



ISSN Print: 2394-7489
ISSN Online: 2394-7497
IJADS 2022; 8(4): 30-32
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www.oraljournal.com
Received: 15-08-2022
Accepted: 25-09-2022

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Assessment of pattern of mandibular fractures in a known population

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DOI: <https://doi.org/10.22271/oral.2022.v8.i4a.1622>

Abstract

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

Materials & methods: A total of 100 patients were enrolled. The number of male patients was 75 and 25 were female. Age of patients was 20 to 60 years. Mean age of patient was 40.45 years. Patients were examined clinically and radiographically in the outpatient departments of the hospital, and a detailed history was taken. The data was analyzed and result was obtained using SPSS software. The level of significance was at $P < 0.05$.

Results: The mandibular condyle was the most common site of fracture in this study found in a vast majority of trauma patients ($n = 42, 42.5\%$) involving 36 males and 6 females followed by the mandibular angle (20.6%), parasymphysis (12.5%) and dentoalveolar. Majority of patients ($n = 49, 49\%$) had unilateral type of mandibular fractures followed by 35 (35%) patients with bilateral fractures.

Conclusion: Frequency of unilateral fractures was higher.

Keywords: mandible, fractures, pattern

Introduction

Mandible is the second most commonly fractured bone after nasal bone, though it is the largest and strongest facial bone [1, 2]. Mandibular fractures can involve only one site or can often involve multiple anatomic sites simultaneously. The facial area is one of the most common sites of injury [3]. The mandible is fractured more frequently than any other facial bone, likely because it is exposed and protruding [4]. In addition to functional loss, a mandibular fracture can result in mild to moderate impairment or defect [5].

The etiology and pattern of mandibular fracture vary considerably among different study populations. Recent overall shift in the mechanism of injury and age distribution of patients sustaining these injuries are well-documented. There is reported variability in the pattern of mandibular fractures resulting from different causes of injury, such as road traffic accidents (RTAs), assaults, and falls [6, 7].

The mandible is particularly more prone for maxillofacial trauma and fractures due to its unique mobility, shape, and chin prominence in the facial skeleton. It is the second most frequent of the facial bones affected by traumatic injuries and shown to account for 15.5%–59% of all facial fractures [8]. 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 [9, 10]. The epidemiology of mandible fractures is highly variable with time among several countries. The mechanism of injury or etiology is also inconsistent in the literature. Etiology of fracture is multifactorial and based variably on socioeconomic status, culture, technology, demography, and economic factors [11]. Hence, this study was conducted to assess the pattern of mandibular fractures in a known population.

Materials & methods

A total of 100 patients who visited to the Post Graduate Department of oral medicine and radiology, Government Dental College and Hospital Srinagar, during time period of (Sep

2020 -July 2021) were enrolled for the study. The number of male and female patients were 75 and 25 respectively. The age range of patients was 20 to 60 years. Mean age of patient was 40.45 years. Patients were examined clinically and radiographically in the outpatient departments of the hospital, and a detailed history was taken. The data was analyzed and result was obtained using SPSS software. The level of significance was at $P < 0.05$.

Results

A total of 100 patients were enrolled. The mandibular condyle was the most common site of fracture in this study found in a vast majority of trauma patients ($n = 42, 42.5\%$) involving 36 males and 6 females followed by the mandibular angle (20.6%), parasymphysis (12.5%) and dentoalveolar. The fracture at body of mandible was 6.25%. Majority of patients ($n = 49, 49\%$) had unilateral type of mandibular fractures followed by 35 (35%) patients with bilateral fractures.

Table 1: distribution of mandibular fractures according to location

Site	Male	Female	Number of fractures
Dentoalveolar	6	3	20 (12.5%)
Symphysis	1	1	4 (2.5%)
Parasymphysis	8	6	20 (12.5%)
Angle	13	6	33 (20.6%)
Body	6	2	10 (6.25%)
Condylar process	36	6	68 (42.5%)
Coronoid process	3	1	2 (1.25%)
Ramus	2	0	3 (1.9%)
Total	75	25	160

Table 2: Distribution of mandibular fractures according to type

Type of fracture	n(%)
Unilateral	49(49%)
Bilateral	35(35%)
Multiple	16 (16%)
Total	100

Discussion

Epidemiological surveys have shown that the causes, incidence, and patterns of mandibular fracture vary by geographical region, socioeconomic condition, cultural characteristic, and era. In the present study, 56% of patients with mandibular fracture were aged 15-25 years, consistent with the results of previous studies, but differs from that in a Jordanian population [12, 13]. Moreover, mandibular fracture was more common in men than in women, with a 3.6:1 ratio, consistent with previous findings [14]. People are more active during the second and third decades of life than during other decades, making them more vulnerable to trauma. Moreover, men participate in more outdoor activities than women [15]. In our study, a total of 100 patients were enrolled. The mandibular condyle was the most common site of fracture in this study found in a vast majority of trauma patients ($n = 42, 42.5\%$) involving 36 males and 6 females followed by the mandibular angle (20.6%), parasymphysis (12.5%) and dentoalveolar. The fracture at body of mandible was 6.25%. In 32% of our patients parasymphyseal fracture were seen, this is consistent with the report of Adi *et al.* [16] who showed that the parasymphyseal fracture is the most common site of mandibular fractures. However, Olson *et al.* showed that there was a higher incidence of angle involvement in patients with mandibular trauma [17]. Another study by Barde D *et al.*, 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%). Parasymphyseal 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. Because RTAs are most frequent, good traffic sense needs to be imbibed and developed by the government as well as the public. [18] In our study, majority of patients ($n = 49, 49\%$) had unilateral type of mandibular fractures followed by 35 (35%) patients with bilateral fractures.

Another study by Samman M *et al.*, 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 [19].

Conclusion

Frequency of unilateral condylar fractures was higher in this study as compared to other types of fractures.

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