

# Analyze the Prevalence and Factors Associated to Mandibular Condyle Fractures

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## ABSTRACT

**Aim:** To evaluate the incidence and pattern of mandibular condyle fracture and also examine the factors associated to mandibular condyle fractures at our settings.

**Methods:** This prospective study was conducted at Oral and Maxillofacial Department, Sandeman Provincial Hospital, Quetta from 1<sup>st</sup> July 2017 to 30<sup>th</sup> June 2018. Three hundred patients were found with maxillofacial trauma, in which 42 patients of both genders had mandibular condyle fracture. Patient's ages were ranging from <10 years to 65 years. Detailed medical history including age, sex, socio-economic status and factors associated to mandibular condyle fractures were examined.

**Results:** There were 42(14%) patients had mandibular condyle fractures, in which 33(78.57%) patients were male and rest were females. 9(21.43%) patients were ages <10 years, 20(47.62%) patients had ages 10 to 30 years, 8(19.04%) patients were ages between 31 to 50 years and 5 patients had ages >50 years. Out of 42 patients 58 condylar fractures was found. 27 (61.90%) were unilateral and rest 15(38.10%) were bilateral. The factors associated to mandibular condyle fractures was noted such as Traffic accidents, fall from height, personal violence, sports accidents as 34 (80.95%), 4 (9.52%), 1 (2.38%) and 3 (7.14%) respectively.

**Conclusion:** Mandibular condyle fractures was mostly observed in patients having ages 10 to 30 years and majority of mandibular condyle fractures were due to road traffic accidents. We should have to aware people to wear helmet, and use of seat belts and traffic rules when they are on roads

**Keywords:** Incidence, Prevalence, Mandibular condyle fracture, Factors

## INTRODUCTION

Worldwide, Mandibular condylar fractures are most commonly found in oral and maxillofacial departments and reported as 1/3 of all mandibular condyle fractures<sup>1</sup>. In paediatric population condyle is the common injured area. It may due to a growth center in condyle in paediatric patients and the mandible reaches to its adult size<sup>2,3</sup>.

The factors associated to condyle fractures is usually due to violence and trauma<sup>4</sup>. Mandibular condyle fractures is mostly due to road traffic accidents and it is reported as the major factor for condylar fractures, inter-personal violence, sports activities and fallen from height are also the etiology of mandible condylar fractures. Maxillofacial area is likely susceptible to injuries and the fractures may occur due to its involving anatomical characteristics<sup>5</sup>. The prevalence of the fractures in the mandibular area is quite high as compared to the other parts of skeleton<sup>6</sup>. The frequency of fracture around the mandibular region is higher than that of the other parts of the body.<sup>2</sup> Mandible is the second most commonly fractured bone after nasal bone, though it is the largest and strongest facial bone. Mandibular fractures can involve only one site or can often involve multiple anatomic sites simultaneously.

The only ambulatory bone of face bony structure is the bone of the lower jaw mandible and is very prominent

raise in number of such cases. In science dealing with formation. It is a membrane bone and usually more fractured rather than other bones of face. Rate of lower jaw bone fractures double than the midfacial fractures.<sup>7</sup> 44.6–74.4 kg/m is the needed energy for fracture, zygoma requires the same and frontal bone is needs half of it.<sup>8</sup> Fracture maxilla requires ¼ of it. Bone breakage from of side of tensile ache, because the hindrance to refusal forces is larger.<sup>6</sup> Mental protuberance Areas from the Area lateral are the area that exhibit delicacy include, mental foramen, mandibular angle, and the condylar neck.<sup>9</sup> The main causes of maxillofacial fractures worldwide are traffic accidents, assaults, fall, and sport-related injuries. Alcohol consumption is a well known contributing factor to mandibular fractures derived from assault. Hagan and Huelke in their survey showed a clean-cut pattern of mandibular fractures<sup>8</sup> as (i) The condyle region is the most common site of fracture. (ii) Angle is the second most common site of fracture. (iii) But if only one fracture is there, then angle is the most common site of fracture than condyle. (iv) Multiple fractures are more common than single (ratio, 2:1), 4.80% of the patients were dentate<sup>10</sup>.

## MATERIALS AND METHOD

This prospective study was conducted at Oral and Maxillofacial Department, Sandeman Provincial Hospital, Quetta from 1<sup>st</sup> July 2017 to 30<sup>th</sup> June 2018. During study period 300 patients were found with maxillofacial trauma, in which 42 patients of both genders had mandibular condyle fracture. Patient's ages were ranging from <10 years to 65 years. After taking informed consent from all the patients, detailed medical history including age, sex, socio-economic status and factors associated to mandibular condyle fractures were examined. All patients were diagnosed by

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multi-detector CT scan. Classification of fractures was noted as head, neck and sub condylar. Degree of condylar displacement was noted as class 1, 2, 3 and 4 according to Maclennan<sup>11,12</sup>.

Patients with oral cancer, on chemotherapy and those whom were not interested for surgical treatment were excluded from this study. Treatment modalities was surgical ORIF and non-surgical. Other fractures were characterized by their location. All the statistical data was analyzed through SPSS 19.

**RESULTS**

Out of 93 patients with mandible fractures trauma, 42(45.16%) patients had mandibular condyle fractures, in which 36(85.71%) patients were male and rest were females. 9(21.43%) patients were ages <10 years, 20(47.62%) patients had ages 10 to 30 years, 8(19.04%) patients were ages between 31 to 50 years and 5 patients had ages > 50 years. Out of 42 patients 58 condylar fractures was found. 35(60.34%) were unilateral and rest 23(39.66%) were bilateral. The factors associated to mandibular condyle fractures was noted such as Traffic accidents, fall from height, personal violence, sports accidents as 34(80.95%), 4(9.52%), 1 (2.38%) and 3(7.14%) respectively. Distribution of condyle fractures base on their location was noted as subcondylar, head and neck as 27(46.55%), 13(22.41%) and 18(31.03%). We found fractures based on their displacement such as Class I, II, III, IV as 12(20.59%), 9(15.52%), 24(41.38%) and 13(22.41%) respectively. Out of 58 condyle fractures 35(60.34%) were treated by Open Reduction Internal Fixation method and rest 23(39.66%) were treated by funtional therapy and elastic traction method.

Table 1: Age, gender and residency wise distribution of patients

Characteristics	No.	%
<b>Gender</b>		
Male	36	85.71
Females	6	14.29
<b>Age (years)</b>		
< 10	9	21.43
10 – 30	20	47.62
31 – 50	8	19.04
> 50	5	11.9
<b>Residency</b>		
Urban	30	71.43
Rural	12	28.57

Table 2: Distribution of condyle fractures

Characteristics	Unilateral	Bilateral
Condyle Fractures (n=58)	35(60.34%)	23(39.66%)
Left	17	-
Right	18	-

Table 3: Factors associated to fractures

Characteristics	No.	%
Traffic Accidents	34	80.95
Fall from height	4	9.52
Personal Violence	1	2.75
Sports activities accidents	3	7.14

Table 4: Condyle fractures based on yheir location (n=58)

Characteristics	No.	%
Subcondyle Fractures	27	46.55
Head	13	22.41
Neck	18	31.03

Table 5: Fractures with their displacement.

Characteristics	No.	%
Non Displacement CI	12	20.59
Deviation CII	9	15.52
Displaced CIII	24	41.38
Dislocation CIV	13	22.41

Table 6: Treatment modalities

Characteristics	No.	%
ORIF	35	60.34
Functional/elastic Therapy	23	39.66

**DISCUSSION**

Globally, fractures rate in the body part of human is too high, it is due to population been increased and road traffic accidents are the major etiology beyond the fractures of bones.<sup>13</sup> The incidences of mandible fractures increases due to large number of road traffic accidents ,violence and other different activities. In our study, out of 93 mandible fractures 42(45.16%) of condyle fractures was found. A study conducted by Marker et al<sup>14</sup> reported 41% of condyle fractures and another study conducted by Ellis et al<sup>12</sup> reported 29% of condyle fractures in the mandible region. In these studies, authors demonstrated that the main cause of these fractures was due to large number of road traffic accidents and inter-personal violence. In our study, road traffic accidents rate was high as compared to other factors and this shows the similarity to the other studies, in which road accidents was rated as 64%, 69% and 73%<sup>15-17</sup>.

In our study, 36 (85.71%) patients were male and rest was females. Nine (21.43%) patients were ages < 10 years, 20 (47.62%) patients had ages 10 to 30 years, 8 (19.04%) patients were ages between 31 to 50 years and 5 patients had ages >50 years. These results shows similarity to the study conducted by Lalatendu et al<sup>18</sup> reported that rate of male population was high as compared to females and mostly patients were in adult ages.<sup>19</sup> In our study we found factors associated to mandibular condyle fractures was noted such as traffic accidents, fall from height, personal violence, sports accidents as 34(80.95%), 4(9.52%), 1(2.38%) and 3(7.14%) respectively. Distribution of condyle fractures base on their location was noted as subcondylar, head and neck as 27(46.55%), 13(22.41%) and 18 (31.03%). These results shows similarity to some other studies conducted regarding madibular condylar fractures in which rate of road traffic accidents followed to condyle fractures was high.<sup>20,21</sup>

In this research, out of 58 condyle fractures 35(60.34%) were treated by open reduction internal fixation method and rest 23(39.66%) were treated by funtional therapy and elastic traction method. We found 35 (60.34%) were unilateral and rest 23(39.66%) were bilateral. We observed ORIF method for treatment of condyle fracture is safe and effective followed by its outcomes and we observed no procedural complications followed to treatment<sup>22</sup>.

## CONCLUSION

Maxillofacial injuries are most commonly found in oral and maxillofacial settings. In our study, we concluded that mandibular condyle fractures was mostly observed in patients having ages 10 to 30 years and majority of mandibular condyle fractures were due to road traffic accidents. We should have to aware people to wear helmet, and use of seat belts and traffic rules when they are on roads.

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