

# FREQUENCY OF MANDIBULAR CONDYLAR FRACTURE IN CHILDREN PRESENTING TO HAYATABAD MEDICAL COMPLEX, PESHAWAR: A CROSS SECTIONAL STUDY

Fahimuddin<sup>1</sup>, Asif Kamal<sup>2</sup>, Nadia Ashraf<sup>3</sup>, Harmain Kayani<sup>1</sup>

<sup>1</sup>Department of Oral and Maxillofacial Surgery, Khyber Girls Medical College, Peshawar

<sup>2</sup>Department of Oral and Maxillofacial Surgery, District Head Quarter Hospital, Wana, South Waziristan

<sup>3</sup>Department of Oral and Maxillofacial Surgery, Peshawar Dental College, Peshawar

## ABSTRACT

**Objectives:** To determine the frequency of condylar fractures in children presented.

**Materials and Methods:** This descriptive (cross-sectional) study was carried out at 2nd November 2020 to 25th October 2022. A total of 261 trauma patients were observed to determine the frequency of condylar fractures in children.

**Results:** A total of 261 maxillofacial trauma patients were included in the study. Among these, 109 (42%) had condyle fracture. Half of the patients (51.4%) were in the age of 11-15 years followed by 6-10 years (35.8%) with mean age of 12 years. Among 109 patients who had mandibular condylar fracture, majority were males (61%) with a male to female ratio of 2:1. Regarding the etiology, the main reason was fall (37.6%) followed by road traffic accident (26.6%). In relation to the fracture distribution, unilateral condyle fracture (74.3%) predominate the bilateral involvement. More over isolated condyle fractures (56%) were more frequent than fracture at multiple sites (44%) with the most common combination noted was condyle and para symphysis (52%).

**Conclusion:** The majority of patients were toddlers and school going children with male predominance. The mandibular condyle was the most frequent fractured site mainly due to fall and RTA. Special precautions should be taken particularly during growing age in order to prevent fall injuries and its subsequent complication.

**Key words:** Condylar fracture, fall, pediatric or children

## INTRODUCTION

Condyle is a very crucial part of mandible particularly in children because it not only makes temporomandibular joint by articulating with the squamous part of temporal bone<sup>1</sup>. But it also provides a growth center for mandible<sup>2,3,4</sup>. Any injury to the condyle during growing age will result in mandibular growth disruption<sup>3,5,6</sup>.

Condylar fractures are quite common among children. According to previously conducted studies, condylar fracture represents 11% to 16% of all facial fractures during young age<sup>5,7,8</sup>. In another study, con-

dylar neck was found to be the most frequent site of fracture (55%) in patients younger than twelve years of age<sup>2</sup>. Generally, males are more prone to trauma as compare to female<sup>4,7,9</sup>.

In relation to the mechanism and etiology of condylar fracture, most of the these injuries are the result of indirect blow which is transmitted to the condyle through an impact in the symphysis/para-symphysis region of mandible<sup>1,6,7</sup>. Considering the etiology, the most common cause in children is fall (68.5%)<sup>2,6,7</sup>. Other causes are road traffic accidents, assaults and sports injuries<sup>3,6,8</sup>.

The problem with condyle fracture is that they frequently remain undiagnosed or left untreated resulting in 5 to 10 percent of severe mandibular deficiency<sup>7,10</sup>. Condylar fracture is of extreme con-

### Correspondence:

**Nadia Ashraf**

Assistant Professor,  
Department of Oral & Maxillofacial Surgery,  
Peshawar Dental College, Warsak road Peshawar  
Email: dr.nadiaashraf7@gmail.com

cern specially in young age as compare to adults because it leads to serious complications like facial asymmetry, malocclusion and Temporomandibular joint ankylosis<sup>10,11</sup>.

The purpose of the present study is to determine the frequency of condyle fracture in pediatric patients because if such injury is not treated properly or left untreated can cause serious morbidity and affects the quality of life. This study will provide a circumstantial evidence and help the policy makers to take preventive measures in playing areas/schools or climbing on altitudes in order to minimize the risk of facial injuries. Moreover, this study will alert the treating surgeon to timely diagnose the condylar fracture especially in young patients.

**MATERIALS AND METHODS**

This is a descriptive (cross-sectional) study that was carried out from 2nd November 2020 to 25th October 2022. Ethical approval was obtained from the Research and Ethics Committee of the hospital. A total of 261 patients from both genders with age less than 15 years having facial trauma was included in the study. Informed written consent was taken from every patient after explaining the purpose and benefits of the study. A specially designed performa was used for data collection. Thorough history, clinical examination and plain radiographs like orthopantomogram (OPG), open mouth reverse townes's view and posteroanterior view of face was advised to every patient to confirm the diagnosis of

condylar fracture. In some selected cases, computed tomographic scan was also obtained.

The collected data was analyzed by using SPSS version 20. Mean and standard deviation was calculated for numerical variable like age. Frequencies and percentages were calculated for categorical variables like gender and condylar fracture.

**RESULT**

A total of 261 maxillofacial trauma patients were included in the study. Among these, 109 (42%) had condyle fracture. The age range of the patients presented was 2-15 years with mean age of 12 years ± 1.87 SD. Half of the patients (51.4%) were in the age of 11-15 years followed by 6-10 years (35.8%) table 1.

Among 109 patients who had mandibular condylar fracture, majority were males (61%) and 39% females with a male to female ratio of 2:1 (Figure 1).

In relation to the cause of pediatric condylar fracture, the prime reason was fall (37.6%) followed by road traffic accident (26.6%) and sport injuries (20.2%). Detailed description is given in table 2.

Regarding the fracture distribution, unilateral condyle fracture (74.3%) predominate the bilateral involvement. Moreover isolated condyle fractures (56%) were more frequent than fracture at multiple sites (44%) with the most common combination noted was condyle and parasymphysis (52%) Table 3.

**DISCUSSION**

Maxillofacial injuries are considered one of the main reasons that cause mortality and morbidity in pediatric population. Mandibular fractures particularly condyle fracture in early years of life can result

**Table 1:**

Age of the patient	N (Percentage)
1-5 years	14 (12.8%)
6-10 years	39 (35.8%)
11-15 years	56 (51.4%)
Total	109 (100%)

**Table 2:**

Etiology of condylar fracture	N (Percentage)
Fall	41 (37.6%)
Road Traffic accident	29 (26.6%)
Sports	22 (20.2%)
Assault	13 (11.9%)
Fire arm injuries	01 (0.9%)
Bomb blast injuries	13 (2.8%)
Total	109 (100%)

**Table 3:**

Types	
Unilateral condyle fracture	81 (74.3%)
Bilateral condyle fracture	28 (25.7%)
Site	
Isolated condyle fracture	61 (56%)
Combination of condyle fracture	48 (44%)
Condyle & parasymphysis	25 (52%)
Condyle & body	13 (27.1%)
Condyle & dentoalveolar	7 (14.6%)
Condyle & angle	3 (6.3%)

in both esthetic disfigurement as well as functional deterioration<sup>14</sup>.

The ongoing study revealed that only 12.8% of condylar fractures were reported in children less than five years of age. This finding is in accordance

with the literature which suggests that maxillofacial trauma is quite rare in infants and preschool age children<sup>3,7,14</sup>. The reason for this finding is that the parents are usually over protective and provide greater supervision to their young ones as compare to

**Table 4: Stratification of age wise distribution w.r.t Mandibular condylar fracture in children (n=194)**

Age of the participants	Condylar Fracture		Total	P.Value
	Yes	No		
1 - 5 Years	27	25	52	0.001
	51.9%	48.1%	100.0%	
6-10 Years	24	21	45	
	53.3%	46.7%	100.0%	
11-15 Years	53	44	97	
	54.6%	45.4%	100.0%	
Total	<b>104</b>	<b>90</b>	<b>194</b>	
	<b>53.6%</b>	<b>46.4%</b>	<b>100.0%</b>	

**Table 5: Stratification of gender wise distribution of w.r.t mandibular condylar fracture in children (n=194)**

Gender wise distribution	Condylar Fracture		Total	P.Value
	Yes	No		
Male	33	24	57	0.001
	57.9%	42.1%	100.0%	
Female	71	66	137	
	51.8%	48.2%	100.0%	
Total	<b>104</b>	<b>90</b>	<b>194</b>	
	<b>53.6%</b>	<b>46.4%</b>	<b>100.0%</b>	

**Table 6: Stratification of gender wise distribution of w.r.t mandibular condylar fracture in children (n=194)**

Frequency of Maxillofacial fractures in Children	Condylar Fracture		Total	P.Value
	Yes	No		
Mandibular condyle	12	10	22	0.02
	54.5%	45.5%	100.0%	
Mandible	27	22	49	
	55.1%	44.9%	100.0%	
Maxilla	14	14	28	
	50.0%	50.0%	100.0%	
Dento alveolar	10	15	25	
	40.0%	60.0%	100.0%	
Multiple bones	13	8	21	
	61.9%	38.1%	100.0%	
Zygomatic Complex	15	8	23	
	65.2%	34.8%	100.0%	
Nose	13	13	26	
	50.0%	50.0%	100.0%	
Total	<b>104</b>	<b>90</b>	<b>194</b>	
	<b>53.6%</b>	<b>46.4%</b>	<b>100.0%</b>	

an older child. Moreover, there are some anatomical facts which also contribute to a decrease occurrence of maxillofacial trauma in younger age group like the face occupies a relatively retruded position in relation to the skull with a more cranium to face ratio along with increased flexibility of bones of the face. According to our studies, the majority of patients (51.4%) who had condyle fracture were the age of 11 to 15 years. Different factors like facial growth, active participation in school activities and more interaction with the society lead to increased risk of injuries in this age group<sup>1,8,10,15</sup>.

In the present study, about two third of the patients were males (61%) with a male to female ratio of 2:1. This corresponds positively with the results of studies done worldwide<sup>13,16,17,18</sup>. The fact behind this is that boys are generally more active and involved in outdoor activities as compare to girls in all age groups<sup>18</sup>.

In relation to the etiology of pediatric mandible fracture, the prime reason was fall (37.6%) followed by road traffic accident (26.6%) and sport injuries (20.2%). These results are in agreement with the findings of Akkoc et al<sup>14</sup> Al Haq et al<sup>19</sup> and Kaura et al<sup>20</sup> who also stated that the most frequent mechanism of facial trauma in pediatric group was fall from height.

It was determined in our study that the unilateral condyle fracture (74.3%) had predominated the bilateral involvement. Moreover isolated condyle fractures (56%) were more frequent than fracture at multiple sites (44%) and the most common combination noted was condyle and para symphysis (52%). These observations are also supported by the findings of other researchers from different parts of the world<sup>21,22,23,24</sup>. The increased frequency of condylar fracture in young age is due to the fact that in children the condyle is composed of relatively more amount of medullary bone surrounded by a thin rim of cortex as compare to adults<sup>22</sup>.

## CONCLUSION

It was concluded from the present study that the majority of patients were toddlers and school going children with male predominance. The mandibular condyle was the most frequent fractured site mainly due to fall and RTA. Special precautions should be taken particularly during growing age in order to prevent fall injuries and its subsequent complication

like temporomandibular joint ankyloses.

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