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DIAGNOSIS AND COMPLICATIONS OF LATE TREATED ZYGOMATIC COMPLEX FRACTURES – CASE SERIES

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INTRODUCTION

Zygomatic complex is the term used for Zygomatic bone, parts of maxilla, frontal bone, temporal bone and sphenoid bone. It forms the infrastructure of anterolateral part of the face and prominence of cheek. [1] Majority of zygomatic complex fracture occur due to road traffic accidents, other causes include fall, sports injury and assaults. [2] It transmits the occlusal stress to the base of skull along its vertical and horizontal struts. In majority of the cases of zygomatic complex fractures, the fractured part displaces inward. In cases of inwardly displaced zygomatic complex fractures trismus, epistaxis and diplopia are common finding. [3] Subconjunctival haemorrhage is also one of the common features of the zygomatic complex fracture. Subconjunctival haemorrhage has no posterior limit and remains bright red owing to the ability of oxygen to diffuse through the conjunctiva to the collection of blood. This article presents a case series of management of malunited Zygomatic fractures at our centre.

Keywords: Zygomatic Complex #, Malunited, Late treatment.

Diagnosis

Zygomatic complex fractures are diagnosed by patient complaints, physical examination and radiographic evaluation. The patient with a zygomatic complex fracture complains of pain, periorbital edema and ecchymosis. Paraesthesia over infra-orbital region is also noticed. Depression of the malar eminence, flattening of the cheek. Downward displacement of the zygoma produces an antimongoloid slant to the lateral can thus, enophthalmos and accentuation of the supratarsal fold of upper eyelid. Tenderness or separation at the Fronto-zygomatic suture and zygomatico-maxillary buttress area is also indicative of Zygomatic complex fracture. Decrease in range of motion and trismus is also noticed. Ophthalmologic evaluation is necessary as orbit is also a component of zygomatic complex.

Radiographic examination

Water's view, Submetovertex view. Maxillofacial CT scan is gold standard.

Case report 1 – 29 years old male reported to our centre with complain of inability to open his mouth and chew properly from left side of face. He sustained injuries in RTA 03 months back and was operated

at civil hospital. After operation, he was unable to chew properly and his mouth opening was also limited. Oral & Maxillofacial CT scan showed improper ORIF of fracture (Figure 1).

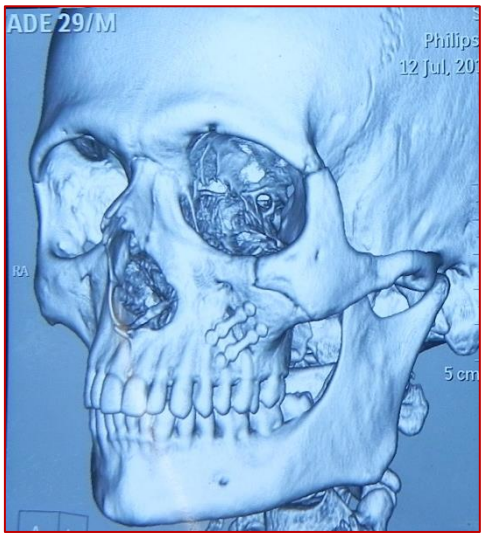

Figure 1 *(Pre–operative 3D view of CT scan.)*

After PA check-up protocol patient was operated again. Hemicoronal (Figure 2)

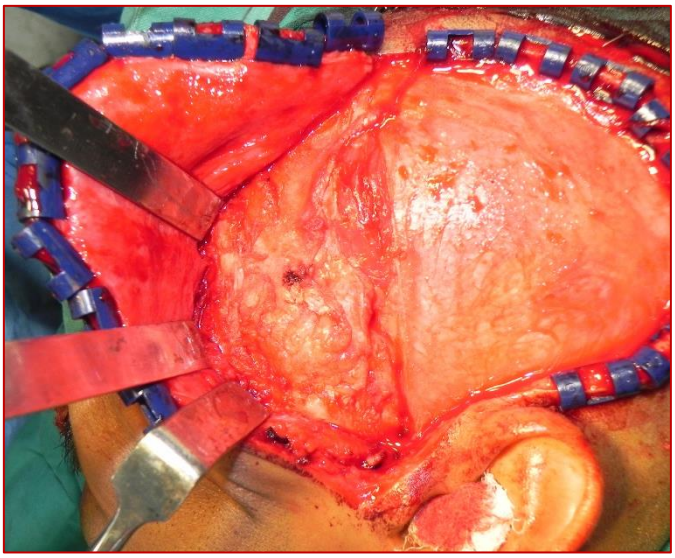

Figure 2 *(Hemicoronal incision to expose Zygomatic arch and FZ region.)*

and maxillary vestibular incision was given. Layer by layer dissection was carried out. Maxillary buttress was exposed using intraoral vestibular incision. Old miniplates were removed (Figure 3).

Figure 3 *(Removal of old miniplate.)*

Osteotomy was carried out. Fracture site was reduced and fixed in correct position. Surgical drain was placed. Surgical site was closed layer by layer. Post-operative healing was uneventful. After surgery patient was able to chew properly. He was also able to open his mouth properly.

Case 2

40 years old male patient reported to our centre with complain of pain on right side of face, flattening of the right side of face (Figure 4)

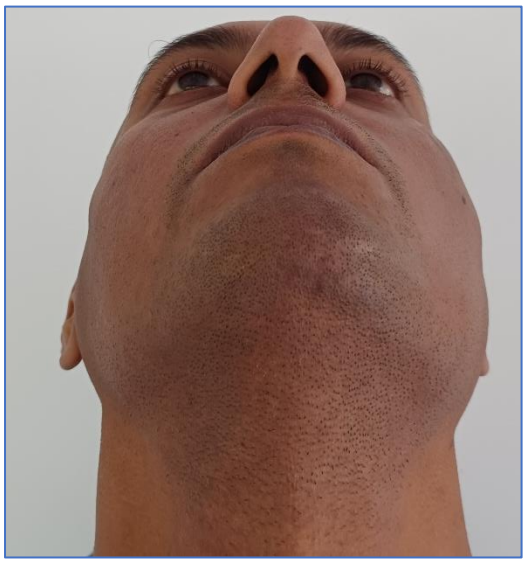

Figure 4 *(Decreased malar prominence (Patient 2))*

inability to chew and reduced mouth opening. He sustained injuries in RTA, 02 months back. He was taken to a hospital where he was given initial treatment. No definite treatment was given to him. Oral & Maxillofacial CT scan showed depressed zygomatic arch on right side. After PA check-up protocol patient was operated using Hemicoronal incision. Layer by layer dissection was carried out. Zygomatic arch was exposed (Figure 5).

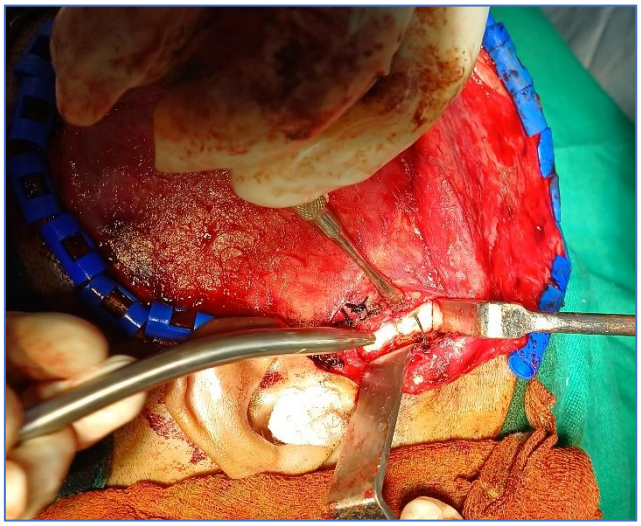

Figure 5 *(Osteotomy at Rt Zygomatic arch (Patient 2))*

Osteotomy was carried out in malunited fracture site. Fracture site was reduced and fixed in correct position (Figure 6).

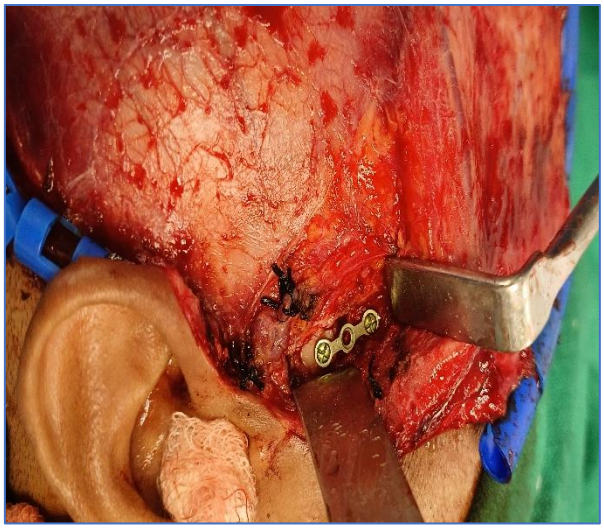

Figure 6 *(Fixation at Rt Zygomatic arch (Patient 2))*

Surgical drain was placed. Surgical site was closed layer by layer. Post-operative healing was uneventful. Surgical site healing was uneventful (Figure 7).

Figure 7 *(Well-healed surgical site with normal hair growth (Patient 2))*

After surgery patient was able to chew properly. He was also able to open his mouth properly.

Case 3

36 years old male patient reported to our centre with complain of pain on right side of face, inability to chew and reduced mouth opening. He sustained injuries in RTA, 01 month back. He was taken to a civil hospital where he was given initial treatment. No definite treatment was given to him. Oral & Maxillofacial CT scan showed fracture of zygomatic complex on right side. After PA check-up protocol patient was operated using Hemicoronal incision. Layer by layer dissection was carried out. Zygomatic arch was exposed. Osteotomy was carried out in malunited fracture site. Infraorbital rim was exposed using sub ciliary incision (Figure 8).

Figure 8 *(Surgical exposure of Rt infraorbital rim (Patient 3))*

Maxillary buttress was exposed using intraoral vestibular incision. Fracture site was reduced and fixed in correct position (Figure 9).

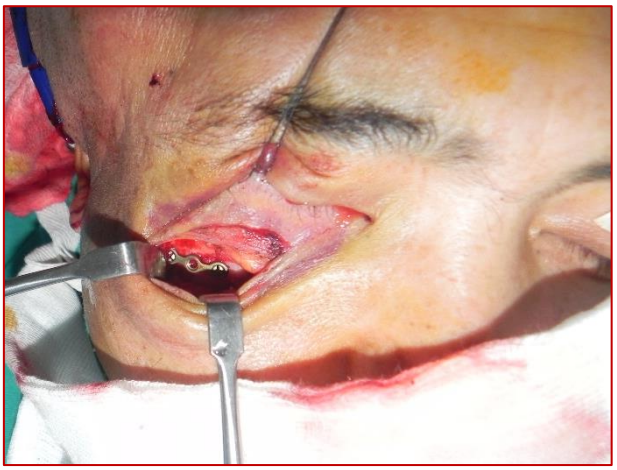

Figure 9 *(ORIF at Rt infraorbital rim (Patient 3))*

Surgical drain was placed. Surgical site was closed layer by layer. Post-operative healing was uneventful. After surgery patient was able to chew properly. He was also able to open his mouth properly.

DISCUSSION

The improper treatment of Zygomatic complex # results in infraorbital paresthesia, [4] diplopia, [3,5] enophthalmos, [6] retrobulbar haemorrhage, [7] trismus, [8] lower eyelid malposition, [3] infection, malunion and facial asymmetry. [9,10] Proper anatomic reduction of the fracture may minimize compression of the nerve and allow for recovery from infraorbital paresthesia. The principal cause of diplopia includes edema, hematoma, entrapment of the extraocular muscles and orbital tissues and injury to cranial nerves 3,4 or 6. [11] Enophthalmos is a troubling complication of Zygomatic complex #. It occurs due to increase in orbital volume. Retrobulbar hemorrhage is a rare but severe complication that may be the result of either the initial injury or the operative correction. Disruption of the retinal circulation may lead to irreversible ischemia and permanent blindness. In such cases an emergent ophthalmologic consultation is necessary, however, decompression with lateral canthotomy and cantholysis should not be delayed. The most likely cause of trismus is impingement of the zygomatic body on the coronoid process of the mandible. Trismus may also occur secondary to fibrous or fibro – osseous ankylosis of the coronoid to the zygomatic arch. In such cases coronoidectomy is the common treatment. If the zygoma is improperly reduced, zygomatic osteotomy and repositioning may be required to restore unrestricted motion of the mandible. Inadequate or stabilization of zygomatic fractures may result in malunion or asymmetry. Poor malar projection is the result of the uncorrected inferior and posterior rotation of zygoma. Increased facial width, in addition to decreased malar projection results from inadequate reduction of the zygomatic arch. Malunion that is recognized up to 06 weeks after injury may be corrected using routine zygomatic reduction technique.

In our case series, all the patients were male. All sustained injury due to road traffic accident. The time of surgery was between 01 month to 03 months. 01 patient was improperly operated before and 02 patients were given only primary care and resulting in inability to chew properly, decreased mouth opening and paraesthesia. In all cases osteotomy and repositioning was required. Bone grafting was not

required in any of the cases. In 01 case, only zygomatic arch was osteotomised and repositioned. No major intra operative and post-operative complication was noticed.

Conclusion

Timely and proper diagnosis and timely surgery of zygomatic complex fractures prevents morbidity and secondary surgery for patients.

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