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MANDIBULAR FRACTURES;

PATTERN AND PRESENTATION OF MANDIBULAR FRACTURES IN DOW INTERNATIONAL DENTAL COLLEGE: FIVE YEAR REVIEW.

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ABSTRACT... Introduction: Maxillofacial trauma is a regularly reported occurrence in the emergency room. Of all maxillofacial injuries worldwide, the mandible is the most commonly involved facial bone, with etiologies ranging from assaults and interpersonal violence to RTAs. **Objectives:** We aim to identify the patterns of incidence, etiology, age groups, anatomical location and gender in mandibular fractures in the population of Karachi, Pakistan. **Study Design:** Observational cross sectional study. **Setting:** Dow International Dental College. **Period:** January 2012 – September 2017. **Materials and Methods:** Informed consent was obtained along with a comprehensive history; a systematic clinical examination was supplemented by radiographs of the face as required to confirm the presence of fractures. Statistical analysis was done using SPSS v.21. **Results:** Over 5 years, an overall 156 patients sustained 250 fractures of the mandible. Most affected gender was male, the age group was 20-30 years, most common cause was Road Traffic Accidents and site was the parasymphysis. **Conclusion:** Mandibular fractures have a higher incidence in young males driving motorbikes or cars. More rigorous legislative action and community awareness is required to lessen the rate of mandibular fractures in Karachi, Pakistan.

Key words: Fracture, Karachi, Pakistan, Pattern, Mandible, Maxillofacial.

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INTRODUCTION

The maxillofacial area has one of the highest reported frequencies of injuries in the human body,[1,2] with the mandible being especially commonly affected due to its relative protuberance as compared to the rest of the facial skeleton.[1,3-6]

Mandibular fractures are reported to have an incidence of 15.5% to 59% among facial trauma worldwide, and they are considered to be the second most common facial fractures presenting to the ER.[7]

The epidemiology of maxillofacial injuries differs from one country to the next and is time dependent. Maxillofacial injuries also rely on multiple factors, including demographics, socioeconomic status, gender, age etc.[6,8-11]

According to some international studies, assaults and interpersonal violence are the main causative factors behind mandible fractures in advanced countries; while in developing countries RTAs predominate.[4,12]

According to reports from developing nations, traffic accidents happen to be the leading source of maxillofacial fractures, while data from developed nations shows interpersonal violence as the main etiology. According to anatomy, Zygomatic complex and mandible fractures make up the majority of maxillofacial fractures and their occurrence varies according to demography (particularly age and gender), and the mechanism of trauma.[3]

With this study, we aim to identify the patterns of incidence, etiology, age groups, anatomical location and gender in patients presenting with mandibular fractures and to compare the patterns of the aforementioned variables to previous studies, in order to aid in the development of

effective preventive approaches.

METHODOLOGY

We carried out this study from January 2012 to September 2017 at the Oral and Maxillofacial Surgery Department at Dow International Dental College, Karachi, considering all patients with mandible fractures.

Informed consent was obtained along with a comprehensive history; a systematic clinical examination was supplemented by radiographs like the standard Orthopantomogram (OPG) and posteroanterior (PA) views of the face as required to confirm the presence of fractures. We applied descriptive statistics for analysis.

RESULTS

During a five-year period (January 2012 to September 2017) an overall 156 patients sustained 250 fractures of the mandible. On average, 31 patients with 50 fractures of the mandible presented annually to our department.

The age range of these patients was from 2 to 87 years old. Gender wise, the distribution was 115 males and 41 females accounting for overall 156 patients. The ratio of women to men was 1:2.8. The bulk of fractures in both genders occurred in the age group of 20-30 years, with the most frequently recurring age being 21 years. The parasymphysis was the most commonly involved area accounting for 31.2% of all fractures, followed by the angle region with 24.4%, body with 16.8% and the sub-condylar region with 14.4%.

Age Group in Years	Number of Patients	Percentage
1-10	18	11.5%
10-20	30	19%
20-30	60	38.5%
30-40	36	23%
40-50	6	3.8%
50-60	4	3.2%
70-80	2	1.3%
Total:	156	100%

Table-I. Mandibular fractures and age

Anatomical Site	Number of Fractures	Percentage
Symphysis	22	8.8%
Parasymphysis	78	31.2%
Body	42	16.8%
Angle	61	24.4%
Ramus	9	3.6%
Condyle	36	14.4%
Coronoid	2	0.8%
Total:	250	100%

Table-II. Mandibular fractures and anatomical site

Male	Female	Total
115 (73.7%)	41 (26.3%)	156

Table-III. Mandibular fractures and gender

Etiology	Number of Patients	Percentage
Road Traffic Accident	85	54.5%
Fall	29	18.5%
FAI	20	12.8%
Assault	4	2.5%
Sports	7	4.5%
Industrial	11	7%
Others	0	0%
Total:	156	100%

Table-IV. Mandibular fractures and cause

DISCUSSION

The pattern of mandible fractures tends to change with change in demographics, such as with consideration to geographic area, socioeconomic situation and cultural norms.[13,14]

In this study, majority of the fractures were sustained by males i.e. 73.7% of all mandibular fracture patients were male, a finding that is comparable to studies from all over the world.[5,8,9,11] The male to female ratio is approximately 3 males to every female, which may be because males engage in more outdoor undertakings while females engage in more indoor activities.

The most fractures transpired in the age group 20-30years (38.5%) in both genders, with more males than females with mandibular fractures, a trend that has also been reported previously.[15,16] It is established that young males are prone to violent conduct, contact sports, and reckless driving, while females are not, predisposing

them to fractures of the facial skeleton.[6,8,9,16,17] Hence, it is quite understandable that males with mandibular fractures are more numerous than females.

With respect to etiology, we found road traffic accidents (54.5%), followed by falls (18.5%), followed by fire arm injuries (12.8%) to be the leading factors.

These inferences support the findings of a study conducted at Khyber College of Dentistry, Peshawar.[14] However, they are in contrast to the findings from Tasmania, Australia where more mandibular fractures are due to assaults than to road traffic accident, doubtless because of the application of firm traffic regulations and public awareness.[4]

Earlier epidemiological reports have identified mainly road traffic accidents and then falls as the chief causes of fractures of the mandible in developing countries[1,3,17,18], and interpersonal violence and assaults in developed nations.[3,5,16,19]

The high incidence of fractures in Pakistan due to road traffic accidents is largely due to poor legislation regarding road safety and driving, as well as a profound lack of cognizance.[1,11,14,20] Falls and firearm injuries both are common in a society with nearly a quarter of the people mired in tribal culture, where ownership of weapons is conventional, and life is spent in mountains and hills. The emerging etiological pattern in western societies, in contrast, is due to superior legislative control over traffic, for example, the seatbelt legislation and its accompanying decrease in RTA associated mandibular fractures[6]; and due to increasing social drug and alcohol use with resultant impaired judgment.[6,11]

We found the parasymphysis (31.2%) to be the most commonly fractured mandibular site, trailed by the angle (24.4%) and body (16.8%). Anatomic site of fractures of the mandible is associated with the cause of fracture,[18,21] with established association between RTA and parasymphysis, ballistic wounds and body, falls and condyle, and interpersonal violence and angle and parasymphysis fractures.[17,18,21]

In our study, parasymphysis fractures dwarf all others, and the majority of these are due to road traffic accidents. The conclusions of the current study correlate with Abbas I et al[18] who found parasymphysis as the most common site of all mandibular fractures.

However, Nigerian researches[12,15] found RTAs to be the main cause of mandibular trauma, and the body to be the most commonly fractured site. Mandibular body fractures were also found to be common in Scotland[22], with interpersonal violence reported as the main cause. We can observe from these findings that the trend in advanced countries is towards body or angle fractures due to assaults, and in underdeveloped or developing countries, it is towards RTA produced mandibular body fractures.

The mandibular angle is more frequently fractured in sports related activities and assaults in Tasmania. It is well known that unerupted wisdom teeth weaken this site; hence these findings are not altogether surprising.[2,4]

CONCLUSION

Mandibular fractures are common and may result in functional and cosmetic deficit with the highest rates involved in road traffic accident and fall. They are commonly due interpersonal violence and RTAs, and befall young males. Therefore, public awareness as well as preventive policies tailored to focus on this susceptible group may aid in reducing mandibular injuries.

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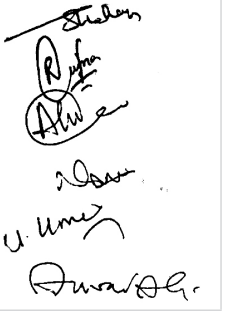
1	Shaheen Ahmed	Discussion.	
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