

## Original Research Article

# A study to assess epidemiological, clinical profile and outcome of Monteggia fracture dislocation in adults: a retrospective study

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**Received:** 26 March 2017

**Revised:** 06 April 2017

**Accepted:** 11 April 2017

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## ABSTRACT

**Background:** Among all the forearm fractures Monteggia fractures account for approximately 1-2%. Early recognition with anatomical reduction and stable internal fixation is most important in the management of Monteggia fractures. This study was performed to evaluate clinical profile and functional outcome of Monteggia fracture dislocation.

**Methods:** This retrospective study was done on 381 forearm fractures, out of which 31 were Monteggia fracture dislocation. All adults patients who were >20 years were included in the study.

**Results:** During the study period, of 381 cases 31 (8.1%) were having Monteggia fracture dislocation. Most of the study participants were males in (61.2%) compared to females (39%). The cause of the fracture in most of the cases was road traffic accidents accounted by 45%. In most of the cases, the outcome of the operation was excellent (61.3%).

**Conclusions:** If the injury is properly classified and if stable anatomical reduction is achieved at the proper time then the results will always be excellent. In present study all the patients achieved excellent results after surgery.

**Keywords:** Monteggia fracture dislocation, Ulna, Radial head

## INTRODUCTION

A Monteggia fracture is defined as a fracture of the ulna with ligamentous failure of the proximal radius resulting in dislocation of the radial head.<sup>1-3</sup> Among all the forearm fractures Monteggia fractures account for approximately 1% to 2%.<sup>4</sup> Sometimes, the presentation of these fractures can be complicated by the simultaneous presence of other comorbid pathology, such as Galeazzi fractures.<sup>5</sup> Other high-energy elbow fracture-dislocations, including transolecranon fracture-dislocations, may sometimes resemble Monteggia fractures on radiography and consequently result in misdiagnosis.<sup>1,6</sup>

Depending on the direction of the dislocation of the radial head and the angulation of the ulnar fracture, Bado

classified Monteggia fracture as type I the dislocation is anterior, type II posterior, and type III lateral. Type IV is defined as a fracture of both bones of the forearm with dislocation of the radial head.<sup>1</sup>

Lot of research has been done and several authors made important contribution in understanding the mechanism of this injury but still the pathogenesis remains controversial.<sup>7-9</sup> It's important that proper recognition of precise restoration of the length and alignment of the ulna lead to better results, due to improved congruence at the radio ulnar joint.<sup>10-12</sup>

Therefore early recognition with anatomical reduction and stable internal fixation is most important in the management of Monteggia fractures.<sup>1,10</sup> Considering all the factors the purpose of the present retrospective study

was to evaluate clinical profile and functional outcome of Monteggia fracture dislocation.

## METHODS

This retrospective study was performed by the Department of Department of Orthopaedics and Traumatology in Shadan Institute of Medicial Sciences and Research over a period of three years from August 2012 to September 2015. Case sheets of the patients who were treated operatively for Monteggia fractures and dislocation were included in the study.

Detailed case history of the patients as well as the demographic details were noted. The fracture and the dislocation was classified according to the Bado's classification. All the patients had been subjected to blood tests such as haemoglobin counts, random blood sugar, complete blood picture, blood urea etc and the results were noted. X-ray findings of the fracture and their diagnosis were also observed and recorded.

The type of the operation performed on the patients for the treatment of the fracture and the postoperative course undertaken were also duly noted and a proforma was made to record all these findings. Finally the duration of the hospital stay and the condition of the patient at the time of discharge was also noted. Depending on the condition of the patient, they were asked to come for the follow up details of which were also obtained from the case sheets.

The overall functional outcome was assessed using the Broberg and Morrey elbow scale.<sup>3</sup> The results were rated as excellent (95 to 100 points), good (80 to 94), fair (60 to 79) or poor (0 to 59).

Follow up was after discharge every two months for a period of 2 years. The study was conducted after taking permission from the Institutional Ethical Committee.

The data was entered in Microsoft excel and analyzed using simple proportions.

## RESULTS

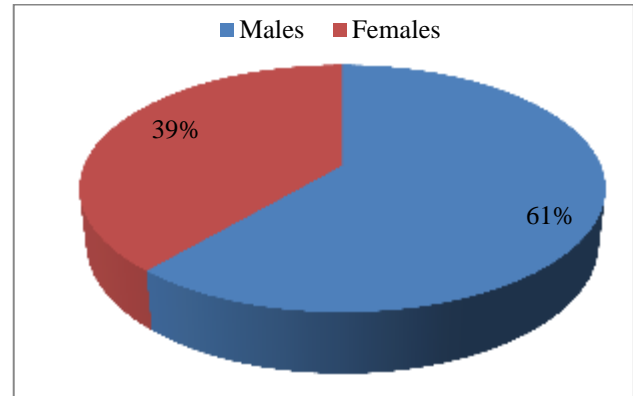
The incidence of Monteggia fracture dislocation in present study was found to be 8.1%. A total of 381 cases of forearm fractures were reported and out of them 31 were having Monteggia fracture dislocation.

Majority of the study participants were in the age group of 21-30years (45.16), followed by 29% in 31-40years. About 6.4% of the study participants were present in the age group of >50years as shown in Table 1.

Most of the study participants were males in (61.2%) compared to females (39%). The fractures on the left side (71%) were more prevalent than those on the right side (29%) as shown in Figure 1.

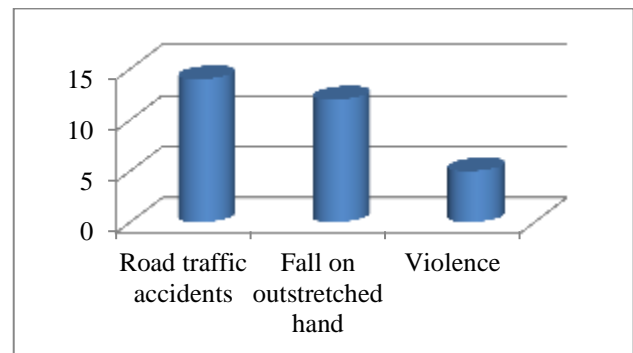
**Table 1: Age wise distribution of study participants.**

Age(years)	Frequency	Percentage
21-30	14	45.16
31-40	9	29
41-50	6	19.3
>50	2	6.4
<b>Total</b>	<b>31</b>	<b>100</b>



**Figure 1: Sex wise distribution of study participants.**

The cause of the fracture in most of the cases was road traffic accidents accounted by 45%, followed by fall on the outstretched hand 39% and violence especially beaten by sticks accounted for 16% respectively as in Figure 2.



**Figure 2: Distribution of study participants with cause of fracture.**

Most of the patients belonged to the Type I category (67.8%) as Bados classification. Equal incidence was found in Type II and III (16.1% each) and nobody was classified under Type IV (Table 2).

**Table 2: Distribution of study participants with Bado's classification.**

Bado's Classification	Frequency	Percentage
<b>Type I</b>	21	67.8%
<b>Type II</b>	5	16.1%
<b>Type III</b>	5	16.1%
<b>Type IV</b>	0	0

More than 50% of the cases were treated with DC plating. In 41.9% of the cases ulnar fracture was segmental, rush nails or K-wire were used and tension band wiring was done in 6.5% of the study participants (Table 3).

**Table 3: Distribution of study participants with type of internal fixation used.**

Type of fixation	Frequency	Percentage
DC Plating	16	51.6%
Intramedullary – rush nail/K-wire	13	41.9%
Tension band wiring	2	6.5%

In most of the cases, the outcome of the operation was excellent (61.3%), while good results were observed in 19.4%. Of the cases, fair outcome was seen in 16.6% were as poor results were seen only in 1 case (3.2%) (Table 4).

**Table 4: Distribution of study participants with outcome.**

Outcome	Frequency	Percentage
Excellent	19	61.2
Good	6	19.3
Fair	5	16.1
Poor	1	3.2
Total	31	100

## DISCUSSION

Out of 381 cases 31 (8.1%) were having Monteggia fracture dislocation. In another study done by Konrad et al the incidence of Monteggia fracture was more than the present study findings (15%).<sup>13</sup> However, in many other studies, the Monteggia fractures accounted for about 1-2% of the total forearm fractures.<sup>4</sup> The increase in the rate of this type of fracture in our area could be attributed to the fact that our hospital is situated in a very accident prone area.

Majority of the study participants were in the age group of 21-30 years (45.16), followed by 29% in 31-40 years. About 2% of the study participants were present in the age group of >50 years. In another studies also majority of the study participants were in the age group of 21-30 years, which was followed by 31-40 years.<sup>12,14,15</sup>

In the present study majority of the study participants were males (61.2%) compared to females (39%). Present study findings were supported by other study were males (65%) were majority of study participants compared to females (35%).<sup>13</sup> The same findings were consistent with other study too were males accounted for (80%) than females (20%).<sup>14</sup>

The cause of the fracture in most of the cases was road traffic accidents accounted by 45%, followed by fall on the outstretched hand 39% and violence especially beaten by sticks accounted for 16% respectively. In a study done by Konrad et al road traffic accidents was the main cause for majority of the fractures (51%) which is more than the present study, followed by fall in 19% of them which is less than present study findings.<sup>13</sup>

Most of the patients belonged to the Type I category (67.8%) in the Bados classification. Equal incidence was found in Type II and III (16.1% each) and nobody was classified under Type IV. In another study it was found that majority were in Type II (59%) as per Bados classification which is different from the present study were as in Type IV 3% of the study participants were classified in another study which didn't supported with present study findings.<sup>13</sup> In other studies also most of them were in Type II classification which wasn't similar with the present study.<sup>11,15</sup>

In most of the cases, the outcome of the operation was excellent (61.3%). The present study findings were supported by another study were 84% were having excellent functional outcome which is near about similar to present study.<sup>16</sup> Similar findings were observed in other study too were excellent outcome was seen in 81% of the study participants.<sup>17</sup>

## CONCLUSION

If the injury is properly classified and if stable anatomical reduction is achieved at the proper time then the results will always be excellent. In present study all the patients achieved excellent results after surgery. Patients should always be informed about the risk of potential functional deficits and the possible need for further surgery. Another important thing is proper rehabilitation of the upper limb must be done as soon as possible, when the stability of the elbow is achieved so that elbow stiffness can be prevented.

*Funding: No funding sources*

*Conflict of interest: None declared*

*Ethical approval: The study was approved by the institutional ethics committee*

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**Cite this article as:** Reddy GR, Prasad PN. A study to assess epidemiological, clinical profile and outcome of Monteggia fracture dislocation in adults: a retrospective study. *Int J Res Orthop* 2017;3:472-5.