

Versatility of Gillie's Temporal Approach in the Management of Zmc Fractures

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ABSTRACT

The authors have studied and presented their experience in the management of ZMC fractures with Gillie's temporal approach and its extreme versatility. The study included 30 patients with ZMC fractures and no sex predilection was followed. The study supports the use of Gillie's temporal approach in ZMC fractures due to its versatility in fracture reduction and aesthetic restoration of form and function.

Key words: Zygomatico- maxillary, fractures, Rowe's zygomatic elevator, Gillie's, incision.

INTRODUCTION

Face being the most important part of aesthetic concern in the human body is prone for fractures due to road traffic accidents, physical assaults, sports injuries, industrial accidents and so on. The facial prominence is given by the sturdy malar bones. Approaches to Zygomatic arches still remains to be debatable. Zygomatico-maxillary complex fractures are the most commonly encountered facial injuries next to nasal bone bone fractures. Zygomatic fractures have been traced down in history since 1650 B.C. To restore the facial contours and its anatomic form, function, these fractures have to be diagnosed precisely with the help of proper clinical examination and advanced imaging techniques.

Zygomatic fracture management was revolutionised with the advent of internal fixation with wires in 1942. In 1978, Champy's et al proposed the adaptation osteo synthesis with plate and screw fixation. In the early part of twentieth century, different approaches to the zygomatic bone were established and reduction of the fracture without fixation was described.

Gillie's temporal approach was first reported in 1927 by Gillie's, Kilner Land stone⁽¹⁾ was frequently used because of the short duration of general anaesthesia and minimal morbidity. The advantages of this closed approach are short duration of anaesthesia, decreased possibility of facial nerve damage, decreased indirect trauma to the globe, absence of visible scar.

MATERIALS AND METHODS

Records of 30 patients with ZMC fractures treated with Gillie's temporal approach were reviewed. All the patients were treated between may 2012 – Dec 2012. No sex predilection was followed. Patients with only Zygomatico maxillary fractures were included. All the cases were treated under general anaesthesia. Pre anaesthetic concern, neurology and ophthalmology opinions were obtained for all the cases. Clinical examination was correlated with radiographic and ct findings. Age range of patients for the study was between 20 -40.

General anaesthesia was administered through naso -tracheal intubation. Skin and intra oral preparation were done with Betadine. Hair

was shaved over the temporal region of scalp above the bifurcation of superficial temporal artery approximately 2.5 cm above the helix of ear. Sterile pads were placed to protect the eye. After face preparation, draping was done in a sterile manner. Before making the incision, Xylocaine with 1 : 80,000 adrenaline was infiltrated in the surgical site to achieve hemostasis. A straight incision 2.5 cm in length was made at an angulation of 30- 45 degree to the horizontal, 1 – 2 cm antero superior to the helix of ear. Blunt dissection was performed to prevent injury to the superficial temporal vessels to expose the temporalis fascia. The fascia was incised to uncover the temporalis muscle. The broad end of Howarth's periosteal elevator was inserted into the interface between temporalis fascia and muscle. The elevator was moved to and fro inferiorly until the zygomatic arches, infra temporal surface of the body of zygoma were felt.

After ensuring the accurate position, the elevator was withdrawn until the tip was under the anterior lip of incision. This acts as a guide for the introduction of Rowe's zygomatic elevator to avoid damage to the cranium. Once the Zygomatic elevator was introduced, its position at the body of zygoma was ensured. Following this, elevation was done to restore the anatomical contour. A snap was audible to ensure the adequacy of elevation. Fullness of cheek and the contour of infra orbital rim gave an idea of reduction and fixation if required further. After stabilization, the zygomatic elevator was withdrawn. Saline and metroglol irrigation was done. Howarth's elevator was also withdrawn then. Temporalis fascia was sutured with vicryl and skin closed with ethilon sutures. Sutures were removed seventh day post operatively. Antibiotics, analgesics, anti inflammatory drugs were prescribed. Sufficient care was exercised to prevent pressure application on the side of fracture. Soft diet was advised till osseous union. Patients were advised to rest their heads elevated and straight while sleep for a week. On the seventh day post operatively, the following parameters were checked.

1. Facial symmetry
2. Infra orbital nerve innervation
3. Diplopia
4. Wound healing

RESULTS

End results in the study of 30 patients treated with Gillie's approach for ZMC fractures were reviewed. None of the patients experienced secondary infections. No post operative diplopia was recorded. Three patients had paresthesia of infra orbital nerve. Wound healing was uneventful in all the cases. Malar prominence was good in all the cases. Post operative radiographs were taken for all the patients. Reduction and fixation were studied with the help of post operative radiographs. Since layered suturing was done, scar was non prominent and was not visible, since the incision was made on the temporal region of scalp. The results claim Gillie's temporal approach is a meticulous technique in the reduction of ZMC fractures.

DISCUSSION

The Zygomatic bone fracture susceptibility was explained by MARKUS ZING *et al* (1992)⁽⁶⁾. Zygoma is most commonly fractured next to nasal bone as stated by VERNARD and JACKSON. In the study, Pre operatively, Patients presented with the clinical features such as sun conjunctival ecchymosis, peri orbital edema, flattening of cheek, paresthesia in the infra orbital region, restricted mouth opening. One patient had diplopia which subsided following treatment. Diagnosis was confirmed with imaging after clinical examination as stated by ROBERT MARCIANI. Ophthalmologist's opinion was obtained for all the cases as mentioned by PETER B GREY *et al* (1993). He stated delayed retro bulbar haemorrhage, transient blindness can be the result of fracture. The classical technique for closed reduction of ZMC fractures is Gillie's temporal approach described by Gillie's, Kilner Landstone in 1927.

S.Balasubramaniam in 1954⁽²⁾ described an intra oral approach for reduction of ZMC fractures. An incision was made about a centimetre in length at the reflection of sulcus, just distal to the buttress of the zygoma along the buccinators fibers that is between maxillary first and second molar and elevation is done.

G.D. Wood in 1986⁽⁴⁾ presented two cases of blindness following fracture of a zygomatic bone

with disruption of the optic canal. PETER JUNGELL *et al* in 1987⁽⁵⁾ studied 68 patients with zygomatic complex fractures and found out 56 patients with sensory disturbances of inferior orbital nerve. J.LOEWINGER *et al* in 1989⁽⁶⁾ reported a case of bradycardia occurring during elevation of zygomatic arch.

According to a recent survey, the practising fellows of British association of oral and maxillofacial surgeons ⁽¹⁰⁾, the Gillie's approach was followed in 74% cases of severely displaced fractures. DAE-HYUN LEW *et al* in 1997⁽¹¹⁾ described a method which begins with Gillie's approach for reduction and internal kirschner's wire fixation. G R. OGDEN *et al* (1991)⁽⁷⁾ studied 105 cases treated with Gillie's approach for ZMC fractures. The author recommends this technique as it is quick, decreased the possibility of facial nerve damage, not associated with visible scar.

Pablo Rosado and Juan C de Vicente (2012)⁽¹⁷⁾ used Gillie's approach for closed reduction in their study of orbital fractures.

S. Taicher *et al.*, in 1993⁽⁹⁾ found out the recovery of paresthesia of infra orbital nerve is

higher in Gillie's approach. Out of 104 cases of zmc fractures ,Gillies approach was followed in 65 cases in the study of E.T. ADEBAYO *et al* in 2003⁽¹²⁾.

Thangavelu *et al.*, in 2007⁽¹⁴⁾ presented 5 cases of zmc fractures with fronto – Temporal approach. Disadvantages of this approach include prolonged operative time and possible damages to facial nerve.

Eric J Dierks *et al.*, in 2009⁽¹⁵⁾ described four potential sites of plate application. Zygomatico-maxillary buttress requires the greatest attention to plate bending detail. GREG J KNEPIL *et al* in 2010⁽¹⁶⁾ recommended antibiotic prophylaxis and found out infection rate is lower in cases with prophylaxis.

CONCLUSION

The authors conclude that Gillie's temporal approach is a versatile technique for the management of ZMC fractures. Gillie's approach is a meticulous technique as it involves short duration of general anaesthesia, decreased possibility of facial nerve damage. The scar is non visible. At the end of this study, Gillie's approach is found to be an excellent method for reduction of zmc fractures

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