Facial reconstruction after chainsaw trauma. A case report

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Background: Facial injuries are a challenge for reconstructive surgery, they can generate disabling injuries, with irreversible aesthetic defects. Trauma due to fireworks injuries has an explosive power equal or greater than that of a hand grenade. These injuries are associated with significant tissue loss, extensive fractures, eye injuries and presence of foreign bodies. The main objective is to restore oral and ocular function and esthetics. The use of tissue expanders are a good option in patients in whom the quantity and quality of adjacent tissue is inadequate, and the defect is very significant. The following is a clinical case of a fireworks injury to the face with repair and placement of a tissue expander.

Keywords: Facial trauma, facial reconstruction.

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Case Report

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Facial trauma is a complex entity that represents a challenge for the surgeon at the time of reconstruction, due to the multiple structures that have to be taken into account at the time of trauma and repair.

The average age of presentation ranges between 24-51 years of age with a higher incidence in males (1) (2).

The facial anatomy is complex, the local flaps are determined by the blood supply, while the nerves such as the facial nerve are structures that delimit these flaps and add complexity to the reconstruction. The skin surface varies according to the different regions of the face, being a relevant consideration for an aesthetic reconstruction, depending on the facial unit and the region involved.

Depending on the facial region and the depth of the affected tissues, the reconstruction presents its own characteristics and limitations and may involve soft tissue and bone defects (3).

Initial treatment focuses on wound cleansing with irrigation, hemostasis and debridement of non-viable tissue. Electrocautery of injured vessels should be reserved for uncontrollable bleeding to avoid further damage to surrounding soft tissues. Arterial hemorrhage may accompany cranial nerve transection (such as facial or trigeminal nerves) and targeted hemostasis helps prevent further damage to traumatized nerve endings.

Removal of obviously nonviable tissue should be performed conservatively to preserve tissue suitable for repair (4).

The following is a clinical case of facial trauma with chainsaw cutting.

Case report

Male, 65 years old, farmer, with no other important antecedents. While pruning a tree with a chainsaw, he suffers an incidental injury with a chainsaw causing facial trauma. He was brought to the emergency unit of the Valentín Gómez Farias Regional Hospital where initial care was provided with orotracheal intubation.

When assessed by the plastic surgery service, multiple bloody lesions were observed covering the left hemiface, left wing and dorsum of the nose, supraciliary region, cheek with communication to the oral cavity and with involvement of the paranasal sinuses.

Computed tomography was performed where hemo sinus was observed with occupation of the maxillary and ethmoidal sinus, fracture of the upper maxilla, zygomatic and floor of the orbit. He went to the operating room for surgical cleaning, exploration and repair.

Exhaustive surgical cleaning with sterile solution, debridement of devitalized tissue trying to keep as much viable tissue as possible.

Internal fixation with open reduction with titanium plates of the upper jaw was performed by the maxillofacial surgery service of the same institution.

Fine hemostasis was performed, integrity was corroborated and the facial nerve, gland and parotid gland duct were not compromised. With gentle tissue and flaps without tension, in muscular and cutaneous plane, with repair of upper and lower eyelid.

The result is shown after and 3 months after the repair with successful esthetic results and without sensory and motor compromise.

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Figure 1. Initial lesion, emergency department approach. Crude lesions, tissue loss.

Discussion

The initial approach is performed with an adequate physical examination and diagnostic imaging, which is essential to understand the anatomical structures involved and to plan the surgical approach. Subsequently, an exhaustive cleaning and debridement, with fixation and restoration of the skeletal structure, as it was performed in our patient (1).

The surgeon must know every detail of the anatomy of the face. The vascular supply of the head and neck is comprised of a large number of blood vessels. The viability of the injured tissues must be carefully assessed, and the repair should be performed

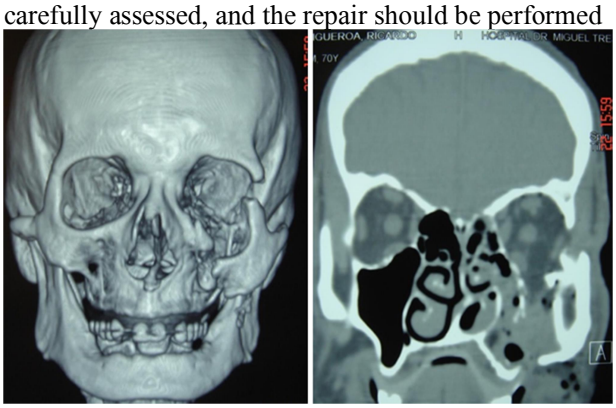

Figure 2. CT with bone reconstruction showing multiple fractures involving the upper jaw, zygomatic bone and floor of the orbit.

Figure 3. First surgical intervention with lavage and debridement, healthy tissue approach.

with minimal tension and sutured gently. In the case of our patient, the injuries to the musculocutaneous plane were with clear cuts and minimal tissue loss, which allowed gentle and tension-free approach, requiring only suturing. As well as the repair of the affected eyelid on its lateral edge.

On the contrary, the rotation of local flaps, grafts or free tissue transfer can be assessed (1).

In addition to assessing the integrity of the facial nerve, as well as discarding lesions at the level of the parotid gland or ducts.

The reconstruction must be meticulous, in an integrated manner, with restoration of the bone, muscle and skin plane, and if necessary, the nerve complex.

Conclusions

Facial trauma is a complex entity due to all the areas involved, both in the knowledge and recognition of facial anatomy, muscle and nerve functionality, as well as in the social and emotional impact that these conditions.

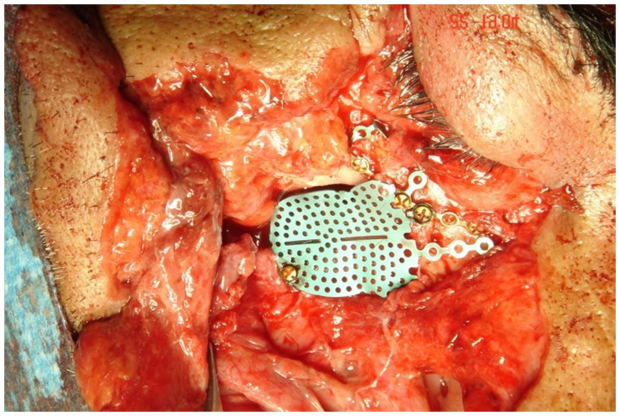

Figure 4. Fracture fixation with titanium plate.

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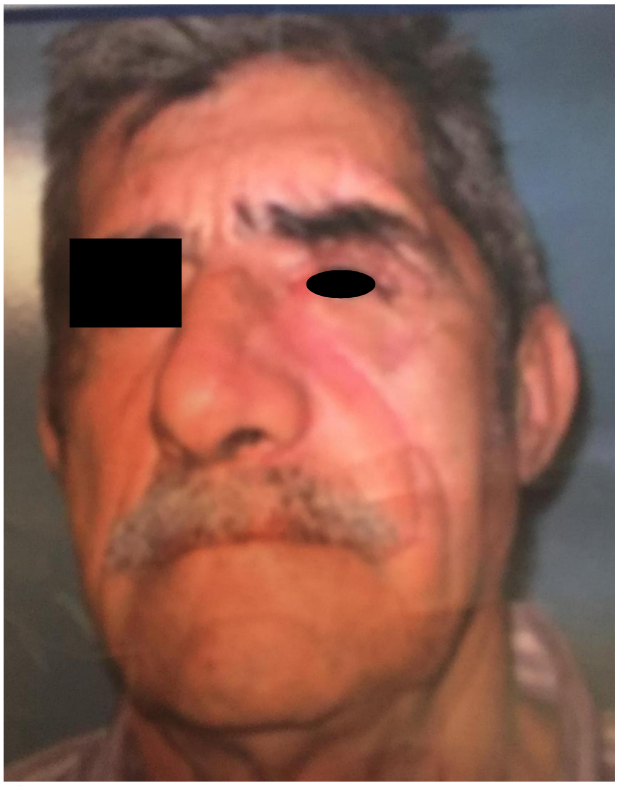

Figure 5. Post-surgical follow-up at one week and 3 months.

The reconstruction is aimed at achieving the best aesthetic and functional results, with the least possible social and psychological impact.

Conflicts of interests

There was no conflict of interest during the study, and it was not funded by any organization.

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