



Lefort i fracture diagnosis and treatment literature review and case report.

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Abstract

Facial trauma includes the involvement of bone tissues, soft tissues, alveolar-dental structures (alveolar-tooth, gingival tissues and mucosa), due to its high severity and complexity in its management, facial trauma is associated with high morbidity, loss of function and a high economic, social, aesthetic and functional cost.

Keywords: Facial fractures, Lefort 1 fracture, diagnosis, surgical treatment

Introduction

Maxillofacial traumatology undoubtedly constitutes a health problem, due to its high incidence, since automobile accidents, as well as injuries caused by fights, have increased. Facial trauma includes the involvement of bone tissues, soft tissues, alveolar-dental structures (alveolar-tooth, gingival tissues and mucosa), due to its high severity and complexity in its management, facial trauma is associated with high morbidity, loss of function and a high economic, social, aesthetic and functional cost [1, 2, 3]. The management is multidisciplinary and is aimed at the resolution of fractures, dentoalveolar trauma if any, lavage and suturing of wounds and management of associated injuries.

Facial trauma is produced by traffic accidents, aggression by third parties and falls as the main causes, facial trauma can involve a single bone caused by low energy trauma and those involving more bones are caused by high energy trauma. The former do not require a great trauma to produce a fracture and the high energy ones are the result of the exchange of a great energy between two or more bodies in an accidental event [4]. Due to the magnitude of the impact, it causes bone fractures, damage to organs and systems, tissue injuries, as well as severe inflammatory processes and large hemorrhages, life-threatening clinical conditions.

The management of maxillofacial trauma consists of open or closed reduction of facial and dentoalveolar fractures and resolution of associated injuries. Adequate management of facial fractures is important, minimizing complications and reincorporating patients to their work, family environment and social insertion in the shortest possible time.

This article carries out a literature review of the subject and presents a clinical case managed in a trauma hospital in Mexico City.

Diagnosis

Diagnosis is made by clinical and radiographic examination. A thorough examination should be carried out to detect

lacerations, wounds, abrasions and contusions. Intraorally we should look for steps, disruptions, loss of continuity and alterations in the teeth. Computed tomography assesses fracture patterns and bone structures involved, as well as injuries to neighboring organs involved.

Fracture Lefort I

Facial trauma is the consequence of a single or multiple impact on a bone, resulting in loss of continuity causing mobility, loss of function and in some cases bone loss in fractures with minute. In this case, the middle third of the face is composed of the maxillary bone, the bones of the nose, malar and temporal bones, contributing to the formation of the orbits, nostrils, alveolar ridge and palat. The Lefort I or horizontal fracture consists of a trace that goes from the piriform ridge to the tuberosity of the maxilla passing over the upper dental apices. It occurs secondary to vehicular trauma and physical aggressions predominantly in males [6].

Treatment

Its management includes a multidisciplinary approach and is focused on surgical resolution, carrying out open reduction with rigid internal fixation and soft tissue repair. The aim of the treatment is to restore facial integrity and dental occlusion.

Clinical case

A 38-year-old male with no significant medical history for the current condition suffered an assault by a third party, resulting in a Lefort I fracture. Open reduction was performed, and the fracture was fixed with titanium miniplates and 5ml screws. The wound was sutured with 3-count Vicril, and the procedure was completed without incident or accident.



Fig 1: Plain CT scan shows a Lefort Type 1 fracture line in the upper jaw



Fig 2: Shows linear incision respecting the lingual frenulum, to carry out the surgical exposure of the Lefort 1 fracture.



Fig 3: Six-hole plates with 5 mm titanium screws are placed to fix the fracture.**Fig 4:** Shows the sutured surgical wound, and the placement of Oliver-Ivy type wiring to perform Intermaxillary Fixation (IMF)

Discussion

Facial fractures should be properly diagnosed since functions such as vision, smell, breathing and chewing may be affected. It is important to take into account the counterforce systems and that the bones that make up the middle third are vulnerable. By virtue of this, any trauma with a significant amount of kinetic energy can fracture them.

Conclusions

Regardless of the mechanism of the facial trauma, a careful evaluation of the patients should be made with a focus on the resolution of life-threatening injuries. The mechanism of trauma must be determined and the physical examination should include assessment of the airway, oropharyngeal bleeding, cerebrospinal fluid leakage and level of consciousness. The resolution of the Lefort 1 fracture should be addressed as soon as the patient has passed the critical stage, also assessing concomitant fractures. Medical and surgical work should be multidisciplinary.

Referencias

1. Mardones M, Fernández M, Bravo R, Pedemonte C, Ulloa C. Maxillofacial traumatology: diagnosis and treatment. *Rev. Med. Clin. Condes*,2011;22(5):607-616.
2. Ferreira B, Augusto L. Epidemiological análisis of maxilofacial fractures in Brazil. A five-year prospective study. *Oral Surg Oral Pathol Oral Radiol Endod*,2006;102:28-34
3. Down K, Boot D, Gorman D. Maxillofacial and associated injuries in severely traumatized patients: implications of regional survey. *Int J Oral Maxillofac Surg*,1995;24:409-412.
4. Cuacuas V, Escobar M, Torres J y Hernández E. High-energy trauma and its systemic inflammatory response. *Ortho-tips*,2008;4(1):39-50.
5. Castillo M, Flores J, González A, Cervantes G, Cervantes G, Ramírez M, *et al.* Fracturas faciales, manejo quirúrgico y resultados en un hospital de tercer nivel. *Rev Esp Cir Oral Maxilofac*,2021;43(3):96-100.
6. González B, Bermúdez P, Margariño L, Rivero R. Tratamiento multidisciplinario de fractura Lefort I.

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