

## **The Epidemiology of Mandibular Fractures – A Single Center Study**

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### **Abstract**

**Background:** The maxillofacial region is the most commonly injured in the body following trauma, particularly mandible is the second most frequently fractured adult facial bone because of its unprotected and prominent position. This study investigated the incidence, causes, pattern and treatment of mandibular fractures in a rural hospital Bengaluru.

**Methods:** The medical records and radiographs for 330 patients were collected for patients with mandibular fractures at the Silicon Hospital over a period of 4 years (from January 2016 to January 2020).

**Results:** Males were predominantly affected with the age group of 31-40 yrs., motor vehicle accidents were common etiological factor and angle was more commonly involved site of fracture involving mandible.

**Conclusion:** The study proved incidence of mandibular fractures in different age groups in both genders in the rural population, different patterns of fracture and

common site involved. This study helped in providing awareness programs and safety measures in general population.

**Keywords:** Mandibular fractures, Occlusion, Trauma.

### **Introduction**

The modern life with sheer speed travel and increased violence in the society made maxillofacial trauma as most commonly seen injuries of the body. Due to changes in patterns of facial injuries, extent, clinical features resulting in mild-to-massive disfigurement of maxillofacial skeleton with functional loss. Along with road traffic accident and violence, direct/indirect trauma to the maxillofacial area may also occur as seen in case of sport activities, falls, alcohol consumption and weapon injuries. Certain diseases like cysts and tumors of maxillofacial region, metabolic diseases can also lead to functional and structural loss. The management of fractures to the maxillofacial complex remains a challenge for oral and maxillofacial surgeons, demanding both skill and a high

level of expertise. It has been reported that fractures of the mandible account for 36% to 59% of all maxillofacial fractures. 1-3 Facial area is one of the most frequently injured area of the body, accounting for 23–97% of all facial fractures.4 Mandible is the only mobile bone of facial skeleton and there has been a significant increase in number of cases in recent years. It is embryologically a membrane bone and is more commonly fractured than the other bones of face. Mandibular fractures occur twice as often as midfacial fractures.5

This study was designed to assess the

1. Incidence of mandibular fractures
2. Aetiology of mandibular fracture
3. Pattern and common site of mandibular fracture
4. Mode of treatment required

**Materials and Methods**

Study was carried out at a rural center situated on national highway. Total of 330 patients were assessed since 2016 Jan -2020 Jan. (**Graph 1**). Detailed information consisting of age, sex, socioeconomic status, chief complaint, history of present illness, past medical history, duration of injury, etiology, and associated injuries was recorded. After recording the history, a thorough clinical examination as well as radiological interpretation was done for each patient in this study for establishing the diagnosis. Age group was reported from below 10 yrs. to 60yrs and above (**Graph 2**). Most of the patients gave history of various etiological factors like RTA, sports injury, interpersonal violence, fall and work related injuries (**Graph 3**). Various site of fracture involving symphysis, angle, body, condyle within mandibular bone was assessed (**Graph 4**). Many of these cases were treated by open reduction and internal fixation (**Graph 5**).

Table1: Sex wise distribution of patients

Sex	No of patients	% of patients
Male	220	66.67
Female	110	33.33
Total	330	100.00

Male patients (220) were commonly affected than female (110) patients.

Graph 1: Sex wise distribution of patients

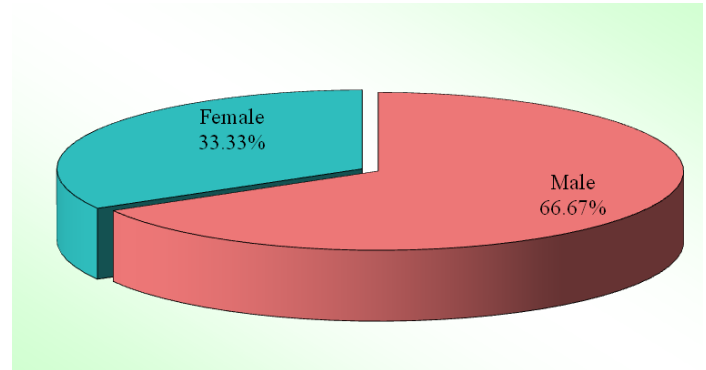


Table2: Age wise distribution of patients

Age groups	No of patients	% of patients
<= 10 Yrs.	20	6.06
11 - 20 yrs.	35	10.61
21 - 30 yrs.	67	20.30
31 - 40 yrs.	120	36.36
41 - 50 yrs.	64	19.39
>=51yrs	24	7.27
Total	330	100.00

Age group commonly affected was 31 – 40 years. Least commonly affected was less than 10years.

Graph 2: Age groups wise distribution of patients

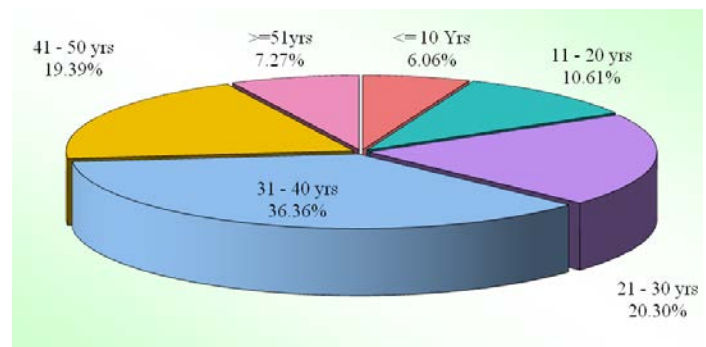


Table3: Etiology wise distribution of patients

Etiology	No of patients	% of patients
Road traffic accidents	240	72.73
Inter-personal violence	40	12.12
Fall	25	7.58
Sports- related injuries	15	4.55
Work - related injuries	10	3.03
Total	330	100.00

Reason for trauma most commonly seen was due to road traffic accidents (240)

Graph 3: Etiology wise distribution of patients

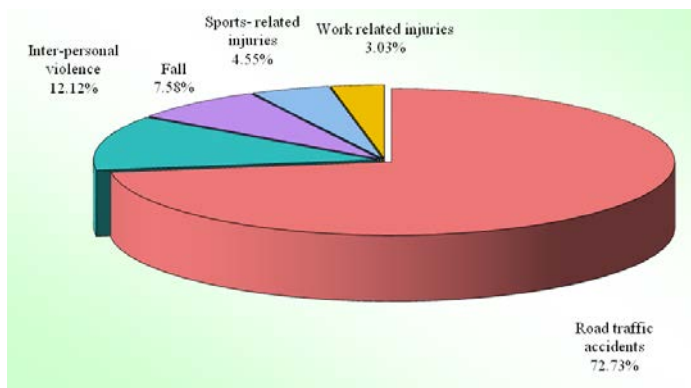


Table4: Site of fracture wise distribution of patients

Site of fracture	No of patients	% of patients
Symphysis	71	21.52
Body	69	20.91
Angle	85	25.76
Ramus	65	19.70
Condyle	40	12.12
Total	330	100.00

Common site affected was Angle of the mandible followed by symphysis.

Graph 4: Site of fracture wise distribution of patients

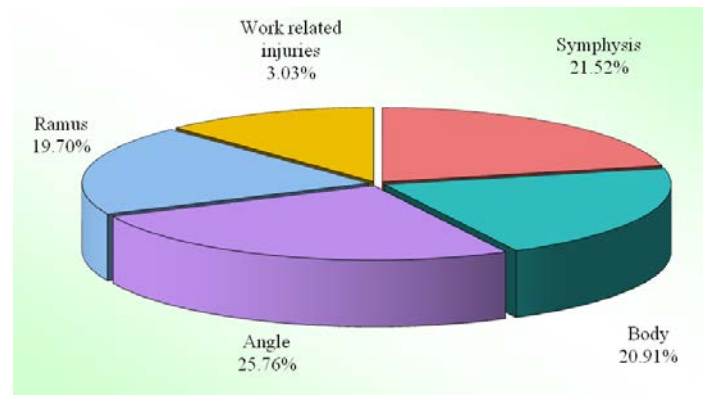
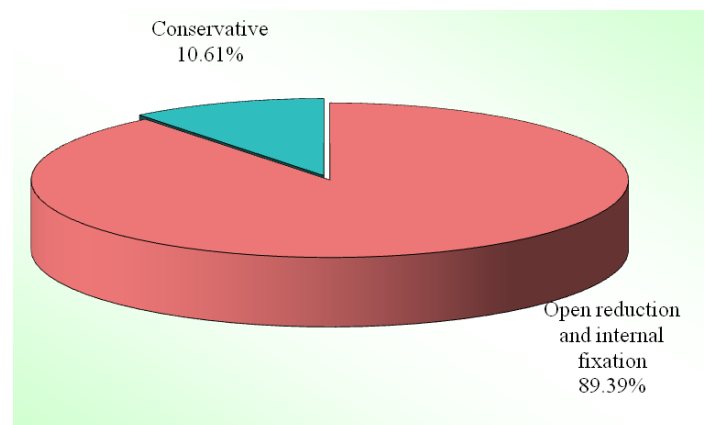


Table 5: Treatment wise distribution of patients

Treatment	No of patients	% of patients
Open reduction and internal fixation	295	89.39
Conservative	35	10.61
Total	330	100.00

Maximum cases treated by surgical approach compared to conservative approach.

Graph 5: Treatment wise distribution of patients



### Discussion

The modern life style of population with high-speed travel and an increasingly violent, intolerant society resulted maxillofacial trauma a form of alarming social situation. Mandible is the only mobile bone of facial skeleton, and there has been significant increase in the number of cases in recent years. Though mandible bone is a strongest facial

bone, due to its complex anatomical architect it has a tendency to get fractured at its weakest parts. In our study mandibular angle was found to be the most commonly involved site of fracture. Our study did not include any dental trauma with mandibular fracture but assessment of dental alveolar fracture along with mandibular fracture is always recommended. Proper treatment is necessary while managing mandibular fractures to avoid complications of cosmetic disfigurement and functional loss.

### Conclusion

The mandibular fractures were more common in males than females. Common age group affected 31 – 40 years. Road traffic accidents were the most common cause of fracture followed by interpersonal violence. Angle of the mandible was the most common site of fracture in mandible followed by symphysis. In conclusion multicenter study of maxillofacial trauma is important as it provides safety and preventive measures. Safety measures like wearing helmets, car seatbelts, limiting speed will reduce incidence of facial trauma. Preventive measures like awareness health programs, audiovisual aids imparting knowledge regarding safety measures will reduce occurrence of maxillofacial injuries.

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