

Unusual Presentation of Monteggia Variant with Distal Radius Fracture in Adult

Anil Kumar Y¹, Siva Prasad Y², Biju R³

^{1, 2, 3}Department of Orthopaedics, Narayana Medical College, Andhra Pradesh, India

¹Email: [dranilseven\[at\]gmail.com](mailto:dranilseven[at]gmail.com)

Abstract: Multiple fractures of the upper limb are infrequent. Hereby we report a rare association of type IIC Monteggia fracture-dislocation with Mason type III radial head fracture with ipsilateral distal radius fracture in an adult patient. This case report also highlights the importance of basic proper clinical examination and radiographs include one joint above, one joint below the suspected fracture. Surgical management of this complex injury had a good functional outcome at one-year follow-up.

Keywords: Multiple fractures, Forearm fracture, Monteggia variant

1. Background

Monteggia fracture dislocation by definition is proximal ulnar fracture with radial head displacement. Multiple fractures of the upper limb are infrequent and account to less than 5% of forearm fracture.¹ Monteggia fracture dislocation usually clinically and radiographically visible, however the associating ipsilateral injuries are rare which may be missed. Hereby we report a rare association of type IIC Monteggia fracture dislocation with Mason type III radial head fracture with ipsilateral distal radius fracture in an adult patient, its surgical management and assessing functional outcome at six months follow-up.

2. Case report

In 2016, A 30 year's old female sustained injury to left upper limb due to RTA. Unable to lift her left upper limb immediately after injury. Presented with pain, swelling, deformity, tenderness, crepitus over left elbow, forearm and wrist region with painful and restricted movements. No distal neurovascular deficits. Radiographs showed left Mason type III radial head fracture with ipsilateral Bado of type IIC Monteggia fracture with ipsilateral Frykman's type VII of distal radius fracture [Figure 1].

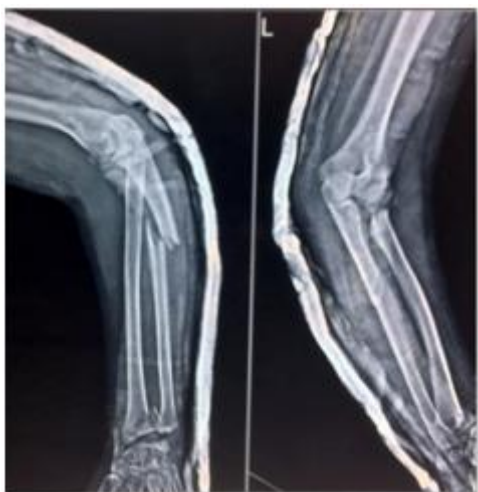


Figure 1: Preoperative anteroposterior and lateral views radiograph of left forearm with elbow and wrist

Surgery was performed two days after trauma, once swelling had reduced. Radial head was excised by Kocher's approach without sacrificing annular ligament [Fig-2]. Ulna shaft fracture was reduced and fixed with 3.5mm narrow DCP plate [Fig-2]. Stability of radiohumeral joint was achieved. Distal radius fracture was reduced and stabilized with two Kirschner (K)-wires [Figure 2].



Figure 2: 2nd day of postoperative anteroposterior and lateral views radiography of left forearm with elbow and wrist.

Postoperatively patient was immobilized with plaster slab for three weeks. After one month K-wires were removed and wrist range of movement exercises started. In second month, patient was allowed to perform light activities and by the end of third month she was allowed to resume her activities of daily living (ADL). Postoperatively radiographs were taken at one, three and six months. Good radiological union was seen at six months at ulnar shaft fracture site and distal radius fracture site [Fig-3]. Functional assessment (Mayo Elbow Performance Score² and Modified Mayo wrist Performance Score³) was done at 6 months and 1 year after surgery [Fig-4]. Mayo Elbow Performance Score showed good results (score of 80 out of 100 and score of 85 out of 100) on 6 months and 1 year follow-up. Modified Mayo wrist Performance Score showed good results (score of 80 out of 100 and score of 80 out of 100) on 6 months and 1 year follow-up [Table 1]. No complication was found on follow-up.



Figure 3: Six months postoperative anteroposterior and lateral views radiography of left forearm with elbow and wrist



Figure 4: Clinical picture of functional assessment at 1 year follow-up

Table 1: Table showed functional assessment of elbow and wrist at 6 months and 1 year after surgery.

Functional assessment	6 months follow-up	1 year follow-up	Outcome
Mayo Elbow Performance Score	80/ 100	85/ 100	Good
Modified Mayo wrist Performance Score	80/ 100	80/ 100	Good

3. Discussion

Monteggia fracture dislocation by definition is proximal ulnar fracture with radial head displacement. Bado classified Monteggia fracture dislocations into four types depending on direction of radial head displacement. Bado's type II injuries are the most common variety in adult population whereas Bado's type I is common in paediatric population.⁴ Adult Bado's type II injuries are usually associated with radial head fractures and coronoid fractures.⁵ Similarly, she had radial head fracture dislocation wherein radial head was comminuted with main fragment lying back of capitulum. There are also fractures similar to Monteggia which are classified as 'Monteggia equivalents and variants' since they share similar radiological findings and biomechanism of injury.⁶ Transolecranon fractures or anterior olecranon fractures differs from Monteggia fracture dislocation with minimal involvement of proximal radioulnar joint.⁷ In our patient proximal radioulnar joint seemed to be disrupted. Jupiter again classified Bado's type II fracture dislocations into four types depending on level of olecranon fracture.

Type IIA fractures involves distal aspect of olecranon with coronoid fractures, type IIB fractures involves metadiaphyseal fractures without involving coronoid fractures, type IIC involving diaphyseal fractures of ulna and type IID fractures involving proximal one-third ulna fractures involving olecranon and coronoid process.⁵ Looking at radiology, Monteggia fracture-dislocation in our patient was classified as type IIC, according to Bado's and Jupiter's sub-classification with Monteggia equivalents and variants with distal radius fracture. Monteggia fractures dislocation in combination with ipsilateral distal radial physeal injuries have been described few times in children.^{8,9} However, in adults such combination of Monteggia fractures with ipsilateral distal radius have been reported few to our knowledge^{10, 11, 12, 13} On the other hand, ipsilateral Monteggia fractures and Galeazzi fracture dislocation have been explained few times in adults.¹⁴ Mechanism of injury of such ipsilateral injuries is not very well understood. Probable mechanism could be, fall on outstretched hand with full pronated forearm which leads to distal radius fracture. While this happens, trunk continues to rotate and longitudinal force along with external rotatory force leads to Monteggia injury at elbow.¹⁵

4. Conclusion

In summary monteggia fracture dislocation with radial head fracture with ipsilateral distal radius fracture is a rare injury both in children and adults which was reported with good functional outcome. Mainly sticking to basic thorough examination and radiographs include one joint above, one joint below the suspected fracture is of paramount importance.

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