

Mandibular condylar fractures: Treatment modalities and their outcomes

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Abstract:

This was a cross-sectional study conducted in the department of Oral and Maxillofacial Surgery of Dhaka Dental College and Hospital from January 2009 to September 2010 presenting with mandibular condylar fractures. The main objective of the study was to assess demographic characteristics to find the causes and site, to ascertain the existing treatment modalities and to observe the treatment outcome.

In the present study majority of patients were male and age belongs to 21 to 30 years. Road traffic accident was the main cause and unilateral fractures were more frequent. Subcondylar region was the most frequent site. Majority of the patients treated by close reduction. Preoperatively anterior open bite, posterior gagging and cross bite were present in 22, 3 and 1 patient respectively but postoperatively after 3 months anterior open bite and posterior gagging were present in only one patient and no patient had cross bite.

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Introduction:

Injuries of maxillofacial complex represent one of the most important health problem worldwide. Particular interest is created by high incidence and diversity of facial lesions. Moreover maxillofacial fractures are often associated with severe morbidity, loss of function, disfigurement and significant financial cost.¹ In the past 50 years the incidence of mandibular fractures are increasing which is possibly related to changes in reporting of data but more likely is a result of advancement in the field of diagnostic imaging that allow a more accurate detection of these fractures. In any event fracture involving the condylar process are by no means uncommon and probably make up between one quarter and one third of all mandibular fractures.² Mandibular condylar fractures are common in maxillofacial traumas, accounting for 20% to 52% of all mandibular fractures.³ According to Kelly, 1991 the most common unilateral fracture is of the condyle and the most common bilateral fractures is of the condylar heads.⁴

According to Villarrel et al, 2004 they are the most controversial fracture regarding diagnosis and management.⁵ Most of the condylar fractures are not caused by direct trauma but follow indirect forces transmitted to the condyle from above elsewhere. Consequently condylar fractures are those commonly missed.^{6,7}

There are two types of fractures intracapsular and extracapsular, but for practical purposes the anatomical level of the fractures is divided into three sites; the condylar head (intracapsular), the condylar neck (extracapsular) and the subcondylar region.^{6,8,9,10,11} The fracture is classified as; undisplaced, deviated, displaced (with medial and lateral overlap or complete separation) and dislocated (outside the glenoid fossa). Lindhal (1977) also classified head fractures into horizontal, vertical and compression types.⁸ Condylar head dislocation is more frequent in children.¹²

The proper management of fractured mandibular condyle is one of the most controversial in maxillofacial trauma. This controversy is reflected in the wide variety of opinions and proposed treatment modalities offered in literature. The commonly accepted and generally agreed on the goal of treatment is reestablishment of preoperative function of the masticatory system. This restoration typically involves the reestablishment of the preoperative relationship of the fractured segments, the occlusion and maxillofacial symmetry.²

It is believed that conservative approach should be regarded as the first choice of treatment for condylar fractures because as long as there is contact between proximal and distal bone fragments union will take place with an acceptable functional result. Closed reduction provide good results, conservative methods of treatment

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are technically simpler and can offer reduced overall morbidity with satisfactory functional results with infrequent ankylosis and avascular necrosis. A favorable conservative outcome depends on: a growing patient upto puberty, a fragment which is confined within the temporomandibular joint space. The duration of immobilization ranges from 2 to 4 weeks.¹³ Early rehabilitation of jaw and functional rehabilitation as an essential part of the treatment.¹² In contrast surgical treatment is indicated primarily for adults with displaced fractures or dislocation of condylar head.

The complications of condylar fractures include pain, restricted mandibular movement, muscle spasm and deviation of mandible, malocclusion, facial asymmetry and an ankylosis irrespective of whether treatment was performed or not.¹⁴

As there is no systematic study in Bangladesh about prevalence of condylar fractures and their management, this would help us in getting more information about demographic characteristics, etiology, site, treatment modalities and outcome of condylar fractures in the perspective of Bangladesh.

Materials and Methods:

It is a cross sectional study from January 2009 to September 2010 in Department of Oral and Maxillofacial Surgery, Dhaka Dental College and Hospital. Patients admitted to hospital and attended to outpatient department with mandibular fractures irrespective of age and sex.

A standardized structured data collection instrument was used to collect necessary information of the patients those who were examined in Oral and Maxillofacial Surgery Department of Dhaka Dental College and Hospital, which includes-

1. History of the patient : a questionnaire would use for demographic data and clinical history.
2. Clinical examination, radiological findings will be recorded in a check list.

Data analysed by SPSS Ver. 15 statistical software.

Results:

Table-I
Age distribution of the patients (n = 26)

	Frequency	Percent
0-10 years	3	11.5
11-12 years	7	26.9
21-30 years	10	38.5
31-40 years	4	15.4
41-50 years	1	3.8
More than 50 years	1	3.8
Total	26	100

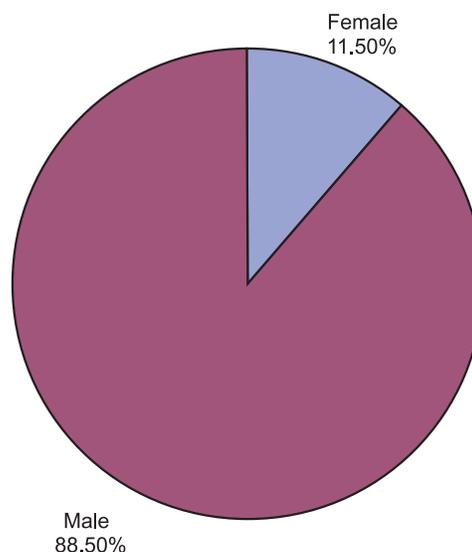


Fig.-1 : Sex distribution of the patients (n=26)

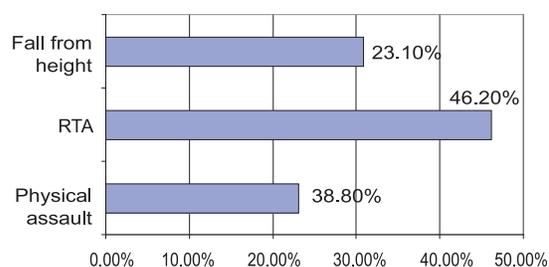


Fig.-2 : Causes of mandibular condylar fractures (n = 26)

Table-II
Prevalence of mandibular condylar fractures

Mandibular fracture	Condylar fractures	Percent
174	26	14.94%

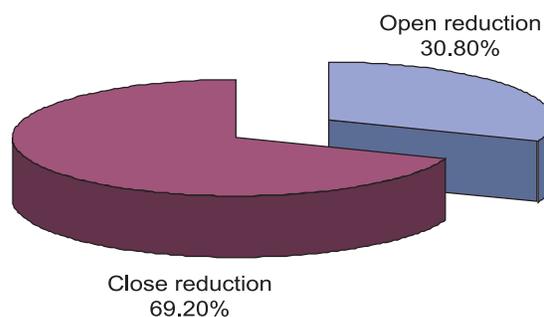


Fig.-3: Treatment modalities of mandibular condylar fractures (n = 26)

Table-III
Pre and postoperative occlusion (n = 26)

	Preoperative occlusion	Postoperative occlusion		
		1 st month	2 nd month	3 rd month
Anterior open bite	22	6	3	1
Posterior gagging	3	2	1	1
Cross bite	1	1	0	0

Above table shows preoperatively ant. Open bite, post. gagging and cross bite were present in 22, 3 and 1 of patients respectively but postoperatively after 3 months anterior open bite, posterior gagging and cross bite were present 1,1 and 0 of patients respectively.

Discussion:

Bangladesh is a developing country with 150 million people and road traffic system is very poor. Thus the prevalence of mandibular condylar fractures are significantly high due to road traffic accident. Epidemiological survey of condylar fractures in Bangladesh though not yet been done but several cross-sectional study on jaw fractures have been done.

This cross-sectional study was carried out in the department of Oral and Maxillofacial Surgery from January 2009 to September 2010 with a sample size of 26 patients presented with condylar fractures of mandible. The current study to investigated the pattern, causes and management of condylar fractures of mandible.

In current study regarding age distribution it was found that highest percentage (38.5%) of patients were in the age ranges of 21-30 years followed by in the age group of 11-20 years(26.9%). The finding is almost similar with other studies. In 2009 Sawazaki in a case series of 263 patients of condylar fractures reported mean age of 28.4 years.¹⁵ In 2004 Ahmed found in his study treated 230 patients with maxillofacial trauma that men 20-29 years of age sustained the most maxillofacial fractures.¹⁶

In this study condylar fractures patients were mostly male(88.5%). Male and female ratio was 7.67:1. Other studies also showed that majority of the patients were male but there was dissimilarity in the ratio of male and female. Sawazaki, 2009 found in his study male/female ratio was 3.05:1.¹⁵

In this study road traffic accident was found to have been the leading etiological factor(46.2%) followed by physical assault (30.8%) and fall from height (23.1%). Road traffic accident is the commonest cause of condylar

fracture. It is due to overcrowding, unsecured road, violation of traffic rules and unskilled driving. The most common cause of condylar fracture was road traffic accident(57.8%).

In this study prevalence of condylar fracture among all mandibular fractures were 14.94%. Rahman, 2008 found in his study that condylar fractures among all mandibular fractures were 14%.¹⁷

In this present study among 26 patients majority 18(69.2%) when treated by close reduction and 8(30.8%) by open reduction. In other studies similar pictures was noted at different centre. Ahmed, 2004 treated 230 patients and more than half of all cases were treated by close reduction (67%).¹⁶ Sawazaki, 2009 treated 263 patients and among them 78.5% managed by close reduction and 21.5% were treated by open reduction.

In this study preoperatively anterior open bite , posterior gagging and cross bite were present in 22, 3 and 1 patients respectively. Postoperatively after 3 months anterior open bite and posterior gagging were present in only 1 and 1 patient respectively. Postoperatively no patient had cross bite at the end of 3 months. 30% of their condylar process fractures treated closed had persistent deviation on opening.⁶ Macclennan, 1952 followed 180 cases for 14 to 37 months reported an overall complications rate of approximately 20%, including 29 patients with deviation on opening, on 7 with visible deformity.¹⁸ Lyons, 1947 found functional disturbances of any kind (deviation on opening , interocclusal malrelationship and mild giant noise during function) in 5.8% of cases.

Conclusion:

This was a cross- sectional study conducted in the department of Oral and Maxillofacial Surgery of Dhaka Dental College and Hospital from January 2009 to September 2010 presenting with mandibular condylar fractures. The main objective of the study was to asses demographic characteristics to find the causes and site, to ascertain the existing treatment modalities and to observe the treatment outcome.

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