

Case Report

Triad of maxillofacial trauma- A threatening plethora- A case report

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ABSTRACT:

Fatalities and injuries resulting from road traffic accidents are a major and growing public health problem in India. The zygomatic bone is situated at the lateral part of the triangle of the face, and is exposed to maxillofacial traumas frequently due to its anatomic positioning. Fracture of the zygoma is the second most common fracture of the face, just behind nasal fractures, which can cause significant cosmetic and functional deformity. Maxillofacial trauma involving Zygomatic bone may either be observed in an isolated zygomatic arch fracture form or in form of complex fractures. Fractures that accompany the zygomatic complex can cause complications such as dystopia, enophthalmos and aesthetic changes if not treated in a timely manner. This is a case report. A 22-year-old man who banged on his face in a road traffic accident. He presented at our department complaining of a change in facial shape and difficulty in mouth opening with redness in the eyes.

Keywords: Zygomatic arch, maxillofacial trauma, Zygomaticomaxillary fracture.

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INTRODUCTION

Maxillofacial injuries are complex plethora of ailments which can cause permanent cosmetic deformity of the face and associated facial structures. Face is made up of 14 bones and feathered with around 20 muscles which if triggered due to trauma can be life threatening. Maxillofacial injuries require thorough assessment of the associated structures with involvement of cervical spine injuries and brain injuries. Assessment of airway, breathing and circulation is the foremost assessing feature in case of maxillofacial trauma.

Sicher and DeBrul were the first to depict facial anatomy and recognize the structural pillars or buttresses of the facial skeleton. Several buttresses about the zygoma to three major bone units in the face—the temporal bone, the frontal skull, and the maxilla—giving the best architectural and stress-bearing functional struts, which can transmit force in

different directions, protecting the eye and the brain. These buttresses also give the zygoma an intrinsic strength such that blows to the cheek usually result in fractures of the zygomatic complex at the suture lines and, less commonly, the body of the zygomatic bone.¹

A case of triad of fracture of the human face is depicted in the following case report which is a classic case of road traffic accident.

CASE REPORT

A 22 year old male patient reported to the Department of Oral Medicine and Radiology with a chief complaint of having met with an accident 2 days back in the afternoon. Patient complained of a change in facial shape and difficulty in mouth opening with redness in the eyes. He revealed of having pain on the face on slight digital palpation. On further interrogation patient revealed that he was driving the

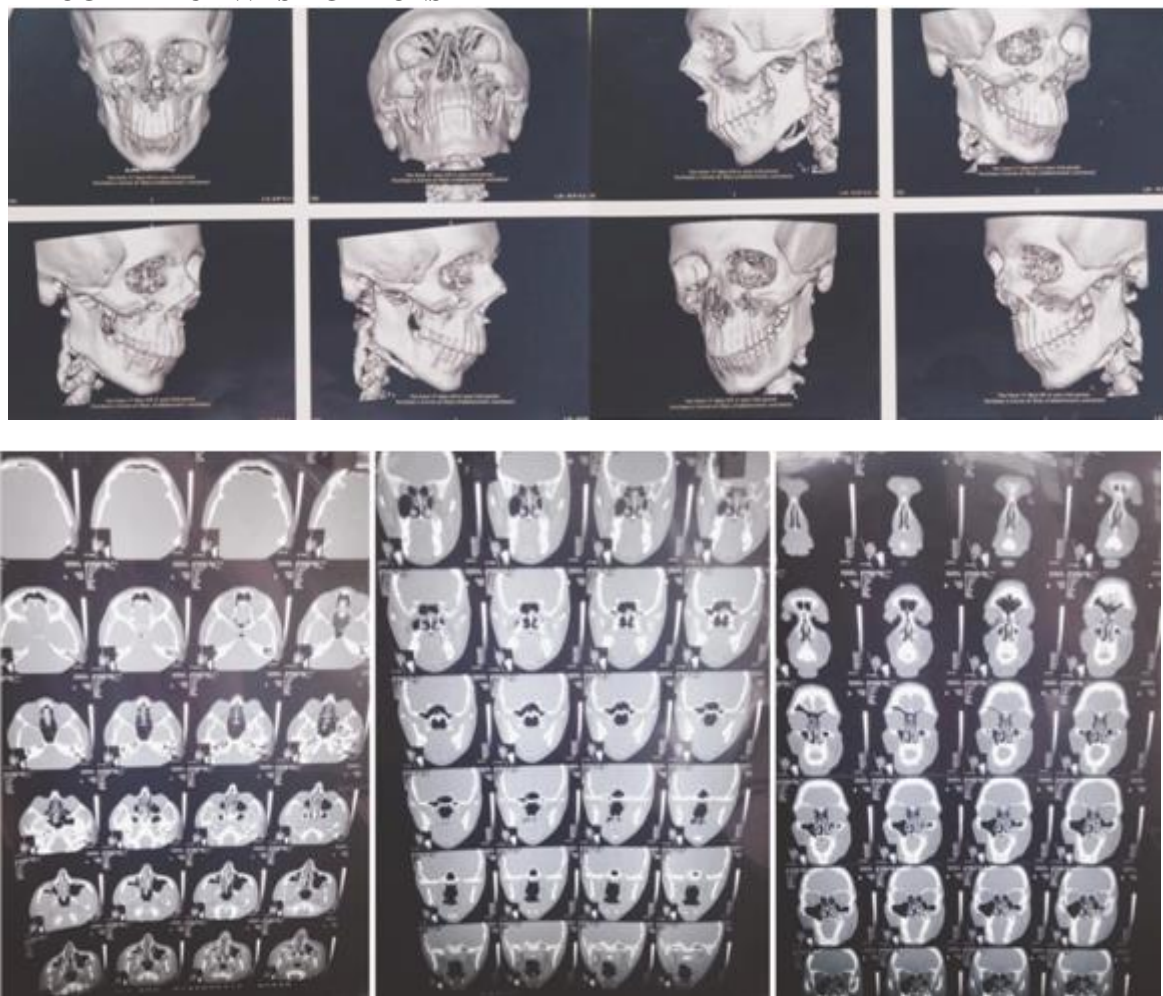
bike when a truck struck him from front which made him fall over the face. Patient had history of unconsciousness after the accident for which he was admitted in the Civil Hospital and was given saline infusion. Advanced trauma life support protocols were followed to prevent further loss of senses. He was advised to get CT scan of the face done and was referred to us for further treatment. It was his first visit to the Dental setup. Reported of having no relevant family history. Patient revealed of being alcoholic past 3 years twice a month.

General examination of the patient revealed nothing abnormal. On further extra oral examination, patient had enlarged lymph nodes bilaterally. Face of the patient had severe cosmetic deformity with enophthalmos and subconjunctival ecchymosis. Patient had flattening of the malar prominence on the right side with severe marks and bleeding scars on face. Intraoral examination showed calculus and stains in the mandibular teeth supraeruption of 37 and 36 due to step deformity. Patient had generalised recession.

Orthopantomograph and other radiographic investigations done revealed fracture of anterior and posterolateral walls of maxillary sinus with displacement of fractured fragments inside the sinus. There is also herniation of post maxillary fat inside the sinus. Hyperdense fluid seen within the sinus suggestive of haemosinus. There is fracture of floor of right orbit noted with mild pneumoorbit. Fracture of lateral wall of right orbit and fracture of right zygomatic arch also noted. Radiographic investigations also revealed fracture of right angle of the mandible involving alveolar process.

Final diagnosis of the patient included zygomatic arch fracture on the right side with orbital floor fracture and angle of the mandibular fracture on the left side with chronic generalized periodontitis. The patient was referred to the Department of Oral and Maxillofacial Surgery for further treatment. Patient had undergone Open reduction and Internal Fixation at Zygomatic buttress region using 2mm 4 -0 hole Stainless steel mono cortical mini plates with 6mm screws. Intraoperative and post operative photographs along with radiographic interpretations attached.

RADIOGRAPHIC INVESTIGATIONS



PRE OPERATIVE PHOTOGRAPH



INTRA OPERATIVE PHOTOGRAPHS



POST OPERATIVE PHOTOGRAPHS



CASE DISCUSSION

Road traffic accidents these days are an unavoidable and sudden mishap in the lives of population residing not only in the metropolitans but also in the rural areas. Developing countries enmark increase in automobile companies launching multispecialized vehicles which if not operated with open senses can land up to severe threatening life loss. Overspeeding, drunken driving, red light jumping, distractions to the driver, avoidance of safety gears like seat belts and helmets, non adherence to lane driving and overtaking in wrong manner and use of mobile phones while driving are some of the causes leading to road traffic accidents. In such cases the zygomatic bone is most frequently exposed to maxillofacial trauma due to its anatomic positioning .It is a strong bone on fragile supports.²

The Five articulations by which zygomatic bone is separated from craniofacial skeleton are identified as Frontal process ,Zygomaticomaxillary buttress ,Infraorbital rim,Zygomatic arch,Lateral orbital wall.The zygoma itself articulates with four bones - frontal,sphenoid , maxillary ,temporal. ZMC plays a key role in structure,function and esthetics of facial region.The Fracture of the zygomatic complex occurs as result of direct impact/blows RTAs: 74.7%, IPV: Interpersonal violence: 15.8%. Falls: 13%, associated ophthalmic injuries in 30.5%., 9% are isolated zygomatic arch fracture.^{1,3} The Left zygoma is affected the most and bilateral zygoma fractures are rare. This fracture has a Male predilection .The male to female ratio of its occurrence is 4:1 .ROWE and KILLEY had classified zygomatic fractures in 1986 based on their rotation along long axis. Type I: no significant displacement, Type II: fracture of zygomatic arch, Type III : rotation around horizontal axis – inward or outward displacement, Type IV: rotation around longitudinal axis – medial or lateral, Type V : displacement of the complex block – medial/inferior/lateral, Type VI: displacement of orbitoantral partition, Type VII: displacement of orbital rim segment, Type VIII: complex comminuted fracture.⁴

The clinical features of ZMC fractures are paraesthesia, the skeletal deformities include asymmetry of the midface ,depression/flattening of the malar prominence ,flattening, hollowing or broadening over the zygomatic arch, gap deformities of orbital margins (infraorbital/lateral), the ocular/ophthalmic symptoms include periorbital edema, increased scleral show ,vertical shortening of

the lower eyelid (ectropion), subconjunctival ecchymosis (edema of conjunctiva) the ocular/ophthalmic symptoms are enophthalmos (outward displacement of zygoma), exophthalmos (inward displacement of zygoma), pneumoexophthalmos, superior orbital fissure syndrome, diplopia and the Neurogenic ocular motility disorder is a classical symptom of ZMC fracture . The oral symptoms include ecchymosis, palpable contour disturbance of zygomaticomaxillary buttress, restriction of mandibular opening (trismus) or closing, blockage of temporal muscle or coronoid process ,impacted zygomatic arch, retrodisplaced zygoma and the nasal symptoms are ipsilateral epistaxis.^{4,5} There is a wide range of treatment modalities at our disposal for such fractures following the three standardised steps of treatment that is reduction, fixation and immobilisation. If the patient has no functional problem then he's kept under observation and advised to take soft diet. Surgical methods include indirect reduction and direct reduction and fixation. The indirect method is when incision site is away from the fracture site. Various surgical approaches that can be undertaken are the extra-oral approach– bicoronal or hemicoronal, Gillies Temporal or superolateral, various supraorbital approaches, infraorbital , subtarsal, subciliary, infraciliary, transconjunctival and percutaneous .Various intra-oral approaches are the transoral approach which included maxillary vestibular, Keen buccal sulcus approach and transantral. Methods of internal fixation are transosseous wiring and miniplate osteosynthesis. In this case we placed dynamic compression plates with screws and inter maxillary fixation was done.⁵ These are few methods which help in surgical management of this fracture triad.

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