

Fratura Complexa de Teto de Órbita Associada Disjunção Traumática do Complexo zigomático

Complex Orbit Roof Fracture Associated with Traumatic Disjunction of the Zygomatic Complex
Fractura Compleja del Techo de la Órbita Asociada a Disyunción Traumática del Complejo Cigomático

RESUMO

Objetivo: As fraturas do complexo zigomático-maxilar (CZM) constituem as principais fraturas do terço médio da face. O diagnóstico é complexo, por envolver uma área alternante sensorial e nobre da face. Portanto o tratamento não visa apenas devolver os contornos ósseos, mas também preservar as funções oculares. No presente caso paciente apresentou severo trauma facial associado a TCE com afundamento do frontal e teto de órbita. **Relato de caso:** Paciente do sexo masculino, 33 anos, vítima de queda da própria altura. No exame físico notou-se FCC extenso em região frontal, se estendendo para a região supra-orbital esquerda, blefaroedema periorbital esquerdo, com oclusão palpebral e distopia ocular. Escoriações em face e afundamento em região fronto-parietal esquerda e perda de consciência. O diagnóstico apontou para fratura do complexo zigomático-maxilar associada a afundamento do osso frontal. Paciente submetido a osteossíntese das fraturas com por meio da ferida e complementado com acesso subciliar e caldwel luc. Foi alcançada boa reabilitação estética e funcional. **Conclusão:** Portanto, a redução aberta com fixação funcional estável com placas e parafusos segue sendo o padrão ouro para o tratamento de fraturas complexas do CZM. Sendo imperativo uma adequada redução e o reestabelecimento do continente orbitário. **Palavras-chaves:** Trauma; Órbita; Fratura.

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ABSTRACT

Objective: Fractures of the zygomatic-maxillary complex are the main fractures of the middle third of the face. The diagnosis is complex, as it involves an alternating sensory and noble area of the face. Therefore, the treatment is not only aimed at restoring bone contours but also preserving ocular functions. In the present case, the patient presented severe facial trauma associated with TBI with frontal and orbital sinking. **Case Report:** Male patient, 33 years old, victim of a fall from standing height. Physical examination revealed extensive CCF in the frontal region, extending to the left supraorbital region, left periorbital blepharoedema, with eyelid occlusion and ocular dystopia. Excoriations on the face and sinking in the left fronto-parietal region and loss of consciousness. The diagnosis pointed to fracture of the zygomatic-maxillary complex associated with frontal bone sinking. Patient undergoing osteosynthesis of fractures through the wound and complemented with subciliary access and caldwel luc. Good aesthetic and functional rehabilitation were achieved. **Conclusion:** Therefore, open reduction with stable functional fixation with plates and screws remains the gold standard for the treatment of complex ZMC fractures. An adequate reduction and reestablishment of the orbiting continent is imperative. **Key-words:** Trauma; Orbit; Fracture.

RESUMEN

Objetivo: Las fracturas del complejo cigomático-maxilar son las principales fracturas del tercio medio de la cara. El diagnóstico es complejo, ya que involucra una zona sensorial y noble alternada de la cara. Por lo tanto, el tratamiento no solo está dirigido a restaurar los contornos óseos sino también a preservar las funciones oculares. En el presente caso, el paciente presentó trauma facial severo asociado a TCE con hundimiento frontal y orbitario. **Caso Clínico:** Paciente masculino, 33 años, víctima de caída desde altura de pie. A la exploración física destacaba FCC extensa en región frontal, con extensión a región supraorbitaria izquierda, blefaroedema periorbitario izquierdo, con oclusión palpebral y distopía ocular. Excoriaciones en la cara y hundimiento en la región fronto-parietal izquierda y pérdida del conocimiento. El diagnóstico apuntó a fractura del complejo cigomático-maxilar asociada a hundimiento del hueso frontal. Paciente con osteosíntesis de fractura a través de herida y complemento acceso subciliar y calwell luc. Se logró una buena rehabilitación estética y funcional. **Conclusión:** Por lo tanto, la reducción abierta con fijación funcional estable con placas y tornillos sigue siendo el estándar de oro para el tratamiento de fracturas CCM complejas. Es imperativo una adecuada reducción y restablecimiento del continente en órbita. **Palabras Clave:** Trauma; Orbita; Fractura.

INTRODUCTION

Fractures of the zygomatic-maxillary complex (ZMC) are responsible for approximately 25% of all facial fractures. The most common etiologies are traffic accidents, work accidents, sports injuries and physical aggressions¹. The ZMC is composed of the zygoma with its rims and processes: temporal, orbital, maxillary and frontal, in addition the extension of the zygomatic arch. The ZMC has a fundamental position in the anterolateral portion of the face, defining the width of the middle third, shape and contour of the inferior and lateral orbital edges, as well as the prominence of the malar region, acting as a shield in the protection of head injuries².

For an adequate diagnosis of the fracture, it is essential to pay attention to the signs and symptoms, obtaining the history of the trauma, physical examination and complementary exams, having tomography as the gold standard, or good quality digital radiographs in the posteroanterior position of Waters and axial of Hirtz. The most frequent signs and symptoms are infraorbital nerve numbness, epistaxis, facial asymmetry, subconjunctival ecchymosis, eyelid edema or hematoma and diplopia³.

Therefore, ZMC plays an important role in the function and aesthetics of the face. Surgical treatment of ZMC fractures is indicated when there is a displacement of bone fragments with evident clinical repercussions. Open reduction and internal fixation are the treatment of choice in cases of fracture instability. The surgical approaches used for fracture reduction, as well as the type, number and location of fixation, will be determined by the fracture pattern and the surgeon's expertise⁴.

The main objectives of the treatment are the reestablishment of the anatomy of the displaced bones and preservation of adjacent structures such as musculature and local innervation. A gentle tissue management prevents aesthetic, sensorial and ocular postoperative complications⁵. The objective of this work is to present a case report about a patient victim of a complex fracture of the ZMC associated with inferior displacement of the orbital roof and frontal bone.

CASE REPORT

Male patient, 33 years old, melanodermic, victim of a fall from his own height, was admitted to the public service of reference in oral and maxillofacial surgery in the metropolitan region of the state of Bahia - Brazil.

The initial maxillofacial physical examination showed extensive laceration in the frontal region, extending to the left supraorbital region, left periorbital edema, with eyelid occlusion and ocular dystopia. Excoriations on the face and depression in the left fronto-parietal region (Figure 1A and 1B).



Figure 1 - Maxillofacial examination showing the excoriations and deformities on the face due to trauma: (A) = Frontal view; (B) = Axial View.

There was a loss of consciousness at the time of the trauma due to the associated TBI. The patient was promptly taken to the operating room for extensive suturing of the face under general anesthesia and orotracheal intubation. After stabilization of the condition and the first consultation,

laboratory and imaging tests were performed following hospitalization.

The facial tomography examination revealed a fracture in the frontal bone, extending to the left parietal region, in addition to a complex fracture of the left ZMC (Figure 2). After evaluation and release by neurosurgery and improvement of the general condition, the patient underwent a surgical procedure for reduction and osteosynthesis of facial fractures after one week of hospitalization. Procedure performed at the surgical center under general anesthesia and orotracheal intubation. The surgical wound was used to access the region and proceed with the reduction and fixation of the complex fracture of the orbital roof and frontozygomatic suture (Figure 3A). The exposure of the fractures was complemented with a subciliary approach to reduce the orbital rim fracture and reconstruction of the left orbital floor (Figure 3B), in addition a caldwell-luc approach was proceeded to reduce fractures of the maxilla and zygomatic pillar (Figure 3C).

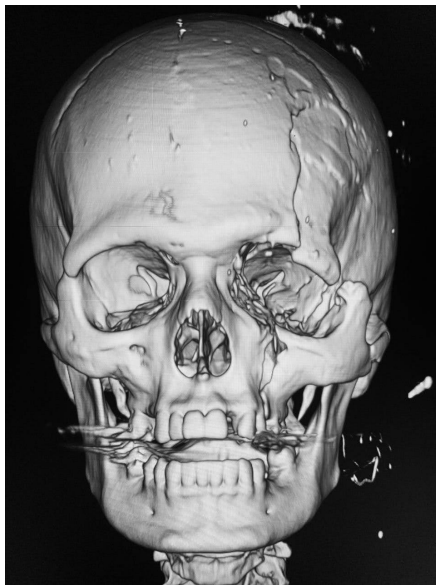


Figure 2 - 3D Tomography showing craniofacial fractures.



Figure 3 - Surgical approaches performed to access facial fractures with osteosynthesis material already fixed: (A) = Supraorbital access; (B) = Subciliary access; (C) = Caldwell-luc access.

For osteosynthesis, 2.0 mm system plates and mono-cortical screws were used. The top to bottom sequence was followed for better anatomical fixation. The orbital roof and infraorbital rim were reconstructed with titanium orbital plates and fixed with monocortical screws. Finally, a straight titanium plate was used for the reduction and fixation of the fracture of the left maxillary zygomatic complex (Figure 4A-C).

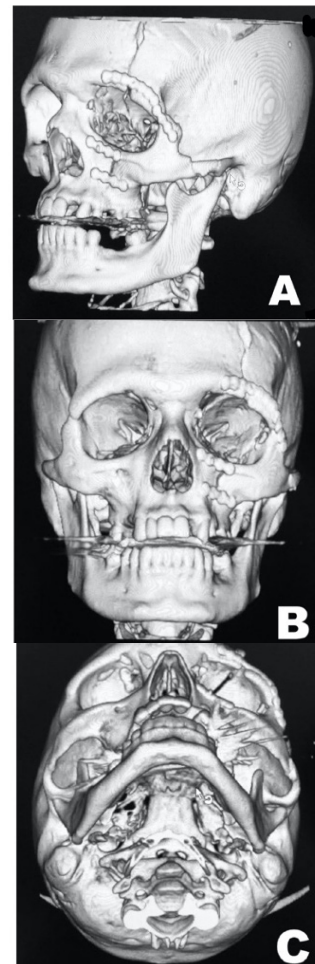


Figure 4 - 3D Postoperative tomography showing osteosynthesis of facial fractures: (A) = Left side; (B) = Front view; (C) = Axial view.

After osteosynthesis of the fractures, abundant irrigation was carried out with 0.9% saline solution, hemostasis with electrocautery, in sequence proceeding with the synthesis in layers with 4.0 vicryl in the musculature and skin closure with 4.0 nylon in the frontal region and nylon 5.0 in the subciliary access. Compressive dressing with gauze, micropore and bandage were applied and maintained for 72 hours.

The patient remained hospitalized until the 3rd POD. During this period, he was on antibiotic therapy with Ceftriaxone 1g 12/12, besides analge-

sia and venous anti-inflammatory. Received hospital discharged the 4th POD, with oral prescription. On the 15th postoperative day, all skin sutures were removed, with no signs of inflammation. After 2 months of follow-up, the patient evolved without complications, with total regression of the edema, good mouth opening, visual acuity maintained, without trauma sequelae in both aesthetic and functional terms.

DISCUSSION

Fractures of the ZMC have a high prevalence among facial fractures. Filho (2020)⁶ reiterates that this can be explained by the prominent presence of this anatomical area on the face, in addition to the fragility exhibited by these bones.

Regarding the etiology of these fractures, the vast majority originate from traffic accidents, followed by physical aggression and falls from one's own height, with males being the most affected by trauma.⁷ Corroborating this, Brucoli et al. (2019)⁸ in their multicenter study stated that young men represent 83% of patients who have fractures of the ZMC. In the present report, the patient represents this risk group, evolving with a fracture of the middle third resulting from a fall from his own height.

As for diagnosis, computed tomography (CT) is seen in the literature as the gold standard⁷. However, Santos (2017)⁹ states that other complementary exams can also be used for diagnosis and treatment planning, such as the Waters x-ray incidence for evaluation of the discontinuity of the orbit and of the canine and zygomatic pillars in addition to the Hirtz x-ray to evaluate possible bone deviations of the zygomatic arch. In addition, it is essential to carry out an anamnesis to collect information on the history of the trauma and a thorough physical examination⁹.

The literature addresses numerous techniques for the treatment of fractures of the ZMC, as closed reduction or open fixation⁹. Surgical treatment is indicated in cases with bone displacements that compromise function, such as limited mouth opening and implications for motility and ocular functions¹⁰. In the case presented, we used the technique of open reduction and stable functional fixation with 2.0 mm system plates and monocortical screws to restore facial contours.

CONCLUSION

The middle third of the face has thinner bones and peculiar anatomical characteristics,

occupying a prominent region on the face, which corroborates the high prevalence of facial fractures in this portion. As presented in this report, open reduction with stable functional fixation with plates and screws represents a good choice for the treatment of fractures of the zygomatic-orbital-maxillary complex, since it adequately restores its positioning, functionality and aesthetics.

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