



## Evaluation of pattern of mandibular fractures in a known population

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### Abstract

**Background:** To assess the pattern of mandibular fractures in a known population.

**Materials & methods:**A total of one hundred patients participated in the study, with 40 being female and 60 being male. The age of the patients ranged from 25 to 55 years, with a mean age of 39.7 years. The patients underwent clinical and radiological examinations, as well as provided a detailed medical history, in the hospital's outpatient departments. The data was analyzed using SPSS software, and a significant result was obtained with a significance level of  $P < 0.05$ .

**Results:**The most common fracture was condylar fracture seen in 26 males and 3 females with total of 29 (29%). The 2<sup>nd</sup> most common fracture was parasymphiseal fracture accounting for total 21 cases (8 males and 13 females). Dentoalveolar fracture was seen in 9 males and 8 females. Symphiseal fracture was seen in 4 females and no males. Angle fracture was evident in 10 males and 5 females. Body fracture was observed in 4 males and 3 females. Fracture of coronoid process and ramus was seen in 6 cases and 1 case, respectively. 55 subjects showed unilateral fracture, 30 showed bilateral fracture while 10 showed multiple fractures.

**Conclusion:**The most prevalent site of the mandibular fracture had been condyle and most of the fractures were unilateral.

**Keywords:** mandible, fractures, pattern.

## Introduction

Fractures of the mandible make up around 25% of maxillofacial fractures. Among these, fractures of the mandible body make up approximately 11% to 36%, with personal violence being a significant contributing factor. It is worth noting that mandibular fractures are rare in children under the age of six, possibly due to the more prominent forehead compared to the chin.<sup>1</sup>

When they do occur, they are often greenstick fractures. Studies have shown that fractures of the mandible body account for nearly 29% of all mandibular fractures, followed by condyle and angle fractures. In children, condylar and body fractures are the most common maxillofacial fractures.<sup>2,3</sup>

Therefore, this research aimed to examine the pattern of mandibular fractures in a specific population.

## Materials & methods

A total of one hundred patients participated in the study, with 40 being female and 60 being male. The age of the patients ranged from 25 to 55 years, with a mean age of 39.7 years. The patients underwent clinical and radiological examinations, as well as provided a detailed medical history, in the hospital's outpatient departments. The data was analyzed using SPSS software, and a significant result was obtained with a significance level of  $P < 0.05$ .

## Results

**Table 1: distribution of mandibular fractures according to location**

Site	Male	Female	Number of fractures
Dentoalveolar	09	08	17(17%)
Symphysis	00	04	04(04%)
Parasymphysis	08	13	21(21%)
Angle	10	05	15(15%)
Body	04	03	07(07%)
Condylar process	26	03	29(29%)
Coronoid process	02	04	06(06%)
Ramus	01	00	01(01%)
<b>Total</b>	<b>60</b>	<b>40</b>	<b>100(100%)</b>

The most common fracture was condylar fracture seen in 26 males and 3 females with total of 29 (29%). The 2<sup>nd</sup> most common fracture was parasymphyseal fracture accounting for total 21 cases (8 males and 13 females). Dentoalveolar fracture was seen in 9 males and 8 females. Symphyseal fracture was seen in 4 females and no males. Angle fracture was evident in 10 males and 5 females. Body fracture was observed in 4 males and 3 females. Fracture of coronoid process and ramus was seen in 6 cases and 1 case, respectively.

**Table2: distribution of mandibular fractures according to type**

Type of fracture	N(%)
Unilateral	55(55%)
Bilateral	30(30%)
Multiple	15(15%)
<b>Total</b>	<b>100</b>

55 subjects showed unilateral fracture, 30 showed bilateral fracture while 10 showed multiple fractures.

## Discussion

Mandibular fractures are a prevalent type of maxillofacial fractures, accounting for 60-70% of cases seen in emergency rooms. In the USA alone, over 2,500 individuals experience a mandibular fracture annually. The epidemiology of maxillofacial fractures varies based on geographical location and socio-economic factors. Common causes of these fractures include road traffic accidents (40-42%), falls, assaults, sports-related injuries, and work-related incidents.<sup>4,5</sup> The average age of patients with mandibular fractures is 38 years for men and 40 years for women, with a higher prevalence among men (male-to-female ratio of 5:1).<sup>6-8</sup>

The management of mandibular fractures often necessitates specialized care and can pose unique challenges in terms of diagnosis and treatment. Complications that may arise from mandibular injuries include temporomandibular joint disorders, dental misalignment, osteomyelitis, and facial asymmetry.<sup>9,10</sup> These complications are more likely to occur if injuries are left untreated or are managed inadequately. Despite the significant number of mandibular fractures resulting from violent causes, there is a lack of research on the surgical outcomes of patients within this specific subgroup.<sup>11,12</sup>

Hence, this study had been performed in order to evaluate the pattern of mandibular fractures in a known population.

In this study, the most common fracture was condylar fracture seen in 26 males and 3 females with total of 29 (29%). The 2<sup>nd</sup> most common fracture was parasymphiseal fracture accounting for total 21 cases (8 males and 13 females). Dentoalveolar fracture was seen in 9 males and 8 females. Symphyseal fracture was seen in 4 females and no males. Angle fracture was evident in 10 males and 5 females. Body fracture was observed in 4 males and 3 females. Fracture of coronoid process and ramus was seen in 6 cases and 1 case, respectively. 55 subjects showed unilateral fracture, 30 showed bilateral fracture while 10 showed multiple fractures.

**Krishnan S et al<sup>13</sup>** evaluated the predicted mandibular fracture pattern among a sample of patients visiting a dental hospital in Chennai, India based on patient demographics. This retrospective analysis involved 46 patients out of which 39 were male and 7 were female who were referred to the Oral Surgery Clinic, Chennai. The medical records and orthopantograms for these 46 patients who received treatment for fractures of the mandible from June 2019-March 2020 were reviewed. Parameters such as age, gender, pattern of distribution, type of mandibular fracture, combination of the fracture and treatment done, were evaluated and assessed by one examiner and reviewed by 2 independent investigators. Data shows that the angle region to be the most common area to be affected (31.67%), accompanied by parasymphiseal region (28.33%), condylar region (13.33%), dento-alveolar region ( 10%), body (8.33%), symphyseal region ( 6.67%) and finally the coronoid region ( 1.67%). Data analysis also revealed that 84.78% of all patients with fractures of the mandible were male and 34.78% of all patients were in the age group of 21-30 years. Most fractures presented with a single fracture site (60.87%), and among combinations of fractures, fractures of parasymphiseal region along with angle region (41.67%) were seen more commonly. Pearson's Chi Square Test was used to determine the association linking the type of mandibular fracture and treatment modality used and p value was < 0.05, which was considered statistically significant. Thus, the patterns of mandibular fractures delineate a significant occurrence of angle fractures among mandibular fractures, commonly seen along with fractures of parasymphiseal region and occurring with a significant male predilection.

Another study by **Samman M et al<sup>14</sup>**, a total of 197 patients with fracture of the mandible were admitted in the period of the study by the Oral Maxillofacial Surgery Department, King Fahad Hospital, Madinah. There were 165 male and 32 female patients. The ages ranged from 3 to 86 years with a mean of 24 years. A total of 260 fractures of Mandible were

documented. The condylar anatomical site of mandible was most frequently affected and constituted the largest number (103) of fractures followed by the angle (51), parasymphysis (45), and then by the body (23) of the mandible. Dentoalveolar fractures were present in 22 cases. Very less number of coronoid fractures (7), followed by those of the ramus (5), and least number at the symphysis (4) of the mandible were found.

### Conclusion

The most prevalent location of the mandibular fracture had been condyle and most of the fractures had been unilateral.

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