



Research Article

**“RESTORING THE SYMMETRY” : MANAGEMENT OF PANFACIAL TRAUMA –  
A CASE REPORT**

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**ABSTRACT**

Panfacial fracture management is one of the most complex and challenging procedures to perform. The primary goal in most of these approaches is to restore the occlusal relationship, spatial relationship, stability of midface buttresses and pillars. The components of the true panfacial fracture include the lower third, the middle third, and upper third of the face<sup>[1]</sup> One of the primary concern with panfacial fractures is airway management. once the airway is established, definitive management should be considered. This article briefs about a case of panfacial trauma as a result of a road traffic accident, surgical approaches and management.

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**INTRODUCTION**

Road traffic accident is the leading cause of trauma world wide. Among that, the incidence of panfacial trauma is 4% to 10%. Panfacial fractures involves fractures including mandible, maxilla, zygomatic complex, most often nasoorbitoethmoid (NOE) & frontal bone. Markowitz & Manson described frontal and palatoalveolar fractures as extended injuries of panfacial fractures. Panfacial fractures are associated with malocclusion, dish face deformity, enophthalmos, diplopia, CSF leak & soft tissue injuries. They are often presented with head, cervical, and long bone injuries. Damages to the bony framework along with the soft tissue may produce aesthetic as well as functional disabilities such as alterations in vertical facial height, transverse or anteroposterior projection, and functional disturbances like derrangement of occlusion, diplopia, or trismus.<sup>[3]</sup>

The surgical approaches for the management of Panfacial fracture have changed in last few years. The wide exposure of fracture foci, use of calvarial or iliac crest bone grafts for reconstruction, high resolution computed tomography & rigid fixation systems have made good results in the field of maxillofacial surgery. <sup>[4]</sup>The form of face is restored in three dimensional space i.e. width, anteroposterior projection and vertical height. Failure to achieve a direct visualization of all fractures and unstable fixations are common reasons for

persistent deformity<sup>[5]</sup> Despite of aggressive treatment some residual post-traumatic deformity may persist which require a second correction surgery.

**CASE REPORT**

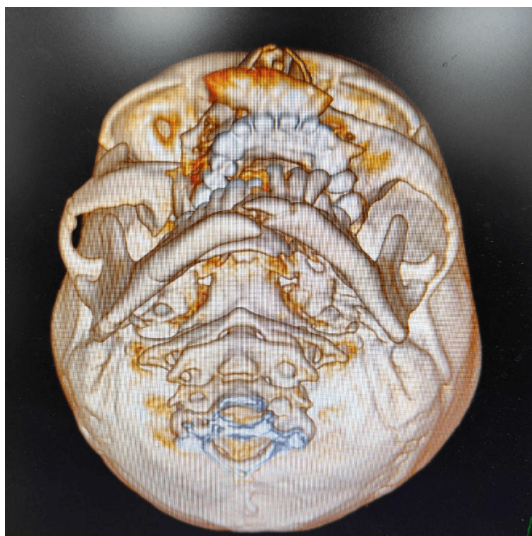
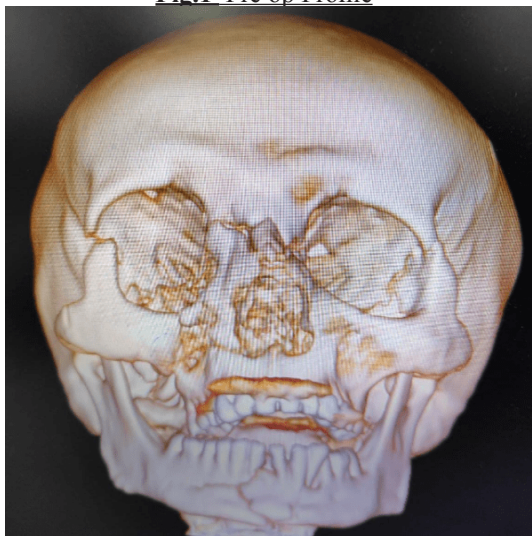
A 48 year old male patient reported to our department of oral and maxillofacial surgery with alleged history of RTA and sustained injuries to his face. Incident occurred at around 8:30 AM on 19/11/2023 near Bkota, Sathya Sai Zilla. No history of seizures or loss of consciousness noted post incident. Bleeding was noted from nose and oral cavity. Patient gives history of two episodes of vomiting of blood. Patient was initially taken to a government hospital for primary care and later shifted to our Hospital for definitive care. Patient did not have any medical history nor any drug allergy. On clinical examination gross facial asymmetry noted with diffuse swelling of face. Bilateral periorbital edema with ecchymosis and restriction in opening of eyes noted. Depressed nasal bridge and tenderness with crepitus over bilateral malar region noted. On intra oral examination, segmental mobility noted over the symphyseal region with mouth opening of 1 finger breadth.

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**Fig.1** Pre op Profile



**Fig. 2** Ct Reveals Bilateral Zmc Fracture With Mandibular Symphysis Fracture

### SURGICAL PROCEDURE

After the patient was stabilized , to achieve patent airway and general anesthesia tracheostomy was performed on day 2 post admission. Other routes such as nasal and oral intubation were not possible due to the multiple maxillomandibular and nasal

bone fractures.



**Fig. 3** Tracheostomy Done Under General Anesthesia

General anaesthesia was achieved via the tracheostomy tube. Painting and drapping was done following standard protocols. 2 % lignocaine with 1:80,000 adrenaline was injected to the proposed surgical sites.

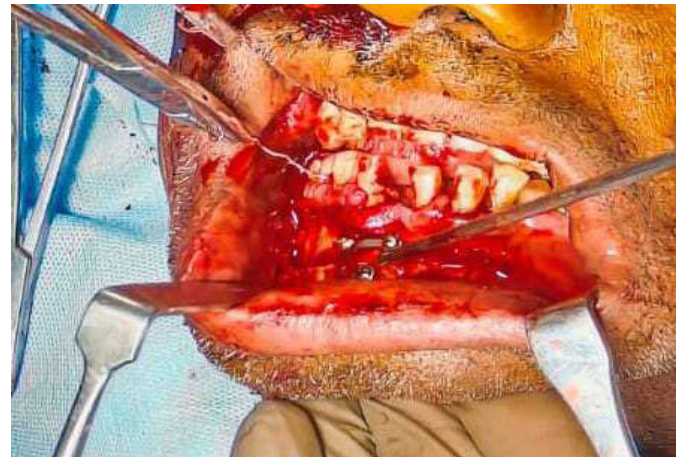


Fig 4 – A vestibular incision was placed from 33 to 44 region. Mental nerve in the 44 region was preserved with careful dissection of tissues and parasymphyseal fracture segments was exposed, reduced and fixed using one 2 holed 2mm plate using two 8mm screws and one 4 holed with gap plate of 2mm using four 8mm screws. Later 3-0 vicryl was used for the surgical site closure.

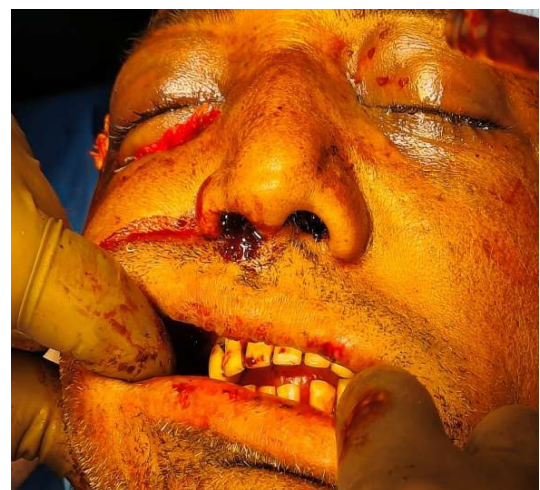






Fig 5 -Maxillary vestibular incision placed from 11 to 17 teeth region leaving 5mm of gingival cuff for the ease of suturing. After reflecting a full thickness mucoperiosteal flap, fracture segments were exposed and zygomatic buttress plating was done using one “ L shaped ” 4 holed 1.5 mm plate with two 6mm and two 4mm screws. Closure achieved using 3-0 vicryl.

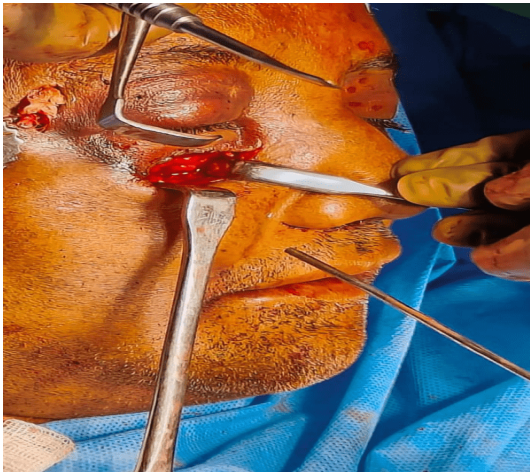


Fig 6 - Infra orbital incision placed and fracture segment was exposed and reduced using 4 holed 1.5 mm plate with 6mm screws after attaining the continuity of infra orbital rim, closure was achieved by subcuticular suturing using 5-0 prolene .



Fig 7 – A lateral brow incision was placed and Frontozygomatic fracture was exposed and reduced using 1.5mm 2 holed plate

and secured with two 6mm screws and continuity of lateral border was achieved. Layered suturing was done using 4-0 vicryl and 5-0 prolene.



Fig 8 - Zygomatic fracture was reduced using Gillie's temporal approach where a horizontal incision, 2.5cm above the outer helix of ear was placed. After careful dissection, rowe's modification of bristows elevator passed between the temporal fascia and temporalis muscle and fracture was reduced and facial width was restored. Wound closure was achieved using 4-0 prolene.

In the above treated case after careful reduction of all fractures, bilateral occlusion and vertical height was evaluated which was attained with semi rigid plates, so maxillomandibular fixation was not done for this case. All the surgical sites were carefully evaluated and checked for any bleeding, the patient was extubated and shifted to the post-operative ICU where he was under observation for a period of 6 hours post which patient was shifted to ward. In the immediate post-operative period, patient was closely monitored for any signs of bleeding from the surgical site. The patient had an uneventful post-operative period with satisfactory healing and minimal to no scarring of the incision line and normal mouth opening. Patient



was advised to continue soft diet for three months and was followed up for every month in 1st three months and every 2 months in next 4 months.



**Figure 5** Immediate Post Operative Photo Versus 3 Months Of Follow Up

## DISCUSSION

There is no accepted definition of panfacial fracture in the literature. Some authors define it as fracture patterns involving both midface and mandible. Others think it must involve the upper, middle, and lower face that means the NOE complex; zygomatic complex, Le Fort midfacial area, and the mandible are all simultaneously fractured.<sup>[5]</sup>

Panfacial fractures are often associated with soft tissue

injuries and loss of bone structures that can lead to severe facial deformities and disabilities. Planning the treatment of panfacial fracture is a challenging process. Multisystem injury is commonly associated; therefore the treatment is often multidisciplinary. Fracture dislocation and the degree of comminution are decisive guidelines in the choice of the surgical procedures. Early management of fractures facilitates reduction and avoids the damage of soft tissues.<sup>[6]</sup>

Following a thorough clinical examination, CT imaging is the preferred way to confirm the diagnosis. For panfacial trauma, where there is loss of many reference points in the axial, sagittal, or coronal views, three-dimensional (3D) reconstruction of CT scans is critical. Identification of fracture patterns directs the operative protocol.<sup>[7]</sup>

The management of Panfacial fracture is extremely complex. The significant complication associated with Panfacial fracture is widening of facial complex.

When geometry of dental arches is disturbed Kelly et al suggested reducing hard palate as guide for mandibular reconstruction. Gruss et al advised reduction of zygomatic arch and malar projection first to reestablish the “Outer facial frame” before NOE or “Inner facial frame” is reduced. Merville recommended “Top to Bottom” sequence in 1974 if NOE was involved in panfacial fracture. Tulio and Sesenna believed establishment of condyles together with mandibular arch is the appropriate first step.<sup>[8]</sup>

“Top down and outside in” starts at Zygomatic region. Frontozygomatic suture is reduced and fixed. Zygomatic arch is reduced properly to avoid under projection of midface. Then NOE complex is positioned. Maxilla is addressed next using the position of zygomaticomaxillary buttress and piriform rim as guide. Maxillo-mandibular fixation can be established. Reduction and fixation of mandibular condyle/ symphysis/ body/angle fractures are then reduced. Subcondylar fracture can be treated closed with use of this approach.<sup>[9]</sup>

## CONCLUSION

Management of panfacial trauma allows proper restoration of facial form and function. Panfacial fractures seem to be complex and difficult to treat, but with an organized and flexible approach, appropriate reduction of fractures it can be accomplished, yet post-surgical complications can't be easily avoided. The sequencing of panfacial fracture repair should be in a stepwise fashion. The restoration of the occlusion is considered the primary goal in the beginning of the sequencing process.

The technique we used was bottom-up approach wherein mandibular fracture was reduced first followed by maxilla and zygomaticomaxillary complex. On recovery the patient had restored facial height, facial profile and width, patent airway with normal vision and extraocular movements. No aesthetic complications were encountered and patient had no other post operative incidents.

## References

1. Asnani U, Sonavane S, Baig F, Natrajan S. Panfacial Trauma a Case Report. International Journal of Dental Clinics. 2010 Jun 30;2(2).
2. Abouchadi A, Taoufik H, Nacir O, Arroba A. Pan-facial

- fractures: a retrospective study and review of literature. Open Journal of Stomatology. 2018 Apr 9;8(4):110-9.
3. Massenburg BB, Lang MS. Management of panfacial trauma: sequencing and pitfalls. In Seminars in Plastic Surgery 2021 Nov (Vol. 35, No. 04, pp. 292-298). Thieme Medical Publishers, Inc..
  4. Ali K, Lettieri SC. Management of panfacial fracture. In Seminars in plastic surgery 2017 May (Vol. 31, No. 02, pp. 108-117). Thieme Medical Publishers.
  5. Ramakrishnan K, Palanivel I, Narayanan V, Chandran S, Narayanan J. Sequencing of fixation in panfacial fracture: a systematic review. Journal of Maxillofacial and Oral Surgery. 2021 Jun;20:180-8.
  6. Sharma S, Dhanasekaran V. Surgical approaches and management of panfacial trauma: a case report. Journal of clinical and diagnostic research: JCDR. 2015 Aug;9(8):ZD13.
  7. Massenburg BB, Lang MS. Management of panfacial trauma: sequencing and pitfalls. In Seminars in Plastic Surgery 2021 Nov (Vol. 35, No. 04, pp. 292-298). Thieme Medical Publishers, Inc.
  8. Buchman SR, Cavaliere CM. Management of panfacial fractures. Plastic Surgery Secrets. Philadelphia: Mosby Elsevier. 2010 Jan 1:326-9
  9. De Melo WM, Sonoda CK, Shinohara EH, Garcia Jr IR. Using the “bottom-up and outside-in” sequence for panfacial fracture management: does it provide a clinical significance?. Journal of Craniofacial Surgery. 2013 Sep 1;24(5):e479-81.
  10. Follmar KE, DeBruijn M, Baccarani A, Bruno AD, Mukundan S, Erdmann D, Marcus JR. Concomitant injuries in patients with panfacial fractures. Journal of Trauma and Acute Care Surgery. 2007 Oct 1;63(4):831-5.

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