



CLINICAL OUTCOMES AND TREATMENT MODALITIES OF MANDIBULAR FRACTURES: AN INSTITUTIONAL RETROSPECTIVE STUDY

Maxillofacial Surgery

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ABSTRACT

Aims And Objectives: The variability of pattern, aetiology, gender predisposition, treatment plan and outcome of mandibular fractures occurred in the district of East Midnapore and surrounding areas is discussed here. The significance of this study is to understand the pattern and mechanism of mandibular injury that would appear to facilitate choosing the most ideal treatment. **Method:** A retrospective study of 72 cases treated in the department of oral & maxillofacial surgery at our institution in between July 2019 and June 2022 was carried out to determine mandibular trauma pattern and distribution. Data on age, gender, cause of injury, anatomic location, alcohol influence, treatment modality, and postoperative complications were collected from both inpatients and outpatients treated in the operating room and outpatient department. **Conclusion:** This paper not only discusses the relation of mandibular fractures with age, gender, aetiology and anatomic location but also enriches our experience in treating a case-series of mandibular trauma and presents an overview of techniques evolved and employed in addressing such fractures. The ideal treatment facilitate the early return of the patients to function and improved quality of life.

KEYWORDS

Mandibular fracture, Quality of life, Treatment.

INTRODUCTION:

Mandible despite of being the largest and strongest facial bone, mandible is fractured most among all the facial bones.¹ The pattern and incidence of mandibular fractures differ due to factors such as geography, seasons, occupation, the psychological make-up and standards of living and facilitate choosing the most ideal treatment plan. The mandible is an important osteological unit of the oral and maxillofacial skeleton that determines lower facial proportion through its close association with muscles and other vital structures. Several studies have shown that interpersonal violence is the major cause of these fractures in developed countries.^{2,3}

Patients And Methods

The medical records of all patients with maxillofacial trauma who reported to Haldia Institute of Dental Sciences & Research, West Bengal, India, between July 2019 and June 2022 were reviewed.

Data regarding age, gender, cause of injury, anatomic location, alcohol influence, treatment modality, and postoperative complications were collected. The hospital records of both inpatients and outpatients were analysed. All patients treated in the operating room and in the outpatient department were included in the study.

RESULTS:

From this study it can be observed that MALES are mostly affected and within the age group of 21 to 30 years. The highest incidence of mandibular trauma was seen in the age group of 21 to 30 years (33.3%), followed by the 31 to 40 year age group (23.61%). [FIGURE 1]

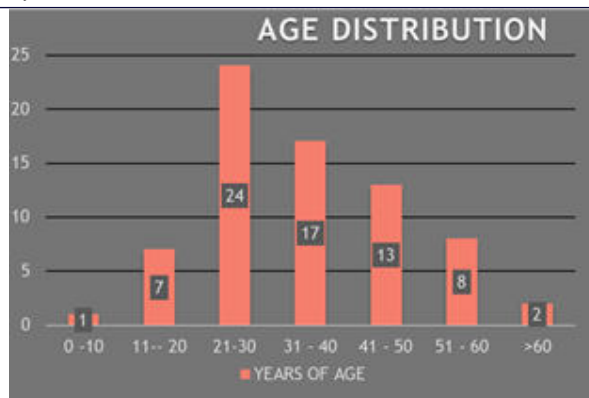
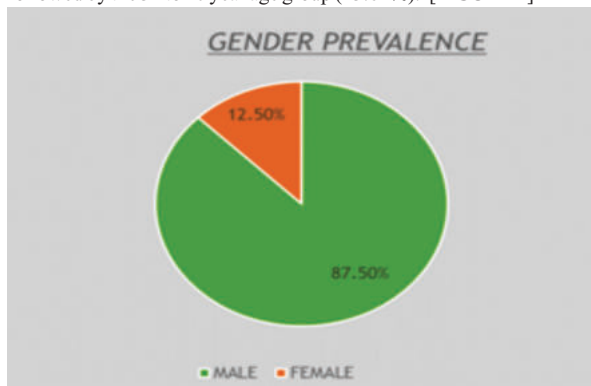


Figure 1: Prevalence And Distribution Of Mandibular Fractures

RTA in two wheeler under alcoholic influence was the most common etiology followed by industrial mishaps. [FIGURE 2]

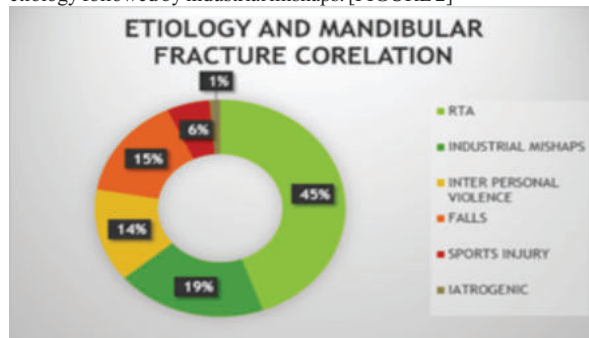


Figure 2: Etiology And Mandibular Fracture Correlation

Para-symphysis region is the most common site of mandibular fracture followed by condyle. [FIGURE 3]

Most of the fractures have been treated by open reduction and internal fixation.

The most common complication observed is the postoperative

paraesthesia which resolved in most of the cases by its own.

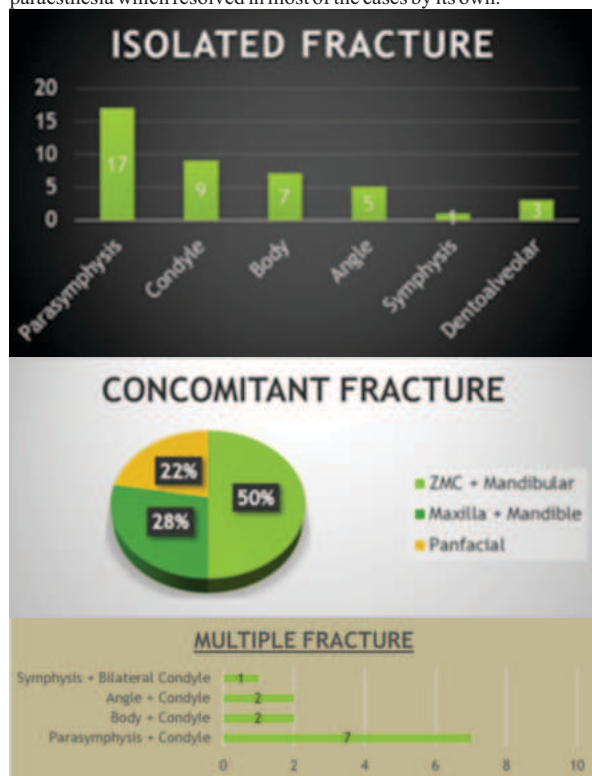


Figure 3: Site Distribution

In applying the Dingman and Natwig classification of mandibular fractures, the pattern of presentation showed an incidence of parasymphysis fracture was 40.48%, followed by condylar fracture 21.42% within 42 isolated mandibular fracture. In combined mandibular fracture the most common was the Para symphysis fracture with condylar fracture being 58.33%. Out of 18 concomitant fractures along with other facial bones the most common fracture was mandibular fracture with zygomatico-complex fracture being 50%. [FIGURE 3]

In 54 (75%) patients, open reduction and internal fixation were performed under general anaesthesia, which involved miniplates, screws, gunning splint or trans-osseous wiring, or some combination of these. [FIGURE 4]

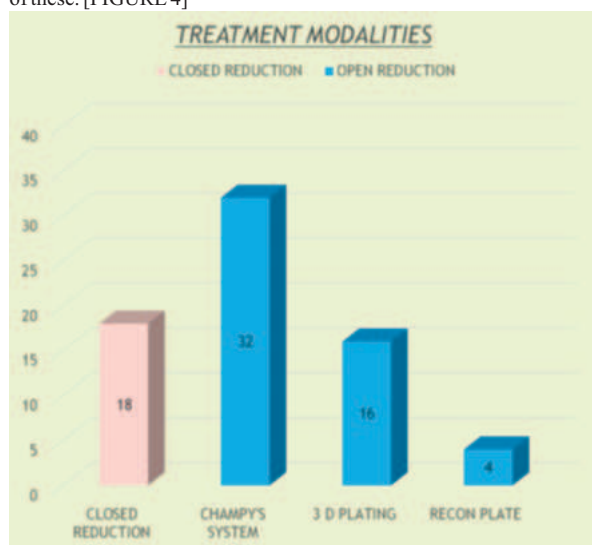


Figure 4: Treatment

In 72 patients treated for mandibular fracture, postoperative complications were seen in 27.8%. We found that postoperative paraesthesia was the most common complication (13.89%) amongst

all the 72 patients treated by closed or open reduction procedure followed by hardware failure being 6.94%.

DISCUSSION:

The results of this study of mandibular fractures treated at Haldia Institute of Dental Sciences and Research, Haldia, Purba Medinipur, West Bengal, are largely in agreement with previous reports, particularly in regard to age and gender of the patients.^{8,11} The gender distribution in the study revealed a male to female ratio is 7:1. It has been consistently shown that the frequency of mandibular fracture among males is far greater than that of females, the ratio being 3:1 to 5.4:1.9.⁹⁻¹³

Although road traffic accidents persist as the most common cause of maxillofacial trauma in developing countries, assault is found to be the most frequent cause in developed countries. Thorn et al reported that of 156 mandibular fractures in Greenland, 90% were caused by interpersonal violence. Adekeye studied 1447 cases in Nigeria and found that 76% of the injuries were related to vehicular accidents. Socioeconomic reasons such as poor roads and inadequate enforcement of road safety regulations and speed limits are some factors that have been noted to be responsible for the higher incidence of road traffic accidents in developing countries.^{8,9}

In a study by Ogundare et al¹⁰ in Washington, D.C., assault accounted for 76% of all mandibular fractures. Oji showed that, in Nigeria, road traffic accidents were the most common cause for mandibular fracture (83%).¹¹ Oslon et al¹⁵ demonstrated that road traffic accidents were the cause of fractures in 48%, whereas in a study by Ellis et al¹⁷ road traffic accidents accounted for only 15% of the fractures. In our study, 45% of patients due to road traffic accident was the most common cause of injury and 19% were due to industrial mishaps as it was an industrial belt.

Vetter et al, who showed that the symphyseal region was the most common location of mandibular fracture which simulate our study.³ However, Oslon et al showed a higher incidence of angle involvement in patients with mandibular fracture.¹⁵ Thus, we can see that the pattern of presentation of mandibular fracture is multifactorial. Fredrich et al showed that when fractures caused by automobile accidents were considered, the condylar region was the most common site of mandibular fractures. When motorcycles were considered, the symphysis region was most often affected. When assault was considered, fracture of the angle was demonstrated as the most common type of mandibular fracture. This is similar to the rates shown in the comprehensive study by Hussain et al¹⁸ who showed that the overall involvement of the middle third fractures in road traffic accidents was 20%. Fracture of the zygomaticomaxillary complex was found in the majority of those patients. This coincides with the study by Rowe and Killey.¹⁹

Reluctance to use helmets, people exceeding speed limits, decrease in tolerance level, and increasing personal competitiveness among young males could be possible explanations for the increased incidence of facial trauma in general and mandibular fracture in particular. We welcome more such data from other parts of the country for a better understanding of the patterns of maxillofacial trauma caused by road traffic accidents.

CONCLUSION:

The pattern and incidence of mandibular fractures differ due to factors such as geography, seasons, and means of livelihood, the psychological make-up and standards of living and facilitate choosing the most ideal treatment. The ideal treatment facilitate the early return of the patients to function and improved quality of life.

Our patient pool shows a specific pattern and predisposition in mandibular fractures. As most of the patients were under alcoholic influence and without helmet and as our college situated in an industrial belt, the no of mandibular fractures due to industrial mishaps is also high comparative to other areas of west Bengal.

This study gives us an indication to address not only about the treatment but also to enforce awareness about road safety protocols and industrial safety measures.

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