Fractures of Zygomatic Complex and Their Treatment

Shaifulizan Ab Rahman1, Kow Hui Xuan1, Sanjida Haque2, Mohammad Khursheed Alam3

ABSTRACT

Background: Fractures of Zygomatic Complex is a relatively common injury in Malaysia.
Case Presentation: This case report is about a 53 year old patient who sustained right zygomatic complex fracture and close fracture of right midshaft of tibia and fibula after involvement in a motor vehicle accident. This report will focus on the oral maxillofacial part, which is regarding the fracture of the zygomatic complex and the management.
Conclusion: Patient underwent open reduction and internal fixation (ORIF) with plates and screws at right zygomatic arch and right frontozygomatic suture via hemicoronal extended incision.

KEY WORDS
zygomatic complex fracture, open reduction internal fixation, plates and screws

INTRODUCTION

Facial injuries occur in a significant proportion of trauma patients requiring prompt diagnosis of fractures and soft tissue injuries, with possible emergency interventions. The facial area is one of the most frequently injured areas of the body, and the mandible is one of the most common maxillofacial bones fractured, due to its prominent position on the face. The incidence and etiology of maxillofacial trauma and facial fractures vary widely in different regions of the world due to social, economic, cultural consequences, awareness of traffic regulations and alcohol consumption. Countries like the United States, Finland and Sweden have high incidence of maxillofacial trauma resulting from assault while road traffic accidents is the main etiology in Nigeria, Singapore, United Arab Emirates, Jordan and Japan.

In Malaysia, road traffic accidents were the main etiology for maxillofacial injury. Among the bony fractures, mandible was the common bone involved followed by midface fractures. For mandibular fractures, condylar fractures are the most common (33.2%), while for midface fractures, zygomatic bone fractures are the most common due to its morphogenic prominence of zygomatic region (45.8%). Motorcyclists were affected most, followed by motorcar occupants. The zygomatic complex is responsible for the mid-facial contour and for the protection of the orbital contents.

CASE REPORT

The patient was a 53-year-old Malay man underlying with hypertension was referred to Oral surgery and Maxillofacial surgery Department, School of Dental Sciences, Universiti Sains Malaysia following a severe maxillofacial trauma as a result of motor vehicle accident.
Following the collision, there was a loss of consciousness of unknown duration. However, there was no nausea or vomiting and no blurred vision. Patient complained of facial swelling and tenderness felt especially at the right malar area. There are a few abrasion wounds around the face. On examination, there was a facial asymmetry showing depressed right malar area from bird's view. There was soft tissue swelling at the right frontozygomatic suture area and right malar region. The area was associated with tenderness to palpation and step deformity was palpable. Mouth opening was limited to 2 finger breadths of his own fingers.

Computed tomography (CT scan) confirmed the diagnosis of right zygomatic complex fracture which involved fracture of right greater wing of sphenoid, right frontozygomatic suture, right zygoma, right zygomatic arch, right lamina papyracaeus, anterior and lateral wall of right maxillary sinus and right inferior orbital wall (Figure 1). The patient underwent surgery for open reduction and internal fixation (ORIF) with plates and screws at right zygomatic arch and right frontozygomatic suture via hemicoronal extended incision under general anesthesia (Figure 2).

On the next day post operation, the patient claimed that he cannot raise his right eyebrow, otherwise was insignificant. Facial profile of patient was asymmetry with flattening of right temporal area (Figure 3). For the upper one-third of the face, there was a suture over coronal area which was intact with radivac drain. There was weakness over right temporal branch of facial nerve. Middle one-third, there was swelling over right malar region no paresthesia noted. Finding for middle one-third was insignificant. A soft diet was also recommended. Analgesics and antibiotics were prescribed. The patient was scheduled for a periodic monitoring under oral maxillofacial surgery clinic.

DISCUSSION

Trauma to the facial region frequently results in injuries to soft tissue, teeth, and major skeletal components of the face. This includes the
mandible, maxilla, zygoma, naso-orbitalethmoid complex and supraorbital structures. In this case, zygomatic complex were involved after a motor-vehicle accident.

The main aims of any fracture treatment are to provide reduction, fixation, and immobilization. This is to ensure rapid bone healing, to return patient's normal function including ocular, masticatory and nasal function and speech, and to obtain acceptable aesthetics. Generally, the best results in the treatment of facial fractures if the reduction is done within the first few days after the injury. However, this is not always possible due to factors such as presence of other more life-threatening concomitant injuries, distance from a suitable medical unit and failure of complete diagnosis. Sometimes, there will be a 3 to 4 days delay to eliminate tissue oedema before treatment is done. The optimum time for primary reduction is a 2-week period following the injury and accurate reduction becomes difficult after the third week.

The zygomatic complex is a key component of structural facial skeleton and aesthetics. Studies done in Kuala Lumpur suggested that zygoma fracture is the second most common fractured facial bone, after the mandible and also the most common type of mid facial fracture. Displacement of zygomatic complex fractures is in principle a surgical indication, unless there is clinical contradictory, such as being medically unfit for surgery, patient refusal or the absence of functional and/or aesthetic problems. A study in Malaysia, showed that more than half of the patients were treated by simple elevation via the Gillies temporal approach alone that did not require additional fixation. However, for the patient in the study, as there was obvious displacement of zygomatic bone, accompanied by paresthesia of the right infraorbital nerve, surgical treatment with internal fixation was required. Insufficient exposure and reduction of the zygomatic fragment result in facial asymmetry. Usually, these problems are noticed weeks after surgical treatment. For these reasons displaced fractures are best managed by open reduction and fixation. In the absence of comminuting or instability at the zygomatic arch, reduction under direct visualization plus fixation at the zygomaticofrontal suture, zygomaticomaxillary buttress, and inferior orbital rim remains the best treatment option.

**CONCLUSION**

Maxillofacial injuries occur most commonly due to motor-vehicle accidents. These injuries should be properly managed and should not be delayed. Management of the patient does not stop after surgery. Patient has to be monitored after surgery, and after discharge, have to come for regular follow-up to ensure proper healing and to achieve the treatment goals of facial fracture management.

**REFERENCES**