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Case Report

Treatment of delayed zygomatic complex fracture deformity- A case report and a review

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ABSTRACT:
In this case report a 32 year old male patient presented with one month old left zygomatico maillary complex fracture. Diagnosis of left side zygomatic complex fracture deformity was done by clinical examination and confirmed by computed tomography which included 3-D reconstruction view. Patient was concerned about a projecting deformity on his left lateral cheek region. Surgical rationale of treatment was easy accessibility to the surgical site for correction of deformity and to obtain desirable facial contour with uneventful postoperative healing. Deformity at left zygomatic arch was exposed by preauriclar incision. A system of 1.2-mm titanium plates with 6 mm monocortical screws was applied. Another incision was given in the existing scar along left lateral eyebrow to expose the deformity in fronto zygomatic region. After exposure of frontozygomatic region, deformity was contoured with a motor driven bur. Surgical correction of facial deformity was esthetical pleasing with no loss of function. Patient was followed upto minimum 40 days.
Keywords: Posttraumatic deformity, left zygomatic arch, facial trauma, posttraumatic surgery

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INTRODUCTION

Surgical intervention is an effective treatment modality for displaced posttraumaticfacial deformities, whereas a nonsurgical approach is often used for nondisplaced fractures [1,2]. Further exposure of the zygomaticofrontal junction or inferior orbital rim is necessary for severely displaced fractures, which may require additional fixation [1]. If treatment is delayed, permanent facial deformities may be unavoidable because surgical manipulation is frequently difficult or even impossible. Considering that maxillofacial injuries occur mostly in younger subjects, the problem of aesthetic outcome is especially serious [2].

Various treatment modalities are there for correction of esthetic deformities of zygomatico maxillary complex such as microstructured grafting, zygomatic arch osteotomy and patient specific medpor implant [3].

In this case report a 32 year old male patient presented with one month old left zygomatico complex fracture. There was a projecting deformity on his left lateral zygomaticoorbital region. His mouth opening and occlusion was normal.

PATIENT CONCERN

Patient was concerned about a projecting deformity on his left lateral cheek region as seen in the preoperative picture. Diagnosis of left side zygomatic complex fracture deformity was done by clinical examination and confirmed by computed tomography which included 3-D reconstruction view as see in the pictures.

SURGICAL RATIONALE

- Easy accessibility to the surgical site for correction of deformity and to obtain desirable facial contour with uneventful postoperative healing
- In terms of safe surgery, it is important to know the shortest distance between the point midway between the upper and lower borders of the malar arch, where the most posterior twig of the temporal ramus crosses, and the most anterior

concavity of the bony external auditory canal, is 0.8 cm with a mean of 2.0±0.5 cm [4]

- To minimize damage to auriculotemporal nerve and superficial temporal vessels by keeping the preauricular incision in close apposition to the cartilaginous portion of external auditory meatus[4]

TREATMENT

Under aseptic conditions under sedation, the deformity at left zygomatic arch region was exposed by preauricular incision given under 2% lidocaine and 1:200,000adrenaline. Surgery consisted of a left preauricular incision for complete exposure of the zygomatic bone followed by sectioning along the deformity at left zygomatic arch. A system of 1.2-mm titanium plates with 6 mm monocortical screws was applied. Another incision was given in the existing scar along left lateral eyebrow to expose the deformity in fronto zygomatic region. After exposure of frontozygomatic region, deformity was contoured with a motor driven bur.

OUTCOME

Surgical correction of projection deformity at zygomatic arch and lateral orbital region was esthetically acceptable with no loss of function[3].

FOLLOW UP

Patient has been followed up routinely after immediate postoperative day and was discharged after 3 days. He was recalled for changing the dressing after every 2 days. Sutures were removed on 14th postoperative day. Patient was followed upto minimum 40 days[3].

Figure 1: Postoperative

Figure 2: Perioperative

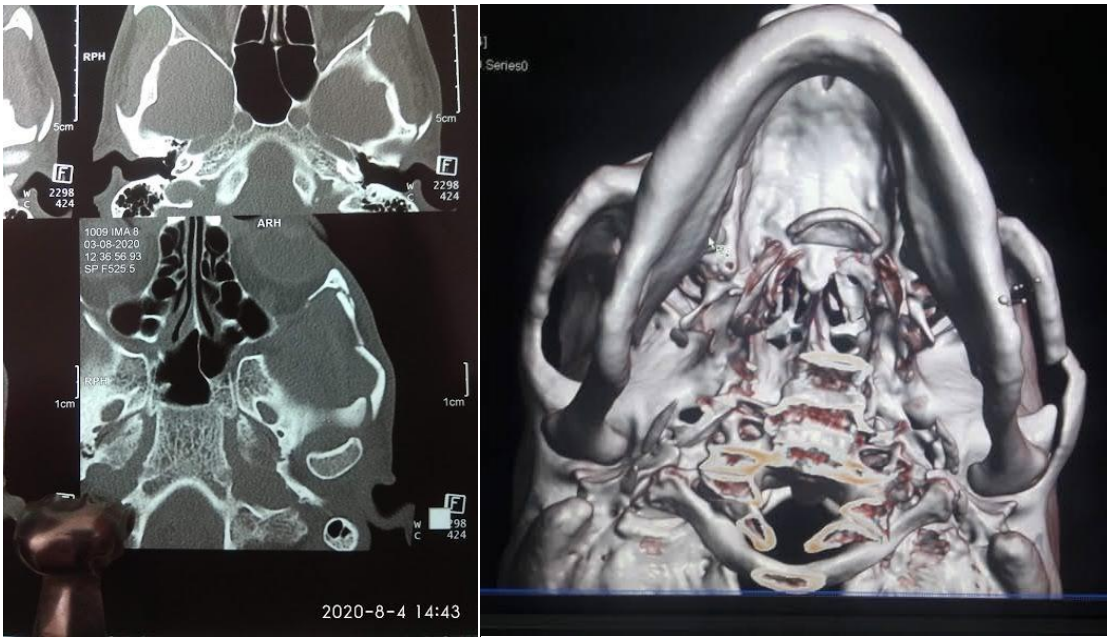

Figure 3: Preoperative

Figure 4: preoperative

DISCUSSION

In this case report a 32 year old male patient wanted correction of the projecting deformity on his left lateral zygomaticoorbital region after he presented with history of one month old left zygomatico complex fracture after aroad traffic accident, which was consistent with the observation in other studies [5] in India.

Fracture sites start to heal spontaneously 10 to 14 days after trauma without immediate management. It is generally accepted that fracture reduction is difficult or impossible in delayed cases even with the maximal force possible with an extractor. Such delayed cases may require surgical procedures such as loosening of the bony fragment by refracturing previous fracture sites with an osteotome, plugging up the defect area using grafts or medpore. Transbuccal approach is an ideal approach for fixation of displaced fractures at anterior third of zygmatic arch[3]. It avoids scaring due to cutaneous approaches, facial nerve injury, minimizes blood loss, rapidity of technique and correct angulation of screw placement[3]. In this case, the patient visited us for opinion 7 days after trauma and was advised radiographic investigations for final diagnosis. However, the patient returned after 30 days for correction of a projecting deformity at his left cheek region. He was diagnosed with left zygomaticomaxillary complex deformity as seen in the preoperative picture.

Preauricular incision was preferred to expose the projecting deformity at left zygomatic arch due to malunited fractures along the zygomatic bone and arch. Zygomatic bone had also moved slightly backwards towards the arch [2]. Coronal approach is extensive procedure with increased surgical time and blood loss [3]. Moreover, as the coronal incision was

refused by the patient there was a great difficulty in performing reduction [2]. The fracture line was refractured with removal of a section of bone at left zygomatic arch with an osteotome in order to obtain acceptable facial contour and sufficient mobility which was then fixed with titanium miniplates and screws[2]. Multiple combined fractures of the arch with zygomatic bone displacement justifies plate fixation. Deformity at frontozygomatic region was exposed by lateral eyebrow approach[6], and contoured with a bur.

Conventional multiple incisions have been routinely used to expose the fracture/ deformity[7,8]. The ideal and the best surgical approach should provide maximum necessary exposure of the desired facial bones, minimize potential for injury to facial structures and enable good cosmetic results [8]. Preauricular approach usually provides access which is limited to the desired area of exposure of the posterior half of zygomatic arch. The hemicoronal approach is most ideally suited for gaining adequate exposure and access to the region, including the lateral wall of the orbit, zygomatic arch, and body of the zygoma[7]. However, it is more invasive than traditional conventional multiple incisions[8].

TAKE AWAY LESSONS

Pre auricular incision provided limited access to zygomatic arch for correction of post traumatic deformity. Additional incision was required for exposure of deformity at frontozygomatic region. However, it is less invasive than the hemicoronal approach.

CONCLUSION

Desired correction of post traumatic facial deformities requires thorough case evaluation and other special investigations. Choice of treatment is left to the discretion of the surgeon which based on patients concern

FUTURE PERSPECTIVES

1. The hemicoronal approach is most ideally suited for gaining adequate exposure and access to the region, including the lateral wall of the orbit, zygomatic arch, and body of the zygoma[7]
2. osteotomy of malunions performed by piezotome minimizes bone damage and loss[9].
3. Autologous fat grafting (AFT) and autologous bone grafting of osteotomised malar bone also plays a crucial role in the reconstruction of ZMC fracture deformities[5, 11, 12].
4. Preoperative computer assisted planning and patient specific navigation system provides accurate intraoperative verification, statistically significant results and is less time consuming in the delayed treatment of ZMC fractures[12]

CONSENT

Written informed consent was obtained from the patient for operating and publication of this case report.

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