Panfacial Fracture – a Case Report

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ABSTRACT

Panfacial Trauma to the maxillofacial region needs special attention, due to its proximity to important sensory organs and various vital structures in the head and neck region. This paper reports the management of a panfacial trauma of midfacial and infraorbital region in a 29-year-old male patient with multidisciplinary approach.

Keywords: Infra orbital fracture; Mid face Fracture; Pan facial Fracture

Introduction

The fracture involving various bones of face such as frontal, naso-orbito-ethmoid, zygoma, maxilla, mandible, palate-alveolar region resulting in soft and hard tissue injuries, malocclusion, dish face deformity, enophthalmos, diplopia, cerebro-spinal fluid leak is termed as panfacial fracture. Polytrauma includes upper one-third, middle one-third and lower one third of the face. Panfacial fracture involves multiple bones of face, which requires a detailed and organized treatment plan coordinated by an exceptional team approach. The most common causes are gunshot wound, assault, sports, fall, road traffic accident and work related issues.

Two major approaches such as ‘Top Down, Outside In’ which starts from fixation and reduction of calvarium to the caudal region and ‘Bottom Up, Inside Out’ which starts from maxilla-mandibular reduction, mainly deal with the restoration of function and contour in three-dimensional manner. This can be achieved by surgical intervention and rigid fixation. Initially, the patient has to be stabilized and then the extensive treatment evaluation can be planned. Maxillofacial buttresses can be plated in order to restore the facial anatomy in three dimensions. D facial computed tomography plays an important role in the assessment and treatment plan. The three dimensional facial form can be improvised further by using calvarial or iliac crest bone graft. Risk factors includes, dental disorders, muscular dysfunction, nervous impairment, temporomandibular joint disorders, oedema, scar, occlusal disturbances, and mastication might lead to unfavourable aesthetic outcome. This paper reports the management of a panfacial trauma of midfacial and infraorbital region in a 29-year-old male patient with multidisciplinary approach.

Case Report

A twenty nine year old male involved in trauma following assault sustained multiple facial injuries with bilateral periorbitial oedema, bilateral subconjunctival haemorrhage, facial bone fractures, persistent intra oral bleeding, airway obstruction and low SPO2. Thus he underwent emergency tracheostomy. Radiographic features includes right mandibular Parasympysis fracture, combination of Le Fort II and III, naso-orbito-ethmoid fracture, Le Fort level I mobility fracture and orbital wall of infra orbital rim fracture (Figure 1, 2). The patient underwent open reduction and internal fixation of panfacial fracture through an existing laceration of left infra orbital incision, left lateral eyebrow incision, upper vestibular incision in relation to right maxillary first molar to left maxillary first molar and lower anterior vestibular incision. First, right parasympysis fracture was reduced keeping in check on lateral flaring of condyles. Upper arch bar fixation done in relation to right maxillary first molar to left maxillary canine and left maxillary first premolar to left maxillary first molar. 2mm straight 6 hole plate with gap and 2x8 mm screws totalling five used in lower border of mandible. 2mm 4 hole straight plate with gap and 2x8 mm screws totalling four used in upper border of mandible.

Left fronto-zygomatic fracture was fixed with 4 hole straight plate without gap with 1.5x4 mm screws. Left infra orbital rim reduced and fixed with 6 hole straight plate with gap and three numbers of 1.5 mm screws. Right and left zygomatic buttress reduced and fixed with 4 hole L plate. Right and left midpalatal splits were fixed with trans palatal plate. Nasal bone reduction was done and occlusion achieved (Figure 3). Postoperative elastics were provided and post operative period was uneventful.

Discussion

Pan facial fractures are simultaneous fractures involving cranium (upper third), mid-face and the mandible. Restoration of both preinjury facial aesthetics and function should be the main goal of surgeons. The most significant guide for reconstruction of mandible was based on hard palate reduction as per Kelly et al, Manson and Glassman. The establishment of condyle along with the mandible might be the first step as per Sessena and Tulio. In case of naso-orbito-ethmoid fracture, top to bottom method would be useful. Before inner facial frame or naso-orbito-ethmoid fracture is reduced, the reduction of malar region and zygomatic arch would be an added advantage.

The main concept of the treatment is to prevent widening of facial complex. Posterior displacement of mandible and widening of angle might result due to fracture in symphysis and parasympysis region. The correction of anterior projection and establishment of lower facial width can be done by closing the lingual gap by applying pressure at the gonial angles. Surgical failure mostly occurs due to inadequate management of telecanthus, inner orbit region and skeletal support. One intact condyle and correct dentition support the concept of...
‘Bottom Up, Inside Out’ for the establishment of mandible as a foundation. Inter maxillary fixations plays an important role in maintaining a stable occlusion. The transverse and anteroposterior dimension of face can be corrected by zygomatico-maxillary complex leading to correct repositioning of upper mid face before leading with the zygomatic buttress. Primarily, naso-orbito-ethmoid region is dealt and then the internal orbit is approached. Finally, bone grafts come in to role for the reconstruction of orbital floor and nasal dorsum.

‘Top down, Outside in’ approach includes the fixation and reduction of fronto-zygomatic suture, zygomatic arch, naso-orbito-ethmoid, maxilla with the help of zygomatico maxillary buttress and piriform rim, condyle, symphysis, body and angle. Either cranium to mandible or vice versa can be applied to achieve better reconstruction. Adherence to one of the protocols described in the literature enables the surgeon to obtain reproducibly good results, even with the most extensive facial dislocations.

Conclusion
In conclusion, Restoration of both preinjury facial aesthetics and function should be the main goal of surgeons to enhance the individuals overall wellbeing.

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References

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