

Original Article

Prevalence of Maxillofacial Fracture: A Retrospective Study

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INTRODUCTION

Maxillofacial region (MFR) involves soft and hard tissues forming the face extending from the frontal bone superiorly to the mandible inferiorly.^[1] Trauma is a type of injury where external force is being applied suddenly and violently at the body which causes a serious injury.^[2] The face being the most exposed part of the body is particularly prone to trauma. Trauma to the MFR causes injuries to skeletal components, dentition, and soft tissues of the face.^[1]

An increase in population in cities and industrial development has resulted in changes in lifestyles and personal activities.^[3] MF trauma is often associated with morbidity, physical, functional, and esthetic damage.^[2] The incidence and epidemiological causes of MF trauma and facial fractures vary widely in different regions of the world due to social, economical, cultural consequences, awareness of traffic regulations, and alcohol consumption. Injuries to the MFR are increasing in frequency and severity because of increased number of vehicles with increased number of road traffic accidents (RTAs), improper roads in developing countries, and increasing socioeconomic activities of the population.^[2,4] With the technological advancements in the developing countries like India, the occurrence of RTAs has been increased drastically over the period of past 10 years. Every 30 s, someone dies on the world's roads. Annually, over 1 million people die and over 25 million are injured or permanently disabled from road traffic injuries. Susceptibility

increases due to the effect of alcohol and other addictive drugs.^[1,3,5]

These injuries are among the major health concerns worldwide and might give rise to socioeconomic burden and deleterious effects on both the community and health system.^[3,6,7] Although there is a large amount of available literature on the epidemiology of facial trauma, it is important to establish the characteristics related to its occurrence in specific region and hence the present study is undertaken to analyze retrospectively the prevalence, etiology and location, and age and gender distribution of MF fractures in the Western part of Maharashtra population.

MATERIALS AND METHODS

A 5-year retrospective study approved by the Ethical Committee was conducted in Tatyasaheb Kore Dental College, Kolhapur, from 2009 to 2014. Radiographs of 1190 patients who had been radiographed in the Department of Oral Medicine and Radiology during the period of 2009–2014 were evaluated for different types of fractures. Orthopantomograph and occlusal and intraoral periapical radiographs which were taken as part of routine examination, diagnosis, and

ABSTRACT

Aim: This study aimed to analyze retrospectively the prevalence, etiology and location, and age and gender distribution of maxillofacial (MF) fractures in the Western part of Maharashtra population.

Materials and Methods: Previous records of 1190 patients were evaluated by the observers who had undergone extraoral radiography and occlusal radiography for any diagnostic or treatment purposes between the years 2009 and 2014 were evaluated by the observers.

Results: Between the years 2009 and 2014, a total of 2109 MF fractures and associated injuries were collected in 1190 patients and analyzed. Out of the 1190 patients, 697 were male and 493 female. The most commonly affected age group was between 30 and 40 years followed by 20–30 years. The prevalence of road traffic accidents (RTAs) was highest followed by fall, physical assault, sports, and miscellaneous.

Conclusion: This study concluded that RTAs were the major cause of fractures. Most fractures occurred in the age group of 31–40 years. Frequency of mandibular fractures was more than midfacial fractures. These findings will be helpful for appropriate health-care policy and management setup in every society.

KEY WORDS: Fractures, mandibular, maxillofacial, midfacial

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treatment planning of patients were used to evaluate the MF fractures. The radiographs of good contrast and density were included and the radiographs of poor quality having poor contrast, density, and scratch marks were excluded from the study group. The fractures were divided into midfacial and mandibular fractures.

For this study, the mandible was divided into symphyseal, parasymphyseal, body, condylar, coronoid, angle, and dentoalveolar regions. In the middle-third of the face, fractures were recorded as Le Fort, I, II, and III types, frontal, orbital blowout, zygomatic and zygomatic arch, nasal bones, and dentoalveolar fractures. Etiological factors were classified as RTAs, fall from height and physical assault, sports injuries, and miscellaneous. The data were then computerized and subjected to statistical analysis.

RESULTS

Between the years 2009 and 2014, a total of 2109 MF fractures and associated injuries were collected in 1190 patients and analyzed. Table 1 shows year-wise distribution of patients and fractures from 2009 to 2014. Table 2 shows age-wise distribution of patients with male 697 and female 493 patients. The most commonly affected age group was 30–40 years followed by 20–30 years. Table 3 depicts the distribution of fractures depending on etiology. RTAs were highest followed by fall, physical assault, sports, and miscellaneous. Table 4 depicts distribution of fractures in the midface region and in the mandible.

DISCUSSION

A retrospective study was conducted between 2009 and 2014 at Tatyasaheb Kore Dental College, Kolhapur. Patients between the age group of 20 and 60 years and above having history of fractures were selected and analyzed for different types of fractures and etiology. Various studies across the world have shown that MF injuries depend on the geographical condition, road safety regulations, population density, socioeconomic status, regional government, alcohol abuse, and type of facilities available at that particular region.^[1,8,9]

From the present study, the higher frequency of MF injuries was found among men compared to women; this may be attributed to the fact that females most often are confined to household works and in Indian subcontinent has lot of social and religious limitation encountered by females, and also females drive vehicle less frequently and more carefully than men.^[1,9] Males are generally more socially active and more involved in life-threatening activities.^[3]

The highest numbers of injuries were reported in the age group of 31–40 years, followed by 21–30 years which were consistent with other studies. The high incidence in the third decade of life might be because people belonging to this decade are more active, energetic, take active participation in dangerous exercises and sports activities, and mostly involved in violence and also careless and fast-driving attitude without the use of safety belts or helmets in this age group are the causes of trauma in these age groups. The findings were consistent with the findings of the study by Azad *et al.*,^[1]

Table 1: Year-wise incidence of maxillofacial fractures

Years	Number of patients	Fractures
2010	223	397
2011	228	431
2012	237	415
2013	243	427
2014	259	439
Total	1190	2109

Table 2: Age-wise distribution maxillofacial fractures

Age (years)	Male	Female	Total
≤20	117	91	208
21-30	144	113	257
31-40	138	131	269
41-50	107	83	190
51-60	98	46	144
>61	93	29	122
Total	697	493	1190

Table 3: Distribution of fractures depending on etiology

Age (years)	RTA	Fall	Physical assault	Sports	Miscellaneous	Total
≤20	230	108	27	39	28	432
21-30	323	69	52	32	33	509
31-40	362	112	63	20	19	576
41-50	252	52	37	9	15	365
51-60	51	47	23	2	00	123
>61	39	50	15	00	00	104
Total	1257	438	217	102	95	2109

RTA: Road traffic accident

Table 4: Distribution of fractures in the midfacial region and in the mandible

Site	Total (%)
Midfacial fractures	
Lefort I	110 (5.21)
Lefort II	86 (4.07)
Lefort III	73 (3.46)
Frontal	129 (5.73)
Orbital blowout	123 (5.83)
Zygoma and zygomatic arch	259 (12.28)
Nasal	105 (4.78)
Dentoalveolar	138 (6.54)
Mandibular fractures	
Symphysis	169 (8.01)
Parasymphysis	225 (10.66)
Body	144 (6.82)
Condyle	137 (6.49)
Coronoid	89 (4.22)
Angle	150 (7.11)
Dentoalveolar	172 (8.15)
Total	2109 (100)

Samieirad *et al.*,^[3] Szontágh and Halász,^[10] and Freidl *et al.*^[11] The lower incidence of MF fractures has been reported in

60 above and 51–60 years of age group in this study, probably as this age group is less active and less involved in outdoor activities. A similar incidence was found by Azad *et al.*^[1]

In the present study, RTA was the major etiological factor followed by fall from height, physical assault, sports, and miscellaneous. The increasing RTA in developing country like India even in its remote part may be attributed to many factors such as sharing of roadways by pedestrians and animals with fast-moving and slow-moving vehicles, large number of poorly maintained roads, increasing number of two and four wheelers, with spread disregard of traffic rules, overloaded buses, and poor street lights. This is in agreement to studies carried out by Szontágh and Halász^[10] and Hogg *et al.*^[12]

The prevalence of mandibular fractures was more as compared to midfacial fractures. The prevalence was more in 2014 as compared to previous years. The studies by Chandra Shekar and Reddy^[4] and Szontágh and Halász^[10] showed that mandibular fractures were the most common type of fractures, which are consistent with our study. The higher involvement of the mandible may be attributed to its prominence and also its exposed anatomical position on the face. Most victims of RTA will try to avoid their head against injury at the time of accidents and thus in the process of avoiding their head, may receive maximum impact on the mandible. The enforcement of certain laws such as use of seat belts and wearing helmets may reduce such incidences. Among the all mandibular fracture cases in the present study, parasymphiseal fracture was highest in number followed by dentoalveolar, symphysis, angle, body, condyle, and coronoid. These findings are comparable with studies carried out by Subhashraj *et al.*^[13] and Buchanan *et al.*^[14]

In the present study, majority of the midfacial fractures were zygomatic bone and arch fractures, followed by dentoalveolar, frontal, orbital blowout, LeFort I, nasal, and LeFort II and III. This is because of the prominent positions of zygoma and zygomatic bone. These findings were in accordance with Azad *et al.*,^[1] Samieirad *et al.*,^[3] and Chandra Shekar and Reddy.^[4] The findings were in contrast with the reports of Zandi *et al.*^[15] and Hussain *et al.*,^[16] in which nasal bone fracture was the most prevalent type of trauma. Minor differences in the frequency of fractures can be caused by variations in the etiology of fractures in various studies.

CONCLUSION

This study concluded that RTAs were the major cause of fractures. Most fractures occurred in the age group of 31–40 years. Frequency of mandibular fractures was more than midfacial fractures. MF injuries are life-threatening nature and might cause esthetic or functional deformities which might lead to psychological, financial, and social costs for people and society. Therefore, it is of high significance to identify the etiology and epidemiology and treatment plans of MF traumas. This sample might provide useful knowledge about the current distribution of facial fractures in the Western part of Maharashtra population the Northeast of Iran, as well as offering a new valuable health-care system database that might improve medical and dental policies to prevent and manage facial trauma.

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CONFLICTS OF INTEREST

There are no conflicts of interest.

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