Content available at: https://www.ipinnovative.com/open-access-journals

International Journal of Oral Health Dentistry

Journal homepage: www.ijohd.org

Case Report

Zygomatico-maxillary complex fracture

Anur Chavan[1], Aravind Anto[1]*, Shruti Ajmera[1], Utham Chand[1], Anjali Bharath[1], Ankush Kumar Agarwal[1]

[1]*Dept. of Oral and Maxillofacial Surgery, NIMS Dental College and Hospital, Jaipur, Rajasthan, India*

ARTICLE INFO

Article history:
Received 12-05-2024
Accepted 21-05-2024
Available online xx xx xxxx

Keywords:
Zygomaticomaxillary fracture
Orbit reconstruction
Mini-plate Fixation
Aesthetics

ABSTRACT

The fractures in the zygomatic complex if left untreated can lead to issues like dystopia, enophthalmos, and changes in appearance. Achieving excellent aesthetic and functional results in treatment relies on utilizing materials and diagnostic tools such as CT scans. This study aims to showcase a case involving a fracture in the left orbital lateral wall and orbital floor, highlighting both aesthetic and functional outcomes.

1. Introduction

Due to the intricate nature of fractures affecting the zygomatic process and their impact on the orbital floor, the expertise of a skilled surgeon is essential.[1] The zygoma, a bone within the viscerocranium, forms connections with adjacent bones such as the maxilla, temporal, sphenoid, and frontal through sutures, presenting a quadrangular shape.[2] Certain fractures, referred to as blowout fractures, primarily occur in the orbital floor, with 5 to 10% also involving the lateral wall. In rare instances, fractures may solely affect the medial wall.[3] Zygomatic complex fractures are categorized into mild, moderate, and high-energy types, with minimally displaced fractures often managed conservatively without orbital restoration.[1]

During patient history taking, thorough examination of the face and skull is crucial to detect soft tissue injuries and fractures. Symptoms reported by patients may include ecchymosis, pain, and periorbital edema,[1] along with subconjunctival and periorbital ecchymosis, diplopia, trismus, enophthalmos, exophthalmos, paraesthesia in the affected area, orbital margin deformity, epistaxis on the affected side, malar depression, and displacement of the eyelid fissure anterior to the tragus.[4,5]

While physical examination and patient history can provide diagnostic clues, imaging tests are imperative for confirmation, assessment of extension, and for legal-medical documentation purposes.[1] While the Waters Projection radiograph is useful, CT scans are considered the gold standard as they offer comprehensive information about the fracture, including soft tissue evaluation within the orbit.[1,6]

Studies investigating the prevalence of facial injuries and advancements in treatment have established open reduction with internal fixation using miniplates and screws as the most common therapy for zygomatic fractures.[1,7–9] This study aims to present a clinical case of an orbital floor fracture and its treatment approach.

2. Case Report

An 80-year-old male, involved in a bike accident, was brought to NIMS Multispeciality Hospital in Jaipur, Rajasthan, by Mobile Emergency Care Services. Upon admission for facial trauma, clinical evaluation at the Oral and Maxillofacial Surgery department revealed infraorbital

* *Corresponding author*.
E-mail address: draravindmaxfac@gmail.com (A. Anto).

https://doi.org/10.18231/j.ijohd.2024.025

paraesthesia, left subconjunctival ecchymosis, and a step in the left orbital border. Additionally, photoreactive pupils and typical oculomotricity were noted, with the patient complaining of impaired left dioptric vision.

A 3D image reconstruction unveiled a complex scenario, suggesting left zygomatic bone dislocation, left orbital floor fracture, left orbital lateral wall fracture, and left zygomatic arch fracture, with visible fracture walls. In response, a decision was made to perform surgical intervention under general anaesthesia to reduce the fractures and employ rigid internal fixation using mini-plates, screws, and a titanium 2.0 system.

Surgical access was gained through an infraorbital incision and a pre-existing laceration. The lost bony segment of the lateral orbital wall was reconstructed using a 6-hole plate. The fracture in the infraorbital rim was carefully reduced and secured with rigid plates and screws. Following fixation, the exposed surgical site was throughly washed and closed using Vicryl 4-0 and Ethylon 4-0, respectively.

After two days of hospital observation, the patient was discharged with left infraorbital nerve paraesthesia, absence of diplopia, normal oculomotricity, and photoreactive pupils. Over the course of a month, with 15 days of further observation, the patient's paraesthesia improved significantly, and after 45 days, excellent aesthetic and functional outcomes were observed.

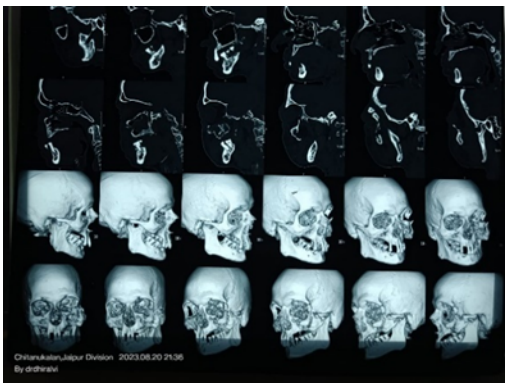

Figure 1: Pre-operative radiography

3. Discussion

Zygomatic complex fractures are a common occurrence and can lead to significant functional impairments due to the displacement of the zygomatic bone.[7,10] However, isolated orbital floor fractures, which do not involve other facial injuries, are relatively rare and uncommon.[11,12] Blowout fractures, also known as orbital floor fractures, are characterized by the involvement of the orbital walls without fracture or displacement of adjacent bones.[13] Approximately 21.4% of fractures in the midface region

Figure 2: Exposure

Figure 3: Fracture fixation

Figure 4: Post-operative day 1

Figure 5: Post-operative day 7

Figure 6: Post-operative after 1 month

Figure 7: Post-operative radiograph A-P view

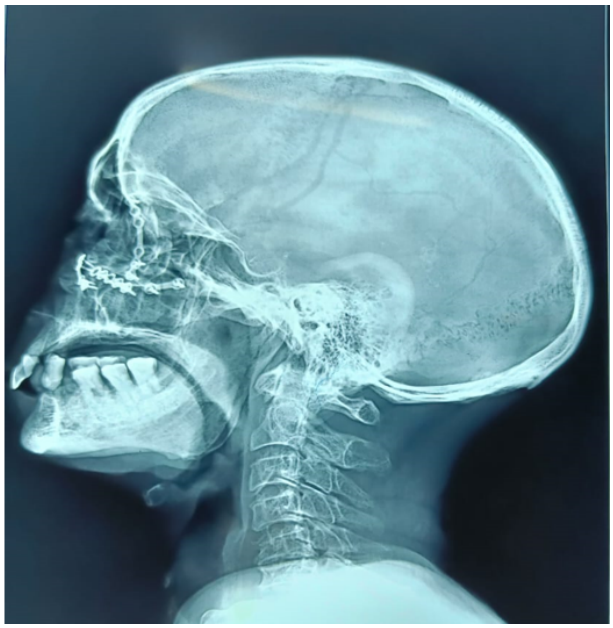

Figure 8: Post -operative radiograph Lateral view

are isolated orbital floor fractures, typically necessitating reconstruction.[12]

For primary reconstructions aiming to restore the contour of the orbital walls, alloplastic materials such as titanium screens can be utilized. In cases requiring secondary reconstructions to address issues like abnormal tissues, enophthalmos, and volume loss, Porous Polyethylene may be preferred. In the presented study, the auricular shell cartilage was also considered, alongside other options like the symphysis, body, branch, and coronoid process, with considerations of surgeon expertise, time, and cost.

In the clinical case discussed, the alloplastic material chosen was the titanium screen due to its ability to prevent bone separation, promote cicatrization, and reduce postoperative complications, ultimately leading to superior outcomes.[1]

4. Conclusion

In order to select the optimum surgical technique and surgical material, minimize potential problems, and promote cosmetic and functional rehabilitation, anamnesis, clinical examination, and imaging analysis are essential. The material utilized in the clinical case in issue had a

significant impact on the ultimate aesthetic and functional outcomes. For the best outcome in zygomatic complicated fracture situations, surgical planning is crucial.

5. Source of Funding

None.

6. Conflict of Interest

None.

References

1. Miloro. Princípios de cirurgia bucomaxilofacial de Peterson. 3rd ed. Rio de Janeiro: Guanabara Koogan; 2012. p. 2407.
2. Sobotta J. Atlas de Anatomia Humana. 21st ed. Rio de Janeiro: Guanabara Koogan; 2000.
3. Tanaka T, Morimoto Y, Kito S, Ro T, Masumi T, Ichiya Y, et al. Evaluation of coronal CT findings of rare cases of isolated medial orbital wall blow-out fractures. *Dentomaxillofac Radiol*. 2003;32(5):300–3.
4. Ellis E, Hupp JR, Tucker MR. Cirurgia oral e Maxilofacial Contemporânea. 5th ed. Rio de Janeiro: Elsevier; 2009. p. 719.
5. Fonseca RJ, Walker RVW. Oral and maxillofacial trauma. 2nd ed. St. Louis: WB Saunders; 1997. p. 2980.
6. Tanrikulu R, Erol B. Comparison of computed tomography with conventional radiograph for midfacial fractures. *DentomaxillofacRadiol Diyarbakir*. 2001;32:141–146.
7. Chrcanovic BR, Freire-Maia B, Souza LN, Araújo V, Abreu M. Facial fractures: a 1-year retrospective study in a hospital in Belo Horizonte. *Braz Oral Res*. 2004;18(4):322–8.
8. Moreira ROM, Freire-Maia B. Management of Fractures of the Zygomaticomaxilary Complex. *Oral Maxillofac Surg Clin North Am*. 2013;25(4):617–36.
9. Vriens JP, Glas H, Moos KF, Koole R. Infraorbital nerve function following treatment of orbitozygomatic complex fractures. A multitest approach. *Int J Oral Maxillofac Surg*. 1998;27(1):27–32.
10. Oliveira. Use of Different Reconstruction Materials in Fractures of the Floor of the Orbit: a Report of Six Cases. *Rev Cir Traumatol Buco-Maxilo-Fac, Camaragibe*. 2005;5:43–50.
11. Swinson B, Amin M, Nair P, Lloyd T, Ayliffe P. Isolated bilateral orbital floor fractures: a series of 3 cases. *J Oral Maxillofac Surg*. 2004;62(11):1431–5.
12. Castellani A, Negrini S, Zanetti U. Treatment of orbital floor blowout fractures with conchal auricular cartilage graft: a report on 14 cases. *J Oral Maxillofac Surg*. 2002;60(12):1413–7.
13. Erling BF, Iliff N, Robertson B, Manson PN. Footprints of the globe: a practical look at the mechanism of orbital blowout fractures, with a revisit to the work of Raymond Pfeiffer. *Plast Reconstr Surg*. 1999;103(4):1317–6.

Author biography

Anur Chavan, Assistant Professor https://orcid.org/0009-0008-0979-3875

Aravind Anto, PG Resident https://orcid.org/0009-0005-0142-3915

Shruti Ajmera, PG Resident https://orcid.org/0009-0000-1323-2300

Utham Chand, PG Resident https://orcid.org/0009-0008-7011-2952

Anjali Bharath, PG Resident

Ankush Kumar Agarwal, PG Resident

Cite this article: Chavan A, Anto A, Ajmera S, Chand U, Bharath A, Agarwal AK. Zygomatico-maxillary complex fracture. *Int J Oral Health Dent* 2024;10(2):126-129.