

## Original Research

### Pattern of mandibular fractures among a known population

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#### ABSTRACT:

**Background:** The mandible is one of the most commonly fractured facial bones, along with the nasal and zygomatic bones. Because of its ring-like structure, multiple fractures are seen in more than 50% of cases. Hence; under the light of above mention data, the present study was planned for assessing the pattern of mandibular fractures among a known population. **Materials & methods:** A total of 100 subjects who reported with mandibular fracture were enrolled. The medical records of all the patients were reviewed. The complete records of these patients were obtained viz., case history, clinical notes, radiographs, photographs, if any, surgical notes etc., All the results were recorded in Microsoft excel sheet and were analysed by SPSS software. **Results:** Most common type of mandibular fracture was Parasymphysis and angle found to be present in 28 percent and 19 percent of the patients respectively. Condylar fracture and fracture of coronoid process was seen in 10 percent and 8 percent of the patients respectively. Fracture of ramus and body of mandible was seen in 7 percent of the patients each. **Conclusion:** In developing countries like India, significant proportion of mandibular fractures attributed to road traffic accidents. The etiology is closely associated with the anatomic location of mandibular fractures. Early diagnosis, of pattern of fractures, and their subsequent treatment would help in improving the prognosis.

**Key words:** Mandibular, Fractures

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#### INTRODUCTION

The mandible is one of the most commonly fractured facial bones, along with the nasal and zygomatic bones. Most frequently, fractures are a result of trauma, such as motor vehicle accidents, physical altercations, industrial accidents, falls, and contact sports. For this reason, it is critical to evaluate patients with mandible fractures for other associated traumas, to include cervical spine and traumatic brain injuries.<sup>1-3</sup>

Vehicular accidents and altercations are the primary causes of mandibular fractures in the United States and throughout the world. In an urban trauma setting, altercations account for most fractures (50%), and motor vehicle accidents are less likely (29%). Males suffer approximately three times as many mandible fractures as females, with the majority occurring in the third decade of life. Mandibular fractures are uncommon in children under the age of six, likely because of the relative prominence of the forehead compared to the chin. When they do occur, they are often greenstick fractures.<sup>4-6</sup>

Because of its ring-like structure, multiple fractures are seen in more than 50% of cases. The most common combination of injuries is a parasymphyseal fracture with a contralateral angle or subcondylar fracture. While studies vary in reported fracture frequencies, the most common individual fracture sites are the body, the condyle, and the angle. The symphyseal/parasymphyseal area is less commonly fractured, and the ramus and coronoid process are rarely involved. In automobile accidents, the condyle was the most common fracture site; whereas, the symphysis was most commonly fractured in motorcycle accidents. In assault cases, the angle is the most common fractured site.<sup>6-8</sup> Hence; under the light of above mention data, the present study was planned for assessing the pattern of mandibular fractures among a known population.

#### MATERIALS & METHODS

The present study was planned for assessing the pattern of mandibular fractures among a known population. A total of 100 subjects who reported with

mandibular fracture were enrolled. The medical records of all the patients were reviewed. The complete records of these patients were obtained viz., case history, clinical notes, radiographs, photographs, if any, surgical notes etc., Then data were analysed based on the following parameters-age, and sex, mechanism of trauma, seasonal variation, drug/alcohol abuse at the time of trauma, number and anatomic location of fractures. All the results were recorded in Microsoft excel sheet and were analysed by SPSS software.

## RESULTS

A total of 100 subjects were evaluated. Mean age of the subjects was 46.3 years. 71 percent of the patients were males while the remaining were females. Most common type of mandibular fracture was Parasympphysis and angle found to be present in 28 percent and 19 percent of the patients respectively. Condylar fracture and fracture of coronoid process was seen in 10 percent and 8 percent of the patients respectively. Fracture of ramus and body of mandible was seen in 7 percent of the patients each.

**Table 1: Distribution of patients according to fracture site**

Fracture site	Number of patients	Percentage
Symphysis	15	15
Parasympphysis	28	28
Condyle	10	10
Angle	19	19
Body	7	7
Ramus	7	7
Coronoid	8	8

## DISCUSSION

The mandible is particularly prone to maxillofacial trauma because of its unique shape, mobility, and prominence in the facial skeleton. It is the second most common facial bone experiencing traumatic injuries, accounting for 15.5%-59% of all facial fractures. Patients with a broken lower jaw experience pain, difficulty chewing and talking, and esthetic disfigurement. These injuries are often accompanied by psychological effects, along with significant financial costs. The epidemiology of mandible fractures varies over time and in different countries. The etiology of these fractures is multifactorial, with the type and frequency of fracture dependent on socioeconomic status, culture, technology, demography, and economic factors.<sup>6-8</sup>The etiology and incidence of mandibular fractures vary with the different geographic regions, socioeconomic status, cultures, traffic rules, and study eras. Motor-vehicle accidents (MVAs) have been reported as the major cause of mandibular fractures in developing countries, and interpersonal violence has become the most common cause in many developed countries.<sup>8-10</sup>The present study was planned for assessing the pattern of mandibular fractures among a known population.

A total of 100 subjects were evaluated. Mean age of the subjects was 46.3 years. 71 percent of the patients were males while the remaining were females. Most common type of mandibular fracture was Parasympphysis and angle found to be present in 28 percent and 19 percent of the patients respectively. Giri KY et al evaluated the significance of various aetiological factors in determining the incidence and dictating the patterns of mandibular fractures in Rohilkhand region. The patient records and radiographs for 144 patients treated for mandibular fractures were reviewed. Maximum incidence of fractures was observed among the individuals in 3rd decade (35.4%) followed by 2nd and 4th decades, which exhibited 32 and 30 cases (22.2% and 20.8%), respectively. Male to female ratio was biased (4:1) portraying a male predominance. Road traffic accidents (RTAs) were observed to be the predominant aetiological factor responsible accounting for 79.2% of the total injuries followed by assaults (11.8%) and falls (9%). Parasympphysis exhibited the highest incidence (32.63%) amongst the anatomic sites, followed by body (18.75%), angle (16.66%), condyle (15.27%), symphysis (12.50%), ramus (2.77%) and coronoid (1.38%). Their study revealed that majority of affected patients was in the 2nd and 3rd decades. A definitive relationship existed between RTA and the incidence of mandibular fractures.<sup>10</sup>

Condylar fracture and fracture of coronoid process was seen in 10 percent and 8 percent of the patients respectively. Fracture of ramus and body of mandible was seen in 7 percent of the patients each. Barde D et al attempted to delineate predictable patterns of fracture based on patient demographics and mechanism of injury in central part of India. They reviewed 464 patients having mandibular fractures with age ranging from 7 to 89 years. Male (343, 79%) to female (91, 21%) ratio was 3.7:1, significantly higher for males. The highest incidence (37.5%) of mandibular fractures was in the age group of 21–30 years. The main cause was road traffic accidents (RTAs, 68.8%) followed by falls (16.8%), assaults (11%) and other reasons (3.8%). Parasympheal fractures were the most frequent 331 (41.1%), followed by condyle (135) and angle (124) fractures in occurrence. Mandibular angle fractures were found mostly to be associated with assault victims. The mechanism of injury correlates significantly with the anatomic location of fracture and knowledge of these associations should guide the surgeons for appropriate and timely management.<sup>11</sup>Rashid S et al assessed patterns of mandibular fractures and associated comorbidities. Fractures due to firearm injuries and interpersonal violence were more frequent in men ( $p < 0.001$ ). In patients with unilateral fractures, the most common fracture site was the parasymphysis (24.6%) followed by the symphysis (10.1%). In patients with bilateral fractures, the most common fracture sites were the

parasymphysis and condyle (11.6%), followed by the parasymphysis and angle (8.0%). Mandibular fractures were more common in men than women, with most patients aged 15-25 years. The most common fracture site was the parasymphysis.<sup>12</sup>

### CONCLUSION

In developing countries like India, significant proportion of mandibular fractures attributed to road traffic accidents. The etiology is closely associated with the anatomic location of mandibular fractures. Early diagnosis, of pattern of fractures, and their subsequent treatment would help in improving the prognosis.

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