

PAN FACIAL FRACTURE – A CASE REPORT

DR.VIJAY EBENEZER

TITLE PAGE:

Type of manuscript – case report
Title – pan facial fracture – a case report
Running title – pan facial fracture
Correspondance to - Dr. Vijay Ebenezer

Professor and Head of Department

Names of the author(s):

Dr. Vijay Ebenezer¹, Dr. Rakesh mohan²

Professor and Head of the department , Department of oral and maxillofacial surgery, Sree Balaji dental college and hospital , BHARATH UNIVERSITY, Chennai-600100 , Tamilnadu , India.

Reader in the department of oral and maxillofacial surgery, Sree balaji dental college and hospital, pallikaranai, chennai-100.

Name of the Department – Oral and Maxillofacial surgery, Sree balaji dental college and hospital Pallikaranai , Chennai – 100, Ph no : 9840136328

ABSTRACT:

Pan facial fractures are complex to treat and hence have to be systematically managed . Several authors have quoted several principles regarding the repair of pan facial fractures in a stepwise fashion . The most important goal is to restore the occlusal relationship at the beginning of the treatment , so that all the other structures get aligned . The following is a case of a traumatic pan facial fracture and its surgical management.

KEYWORDS: *Pan facial fracture , trauma , fracture , treatment.*

1. INTRODUCTION:

Traumatic pan - facial fractures , are in most instances quite complex to be managed. The most accepted and widely used classification of mid facial fractures is Rene Lefort's classification . This has been the gold standard forover 100 years . A pan facial fracture ideally comprises of fracture of lower third , middle third and upper third of the face . Although most cases wouldn't constitute a perfect pan - facial fracture , involvement of the middle third and mandible follow the same principles of repair , as a true pan facial fracture .

Airway management is the primary concern with regards to repair of pan facial fractures . The established mechanisms for the airway include oral intubation , nasal intubation , submental intubation and tracheostomy.

A systemic approach is flloved once airway has been established . Two different philosophies are followed when it comes to management of pan facial fractures . One being “ inside – out” or the “bottoms-up” approach and the other being “ outside-in” or “ top –down” approach¹ . The first approach involves reconstructing the maxillary – mandibular unit as the first step and then the mid facial structures . This would allow the occlusal relationship to be restored and then ‘built out’ from that process.

With the advent of rigid fixation in the 1960's, there has been a significant evolution of the principles for the restoration of structural relationships between the occlusal services and the skull base².

2. CASE REPORT:

A 52 year old male patient reported to Sree Balaji Medical College and hospital, Chennai. The patient had met with a road traffic accident a few days before reporting here. Following the accident, the patient was taken to another private hospital, for immediate care. The patient had a history of loss of consciousness for five hours following the accident.

After reporting to our institution, on examination, the patient was slightly disoriented. The occlusion was found to be normal. The patient had pain in the right maxillary and mandibular region. The maxilla was mobile. Step deformity was present in the nasal region. Edema was seen in the nasal region and right periorbital region. Echymosis was present in the right periorbital region. Soft tissue injury was seen in the frontal region and a sutured laceration in the right supra orbital region.

CT facial bones with 3D reconstruction was taken. On examining the CT, undisplaced fracture was noted in the bilateral nasal bones and anterior wall of left maxillary sinus. Comminuted and displaced fracture was noted in the right zygomatic arch, the anterior and posterolateral wall of right maxillary sinus, floor of right orbit with herniation of fat into right maxillary sinus, right medial and lateral pterygoid plates and the right ramus of the mandible.



Neurosurgery and anaesthetic fitness was obtained to carry out the surgery. The patient was operated under general anaesthesia, using oral intubation. Eyelets were placed. A vestibular incision was placed from the upper canine to the upper second molar, on both the right and left sides. Mucoperiosteal flap was elevated. The fractured sites were exposed. The right zygomatic arch was elevated using a Rowe's zygomatic elevator. The fractures were thus reduced and stabilised with an L shaped plate on the right and left zygomatic buttress regions and secured with 4 – 2*8 screws on each plate and a 4 hole plate without gap in relation to the right pyriform aperture region and stabilised with 4 – 2*8 mm screws. A lateral eyebrow incision was placed using the already existing laceration, in relation to the right eyebrow region. Fracture in relation to the right frontozygomatic region was exposed, fracture was reduced and stabilised with 1 4 hole plate without gap and secured with 4 – 2*8 mm screws.

Closed reduction of the nasal bone fracture was then done using Walsham's and Asche's septal forceps. A POP splint was then adapted and placed over the nose. Intra oral and extra oral suturing was done. Intermaxillary fixation was done post operatively.



3. DISCUSSION:

Currently, there is no accepted definition for pan facial fractures . Some authors have defined it as fracture patterns involving the mid face and lower third . Some other authors have defined it as fracture patterns involving the upper , middle and lower thirds of the face³ .

Soft tissue injuries, loss of bony structures are most probably associated with pan facial fractures. Severe post traumatic defects and deformities are seen following pan facial fractures. The most crucial step in treating pan facial fractures is planning the treatment. Early management of these fractures will help in the reduction and in avoiding damage to the soft tissues.

In this case, we used CT as the diagnostic tool to evaluate the exact fracture lines. Oro tracheal intubation was used. Intermaxillary fixation was done post operatively on the first post operative day.

As several authors have quoted, for patients who are medically unstable because of neurologic or systemic injuries , facial fracture repair may have to be delayed beyond a reasonable time⁴ . Abouchadi et al. quoted that a delay of 2 weeks for definitive repair would increase the difficulty in obtaining adequate reduction of fracture dislocations⁵. Carr and Mathog stated that, bone healing beyond 3 weeks is in a “grey stage” the edges of the fragment begin to absorb and remodel, which makes it very difficult to obtain anatomic reduction⁶. This would lead to bone malunion, delayed union, nonunion, and bone defect. Quick management within 10 days, is considered to be of utmost importance because soft-tissue stiffening and interfragmentary healing make delayed corrections very difficult. In this case , although the treatment was delayed by 10 days , due to the systemic complications that the patient had , the patient had proper occlusion and there were no complications perioperatively⁷ .

Marciani et al. stated that ideal protocol to be followed is first restoring the occlusion and alveolar ridge continuity and alignment and then repairing the mandibular body and angle fractures⁸. Following which , the vertical height of the mandibular condyles and ramus should be established. Most surgeons advocate exposing all mid-face and upper face fractures to allow good visualization of the fracture segments⁹. Then, the transverse width of the face is restored by using the zygomatic arches as a guide. The vertical height of

the face should then be restored by aligning and fixing all facial vertical buttresses¹⁰. Then the continuity of the orbital and sinus floors and walls are reestablished and finally the nasoethmoidal fractures are aligned and fixed.

4. CONCLUSION:

The reconstruction and repair of pan facial fracture has to be carried out in a step wise fashion . When the management is carried out in a step wise fashion, although complex , appropriate reduction of the fractures is possible . Occlusion remains the foundation of proper alignment . Post surgical complications cannot be avoided .

5. REFERENCES:

- [1] Louis, P. (2004) Management of Panfacial Fractures. In: Miloro, M., Ed., Peterson's Principles of Oral and Maxillofacial Surgery, 2nd Edition, BCDecker Inc., Hamilton.
- [2] David, D.J. (1999) Maxillofacial Trauma: Principles of Management, Priorities and Basic Techniques. Trauma, 1, 215-226.
- [3] Yang, R., Zhang, C., Liu, Y., Li, Z. and Li, Z. (2012) Why Should We Start from Mandibular Fractures in the Treatment of Panfacial Fractures? Journal of Oral and Maxillofacial Surgery, 70, 1386-1392.
- [4] Ramanujam, L., Sehgal, S., Krishnappa, R. and Prasad, K. (2013) Panfacial Fractures—A Retrospective Analysis at MS Ramaiah Group of Hospitals, Bangalore. Journal of Oral and Maxillofacial Surgery, Medicine, and Pathology, 25, 333-340.
- [5] Abdeljalil Abouchadi, Hind Taoufik . Pan-Facial Fractures: A Retrospective Study and Review of Literature. Open Journal of Stomatology, 2018, 8, 110-119.
- [6] Carr, R.M. and Mathog, R.H. (1997) Early and Delayed Repair of Orbitozygomatic Complex Fractures. Journal of Oral and Maxillofacial Surgery, 55, 253-258..
- [7] Rosenberger E, Kriet JD, Humphrey C. Management of nasoethmoid fractures. Curr Opin Otolaryngol Head Neck Surg 2013; 21(4):410–416.
- [8] Marciani, R. (2009) Integrating the Care and Treatment of the Complex Facialtrauma Patient. In: Fonseca, R., Marciani, R., Eds., Oral and Maxillofacial Surgery, 2nd Edition, Saunders/Elsevier, 395-411.
- [9] Powers, D.B., Will, M.J., Bourgeois, S.L. and Hatt, H.D. (2005) Maxillofacial Trauma Treatment Protocol. Oral & Maxillofacial Surgery Clinics of North America, 17, 341-355.
- [10] Kausar Ali BA , Salvatore C et al. Management of an facial fractures . Semin Plast Surg 2017; 31:108–117.