

Pattern and Distribution of Jaw fracture: A study conducted on 422 patients of jaw fracture

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Introduction :

The maxillofacial region may frequently uphold trauma due to various factors such as road traffic accident (RTA), political violence, assault, fall, industrial injury and sports injury. In western countries assaults are replacing RTA as the commonest etiological factor^{1,2}. However, in developing countries like Bangladesh, RTA remains the commonest cause of maxillofacial trauma^{3,4,5,6,7}. It is due to overcrowding, insecure road, violation of traffic rules and unskilled driving⁸. In case of mandible fracture it is most in the body of the mandible, it is 30-40%, followed by angle (25-31%), condyle (15-17%), symphysis (7-15%), ramus, alveolar and coronoid process. In case of midfacial fracture, it is more in zygomatico maxillary complex (40%), followed by Le-Forte I, II, III (35%), zygomatic arch (10%), alveolar process of maxilla (5%), smash fracture (5%), and other (5%).⁹

In Bangladesh Molla MR reported that the major causes of mandible fracture was road traffic accident (58.4%), the other causes were falls (13.6%), work related (12.8%), sports related (4.8%), assault (0.8%) and pathological fracture (1.6%)⁶.

Treatment of jaw fractures has changed over the last 20 years. There has been a decrease in the use of wire osteosynthesis and intermaxillary fixation and an increase in preference for open reduction and internal

fixation with miniplates. This has helped to reduce malocclusion, non-union, improved mouth opening, speech, oral hygiene, decrease loss and the ability for patients to return to work earlier.

The aim of the study was to examine the pattern and treatment of mandibular fractures.

This was a Prospective cross-sectional study in the period of January 2007 to June 2008 at the Department of Oral and Maxillofacial surgery Dhaka Dental College Hospital.

Study population: Patients who attended to out patient department of DDCH with jaw bone fracture irrespective of age and sex.

Sample size: 422 patients with jaw bone fracture.

Assignment procedure: Among all patients admitted to hospital with facial bone fracture, study subjects were assigned recording the data including the history sheet.

Results :

This was a prospective cross sectional study conducted in the outpatient department of oral and maxillofacial surgery of Dhaka Dental College from January 2007 to June 2008 presenting with jaw fracture. The main objective of the study was to assess proportion of jaw fractures among the admitted patients.

Table 1: Distribution of patients in the OMS outpatient department

sex	Hospital attendance		%
	Total Jaw fracture		
Male	2494	304	12.19
female	2223	118	5.31
Total	4717	422	8.94

Table 1 shows the number of patients attended in the OMS OPD during January 2007 to June 2008. Total 4717 patients attended in the OPD and among them 8.94 % had jaw fracture.

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Table 2 : Age distribution of study patients

Age	Frequency	Percentage
0-12	61	14.45
13-20	46	10.9
21-30	154	36.49
31-40	77	18.25
41-50	52	12.32
51-60	21	4.97
60>	11	2.62
Total	422	100.00

Table 3: Distribution of cause of jaw fracture:

Cause	Frequency	Percentage
RTA	257	60.9
Assault	67	15.9
Fall	46	10.9
Sports	31	7.3
Others	21	5.0

Table 3 shows the distribution of causes of jaw fracture: 60.9% were due to RTA followed by assault 15.9%.

Table 4: Distribution of pattern of jaw fracture:

Site	Frequency	Percentage
Mandible alone	227	53.8
Maxilla alone	92	21.8
Mand+ Maxilla	57	13.5
Mand+ Zygoma	10	2.4
Max +Zygoma	36	8.5
Total	422	100.0

Table 4 shows only mandible fracture occurred in 53.8% (n=227) of total study subjects and maxilla alone in 21.8%, both mandible and maxilla were 13.5%, maxilla with zygomatic were 8.5% and the lowest 2.4% were found in mandible with zygomatic bone fracture

TABLE 5: Age distribution of the admitted patient

Age group	Frequency	Percentage
0-12	12	14.6
13-20	9	11.0
21-30	30	36.6
31-40	15	18.3
41-50	10	12.2
51-60	4	4.9
61-70	2	2.4
Total	82	100.0

Table 5 : Shows distribution of age group of the study subjects (n-82) , 0-12years were 15%, 13-20 years were 11%, 21-30 years were 37%, 31-40 years were 18%, 41-50 years were 12%, 51- 60 years were 5% and 61-70 years were only 2% of the total respondents.

Table 6: Distribution of site of mandibular fractures:

Site	Number	Percentage
Body	91	31
Angle	42	27.9
Condyle	41	13.9
Parasymphysis	57	19.4
Symphysis	21	7.1
Dentoalveolar	02	0.7
Total	294	100.0

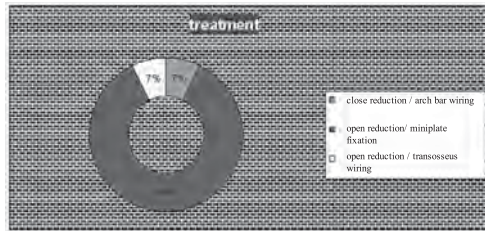
Table 6 shows that mandible fracture has specific pattern of distribution. Almost one third of the study subjects attended with fracture at body of mandible (31%), 27.9% had fracture at the angle of mandible, fracture at parasymphysis, condyle and symphysis were found to be 19.4%, 13.9% and 7.1% respectively.

Table 7: Pattern of treatment of Jaw fracture (out patient dept):

Type	Number	Percentage
close reduction with arch bar wiring	210	49.8
open reduction (intraoral approach) and miniplate fixation	80	18.9
Admission for major surgery(by general anaesthesia)	82	19.4
Missing	50	11.8
Total	422	100.0

Table 7 shows that in out patient department almost half of patients received close reduction with arch bar wiring.

Figure 1: Pattern of treatment of jaw fractures (indoor patient)



Discussion :

Bangladesh is a developing country with 150 million people and its road traffic system is very poor. Thus the prevalence of maxillofacial trauma fracture is significantly high due to road traffic accident which often affect the mandible of the facial bone. Epidemiological survey for jaw fracture in Bangladesh though not yet been done but several cross sectional studies on jaw fractures have been carried out.

Current study investigated the pattern, causes and management of maxillofacial fractures along with the common complications in maxillofacial trauma. Current study was conducted among 422 maxillofacial fracture patients attending in out patient department of Dhaka Dental College Hospital and also management with common complications of jaw fractures among 82 admitted patients who underwent open reduction with miniplate fixation.

Regarding age distribution it was found that highest percentage (36.49%) of patients were in the age ranges of 21-30 years followed by 31-40 years (18.25%).

The finding is almost similar in several of the multi-centered study although injury among young age group was found rather higher in the current series,¹⁰ Facial trauma patient were mostly (68.6%) male. High mobility of male might be the reason for higher proportion of trauma among males. The finding accords with most of the findings of the studies where sex was considered as variable¹¹

In several studies results showed that the greatest number of maxillo-mandibular fractures occurred in patients between the age group 21-30 years, with a male to female ratio of 3:1. Assault was found to have been the leading aetiological factor (29.9%) followed by motor vehicle and motor cycle accidents (27.3%), falls (18.2%), bar fights (9.1%), sports (8.6%), spouse abuse (3.7%) and work injuries constituted 3.2%. Mandibular fractures out-numbered maxillary fractures in a ratio of 4:1. Of the mandibular fractures, fracture of the body of the mandible occurred most followed by fracture at the

angle of the mandible, symphysis, condyle, alveolar and ramus.¹²

In this study, jaw fracture has specific pattern of distribution. Almost half of the subjects admitted with fracture of mandible (53.8%) and 21.8% had fracture of the maxilla alone. Fracture of both mandible and maxilla, mandible and zygomatic, maxilla and zygomatic were found to be 13.5%, 2.4 % and 8.5% respectively.

In the current study occlusion has been evaluated as satisfactory occlusion and mal occlusion. Occlusion has been the key variable for measuring the outcome and comparison of treatment modalities. Five of the components, Molar relation, Canine relation, anterior open bite, posterior open bite and cross bite were taken in to account for assessing the occlusion as the outcome of treatment.

Almost all methods were used for fixation by miniplate but simple methods of reduction and immobilization were used on our patient basis under local anesthesia. The results were satisfactory.

Conclusion & Recommendations :

In the present study, the mandibular fractures were more prevalent in male patients and during the 3rd decade of life. The most common cause was RTA and the more frequently affected regions were body and condyle. Isolated mandibular fracture occur in more than 50 percent of cases. Most patients were treated with close reduction and conventional means.

It is hoped that assessments such as the one presented here will be valuable to the government agencies and health care professionals involved in planning future programme of prevention and treatment.

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