

Retrospective Analysis of Different Mandibular Fractures among Patients Visited in Emergency

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ABSTRACT

Background: Maxillofacial fractures are one of the most frequent and complicated problems of oral and maxillofacial surgery. Within these fractures, mandible is one of the most affected bones. The most important aim of the treatment is to provide healing on both functional and cosmetic aspects. This retrospective study was undertaken to analyse and assess the pattern of mandibular fractures in emergency.

Materials and Methods: 80 patients who had received treatment for mandibular fractures were included in this study. All the demographic details of the patients were obtained from the hospital records. Patients with a history of congenital osseous defects and deranged vitamin D and calcium levels were excluded from this study. The patients were divided into three age groups. SPSS software was used for statistical analysis.

Results: In the current study, 57 out of the 80 patients selected retrospectively were males (71.25%) and 23 were females (28.75%). It was seen that most of cases of fracture were seen in the young age group of 20-30 years (42.50%). 36.25% and 21.25% cases were seen in the age group of 31-40 years and more than 40 years respectively. This study observed that maximum cases of single mandibular fractures

were dentoalveolar fractures comprising 28 out of 80 cases (35%). Similarly, maximum fracture cases were observed in the young age group of 20-30 years and even this co-relation was not significant statistically with P-value of .088.

Conclusion: Young males presented with a greater percentage of fracture cases and the most common single mandibular fractures were the dentoalveolar fractures.

Keywords: Maxillofacial Fracture, Mandible, Dentoalveolar.

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INTRODUCTION

In the entire human body, the maxillofacial area is injured quite frequently. In it, the second most often fractured adult facial bone is mandible because of its projecting and vulnerable position in the face. Mandibular fractures comprise 15.5%–59% of all maxillofacial fractures.^{1,2} The occurrence of facial injuries tends to be high compared to injuries in other parts of the body because the face is without a protective covering, and the mandible the most prominent bone in this region of the body.^{3,4} However, the presence of teeth in the mandible is the most important anatomical factor, which makes its fracture different from fractures elsewhere in the body.^{5,6} During the determination of treatment strategy, age of the patient, presence of additional injuries, comorbid diseases of the patient, trauma type, and localization of the fracture must be kept in mind. Although there are many developing techniques for the fixation of the fractures, still there is no consensus on the ideal treatment.⁷ Hence, this retrospective study was undertaken to analyse and assess the pattern of mandibular fractures and their demographic co-relation.

MATERIALS AND METHODS

This retrospective study was undertaken to analyse and assess the pattern of single mandibular fractures. 80 patients who had received treatment for mandibular fractures were included in this study.

All the demographic details of the patients were obtained from the hospital records. The causes and pattern of injury was obtained from past history of the patients. Patients with a history of congenital osseous defects and deranged vitamin D and calcium levels were excluded from this study. The patients were divided into three age groups based on the age:

- Group 1: 20-30 years
- Group 2: 31-40 years
- Group 3: > 40 years

All the data was collected and recorded in the Microsoft excel sheets. SPSS software was used for statistical analysis. Student t test and chi square test were applied to find out the level of significance. P-value of less than .05 was considered significant.

Table 1: Fracture correlation based on Gender

Gender	Number of cases	Percentage
Male	57	71.25%
Female	23	28.75%

Table 2: Fracture correlation based on age

Age	Number of cases	Percentage
18-25	34	42.50%
26-39	29	36.25%
40-50	17	21.25%

Table 3: Site of fracture

Site	Number of cases	Percentage
Symphysis	6	7.5%
Parasymphysis	17	21.25%
Body	7	8.75%
Angle	9	11.25%
Ramus	5	6.25%
Condyle	8	10%
Dentoalveolar	28	35%

Table 4: Correlation between the gender and site of fracture

Site	Gender		P-value
	Male	Female	
Symphysis	4	2	.078
Parasymphysis	11	6	
Body	4	3	
Angle	6	3	
Ramus	4	1	
Condyle	5	3	
Dentoalveolar	19	9	

Table 5: Correlation between the age and site of fracture

Site	Age			P-value
	20-30 years	31-40 years	>40 years	
Symphysis	3	2	1	.088
Parasymphysis	5	8	4	
Body	3	2	2	
Angle	4	3	2	
Ramus	2	2	1	
Condyle	3	3	2	
Dentoalveolar	14	9	5	

RESULTS

In the current study, 57 out of the 80 patients selected retrospectively were males (71.25%) and 23 were females (28.75%). It was seen that most of cases of fracture were seen in the young age group of 20-30 years (42.50%). 36.25% and 21.25% cases were seen in the age group of 31-40 years and more than 40 years respectively. (table 1 and table 2)

This study observed that maximum cases of single mandibular fractures were dentoalveolar fractures comprising 28 out of 80 cases (35%). After dentoalveolar fractures, parasymphysis was most frequently fractured (21.25%). Pattern of single mandibular fractures are illustrated in table 3.

Co-relation of gender and age with fracture site was elaborated in table 4 and 5 respectively. It was observed that although males

reported with majority of fracture cases, this co-relation was not significant statistically with P-value of .078. Similarly, maximum fracture cases were observed in the young age group of 20-30 years and least in the age group of more than 40 years. Even this co-relation was not significant statistically with P-value of .088.

DISCUSSION

The mandible can be seen fractured alone or in combination with a fracture of other bones in the maxillofacial region. A broken lower jaw is accompanied by pain, deranged occlusion and loss of masticatory function, speech impairment, and esthetic disfigurement with psychological effects apart from significant financial cost.^{8,9} There is an emerging trend towards an increase in the frequency of violent mechanisms of fracture and in the proportion of adolescents and young adults sustaining such injuries. These trends seem to hold true in urban settings in particular.^{10,11}

Several variables are related to the study of mandibular fractures which have resulted in differences in demographic characteristics reported in the literature. Various countries across the globe have provided statistics of mandibular fractures, but information provided is distinct for the countries of origin and the people residing there. Increase in incidence of mandibular fractures is stated in long-term studies. Reported data show that mandibular fractures occur usually in the third decade of life with male predominance. The socioeconomic trends, geographic locations, and local behaviour have a considerable impact on the etiology of the injury which sequentially influences the distribution of fracture sites.^{12,13}

In the current study, 57 out of the 80 patients selected retrospectively were males (71.25%) and 23 were females (28.75%). It was seen that most of cases of fracture were seen in the young age group of 20-30 years (42.50%). 36.25% and 21.25% cases were seen in the age group of 31-40 years and more than 40 years respectively (table 1 and table 2). M Adi et al. undertook a retrospective study to assess mandibular fractures presenting over the period 1977-1985 in Dundee, Scotland. The data collected included age, sex, aetiology, month in which injury occurred, anatomical site of fracture, associated maxillofacial trauma and treatment modalities. The majority of fractures were sustained by males in the age group 20 to 29 years. Assault was the major cause of trauma followed by falls and road traffic accidents. The posterior body region was found to be the most common fracture site in the mandible.¹³

This study observed that maximum cases of single mandibular fractures were dentoalveolar fractures comprising 28 out of 80 cases (35%). After dentoalveolar fractures, parasymphysis was most frequently fractured (21.25%). Pattern of single mandibular fractures are illustrated in table 3. Melike Oruç et al. in their study conducted a retrospective analysis of 419 mandible fractures in 283 patients in relation to epidemiologic factors, treatment strategies, and complications. The average age was 32.14 years (4-69 years). The male/female ratio was 4/1. The most frequent etiologic factor was interpersonal violence (104 patients, 36.7%). The parasymphysis region was the mostly affected site (28.4%). A total of 157 patients (55.5%) were presented with single fracture and the rest with 2, 3, or 4 fracture lines on the mandible. The most common fracture combination was angulus-parasymphysis fracture combination (24.6%). Open reduction and fixation with

mini plates and screws was the most preferred treatment strategy (48.2%). Transient short arch bars were not used intraoperatively for any of the patients. There was not any difference in terms of complications between the patients treated with plating systems and plating systems plus intermaxillary fixation. In conclusion, proper treatment of mandible fractures is critical.⁷

In the current study the co-relation of gender and age with fracture site was elaborated in table 4 and 5 respectively. It was observed that although males reported with majority of fracture cases, this co-relation was not significant statistically with P-value of .078. Similarly, maximum fracture cases were observed in the young age group of 20-30 years and least in the age group of more than 40 years. Even this co-relation was not significant statistically with P-value of .088. Bart van den Bergh et al. investigated the etiology, incidence, and complications of patients with mandibular fracture in Amsterdam for a period of 10 years. Between January 2000 and January 2009, 213 patients with surgically treated mandibular fracture were identified. Two hundred thirteen patients were included with a mean age of 32.5 (SD, 15.2) years. Male-female ratio was 2.2:1. A total of 410 fracture lines were identified. In violence-related injuries, angle fractures were proved to be the main fracture site. For male patients, violence (33.6%) was the main cause of injury. The most common cause for female patients was traffic related. In 169 patients, open reduction with internal fixation was performed in 17 patients without intermaxillary fixation. Twenty-seven patients were treated only with intermaxillary fixation. A total of 1738 screws and 393 plates were used. Sixty patients presented with complications.¹⁴

CONCLUSION

Within the limits of this study the author concluded that young males presented with a greater percentage of fracture cases and the most common single mandibular fractures were the dentoalveolar fractures. Further studies on this topic are recommended.

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