

ORIGINAL ARTICLE**CURRENT EPIDEMIOLOGIC AND CLINICAL ASSESSMENT RELATING ZYGOMATIC BONE AND ZYGOMATIC ARCH FRACTURES- A 3 YEAR RETROSPECTIVE STUDY**¹Gaurav Singh, ²Parul Singh¹Associate Professor, Department of Oral and Maxillofacial Surgery, Shree Bankey Bihari Dental College, Ghaziabad, Uttar Pradesh, ²Senior Pedodontic Consultant & Director DOC Clinics and Research Center Pvt. Ltd., Delhi**ABSTRACT:**

Background: Fractures of zygomatic complex causes disruption in articulation of zygomatico-maxillary complex, zygomatic complex proper and orbitozygomatic complex. The present study was done to evaluate zygomatic bone and zygomatic arch fractures in study population. **Materials & Methods:** This study was conducted in department of Oral and maxillofacial surgery from 2012 to 2015. All the patients with history of fractures during this period were retrieved from data of department. Patients with zygomatic bone and zygomatic arch fractures were involved in the study. The diagnosis of fracture was based on clinical and radiological criteria. The data collected included the patient's age and gender, the etiology and the site of the facial fracture, the existence and type of other injuries. **Results:** Out of total 360 fractures reported to the department, 112 were zygomatic bone fractures and 153 were zygomatic arch fractures. The difference was non-significant (P=0.2). Zygomatic bone fractures were seen in age group 0-10 years (12), 11-20 years (20), 21-30 years (33), 31-40 years (26), 41-50 years (10) and > 50 years (11). Zygomatic arch fractures were seen in age group 0-10 years (3), 11-20 years (32), 21-30 years (40), 31-40 years (34), 41-50 years (24) and > 50 years (20). The difference was significant (P < 0.05). Among various causes main cause in zygomatic bone fracture was road traffic accidents (RTA) (52), assaults (23), sports injury (24), home injuries (6) and work place accidents (7). In case of zygomatic arch fractures causes were road traffic accidents (RTA) (65), assaults (35), sports injury (22), home injuries (19) and work place accidents (12). The difference was significant (P < 0.05). **Conclusion:** Zygomatic bone and arch are common among facial bone fractures. Various causes are road traffic accidents, sports injury, and work place injury. Strict law should be made to ensure safety devices on road to avoid these injuries.

Key words: Facial bone, Fracture, zygomatic bone**Correspondence:** Dr. Gaurav Singh, Associate Professor, Department of Oral and Maxillofacial Surgery, Shree Bankey Bihari Dental College, Ghaziabad, Uttar Pradesh, Email; drgaurav2@gmail.com**This article may be cited as:** Singh G, Singh P. Current epidemiologic and clinical assessment relating zygomatic bone and zygomatic arch fractures- A 3 year retrospective study. J Adv Med Dent Scie Res 2017;5(3):17-20.

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INTRODUCTION

Now a day's bone fractures are considered as one of the major public health issue in almost all societies. This problem is commonly related to a high mortality rate but also for having a great impact onto the health system. Amongst different fractures, facial fractures are relatively more common. It usually exposes anatomic position of the face and the fragility of its bones. Facial

fractures may result in functional and aesthetical impairments.¹

Maxillofacial fractures are often associated with severe morbidity, functional deficit, disfigurement, and significant financial cost. Facial trauma is the most common trauma all over the world and more than 30% of the trauma cases suffer from fractured maxillofacial (MF) skeleton. Moreover the neurological component associated with it makes it even more complex to manage.²

Zygoma occupies a prominent position on the face and so the zygomatic complex fractures are second most common fractures of the facial skeleton after nasal bone fractures. Fracture and dislocation of this bone causes cosmetic defects and disrupts other ocular and mandibular functions. Fractures of zygomatic complex causes disruption in articulation of zygomatico-maxillary complex, zygomatic complex proper and orbitozygomatic complex. The zygomaticomaxillary region is the third most commonly fractured facial area. The majority of the zygomaticomaxillary fractures generally reported in men. Facial bones results extremely exposed to trauma as for their anterior location and the zygomatic complex injuries are very common in trauma patients. They could be segregated with other severe injuries, including cranial and spinal injuries. The prevalence and location of zygomatic complex fractures and facial fractures in general depend on sample population studied but the zygomatic complex fractures represent the second most frequent fractures of the middle face after the nasal bones.³ These occur for the rotation of the zygoma associated with the disarticulation of the zygomatic bone at the zygomaticofrontal suture, the zygomaticomaxillary suture, and along the zygomatic arch to the temporal bone.⁵ The treatment modality is primarily divided into closed reduction, open reduction and internal fixation with miniplate and screws. Different approaches to the zygomatic complex have already been well described in literature; these include: coronal, eyebrow, upper eye lid, transconjunctival and infraciliary lower eye lid, and maxillary vestibular approaches.^{4,5}

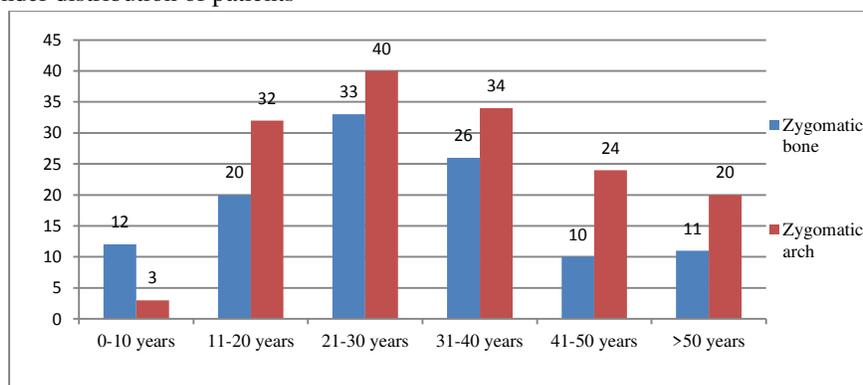
The present study was done to evaluate zygomatic bone and zygomatic arch fractures in study population.

MATERIALS & METHODS

Table I Distribution of fractures

| Total- 360 | | |
|----------------|----------------|---------|
| Zygomatic bone | Zygomatic arch | P value |
| 112 | 153 | 0.2 |

Graph I Age and gender distribution of patients

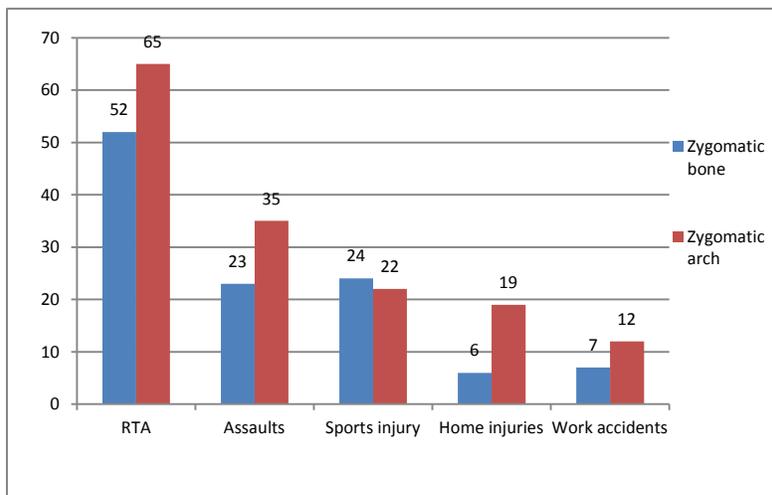


This study was conducted from the records obtained from respective Department. All the patients with history of fractures during 2012 to 2015 were retrieved from data of Department. Patients with zygomatic bone and zygomatic arch fractures were involved in the study. Out of 360 facial bone fractures, zygomatic bone and zygomatic arch fractures were seen in 265 patients. The diagnosis of fracture was based on clinical and radiological criteria. The data collected included the patient’s age and gender, the etiology and the site of the facial fracture, the existence and type of other injuries. Results consequently obtained were subjected to statistical analysis using Chi Square test. P value < 0.05 was considered as significant.

RESULTS

Table I shows that out of total 360 fractures reported to the department, 112 were zygomatic bone fractures and 153 were zygomatic arch fractures. The difference was non-significant (P=0.2). Graph I shows that zygomatic bone fractures were seen in age group 0-10 years (12), 11-20 years (20), 21-30 years (33), 31-40 years (26), 41-50 years (10) and > 50 years (11). Zygomatic arch fractures were seen in age group 0-10 years (3), 11-20 years (32), 21-30 years (40), 31-40 years (34), 41-50 years (24) and > 50 years (20). The difference was significant (P < 0.05). Graph II shows that among various causes main cause in zygomatic bone fracture was road traffic accidents (RTA) (52), assaults (23), sports injury (24), home injuries (6) and work place accidents (7). In case of zygomatic arch fractures causes were road traffic accidents (RTA) (65), assaults (35), sports injury (22), home injuries (19) and work place accidents (12). The difference was significant (P < 0.05).

Graph II Etiology of fractures



DISCUSSION

Zygomatic bone and zygomatic arch are more prominent bones of the face. Fractures of these bones are not uncommon. The epidemiology of maxillofacial trauma can provide information about how populace are injured and identify how the geographic area, the socioeconomic status, the traffic and social behavior can influence this type of trauma.⁶⁻⁸ The zygomatic bone forms the facial portion of human skeleton and is consequently simply affected by any outside trauma to the face. Literature has very well evidenced about the basic etiologies and clinical outcome of the zygomatic complex fractures.⁹⁻¹¹ Usually, fractures of the zygomatic complex are hardly ever fractures of the zygoma. In general, incidences and location of zygomatic complex fractures mostly depend on sample population studied.¹²⁻¹⁵ Different surgical approaches to manage zygomatic complex fractures have been well explained in the literature including, hemiconoral, temporal, eyebrow, coronal, lower and upper eyelid, transconjunctival and infraciliary lower eyelid, and maxillary vestibular approaches. The basic concept and ideology in selecting the particular approach is stated by the actual degree of injury and requirement for exposure for open reduction and internal fixation.¹⁶⁻¹⁸ Furthermore, monitoring trends in the incidence of maxillofacial trauma permits modifications to be made in the training and continuing professional development in a timely fashion.¹⁹ According to several authors, as per literature documented, the methods executed for the treatment of zygomatic bone and arch fracture vary. American and European maxillofacial surgeons are generally engaged in debates as to whether the reduction of a displaced, and or fractured zygoma should be open or closed.

The present study was done to evaluate zygomatic bone and zygomatic arch fractures in study population. All the patients with history of fractures during this period were

retrieved from data of department. Patients with zygomatic bone and zygomatic arch fractures were involved in the study. Out of 510 facial bone fractures, zygomatic bone and zygomatic arch fractures were seen in 265 patients. We found that maximum number of both bone fractures was seen in age group 21-30 years. This is comparable to the study results of Motamed et al.²⁰ The higher number in young age group may be due to more vigorous activity in young adults. Maximum number of fractures was due to road traffic accidents both involving zygomatic bone and zygomatic arch. Due to change in life style, modernization and lack of time led to these fractures. This is similar to results of Montovani et al.²¹

Various approaches to zygomatic complex fractures have been well described in the literature. Giovanni PP et al has done extensive work on this particular area of research.²² These include coronal, hemiconoral, temporal, eyebrow, lower eyelid, upper eyelid, transconjunctival and infraciliary lower eyelid, and maxillary vestibular approaches. Various fracture management modalities including microfixation has also been described by number of pioneer workers including Ohara D et al.²³⁻²⁶ The approach is dictated by the degree of injury and need for exposure for open reduction and internal fixation. Nevertheless, the ever increasing prevalence rate of facial bone injuries literally insists the requirement for long term epidemiological surveys so as to establish certain concrete prophylactic strategies and patient management. Thus the data of causes and incidence of zygomatic fractures could be useful for clinicians in routine decision makings.

CONCLUSION

Zygomatic bone and arch are common among facial bone fractures. Various causes are road traffic accidents, sports injury, and work place injury. However, road traffic accidents were the leading cause of zygomatic bone and

zygomatic arch fractures. Depending on the site of fracture, different treatment modalities may be used and all patients usually attain acceptable results without any complications after surgery. Strict law should be made to ensure safety devices on road to avoid these injuries.

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