

## Original Research

### Assessment of cases of mandibular fractures- A clinical study

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#### ABSTRACT:

**Background:** The present study was conducted to assess cases of mandibular fractures. **Materials & Methods:** 126 patients having mandibular fractures of both genders were involved. The etiology, site and treatment given was recorded. **Results:** The main etiology of mandibular fractures was fall in 30, road traffic accident in 84 and violence in 12 cases. Common type of fracture was body seen in 45, ramus in 30, angle in 21, symphysis in 16, condyle in 10 and coronoid process in 4 cases. In 36 cases, closed reduction and in 90 cases Open reduction internal fixation was done. The difference was significant ( $P < 0.05$ ). **Conclusion:** The most common etiology of mandibular fracture was road traffic accident and most common site was body and ramus of mandible.

**Key words:** Open reduction, internal fixation, mandibular fracture

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#### INTRODUCTION

Several variables are related to the study of mandibular fractures which have resulted in differences in demographic characteristics reported in the literature.<sup>1</sup> Various countries across the globe have provided statistics of mandibular fractures, but information provided is distinct for the countries of origin and the people residing there. Increase in incidence of mandibular fractures is stated in long-term studies.<sup>2</sup> Reported data show that mandibular fractures occur usually in the third decade of life with male predominance.<sup>3</sup>

The socioeconomic trends, geographic locations, and local behavior have a considerable impact on the etiology of the injury which sequentially influences the distribution of fracture sites. The key etiology for maxillofacial fractures may vary from road traffic accidents to assaults and from fall to sports injuries. Most mandibular fractures which occurred from assault have alcohol consumption as an eminent contributing factor.<sup>4</sup>

Bone fractures at site of tensile strain, since their resistance to compressive forces is greater. Areas that

exhibit weakness include the area lateral to the mental protuberance, mental foramen, mandibular angle, and the condylar neck. The thickening on the inner aspect of the condylar neck or crest of the neck apparently acts as a main buttress of the mandible as it transmits pressure to the TMJ and the base of the skull.<sup>5</sup> The present study was conducted to assess cases of mandibular fractures.

#### MATERIALS & METHODS

The present study was conducted among 126 patients having mandibular fractures of both genders. The study was approved from institutional ethical committee. All were well informed and their written consent was obtained.

Data such as name, age, gender etc. was recorded. A thorough clinical examination was performed. The etiology, site and treatment given was recorded. Results were tabulated and subjected to statistical analysis. P value less than 0.05 was considered significant.

**RESULTS**

**Table I Age wise distribution of patients**

Age group (Years)	Number	P value
20-40	80	0.04
40-60	31	
60-80	15	

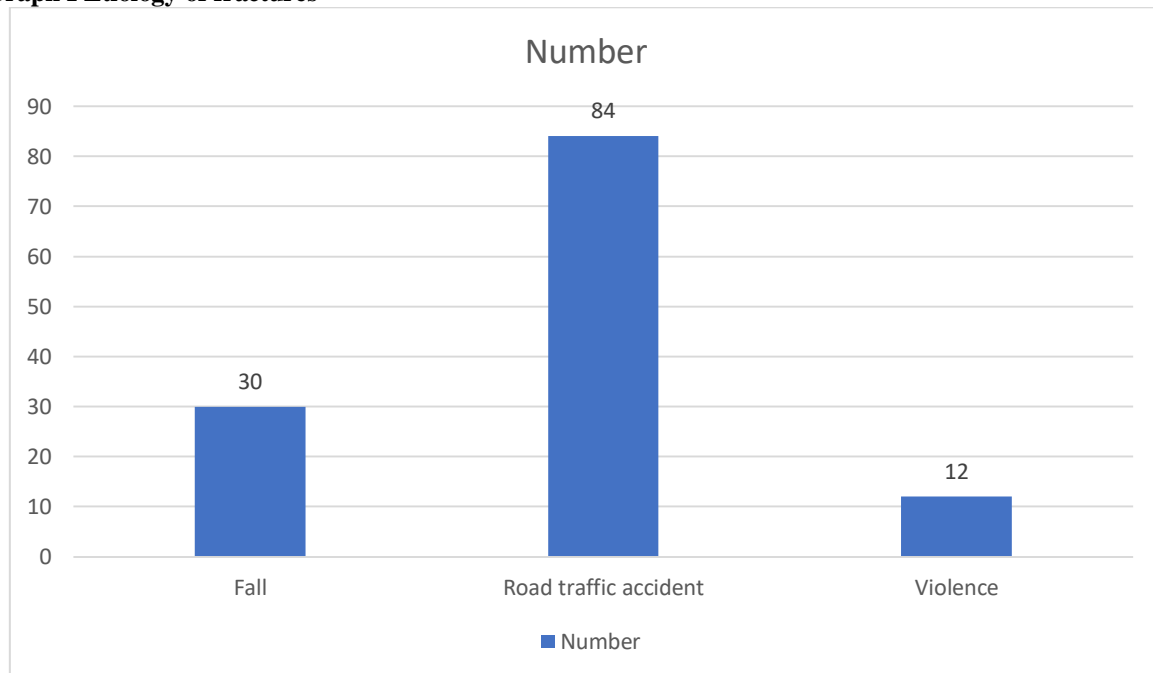
Table I shows that age group 20-40 years had 80, 40-60 years had 31 and 60-80 years had 15 cases.

**Table II Etiology of fractures**

Etiology	Number	P value
Fall	30	0.02
Road traffic accident	84	
Violence	12	

Table II, graph I shows that main etiology of mandibular fractures was fall in 30, road traffic accident in 84 and violence in 12 cases. The difference was significant ( $P < 0.05$ ).

**Graph I Etiology of fractures**

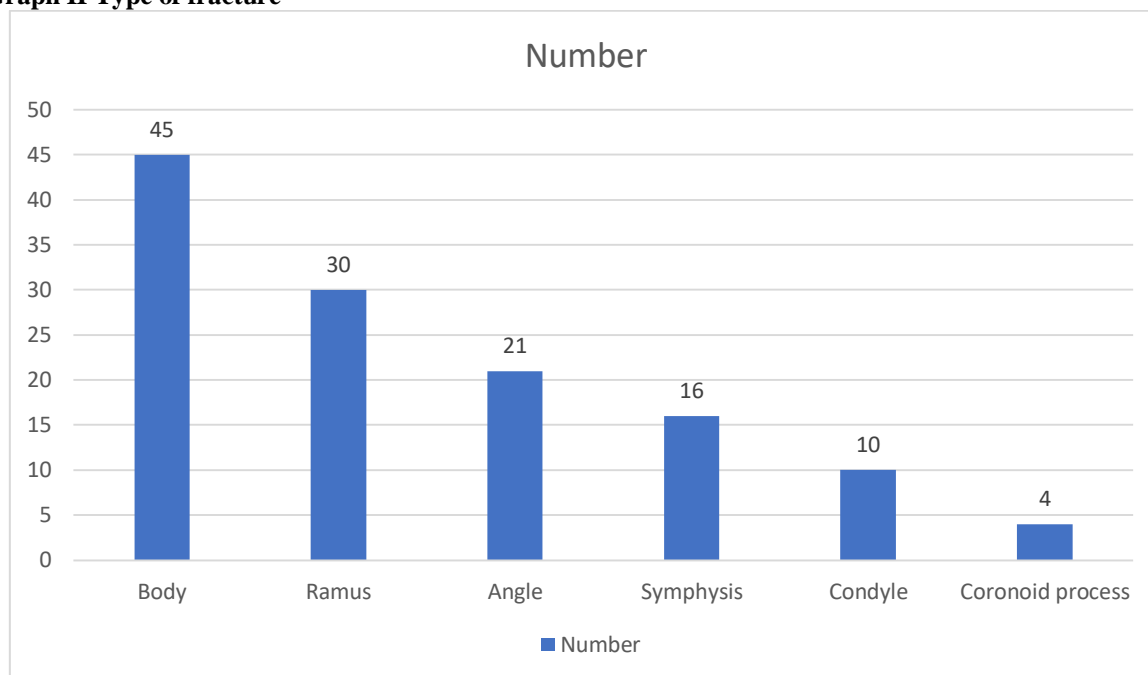


**Table III Type of fracture**

Type	Number	P value
Body	45	0.02
Ramus	30	
Angle	21	
Symphysis	16	
Condyle	10	
Coronoid process	4	

Table III, graph II shows that common type of fracture was body seen in 45, ramus in 30, angle in 21, symphysis in 16, condyle in 10 and coronoid process in 4 cases. The difference was significant ( $P < 0.05$ ).

**Graph II Type of fracture**



**Table IV Treatment given**

Treatment	Number	P value
Closed reduction	36	0.001
Open reduction internal fixation	90	

Table IV shows that in 36 cases, closed reduction and in 90 cases Open reduction internal fixation was done. The difference was significant ( $P < 0.05$ ).

**DISCUSSION**

The fracture is defined as “breach in the continuity of bone”. Facial area is one of the most frequently injured area of the body, accounting for 23–97% of all facial fractures.<sup>6</sup> 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.<sup>7</sup> Mandibular fractures occur twice as often as midfacial fractures. The energy required to fracture it being of the order of 44.6–74.4 kg/m, which is about the same as the zygoma and about half that for the frontal bone. It is four times as much force is required to fracture maxilla. Bone fractures at site of tensile strain, since their resistance to compressive forces is greater.<sup>8</sup> Areas that exhibit weakness include the area lateral to the mental protuberance, mental foramen, mandibular angle, and the condylar neck. The thickening on the inner aspect of the condylar neck or crest of the neck apparently acts as a main buttress of the mandible as it transmits pressure to the TMJ and the base of the skull.<sup>9</sup> The present study was conducted to assess cases of mandibular fractures.

In present study, age group 20–40 years had 80, 40–60 years had 31 and 60–80 years had 15 cases. The main etiology of mandibular fractures was fall in 30, road traffic accident in 84 and violence in 12 cases. Shah et

al<sup>10</sup> assessed correlation between different factors associated with mandibular fractures. A database of 277 patients between July 2011 and October 2018 with mandibular fractures was retrospectively retrieved. Information on age, gender, etiology, pattern of fracture, and treatment done was obtained, tabulated, and analyzed statistically. Entities such as age and gender, age and cause, gender and cause, site of fracture and cause, site of fracture and side, site of fracture and treatment done, and site of fracture and gender were correlated. In a total of 277 patients, a statistically significant correlation was found between age and the etiologic agent, site and side of fracture, and site of fracture and the treatment done with value of  $P < 0.05$ . A definite correlation between multitude of overlooked relevant co-factors has been studied which can provide an operating surgeon, a valuable impetus to be more vigilant in terms of medicolegal record maintenance, diagnosis, and possible clinical strategy for the treatment of mandibular fractures.

We found that common type of fracture was body seen in 45, ramus in 30, angle in 21, symphysis in 16, condyle in 10 and coronoid process in 4 cases. Natu et al<sup>11</sup> study was undertaken to study mandibular fractures clinicoradiologically with an aim to calculate incidence and study pattern and the commonest site of fractures in population in and around Lucknow. Patient presenting with history of trauma at various

centers of maxillofacial surgery in and around Lucknow were included in this study. Detailed case history was recorded followed by thorough clinical examination, and radiological interpretation was done for establishing the diagnosis. Out of 66 patients with mandibular fractures, highest percentage was found in 21–30 years of age with male predominance. Road traffic accidents were the most common cause of fracture with parasymphysis being commonest site. Commonest combination was parasymphysis with subcondyle. There was no gender bias in etiology with number of fracture sites. The incidence and causes of mandibular fracture reflect trauma patterns within the community and can provide a guide to the design of programs geared toward prevention and treatment. We found that in 36 cases, closed reduction and in 90 cases Open reduction internal fixation was done. Morris et al<sup>12</sup> found that the average age was approximately 38 years, with most patients (33%) in the third decade. An overwhelming majority of patients were men (83.27%), with only 16.27% consisting of women. Most injuries occurred in the summer months, with July being the most common month of occurrence. The mechanism of injury predominantly involved low-velocity blunt injuries (62%) compared with high-velocity blunt injuries (31%). The anatomic distribution of fractures evaluated was the angle (27%), symphysis (21.3%), condyle and subcondyle (18.4%), and body (16.8%). The shortcoming of the study is small sample size.

## CONCLUSION

Authors found that most common etiology of mandibular fracture was road traffic accident and most common site was body and ramus of mandible.

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