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# ORIGINAL ARTICLE

## Prevalence of mandibular fractures in patients visiting to dental department in Medical Institute of Central India

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***ABSTRACT*:**
**Background:** Facial zone is the most fractured area in the body and mandible is one of the most frequent facial bones to be fractured because of the prominence, position and anatomic configuration. **Aim of the study:** To study prevalence of mandibular fractures in patients visiting to dept of dentistry in medical institute of central India. **Materials and methods:** The present study was conducted in the dental department of the medical institution. The study was performed retrospectively for a period of 6 months that included all cases of mandibular fractures that were clinically and radiographically diagnosed at our institution. A total of 100 patients were included in the study population. The study population consists of individuals from 7 to 68 years of age, with either sex being included. The study individuals having developmental disorders, pathology, and tumors of mandible were excluded from the study. **Results:** A total of 100 patients with mandibular fractures were reviewed in our study. The highest frequency of mandibular fractures was seen in 18-35 years age group (n=43), followed by 35-50 years (n=35). Mandibular fractures were more common in males (n=75). The most commonly seen mandibular fracture was parasymphyseal fracture. Angle fracture was second common fracture. Coronoid fractures were least common. **Conclusion**: Within the limitations of the present study, it can be concluded that in the study population, mandibular fractures were most commonly seen in males and in age group 18-35 years. The most common mandibular fracture was parasymphyseal fracture.
**Keywords:** mandibular fracture, fracture management, clinical fracture

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### INTRODUCTION:

Facial zone is the most fractured area in the body and mandible is one of the most frequent facial bones to be fractured because of the prominence, position and anatomic configuration. Among all of the maxillofacial fractures, mandible fracture rate was reported as 36% to 59%. [1] The etiology of jaw fractures has been the topic of many studies. Violence is the most frequent etiologic factor in developed countries while a traffic accident is the major factor in countries. This situation is due to the differences in socioeconomic factors, geographic situations, religion, traffic rules and seasons among countries. [2] Management of the mandibular fractures has evolved with time. It has come a long way from the initial use of horse hair as interdental wiring tool, to the present-day use of resorbable hardware and custom-made titanium hardware. [3] The basis of this evolution in management strategies is largely attributable to a better understanding of the biomechanics of the mandible, its behavior in response to traumatic forces, fracture patterns, etiology, epidemiology, mode of healing, and functional rehabilitation. Hence, it is of paramount importance that the aforementioned variables are further researched to improve our understanding of the mandibular fractures. [4] The basic principle and methodology of fracture management, that is, reduction, fixation, and immobilization, is also applied to maxillofacial fractures. However, treatment outcome depends on other factors such as the degree of injury, type of fractures, maxillofacial surgeon expertise, experience, and the available technology. [5, 6] Hence, the present study was conducted to study prevalence of mandibular fractures in patients visiting to dental dept in medical institute of central India.

### MATERIALS AND METHODS:

The present study was conducted in the dental department of the medical institution. The ethical clearance for the study was approved from the ethical committee of the hospital. The study was performed retrospectively for a period of 6 months that included all cases of mandibular fractures that were clinically and radiographically diagnosed at our institution. A total of 100 patients were included in the study population. The study population consists of individuals from 7 to 68 years of age, with either sex being included. The study individuals having developmental disorders, pathology, and tumors of mandible were excluded from the study. The data about mandibular fracture were collected by means of structured

questionnaire including age, sex, and anatomic site of fracture.

The statistical analysis of the data was done using SPSS version 11.0 for windows. Chi-square and Student's t-test were used for checking the significance of the data. A p-value of 0.05 and lesser was defined to be statistically significant.

**RESULTS:**

A total of 100 patients with mandibular fractures were reviewed in our study. Table 1 shows the age intervals and association with mandibular fractures. The highest frequency of mandibular fractures was seen in 18-35 years age group (n=43), followed by 35-50 years (n=35). The least number of mandible fractures were seen in >60 years age group (n=2). Table 2 shows gender predisposition and association with mandibular fractures. We observed that mandibular fractures were more common in males (n=75). Table 3 shows type of mandibular fractures and frequency. We observed that most commonly seen mandibular fracture was parasymphyseal fracture. Angle fracture was second common fracture. Coronoid fractures were least common. (Fig 1)

**Table 1: Age intervals and association with mandibular fractures**

| Age intervals (years) | Frequency |
|---|---|
| Below 18 | 10 |
| 18-35 | 43 |
| 36-50 | 35 |
| 51-60 | 10 |
| >60 | 2 |
| Total | 100 |

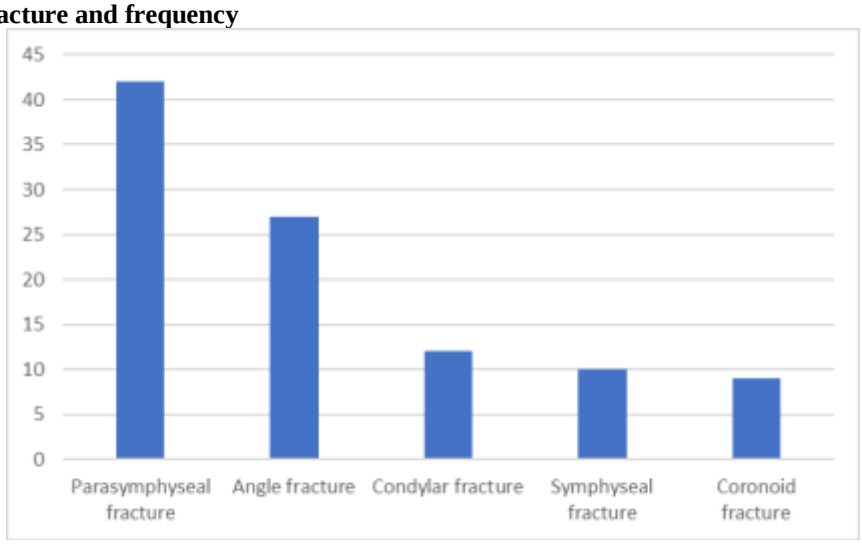
**Table 2: Gender predisposition and association with mandibular fractures**

| Gender | Frequency |
|---|---|
| Male | 74 |
| Female | 26 |
| Total | 100 |

**Table 3: Type of mandibular fractures and frequency**

| Type of fracture | Frequency |
|---|---|
| Parasymphyseal fracture | 42 |
| Angle fracture | 27 |
| Condylar fracture | 12 |
| Symphyseal fracture | 10 |
| Coronoid fracture | 9 |
| Total | 100 |

**Fig 1: Type of fracture and frequency**



**DISCUSSION:**

In the present study, we assessed the prevalence of mandibular fractures in patients reporting to dental department of medical institute. We observed that mandibular fractures were most commonly seen in 18-35 yrs of age group. Furthermore, mandibular fractures are most commonly observed in males as compared to females. In addition, parasymphyseal fractures were seen in highest frequency. The results were compared with the results of previous studies and were consistent. Gokkulakrishnan S et al [7] evaluated the efficacy and postoperative complications of 3-D titanium miniplates in the treatment of mandibular fractures. The study was conducted on 40 patients with non-comminuted mandibular fractures. Two patients had a postoperative infection with no consequences. All patients had normal sensory function 3 months after surgery. Plate fracture had not occurred in any patient. Occlusal was normal and wound dehiscence was not reported. 3-D plate was stable in all the patients. They concluded that it was seen that 3-D titanium miniplates were effective in the treatment of mandibular fractures and overall complication rates were lesser. In symphysis and parasymphysis regions, 3-D plating system uses lesser foreign material than the conventional miniplates using Champy's principle. Martins MM et al [8] gathered data on trauma etiology and mandibular fracture localization in patients who presented at the General Hospital of Nova Iguaçu, Rio de Janeiro, Brazil. Concerning mandibular fracture etiology, 21.05% were caused by motorcycle accidents, followed by interpersonal violence without use of weapons (punches, kicks, bumps with the head, blows with the elbow, etc) (16.84%) and interpersonal violence with firearm (14.73%). It was found that 52.63% of the patients had a single fracture line. The most affected fracture area was the parasymphysis (26.02%), followed by the condyle (22.60%) and mandibular angle (18.49%). Concerning the injury area, 24.21% were directed to the mandibular symphysis, 22.17% of the patients did not remember the injury area, and 18.94% had multiple injuries. When the injury was directed to the symphysis, the result was more condyle fractures (11.64%), and injuries at the mandibular angle resulted in fractures at the angle itself (8.90%). The most common fracture cause was traffic accidents, mainly motorcycle accidents, and the most affected areas were the parasymphysis and the condyle. The mandible isolated fractures occurred in half of the cases. Motorcycle accidents resulted in more fractures in the parasymphysis area, and when the symphysis area is affected by injuries, the result is a higher percentage in condyle fractures.

Bormann KH et al [9] evaluated current trends in maxillofacial trauma, a retrospective review of mandibular fractures at a German university hospital was carried out. In this retrospective study, records of 444 patients with mandibular fractures between 2000 and 2005 at the Department of Oral and Maxillofacial Surgery, University Hospital of Freiburg, Germany, were reviewed. A total of 444 patients presented with 696 mandibular fractures. Three hundred twenty-nine (74%) of the fractures occurred in male and 115 (26%) in female patients (2.9:1). One hundred forty-two fractures (32%) resulted from road traffic accidents, 126 from fights (28%), and 116 from falls (26%). Forty-four fractures were caused by sport accidents (10%) and 16 by pathologic fractures (4%). The mandibular condyle area was the most common fracture site, with 291 fractures (42%), followed by 144 fractures of the symphyseal and parasymphyseal area (21%) and 141 angle fractures (20%). Combined fractures were found in nearly half of the cases. Five hundred seventy-nine (83%) of patients with mandibular fractures were treated by surgical intervention, 117 (17%) of patients conservatively. Regarding the surgical treatment, 561 (65%) miniplates, 247 (29%) locking plates, and 51 (6%) lag screws were used. Complications, such as postoperative infections, abscesses, and osteomyelitis appeared in 66 (9%) cases. Roode GJ et al [10] studied the etiology, distribution, treatment modalities and complications of mandibular fractures of patients who attended the Maxillo-Facial and Oral Surgery (MFOS) unit at the School of Dentistry, University of Pretoria. The records of a representative sample of patients who presented at the MFOS unit with mandibular fractures between January 1999 and December 2003 were captured on a data form specifically designed for this purpose. The data were then analysed using the Statistix 8 programme. Of the 501 patients who were included in the survey, 67.6% were in the age group 21 to 40 years. The majority of the patients (83.2%) were male. Assault (72.5%) was the most common cause of injury followed by road traffic accidents (14.2 %) and falls (8.8%). Of the 501 cases, 41.3% were bilateral, 32.7% on the left side and 26% on the right side. With regard to the location of the fractures, the majority occurred in the body of the mandible (411%), followed by those in the area of the symphysis/ parasymphysis (23.1%). In the majority of cases (51.7%) the treatment modality used was a closed reduction with intermaxillary fixation. Complications were reported in 14.6% of the 501 cases of which malunion (32%) was the most prevalent. They concluded that mandibular fractures are more common in males in the age range 21 to 40 years. Interpersonal violence is the main cause of these fractures. The majority of mandibular fractures occur in the body region while malunion is the most common complication.

Akama MK et al [11] retrospectively studied hospital records revealed that 39 cases of mandibular fractures presented at Kisii District Hospital during a two-year

period. 27 cases were due to interpersonal violence while road traffic accidents and accidental falls accounted for 9 and 3 of the cases respectively. The male ratio was 2.9:1. Majority (26 cases) of the patients were aged between 20 and 39 years. The commonly involved fracture site was the left body of the mandible accounting for 20 of the fractures.

**CONCLUSION:**

Within the limitations of the present study, it can be concluded that in the study population, mandibular fractures were most commonly seen in males and in age group 18-35 years. The most common mandibular fracture was parasymphyseal fracture.

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