ORIGINAL RESEARCH PAPER

Volume-7 | Issue-3 | March-2018 | PRINT ISSN No 2277 - 8179

INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

ZYGOMATIC COMPLEX FRACTURES:MANAGEMENT OF DISPLACED AND UNDISPLACED FRACTURES WITH EMPHASIS ON INFRA ORBITAL NERVE PARESTHESIA.

Surgery

Dr Sourav Sharma* MDS Oral and Maxillofacial surgery. Dental surgeon.Sub district hospital. Akhnoor. Jammu and Kashmir.India. *Corresponding Author

Dr Vandana D (MDS) Superspeciality Dental and Maxillofacial centre.Roop nagar.Jammu.India

ABSTRACT

The zygomatic bone being most prominent is commonly fractured in Road traffic Accidents.Most common causes of zygomatic complex fractures are Road traffic accidents, personnel altercations, sport injury etc. Majority of the patients with zygomatic compex fracture also complain regarding some sort of Neurosensory disturbance involving infra orbital nerve. In this study 51 patients were evaluated from September 2016 to January 2018 in terms of surgical and medicinal intervention required for zygomatic complex fractures along with Neuro-sensory disturbance in the interest of patients.Patients were aged between 16 to 60 years. The main emphasis was laid on restoring proper aesthetic zygomatic prominence, occlusion,wound healing and infra orbital paresthesia.Road traffic accidents were found to be the commonest cause of injury.General population should be educated about use of automobile safety devices and their compliance by vehicle occupants.

KEYWORDS

Zygomatico-Maxillary Complex(ZMC),Neuro-sensory disturbance(NSD),Sub-conjunctival haemorrhage(SCH).

Introduction

The face being the most prominent part of the body renders it vulnerable to injuries and fractures. The convex external surface of the zygomatic bone provides prominence to the cheek region. The maxillofacial injuries as compared to the injuries involving face, head and neck have received little attention.[1] Articulation of the zygoma with its adjacent bony structures and its lateral prominence causes the zygomatic complex to be frequently fractured.[2-3] Ocular disturbances and deranged occlusion are common findings; owing to the proximity of the zygomatic bone with the orbit and maxilla. Paresthesia of the Infra orbital nerve which is an important anatomical structure in zygomatic complex fractures is mostly encountered. Restoration of post operative stability,aesthetics,proper occlusion and wound healing were the main aims of this research.

Patients and methods

This study involved 51 patients who reported to our institution with fractured zygomatic complex. Our study was aimed at evaluating the surgical intervention for Infra orbital nerve paresthesia and displaced fractures along with a drug composed of Mecobalamin 1500 mcg, Alpha lipoic acid100mg,folic acid 1.5mg and pyridoxine hydrochloride 3mg for a period of two to three months. Patients not willing for surgical management and patients without significant displacement of fractured fragments; but with complains of paresthesia were managed medicinally in the interest of these patients.

The following data were collected which showed the gender distribution of the study population[Table 1] and population distribution according to the etiology.[Table 2]All the routine Radiographic and clinical investigations were done . Informed written consent was taken from all the patients who underwent surgery.

Inclusion criteria

- Patients with ZMC fractures
- Above 16 years of age
- Unilateral or bilateral fractures

Exclusion criteria

- Patients with the history of uncontrolled systemic diseases
- Patients not willing for the treatment

Table 1 Gender distribution of the study population

Gender	Frequency	Percentage
Male	40	78.43%
Female	11	21.56%
Total	51	100.0%

Table 2 Population distribution according to Etiology

Etiology	Frequency	Percentage
RTA	33	64.70%
Assault	15	29.41%
Fall	3	5.88%
Total	51	100.0%

Results

Fifty one patients were evaluated who reported with ZMC fracture. Thirty five were willing for surgical intervention and the remaining subjects were not willing for the surgery but rather insisted for medications for early recovery of infra orbital nerve paresthesia.The drug composed of Mecobalamin,alpha lipoic acid,folic acid and pyridoxine hydrochloride was prescribed to all our cases; which was found to result in early recovery from paresthesia if taken from the first 24-48 hours after trauma along with other anti inflammatory and antibiotics after taking the proper medical history of the patient.

Under G.A ;the patients were managed by open reduction and internal fixation at two points i.e zygomatic buttress and infra orbital region.[Picture 1 & 2] Keen's intra oral buccal sulcus incision was used for zygomatic arch elevation.[Picture 3] RTA was found to be the commonest cause of Injury.[Table 2] The results of our study are also confirmed with other researchers who documented the incidence of Infra orbital paresthesia after ZMC fracture ranging from 18-83% in a study conducted in Israel and 58 to 94% from India.[4-5]

Miniplates were fixed after reducing the fractured fragments into proper anatomical alignment.Two point discrimination test,Feather light touch,pin prick and brush stroke tests were performed on all our patients for evaluating Neurosensory disturbance pre operatively and post operatively as well.All the patients consented for medicinal therapy;but only those who had undisplaced fractures were assured of positive outcomes in terms of resolution of nerve paresthesia.In another study Infra orbital nerve has also been transposed into the orbital floor to minimize the nerve injury while plating displaced zygomatic complex fractures and found no evidence of sensory disturbance in 3 month follow up.[6] A study showed Tab Pregabalin 150 mg BD for 3 months in post traumatic Neuropathic pain to be effective with good results .[7] In our study the drug combination prescribed was helpful for all the patients in achieving early resolution from paresthesia.

Figure 1: Fractured zygomatic buttress

Figure 2: Fracture at Infra orbital region with miniplate

Figure 3: Intra oral keen's incision sutured

Figure 4: 2 months post op with imperceptible scar

Discussion

Facial trauma always lead to social discomfort and mental agony.The integrity of the zygomatic complex is of utmost importance in maintaining facial prominence and width.Zygomatic complex acts as a buttress between the face and the skull thereby reducing the impact on the brain.

Ophthalmic consultation is mandatory for most of ZMC fractures as delayed haemorrhage in the retro bulbar region may lead to vision loss.[8] Males are found to be more involved in fractures than females with the age between 20 to 30 years.[9] Our study also showed increased male predilection.The infra orbital nerve was found to be the 2nd most commonly damaged nerve after the trigeminal nerve.[10] Sub conjunctival haemorrhage was present in most of our patients which resolved in a weeks time. Ophthalmic ointment may be prescribed in patients with SCH to reduce any chance of infection. Three of our patients who complained of Diplopia were under ophthalmic care and diplopia was resolved in two weeks. The ideal surgical approach to treat the ZMC fracture should provide adequate exposure of the fracture site,ensure less chances of nerve injury while manipulating and fixing the fractured fragments thereby resulting in good post operative cosmetic and functional resuts.Infra orbital plating was performed using extra oral infra orbital incision with almost imperceptible post operative scar.[Picture 4] Wound closure was done in layers.Intra oral buccal sulcus incision was less time consuming as compared to extra oral temporal approach.[11] Our study showed Two point fixation yielded good results along with the mentioned drug combination in terms of paresthesia and other important parameters mentioned previously like aesthetics,occlusion etc. We also advise our fellow colleagues to prescribe our drug combination (Mecobalamin: 1500mcg, Alpha lipoic acid:100mg,Folic acid: 1.5mg, Pyridoxine hydrochloride:3mg) OD for two to three months atleast after taking proper medical history of the patient's to increase the chances of early recovery from nerve paresthesia.

ZMC is one of the frequently fractured sites in Maxillofacial trauma cases encountered.RTA was the leading cause of fractures. People need to be educated on a war footing level regarding the importance of Restraints and use of the safety measures while travelling in motorized transports.

Conflict of Interest

None

Ethics statement/Patients consent

All the procedures performed in this study involving human participants were in accordance with the ethical standards of the institution.

Informed written consent was obtained from all the patients who were involved in this study.

References

1. Rowe NL, Williams JL.Fractures of the zygomatic complex and orbit. In:Williams JL(ed) 'Rowe and Williams' maxillofacial injuries,Churchill Livingstone,Edinburgh,1994, 1(2)475-590.
2. Covington DS, Wainwright DJ, Teichgraeber JF, Parks DH. Changing patterns in the epidemiology and treatment of zygoma fractures:10-year review. J Trauma 1994,37(2):243-248.
3. Poswillo D.Reduction of the fractured malar by a traction hook.British Journal of Oral Surgery 1976,14:76-79.
4. Benoliel R,Birenboim R,Regev E,Eliav E.Neurosensory changes in the infraorbital nerve following zygomatic fractures.Oral Surg Oral Med Oral Pathol Oral Radiol endod.2005,99(6):657-65.
5. Kumar P,Godhi S,Lall AB,Ram CS.Evaluation of neurosensory changes in the infraorbital nerve following zygomatic fractures.J Maxillofac Oral Surg. 2012, 11(4):394-9.
6. Kotrashetti SM, Kale TP, Bhandage S, Kumar A. Infraorbital nerve transpositioning into orbital floor: A modified technique to minimize nerve injury following zygomaticomaxillary complex fractures. J Korean Assoc of Oral and Maxillofac Surgeons. 2015,41(2):74-77.
7. Singh RK,Sinha VP,Pal U S,Yadav SC,Singh MK.Pregabalin in post traumatic neuropathic pain:Case studies.Natl J Maxillofac Surg 2012,3:91-5.
8. Gray B.P,Leen MM,Loftus MJ. Late retro bulbar hemorrhage and blindness following malar fracture complicated by factor XI deficiency. J Oral and Maxillofac Surg 1993,51; 699 - 702.
9. Arosarena OA,Fritsch TA,Hsueh Y,Aynehchi B,Haug R.Maxillofacial injuries and violence against women.Arch Facial Plast Surg.2009,11(1):48-52.
10. Poorian B,Bemanali M,Chavoshinejad M.Evaluation of sensorimotor nerve damage in patients with maxillofacial trauma;a single center experience.Bull Emerg Trauma.2016,4(2):88-92.
11. S.Balasubramaniam. Intraoral approach for reduction of malar fractures..Br J Oral Surg.1967,189-191.