SUNTEXT REVIEWS

SunText Review of Dental Sciences
ISSN: 2766-4996

Open Access
Case Report
Volume 2 Issue 3

Conservative Management of Left Maxilla Left Zygoma Left Zygomatic Arch Undisplaced Fracture - A Case Report and Review of Literature

Shunmugavelu K*

Consultant dental surgeon, Department of dentistry / Oral and maxillofacial pathology and Faciomaxillary surgery, Kasturi Multispeciality hospital, Chennai, India

***Corresponding author:** Shunmugavelu K, Consultant dental surgeon, Department of dentistry / Oral and maxillofacial pathology and Faciomaxillary surgery, Kasturi Multispeciality hospital, Chennai, India; Tel: 0091-9789885622; E-mail: drkarthiks1981@gmail.com

Received date: 22 June 2021; **Accepted date:** 06 July 2021; **Published date:** 10 July 2021

Citation: Shunmugavelu K (2021). Conservative Management of Left Maxilla Left Zygoma Left Zygomatic Arch Undisplaced Fracture - A Case Report and Review of Literature. SunText Rev Dental Sci 2(3): 144.

DOI: https://doi.org/10.51737/2766-4996.2021.144

Abstract

Zygomatico maxillary fractures are complex and most often due to trauma from road traffic accidents. Increased width of the face and flattening over the zygomatic arch are characteristic findings of these fractures. The number of fixation points used, their location, as well as the incisional access to these fixation points are variable. This a case report and review of conservative management of left maxilla left zygoma left zygomatic arch undisplaced fracture.

Keywords: Zygomatico maxillary fracture; Undisplaced fracture; Two point fixation

Presentation of Case

A 48-year-old male patient reported with a chief complaint of severe pain and difficulty in opening his mouth for the past 1 day due to trauma from a road traffic accident. He had a history of bleeding from the mouth immediately after the injury. Clinical examination revealed lacerations and contusions on the left side of the face along with swelling of the left cheek. Increased width of the face, flattening over the zygomatic arch, diplopia, subconjunctival haemorrhage and lateral orbital haematoma were also present. Intraoral examination revealed ecchymosis of the left maxillary buccal sulcus, deranged occlusion, fracture of left maxillary teeth. Palpation revealed tenderness along with crepitation on percussion. Radiographic examination of CBCT revealed fracture along the zygomatico-maxillary arch (Figure 1-7).

Clinical diagnosis

Patient did not experience vomiting, loss of consciousness, and bleeding from the nose and ear, which ruled out the possibility of a head injury. No other associated injuries were present elsewhere in the body. Past medical, dental and family history were insignificant. Based on the history and clinical features, clinical diagnosis was fracture of left zygomatico-maxillary arch.

Figure 1: *Lacerations and contusions on the left side of the face and swelling of the left cheek.*

Figure 2: *Lacerations and contusions on the left side of the face and swelling of the left cheek.*

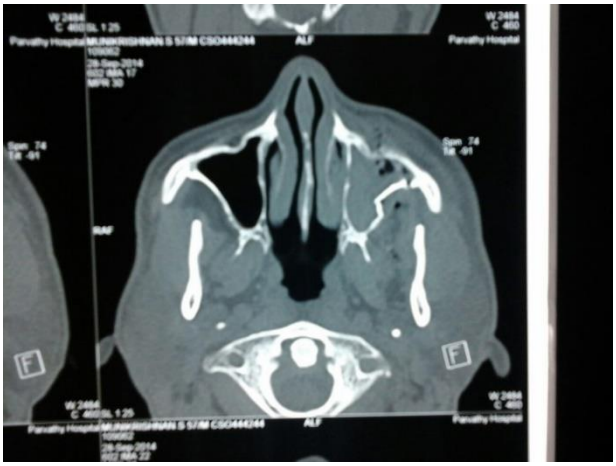

Figure 3: *CBCT reveals fracture along the zygomatico-maxillary arch.*

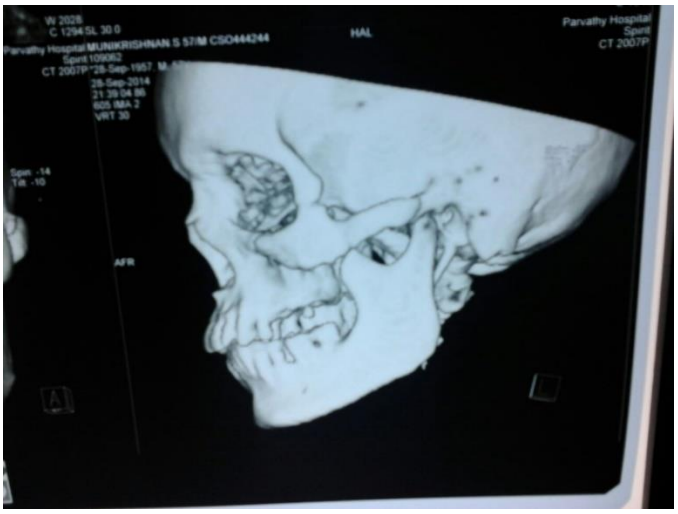

Figure 4: *CBCT reveals fracture along the zygomatico-maxillary arch.*

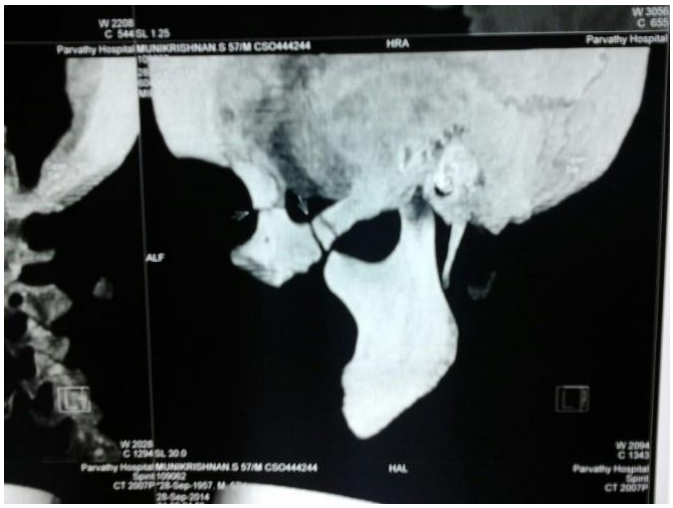

Figure 5: *CBCT reveals fracture along the zygomatico-maxillary arch.*

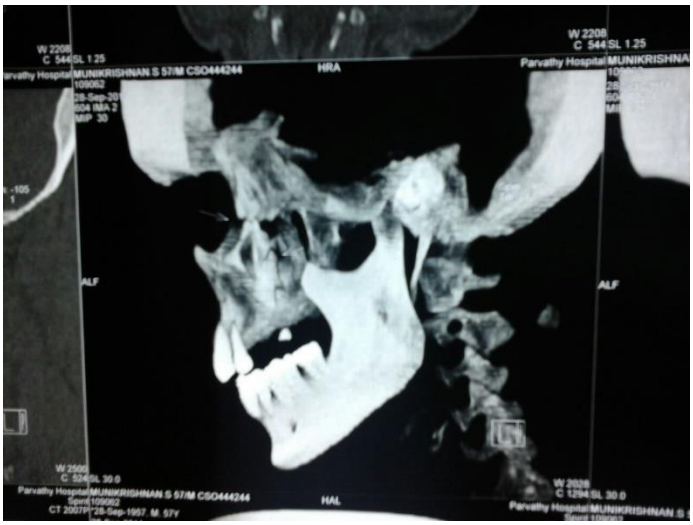

Figure 6: *CBCT reveals fracture along the zygomatico-maxillary arch.*

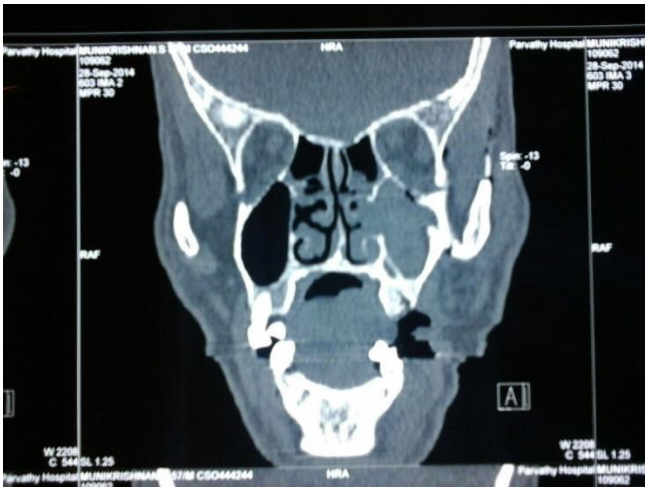

Figure 7: *CBCT reveals fracture along the zygomatico-maxillary arch.*

Discussion of Management

Reduction, fixation and immobilisation were done with extraoral approach. Closed reduction was done using Gillies temporal approach.An incision of 2.5 cm was made between the two branches of the superficial temporal artery at an angle of about 45°. A Bristow's elevator was passed down through the incision between the zygomatic bone which was then reduced. Following accurate reduction of the fragments, direct fixation through plate and screws using two-point fixation.

Review of Literature

Introduction

Zygomaticomaxillary complex fracture, is also called as a quadripod fracture, quadramalar fracture. It was previously called as a tripod fracture or trimalar fracture. It consists of four components: the lateral orbital wall (at either the zygomaticofrontal suture superiorly along the wall or zygomatic sphenoid suture inferiorly), separation of the maxilla and zygoma along the anterior maxilla (near the zygomaticomaxillary suture), the zygomatic arch, and the orbital floor near the infraorbital canal [1].

Classification

Based on anatomic points [2]:

- **Type A:** Incomplete zygomatic fracture. Low-energy injuries frequently cause isolated fractures of only one zygomatic pillar. This may be an isolated zygomatic arch fracture (Al), a lateral orbital wall fracture (A2), or an infraorbital rim fracture (A3). Displacement of the malar complex does not occur because the remaining pillars are intact.
- **Type B:** Complete monofragment zygomatic fracture (tetrapodfiacture). All four pillars of the malar bone are fractured and displacement may occur. This is the so-called "classic tripod fracture," but anatomically these fractures are actually tetrapod fractures.
- **Type C:** Multifragment zygomatic fracture. Same as Type B, but with fragmentation, including the body of the zygoma.

Rowe and Killey's classification (1968)

- Type I : no significant displacement
- Type II : fracture of the arch
- Type III : rotation around a vertical axis
- Type IV : rotation around a longitudinal axis
- Type V : displacement of the complex en bloc
- Type VI : displacement of orbito-antral partition
- Type VII : displacement of the orbital rim segments
- Type VIII : Complex comminuted fractures

Epidemiology

Males have a higher incidence of zygomatico- maxillary fracture with a peak in 20- to 41-year age range.

Aetiology

The most common cause of injury is assault, road traffic accidents. Other causes include falls, and sports and work accidences [3-5]. Alcohol use is a significant factor in adolescent trauma [6].

Clinical findings

Patients with ZMC fractures present with tenderness, ecchymosis and edema over the malar prominence, lateral orbit, upper and lower eyelids, loss of malar projection. Other findings blunting of the lateral canthus relative to the unaffected side, paresthesia in the region of the infraorbital nerve. Significant involvement of the orbital floor may result in extraocular muscle dysfunction/entrapment, diplopia, or enophthalmos. Trismus is seen in medially displaced zygomatic arch fractures impinging on the coronoid process or temporalis tendon [7,8]. Palpation can detect bony steps and tenderness on the orbital rings and over the crista zygomatico alveolaris, diplopia, sensory disturbance of the infraorbital nerves, and anterior open bite and premature contact in the molar region [9-11].

Radiographic findings

Postero-anterior skull, occipitomental view, and orthopantomogram and CT can be used for the diagnosis of zygomatico maxillary fractures.Modified P-A projection (10 degrees-20 degrees) provides a clear image of the frontozygomatic, infra-orbital rim and temporozygomatic fracture lines compared to Water's view [12].

Management

Indication for fixation of zygomatic fractures are aesthetic defects (e.g., cheekbone flattening or a dimple) or functional defects (e.g., restrictive mouth opening, malocclusion or ophthalmic issues such as diplopia, restricted eye movements, enopthalmus and hypoglobus) [13]. In complex fracture of the zygoma and Le Fort I fracture of the maxilla, the principle of treatment is reconstruction of the load-bearing structures of the facial skeleton starting peripherally and moving centrally and the building up of the face which should start by establishing the anteroposterior dimension by reconstructing the outer facial frame, starting from the stable posterior regions and continuing toward the midline. In zygomatico maxillary fractures, the number of fixation points used, their location, as well as the incisional access to these fixation points are variable [14-17]. Management can be open reduction and internal fixation with miniplates and screws which offers stable reduction of the fracture fragments. This will subsequently allow early mobilization of the jaw and early and optimal recovery of function and esthetic [18]. Non-displaced or minimally displaced fractures

may be treated conservatively. Displaced fractures will require surgery consisting of fracture reduction with miniplates, microplates and screws. Gillie's approach is commonly used for depressed zygomatic fractures [19]. Prognosis is generally good. In few cases, there can be persistent post-surgical facial asymmetry, which can require further treatment [20,21].

References

1. Fraioli RE, Branstetter BF, Deleyiannis FW. Facial fractures: beyond Le Fort. Otolaryngologic Clinics North Am. 2008; 41: 51-76.
2. Zingg M, Laedrach K, Chen J, Chowdhury K, Vuillemin T, Sutter F, et al. Classification and treatment of zygomatic fractures: a review of 1,025 cases. J Oral Maxillofac Surg. 1992; 50: 778-790.
3. Alvi A, Doherty T, Lewen G. Facial fractures and concomitant injuries in trauma patients. Laryngoscope. 2003; 113: 102-106.
4. Booth PW, Schendel SA, Hausamen JE. Maxillofacial surgery. 2nd edition St. Louis, Missouri: Churchill Livingstone. 2007; 120-154.
5. Bogusiak K, Arkuszewski P. Characteristics and epidemiology of zygomaticomaxillary complex fractures. J Craniofac Surg. 2010; 21: 1018-1023.
6. Pluddemann A, Parry C, Donson H. Alcohol use and trauma in Cape Town, Durban and Port Elizabeth, South Africa. Inj Control Saf Promot. 2004; 11: 265-267.
7. Avery LL, Susarla SM, Novelline RA. Multidetector and three-dimensional CT evaluation of the patient with maxillofacial injury. Radiol Clin North Am. 2011; 49: 183-203.
8. Ellstrom CL, Evans GR. Evidence-based medicine: zygoma fractures. Plast Reconstr Surg. 2013 132: 1649-1657.
9. Gruss J, Wyck L, Phillips JH, Antonyshyn O. The importance of the zygomatic arch in complex midfacial fracture repair and correction of posttraumatic orbitozygomatic deformities. Plast Reconstr Surg. 1990; 85: 878-879.
10. Peterson L. Contemporary oral and maxillofacial surgery. 1993; 597.
11. Kaastad E, Freng A. Zygomatic-maxillary fractures. J Craniomaxillofac Surg. 1989; 17: 210.
12. Ardekian L, Kaffe I, Taicher S. Comparative evaluation of different radiographic projections of zygomatic complex fractures. J Craniomaxillofac Surg. 1993; 3: 120-123.
13. Bradley D, Leung B, Saxena S, Dungarwalla M, Chapireau D, Fan K. Surgical management of zygomatic complex fractures in a major trauma centre. Plast Aesthet Res. 2019; 6: 11.
14. Venugopal MG, Sinha R, Menon PS, Chattopadhyay PK, Chowdhury SK. Fractures in the maxillofacial region: a four year retrospective study. Med J Armed Forces India. 2010; 66: 14-17.
15. Brasileiro BF, Passeri LA. Epidemiological analysis of maxillofacial fractures in Brazil: a 5-year prospective study. Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 2006; 102: 28-34.
16. Forouzanfar T, Salentijn E, Peng G, Bergh B. A 10-year analysis of the Amsterdam protocol in the treatment of zygomatic complex fractures. J Craniomaxillofac Surg. 2013; 41: 616-622.
17. Ribeiro AL, Gillet LCS, Vasconcelos HG, Rodrigues LC, Pinheiro JV. Facial fractures: large epidemiologic survey in Northern Brazil reveals some unique characteristics. J Oral Maxillofac Surg. 2016; 74: 1-12.
18. Prein J. Manual of internal fixation of cranio facial skeleton. Berlin:Springer-Verlag.
19. Swanson E, Vercler C, Yaremchuk MJ, Gordon CR. Modified Gillies approach for zygomatic arch fracture reduction in the setting of bicoronal exposure. J Craniofacial Surgery. 2012; 23: 859-862.
20. Linnau KF, Stanley RB, Hallam DK, Gross JA, Mann FA. Imaging of high-energy midfacial trauma: what the surgeon needs to know. European J Radiol. 2003; 48 17-32.
21. David K, Coen D.Management of zygomatic-maxillary fracture. The principles of diagnosis and surgical treatment with a case illustration. Dental Journal: Majalah Kedokteran Gigi. 2008.