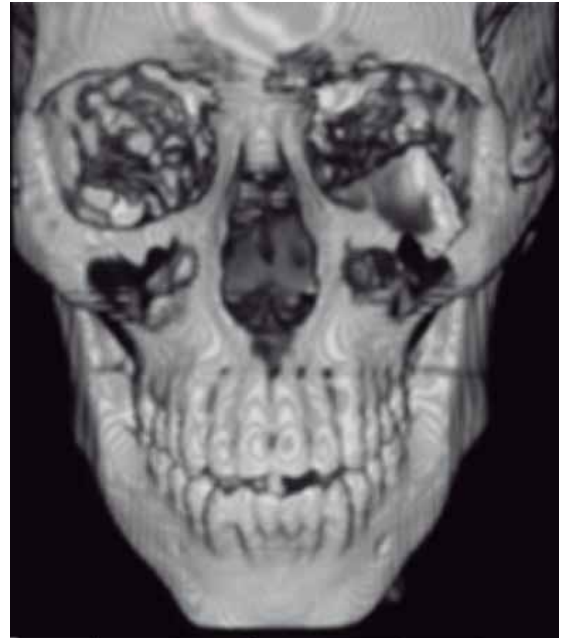


Figure 3. 3-D reconstruction.



Figure 2. Lateral view before surgery.



Figure 4. 3-D reconstruction removing part of facial middle third.

displacement of ocular globe, due to one end of the weapon, and which limited eye movements. Patient reported blurry vision. The infra-orbital wound had been sutured outside of the Institution with 3-0 nylon material (*Figures 1 and 2*).

When performing intra-oral exploration ecchymosis of the right soft palate was observed. At that site, upon palpation, the tip of the knife could be felt. There was no open communication into the oral cavity. When history was taken, the patient revealed history of drug

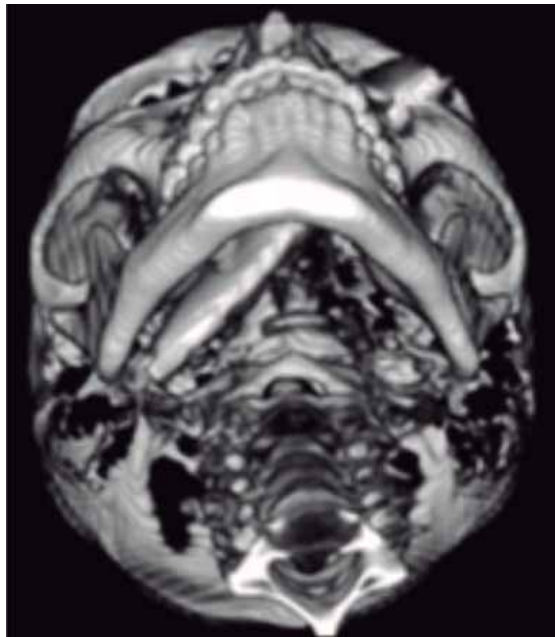


Figure 5. 3-D reconstruction, lower view.



Figure 7. 3-D reconstruction, lateral view.

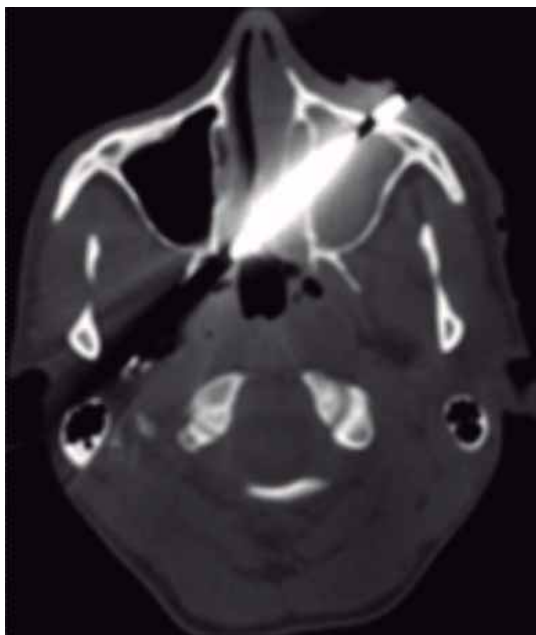


Figure 6. Computed tomography with axial section.

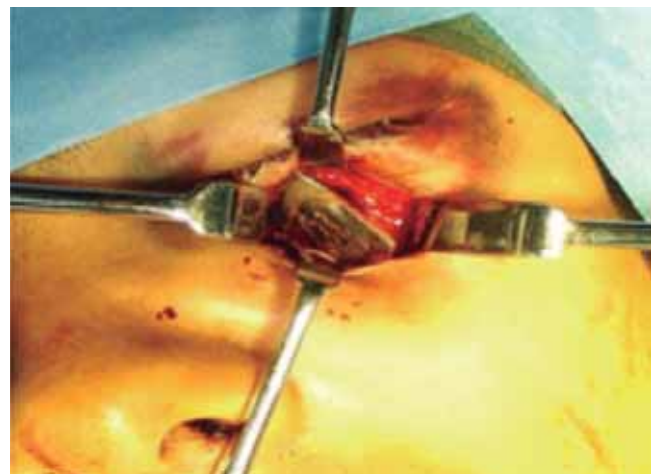


Figure 8. Knife exposition.

addition, as well as drug intake just before the aggression.

Imaging studies were conducted (*Figures 3 to 7*) at different projections, to determine the extent of the wound and its probable relation to important neigh-

boring structures. Computed tomography showed the knife's trajectory, which affected the orbit floor and left maxillary sinus, and crossed over laterally until reaching the right side of the palate.

The patient entered the operating theatre and was subject to general anesthesia. The knife was withdrawn pulling it through the wound, without causing any damage to neighboring structures. (*Figures 8 to 10*).

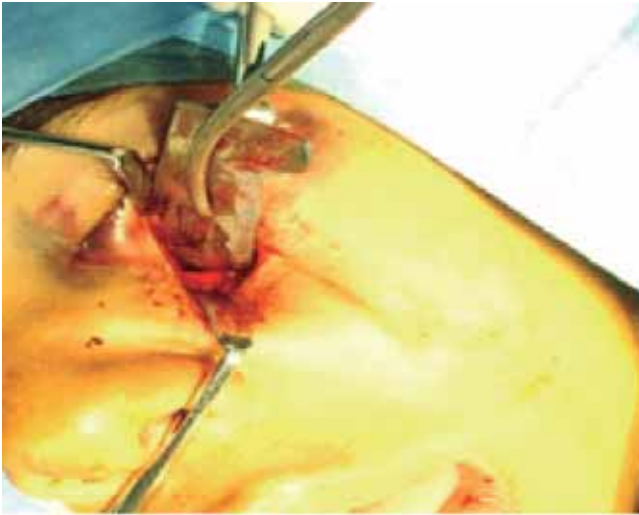


Figure 9. Knife extraction.



Figure 11. Fracture exposition.



Figure 10. Extracted knife.



Figure 12. Fracture reduction and fixation.

After this, reduction and fixation of the orbital floor fracture was achieved by placing resorbable plate and screws. The wound was sutured anew, and the surgical event was finalized with the administration of the following drugs: clyndamycin 600 mg IV every 6 hours, ketorolac 10 mg every 8 hours for two days, metoclopramide, 10 mg IV, single dose, dexamethasone 8 mg IV, single dose. The patient was discharged and asked to continue with clyndamycin 600 mg every 6 hours for 7 days, as well as ketorolac 10 mg every 8 hours for two days. The patient experienced satisfactory evolution immediately after surgery: visual acuity was

restored, eye movements were not compromised, excellent functional esthetic and results were obtained. These results were obvious in post-surgery control visits (*Figures 11 to 14*).

DISCUSSION

Treatment of penetrating lesions located in the maxillofacial region can vary according to the lesion's etiology, the nature of the retained foreign body, the site of the lesion, as well as extension of damage to soft and hard tissues of the region and neighboring structures.⁴ Eyes are especially vulner-



Figure 13. Picture taken Immediately after surgery.



Figure 14. Picture taken at control visit 7 days after surgery.

able to intrusive lesions and foreign bodies, which can lodge within the orbit and even extend beyond it, into the skull. Removal of foreign bodies is not always easy, especially in cases when they deeply embed themselves into soft tissues.

Routine removal of a foreign body is normally performed through the entrance wound as well as the trajectory created by the foreign object. It might prove necessary to expand the incision caused by the wounding agent so as to facilitate proper exploration of the trajectory, and the recovery of the foreign body with a curved hemostat. Removal of an intruding object, such as a knife, serrated fragments of a bullet, or shards of glass, must be approached with extreme caution, since these very sharp objects could damage vital structures during the removal process.

CONCLUSIONS

Penetrating lesions on the middle facial third, where intracranial extension is suspected, must be assessed and treated following multi-disciplinary criteria. Therefore, the following is recommended:

1. Airway should be examined, and in some cases, endotracheal intubation might be needed to ensure patient's proper ventilation.^{5,6}
2. Vascular damage is frequently diagnosed and treated at early stages.^{5,7}

3. X-rays and tomography are paramount to determine the wound's trajectory and assess any possible damages to central nervous system.
4. These lesions can severely affect anatomical structures such as maxillary sinus, ocular globe, blood vessels, brain and cervical spine.^{5,8,9}
5. Detailed history of trauma incident must be obtained, including description of the weapon.

Ophthalmological, neurosurgical, and ENT services must always be consulted, so they can assist in orbital framework fracture management, or in cases when foreign bodies are embedded into the orbit, or into circum-nasal and intra-cranial sinuses in cases associated with penetrating maxillofacial trauma.

Injuring artifacts such as shot, or bullet fragments superficially located must be removed through the entrance way. Nevertheless, artifacts located in deeper planes and impinging upon vital structures must be subject of a more detailed and prolonged examination as well as systematic follow-ups.

Facial lesions in the mid-facial third with intra-cranial extensions, must be borne in mind when assessing moderate or severe intruding trauma. The possibility that this trauma might show extension towards the brain must also be considered.

When treating maxillofacial or circum-orbital penetrating trauma, signs and symptoms associated to intra-cranial extension can be attributed to other causes

in cases when there is no fracture of the orbital floor or cranial fossa floor is suspected.³

REFERENCES

1. Hitoshi SE, Heringer L, Pereira de Carvalho J Jr. Impacted knife injuries in the maxillofacial region Report of 2 cases. *J Oral Maxillofac Surg* 2001; 59: 1221-1223.
2. Bourguignon FAM, Puppín AAC, Pimentel DP, Jaques PM. Unusual penetrating orbit injury. *Int J Oral Maxillofac Surg* 2006; 35: 92-93.
3. Morrisette MP, Chewning LC. Rapid airway compromise following traumatic laceration of the facial artery. *J Oral Maxillofac Surg* 1990; 48: 989.
4. Kreutz RW, Bear SH. Selective emergency arteriography in cases of penetrating maxillofacial trauma. *Oral Surg Oral Med Oral Pathol* 1985; 60: 18.
5. Niamtu III J, Lassiter J. A bizarre penetrating head wound with intraoral communication. Report of a case. *Oral Surg* 1979; 48: 410.
6. Randall DA, Richard Kang D. Current management of penetrating injuries of the soft palate. *Otolaryngology-Head and Neck Surgery* 2006; 135: 356-360.
7. Díaz FJM, Jardón CJ, Quintero MY, Peña SL. Lesiones penetrantes maxilofaciales. Presentación de 4 casos. *Rev Cubana Estomatol* 2006; 43: (3).
8. Gan BJ, Kallal RH, Helgerson AC. The imagen interfer in oral and maxillofacial injuries surg. *J Oral Maxillofac Surg* 2000; 28 (3): 726-31.
9. Exadartulos AK, Stettbacher A, Batz PC. The value of protocol-driven CT scanning in stab wounds to the head. *Am J Emerg Med* 2002; 20: 295-297.

Mailing address:

Dra. Gloria Leticia Lara Fong

E-mail: dra_gloriallf@hotmail.com