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Original Article

Estimation and Evaluation of Mode and Type of Facial Bone Fracture as Related to Demographics: A Clinical Study

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ABSTRACT:

Background and Aim: Facial trauma is common nowadays. Mandible and nose fractures are the most prevalent, followed by the zygomatic bone. Maxillofacial trauma is typically caused by blunt trauma due to interpersonal violence, moving vehicle accidents, falls, or sporting activities. A critical analysis of the literature reveals that most studies on facial injuries are limited to data of a predominantly descriptive nature, which compromises the quality of the evidence and the correct interpretation of the findings. This study was conducted to assess the cases of facial bone fractures in study population as related to their demographic details. **Materials & Methods:** The present study was conducted on cases of facial bone fractures of both genders (males- 170, females- 110). General information such as name, age, gender, etiology etc was recorded. Type of fractures such as Lefort- I, II, III, nasal bone, mandibular, zygomatic bone etc. fractures was recorded. **Results:** Age group 21-30 years, 31-40 years and 41-50 years had significant difference ($P < 0.05$). Common fractures were Lefort- I (45), II (56), III (37), mandibular (42), maxillary (50), zygomatic (24) and nasal bone fractures (26). The difference was significant ($P < 0.05$). Common etiology was road traffic accident (RTA) (199), fall from height (26) and domestic violence (55). The difference was significant ($P < 0.05$). **Conclusion:** Facial bones fractures are common in modern lifestyle. The common type was Lefort- II and maxillary bone fractures those happening primarily due to road traffic accidents.

Key words: Fractures, Mandible, Road traffic accident

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INTRODUCTION

Trauma is a worldwide problem of public health importance, being one of the main causes of morbidity and mortality. Because these activities transcend cultural and geographic borders, maxillofacial trauma remains a global health issue. Technological advances have resulted in faster methods of transportation and with these developments maxillofacial trauma has become a major public health issue also in the developing world. The management of fractures

of the maxillofacial complex remains a challenge for the oral maxillofacial surgeon, demanding both skill and expertise. The success of treatment and implementation of preventive measures are more specifically dependent on epidemiologic assessments. Among the numerous injuries, facial fractures are common given the anatomically exposed position of the face and the fragility of its bones. Facial fractures may result in functional and aesthetical impairments. Furthermore, facial fractures patients may

experience a variety of concomitant injuries with some of them being life threatening such as head injury.¹ On the maxillofacial region, mandible and nose fractures are the most prevalent, followed by the zygomatic bone. The epidemiology of facial fractures varies with type and lesion cause and severity, depending on the sample studied. Although the accidents caused by motor vehicles still represent the main cause of maxillofacial trauma in some developed countries. Fractures stemming from both etiologies, automobile accident and interpersonal violence involve patients in the age range between 20 and 29 years of age. Interpersonal violence frequently happens in homes, involving young men and having alcoholic beverages as the major contributing factor.² Recent studies indicate that interpersonal violence has become another prevalent cause. The world trend in the reduction of maxillofacial lesions associated with automobile accidents is associated to the combination of better road conditions, modern safety systems installed to the vehicles, implementation of punishment to drunk drivers, lowering speed limits, increase demands as far as safety systems in vehicles is concerned and the need to use a safety belt.³ The present study was conducted to assess the cases of facial bone fractures in study population as related to their demographic details.

MATERIALS & METHODS

The present study was conducted in the department of Oral & Maxillofacial surgery. It comprised of 280 cases of facial bone fractures of both genders (males- 170, females- 110). It involved a retrospective review of records of patients who were referred for management of facial bone fractures in last 3 years. The patients presented either through accident and emergency ward or maxillofacial surgery clinic of our hospital. All were informed regarding the study and written consent was obtained. Ethical clearance was taken from institutional ethical committee. Information on demography, etiology and type of fracture, examination findings and radiologic diagnosis were accessed from patients' individual Performa. Level of consciousness was determined using the Glasgow Coma Scale [GCS]. The diagnosis of bone

fractures was made after thorough clinical examination and confirmation with extraoral radiographs. General information such as name, age, gender, etiology etc was recorded. Type of fractures such as Lefort- 1, II, III, nasal bone, mandibular, zygomatic bone etc. fractures was recorded. Results thus obtained were subjected to statistical analysis using chi square test. P value <0.05 was considered significant.

RESULTS

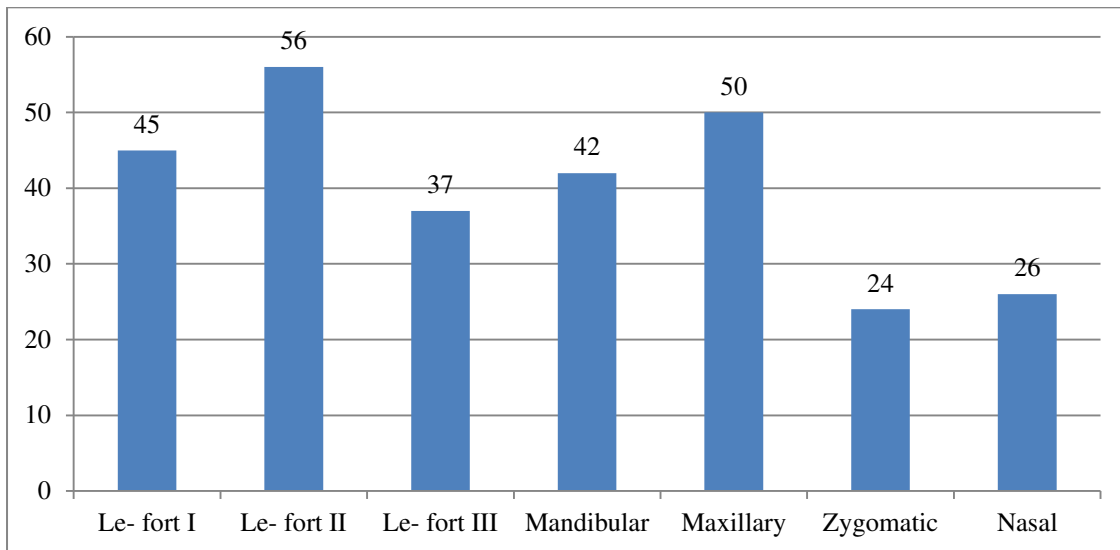
A large number of studies have reported on the etiology of facial trauma. The results of epidemiological investigations vary depending on the demographics of the population studied. Factors such as geographic region, socioeconomic status and temporal factors, including time of year and time of the study, can influence both the type and the frequency of injuries reported for a given population. This makes meaningful comparisons between different reviews difficult. The ever increasing incidence of facial bone injuries emphasizes the necessity for survey based studies to determine optimal prevention strategies and patient management. Such data can inform clinicians about the causes and incidences of facial bone fractures. All the observational findings were compiled and sent for statistical evaluation using statistical software Statistical Package for the Social Sciences version 21 (IBM Inc., Armonk, New York, USA). Table I shows that age group (years) 11-20 had 6 males, 8 females, 21-30 had 45 males and 26 females, 31-40 had 36 males and 13 females, 41-50 had 40 Males and 16 females, 51-60 had 28 males and 20 females and >60 had 15 males and 27 females. Age group 21-30 years, 31-40 years and 41-50 years had significant difference (P< 0.05). Graph I shows that common fractures were Lefort- I (45), II (56), III (37), mandibular (42), maxillary (50), zygomatic (24) and nasal bone fractures (26). The difference was significant (P< 0.05). Graph II shows that common etiology was road traffic accident (RTA) (199), fall from height (26) and domestic violence (55). The difference was significant (P< 0.05).

Table I: Age wise distribution of cases

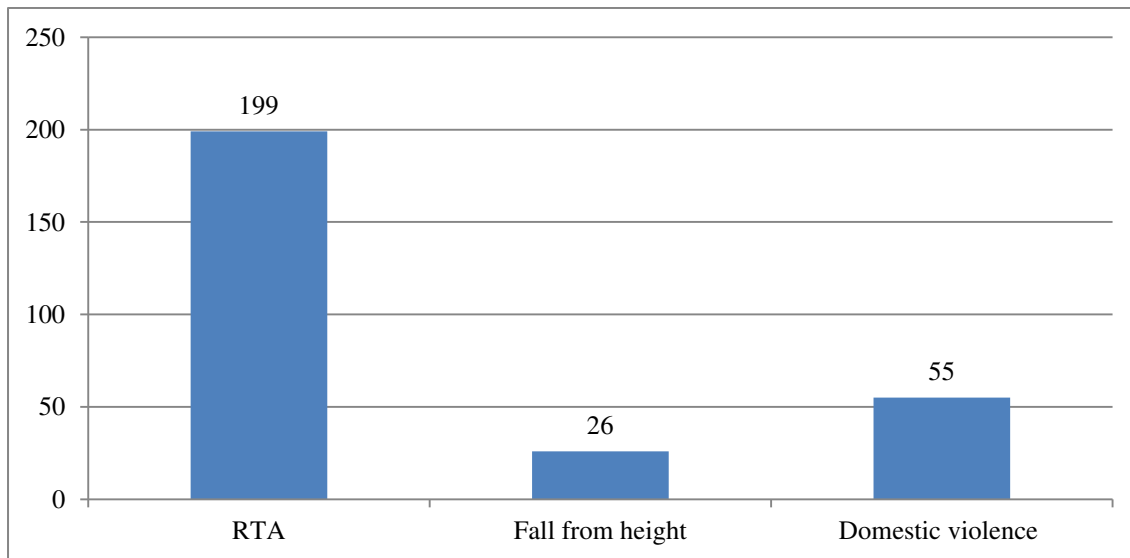
Age group (Years)	Males	Females	P value
11-20	6	8	0.1
21-30	45	26	0.01*
31-40	36	13	0.05*
41-50	40	16	0.001*
51-60	28	20	0.6
>60	15	27	0.12
Total	170	110	-

*p<0.05 significant

Graph I: Type of fractures



Graph II: Etiology of cases



DISCUSSION

An understanding of the frequency and case distribution of facial fractures can assist in establishing research priorities for effective treatment and prevention of these injuries. Facial trauma stand out not only because of its importance, since they also bear emotional, functional and cosmetic repercussions, whether permanent or not, but also for representing about 7.4% to 8.7% of the medical care provided in emergency centers. About 80.7% of the patients are males.⁴ This is likely due to the fact that there are more men driving, practicing physical activities, and abusing drugs and/or alcohol before driving. Nonetheless, in the last decades there has been a growing number of trauma

involving women, usually below 40 years of age. This is due to the behavioral changes women are going through in our society, with a larger number of them having jobs, the association between alcohol and driving and the practice of sports requiring more physical contact.⁵ In present study, out of 280 cases, males were 170 and females were 110. We found that maximum cases were seen in age group 21-30 years (45 males and 26 females) followed by 41-50 years (40 males and 16 females), 11-20 years (6 males, 8 females), 31-40 years (36 males and 13 females), 51-60 years (28 males, 20 females) and >60 had 15 males and 27 females. This is in agreement with Adebayo et al.⁶ Deogratious et al⁷ found that in 349 patients, the fracture

involved the mandible (44.5%), the zygomatic complex (38.9%), the maxilla (13.8%) or the naso-fronto-orbito-ethmoidal complex (2.8%). The peak of frequency (58.2%) was recorded between 20 and 39 years and the male to female ratio was 7.1:1. The etiologies of the fractures were road traffic crashes (80.5%), assaults (9.7%), falls (8.3%), and sport accidents (1.5%). In 80% of the road traffic accidents, a two-wheeled vehicle was involved and 75.9% of falls were from a tree height. There was a significant association between multiple facial fractures and road traffic accidents. Epidemiology of facial fractures in this study is similar to that generally reported in developing countries. Frequency of falls from trees height constitutes however a particularity.⁷⁻⁸ We found that common fractures were Lefort- I (45), II (56), III (37), mandibular (42), maxillary (50), zygomatic (24) and nasal bone fractures (26). Common etiology was road traffic accident (RTA) (199), fall from height (26) and domestic violence (55). In a study by Motamedi MH et al⁹, 355 charts from patients with facial trauma were revised. The following data such as age, gender, etiology, anatomical localization of the fracture, associated injuries, alcohol consumption, treatment, and hospitalization was collected. Most of the patients were young adult men (with a male: female ratio of 4:1. Interpersonal violence is the most prevalent cause of facial trauma (27.9%), followed by motor vehicle accidents (16.6%). The mandible is the most prevalent facial bone fractured (44.2%), followed by nasal fracture (18.9%). 41.1% of the patients consumed alcohol with a male: female ratio of 11.2:1. Seventy-seven percent of the patients required surgical intervention and 84.5% were hospitalized.¹⁰ Young male adults are the most prevalent victims of facial trauma, and interpersonal violence is responsible for the majority of the facial injuries.¹¹⁻¹⁵ Most of the cases of facial trauma are associated with the consumption of alcohol.^{3,16,17} Further studies will be necessary to provide a clear understanding of the trends in the etiology of facial trauma.

CONCLUSION

The combination of road traffic accidents and blows sustained during fights accounts for more than 80% of all injuries to the facial skeleton. The common type was Lefort-II and maxillary bone fractures. Common cause was road traffic accidents wherein surgeons often need to make their own evaluation of the degree of skeletal disruption revealed by imaging studies when planning initial treatment of facial fractures. These patients should be monitored with heightened vigilance and followed up closely during hospitalization, regardless of the presenting clinical findings. Our study results could be treated only as suggestive for predicting clinical outcomes for prone situations. Though we expect other large scale long term studies to be conducted that could further establish certain concrete guidelines in this field.

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