Original Article

RISK FACTORS AND PATTERN OF MANDIBULAR CONDYLAR FRACTURES IN PATIENTS PRESENTING AT AYUB TEACHING HOSPITAL ABBOTTABAD

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ABSTRACT

Objective: *To detect condylar fracture risk factors and patterns in Ayub Teaching Hospital Abbottabad patients.*

Study design : *cross-sectional descriptive study*

Duration and place of study : *department of the Ayub Teaching Hospital in Abbottabad between March 26 and September 26, 2014*

Materials and Methods: *This cross-sectional descriptive research was conducted at the dentistry department of the Ayub Teaching Hospital in Abbottabad between March 26 and September 26, 2014. It was conducted in the Oral and Maxillofacial Surgical Unit. Ninety patients in all who fulfilled the requirements for inclusion were counted. Following a comprehensive history, clinical examination, and radiographic examinations, a diagnosis was made for each patient. SPSS 16.0 was used to analyze the data.*

Results: *This cross-sectional descriptive study was conducted at the dentistry department of the Ayub Teaching Hospital in Abbottabad between March 26 and September 26, 2014. It was conducted in the Oral and Maxillofacial Surgical Unit. Ninety patients in all who fulfilled the requirements for inclusion were counted. Following a comprehensive history, clinical examination, and radiographic examinations, a diagnosis was made for each patient. SPSS 16.0 was used to analyze the data.*

Conclusion: *The majority of the fractures were undisplaced and subcondylar. The most prevalent risk factor is RTA. In the second decade of life, condylar fractures were more common in men than women.*

Keywords: *Mandibular condylar fractures, road traffic accident, mandibular fractures, temporal temporomandibular joint.*

INTRODUCTION

The mandible is made up of two rami and a body. The rami are arranged vertically With anterior coronoid and posterior condyloid processes. Of all mandibular fractures, condylar fractures account for 24.2% of cases.[1] Patients with condylar fractures are often young, with an average age of 13 [2]. Females get subcondylar fractures in maxillofacial trauma more often than men [3]. About three times as many unilateral fractures occur as bilateral fractures. The ratio of condylar fractures in children to adults is 5:3 [4]. There is a suggestion that low condylar fractures, or fractures that extend into the ramus, account for a very tiny percentage of condyle fractures in young children, with the majority being intra-capsular and high neck fractures. The mandible is the most often fractured bone in children who need hospitalization and surgical intervention; over 80% of mandibular fractures occur at the angle, condyle, and subcondylar area. The majority of fractures are subcondylar, unilat-

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eral, and displaced. The majority of condylar fractures coexist with mandibular body fractures. [5] Direct or indirect impact might result in condylar fractures.6 Road traffic accidents are the most frequent cause of condylar fractures (RTA)[7]. Fall, trauma from sports, intimate partner violence (IPV), firearm injury (FAI), and industrial trauma are additional risk factors. The likelihood of mandibular condylar fractures decreases when mandibular third teeth are impacted.8 All age groups are at risk for temporomandibular dysfunction (TMD) due to losing the third molar. Mandibular condylar fracture risk factors differ amongst nations based on dominant environmental, social, and cultural variables. Condylar fractures are linked to significant morbidity of malocclusion and temporomandibular joint dysfunction, particularly in cases of intra-capsular fractures, restricted mouth opening, slowness, and altered chewing cycle patterns.

This study will help us understand the pattern and identify the risk factors of condylar fractures. It may also offer evidence supporting recommendations for potential preventive measures, such as laws requiring seat belts, prohibiting driving after intoxication, increasing public awareness of traffic laws, and requiring protective gear when playing sports or operating a vehicle. It will assist in lowering the frequency of condylar fractures brought on by various risk factors.

RESULTS

The Oral and Maxillofacial Surgical Unit, Dentistry Department, Ayub Teaching Hospital, Abbottabad, was the site of this investigation. Ninety-nine individuals who satisfied the inclusion criteria had their mandibular condylar fractures assessed.

The research found that road traffic accidents (RTAs) accounted for 43 47.8% of the condylar fracture risk factors. Fall, 26 (28.9%), fight, 9 (10%), and sports, 7, or 7.8%, were the next most prevalent risk factors. Of the forty-three RTA cases, sixteen were female, and 27 were male. Twelve of the 26 autumn cases were in men and fourteen in females. Six of the seven incidents involving sports were male, and one included a female; all nine cases involving fights were men. Table No. 1 shows 32 females and 58 men (64.4%). The ratio of men to women was 1.8:1. (Table #2)

In this survey, the second decade of life (34.4%) was the most prevalent age group. This was followed by the third decade of life (22.2%), the first decade (15.7%), and the fourth decade (12.3%). Nine instances were female, and six were male in the first ten years of life. Twelve women and nineteen men made up the second decade. Nine cases were of men and three of females in the fourth decade, compared to fifteen cases of males and five of females in the third. (Table Third)

Subcondylar 39 (43.3%) was the most frequent fracture level, followed by condylar head 33 (36.7%) and condylar neck 18 (20%). (Table #4)

There were 38 misplaced fractures (42.2%) and 52 non-displaced fractures (57.8%). (Table Number 5)

MATERIAL AND METHODS

The following method of data collection was used. First, each patient gave their informed permission. The patient's age and gender were recorded. Both the grievances that were presented and an appropriate history were elicited. The history of the presenting symptoms includes details on the accident's cause and timing, any history of ear bleeding, and any other pertinent information, such as vomiting or losing consciousness at the injury scene. A thorough medical and mental health history was taken to treat mandibular fractures in the future. To avoid misdiagnosis, a history of prior mandibular trauma was recorded. Any temporomandibular joint abnormalities before the trauma were inquired about. It was observed where, how much, and which way the traumatic force came from. A clinical examination was then carried out. Before the inspection, the patient's face was carefully cleansed with warm water or swabs to remove any caked-on blood, road grime, etc. Any mandibular swelling, chin lacerations, facial asymmetry, ecchymosis, and external acoustic meatus hemorrhage were seen during the extraoral examination.

To detect any soreness, aberrant movement, or step deformity, palpations were performed first in the condylar area and then moved downhill and down the bottom border of the jaw. The external acoustic meatus was punctured with fingers to assess condylar motions. It was recorded whether there was any intraoral echymosis, disrupted occlusion, anterior open bite, soft tissue bleeding, degree of mouth opening, etc. A dental mirror was used to aid percussion teeth.

Following this, a radiographic test was carried out to verify the diagnosis and determine the displacement

Table 1: Distribution of Condylar Fractures According to its Risk Factors (n=90)

RISK FACTORS	NUMBER OF CASES	PERCENTAGE
RTA	43	47.8
Fall	26	28.9
Fight	9	10.0
Sports	7	7.8
Industrial trauma	1	1.1
Others	4	4.4
Total	90	100.0

Table 2: Gender Distribution of Condylar Fractures (n=90)

GENDER	NUMBER OF CASES	PERCENTAGE
Male	58	64.4
Female	32	35.6
Total	90	100.0

Table 3: Age Distribution of Condylar Fractures (n=90)

AGE IN GROUPS	FREQUENCY	PERCENTAGE
0-10 Years	15	16.7
11-20 Years	31	34.4
21-30 Years	20	22.2
31-40 Years	12	13.3
41-50 Years	6	6.7
51-60 Years	3	3.3
61-70 Years	2	2.2
71-80 Years	1	1.1
Total	90	100.0

Table 4: Site Distribution of Condylar Fractures (n=90)

FRACTURE LEVEL	NUMBER OF CASES	PERCENTAGE
Sub Condylar	39	43.3
Condylar head	33	36.7
Condylar Neck	18	20.0
Total	90	100.0

Table 5: Distribution of Displacement of Condylar Fractures (n=90)

DISPLACEMENT	NUMBER OF CASES	PERCENTAGE
Undisplaced	52	57.8
Displaced	38	42.2
Total	90	100.0

and level of the fracture. A panoramic radiograph proved to be the most useful modality for mandibular and condylar fractures. Additional radiographs included the reverse Towne view, mandibular occlusal view, posterior-anterior (PA) mandibular view, and lateral oblique view. A CT scan was done if the condylar head was difficult to see. Periapical radiographs of the teeth on each side of a fracture line were taken to check for root fractures.

The pattern and risk variables arranged the outcomes. A proforma that was specifically created was then filled out using the data.

DISCUSSION

Numerous events may result in face trauma, such as car crashes, assaults, fire-related arm injuries, obstetric trauma, falls, and contact sports [9].

In this research, the most prevalent risk factor was RTA, 43 (47.8% n=90). My results are in line with earlier national and international research projects conducted by Nwoku AL et al., and Zakia MA et al. [11] The research above indicates that RTA remains the most prevalent risk factor in undeveloped and underdeveloped nations; however, this is not the case with studies conducted by James RB [12], who said that interpersonal violence (IPV) is now the primary cause of mandibular fractures. According to this study, falls were the second most frequent risk factor (n=90; 28.9%), which aligns with research conducted in Australia and Pakistan by Shahim FN [13]. However, this research contradicts that of Abbas I et al. (2014), who found that falls are the primary cause of condylar fractures in Pakistan.

The majority of children fell from beds, staircases, and their parents' hands as a result of parental negligence and insufficient safety measures in construction plans. The second reason might be the growing prevalence of off-road vehicles and multispeed bicycles in the hands of unskilled or unprotected kids. The research found that IPV was a rare cause, partly due to the calm nature of the Abbottabad community and

the Islamic prohibition on alcohol usage. According to this research, home conflicts were linked to attacks. My research aligns with a study conducted in Libya (2015), which found that since Libya lacks bars, pubs, and nightclubs, fights and attacks seem less prevalent there. Sports-related fractures accounted for 7.8% (n=90) of all common causes in our study, which aligns with earlier research conducted by Ellis E. et al. in Pakistan [16] and India [17]. Six of the seven sports instances I studied were males, and one included a girl. This illustrates the societal and cultural constraints as well as the male-dominated culture in which women are expected to remain at home and are seldom seen with these kinds of injuries. In comparison, the research conducted in Bahrain [18] found that 12.3% of condylar fractures (n=325) were associated with sports. Firearm injury (FAI), which accounts for 4.4% of risk variables, was another. This contrasts with the 16.6% found in the other research conducted in Pakistan [19]. The low incidence of FAI in my research is because there are fewer guns in this region than in other areas of the province where having guns is ingrained in people's culture. According to my study's male-to-female ratio of 1.8:1, men are more likely than women in this region of the globe to suffer from fractured condyles. This discovery aligns with the findings of other research projects carried out in Pakistan [20]. and Australia [21]. This research contrasts with those conducted at Chaim Sheba Medical Centre 3, where females get condylar fractures more often than men. According to my study's male-to-female ratio (1.8:1), women currently participate in outdoor activities at a rate almost equal to that of men. This study's primary age group was between 11 and 20 years old, which aligns with previous research conducted in Pakistan [16]. This research, however, differs from others conducted in the United States, Turkey [22], and Bahrain [18], where the majority of participants were between the ages of 21 and 30. The age group from 21 to 30 was the second most prevalent in my survey.

Patients above the age of sixty had a low prevalence of 2.2%, consistent with findings from earlier studies conducted in Saudi Arabia and Pakistan [19]. 23 Since the second and third decades of life are the most active, there may be a connection between the increased prevalence of fractures in the age groups of 11–20 and 21–30 years and the susceptibility of individuals in these decades to trauma. Sports, fighting, aggressive activities, industries, and high-speed transit are increasingly prevalent among these age groups. In this research, subcondylar fractures (39; 43.3%) were the most common, followed by condylar head fractures (33) (36.7%) and condylar neck fractures (18) (20%). The subcondylar region was identified as the most often fractured location of the mandible by Silvennoinen U et al. [25], which is in line with the findings of the Korea [24] research. Fifty-two fractures (57.8%) and 38 fractures (42.2%) were displaced in this research. These results conflict with Yamaoka M. et al. [26] One observation made in this research when evaluating the displacement of condylar fractures was the number of dislocation cases that seemed to be displaced on a plain radiograph and were subsequently verified by a CT scan. My research aligns with that of Sawazaki R et al. [27], who reported that 249 317 condylar fractures were non-displaced. According to this research, June and July were the busiest months for condylar fracture incidence. The region has nice weather in June and July, encouraging outdoor activities like picnics and trips. Consequently, there is an increase in the prevalence of condylar fractures.

CONCLUSION

The majority of the fractures were undisplaced and subcondylar. The most prevalent risk factor is RTA. In the second decade of life, condylar fractures were more common in men than women. The pattern and risk factors of condylar fractures are indicative of trauma patterns in the population. As such, they may serve as a guide for developing preventative and treatment programs.

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