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Case Report

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A rare case of Monteggia fracture dislocation with distal radius epiphyseal injury in a 12-year-old male: case report and review of literature

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ABSTRACT

Monteggia fracture dislocation is a fracture of proximal ulna with dislocation of radial head. Its association with ipsilateral distal radius fracture is very rare and only ten cases have been reported in the English literature. Authors report a case of a 12 years old male, who sustained Monteggia fracture with ipsilateral distal radius epiphyseal injury following a fall while playing cricket. He was managed conservatively at a local centre elsewhere. As the fracture was found to be displaced, surgical fixation was done at our hospital. At 3 months follow up, the fracture was found to have united and the child had a good functional range of motion. Early diagnosis and one stage surgical management can lead to a satisfactory outcome even in these complex fracture dislocations.

Keywords: Monteggia fracture, Distal radial epiphyseal injury

INTRODUCTION

In the paediatric population, fractures around the elbow and wrist are commonly encountered. However, patients with ipsilateral elbow and wrist joint fractures are rarely seen.[1] Monteggia fracture dislocation was first described by Giovanni Batista Monteggia in 1814. It is an uncommon injury in children comprising only 0.4% of all forearm fractures.[2,3] Bado classified the injury into four types depending upon the direction of radial head dislocation.[4]

Authors present a rare case of Monteggia fracture dislocation Bado's type I with ipsilateral distal radius physeal injury Salter Harris type II in a twelve years old boy. The purpose of this case report is to illustrate the rarity of this type of injury, as this is the first case we have encountered in our hospital and only few cases have been reported in literature (Table 1). This case also emphasizes that often, if closed reduction fails, one should not hesitate in doing surgical intervention in the paediatric age group.

CASE REPORT

The patient, a 12-year-old male, was admitted to the Orthopaedics ward through the emergency as a case of injury to the left forearm with above elbow pop cast in place. He had a history of fall while playing cricket eight days back leading to pain, swelling and deformity over left elbow and pain over left wrist. He was managed conservatively at a local centre with closed reduction and above elbow pop cast. No previous X-ray was available from the local centre where he had received primary care. The patient continued to complain of pain, which resulted in his referral to our hospital.

In the emergency, X-ray was done, which showed fracture of proximal ulna with anterior dislocation of radial head along with ipsilateral epiphyseal injury of distal radius (Figure 1). Diagnosis was made as Bado Type 1 Monteggia fracture with Type II physeal injury of distal radius. As conservative method had failed, surgery was planned and following appropriate work-up, he was posted

for surgery. Authors did open reduction and internal fixation with a 3.5 mm eight-hole semi tubular plate for fracture proximal ulna through dorsolateral approach. Distal radial physeal injury was closely reduced and fixed with percutaneous two K-wires.

Lastly, anteriorly dislocated radial head was reduced, but as it was found to be unstable, a trans-capitellar K-wire was used to fix the radial head. Above elbow POP slab was given at 90 degrees of flexion and kept for 4 weeks. A standard postoperative X-ray was advised (Figure 2).

It was found to be satisfactory. At 4 weeks post-op, a check X-ray was done (Figure 3). K-wires were removed and aggressive physiotherapy with elbow and wrist mobilization was started. At 3 months follow up he had attained good functional range of motion with elbow movement of 0 to 110 degree. There was mild restriction of pronation and supination.

Figure 1 (a-d): X-ray showing Bado type i Monteggia fracture with distal radius epiphyseal injury type II.

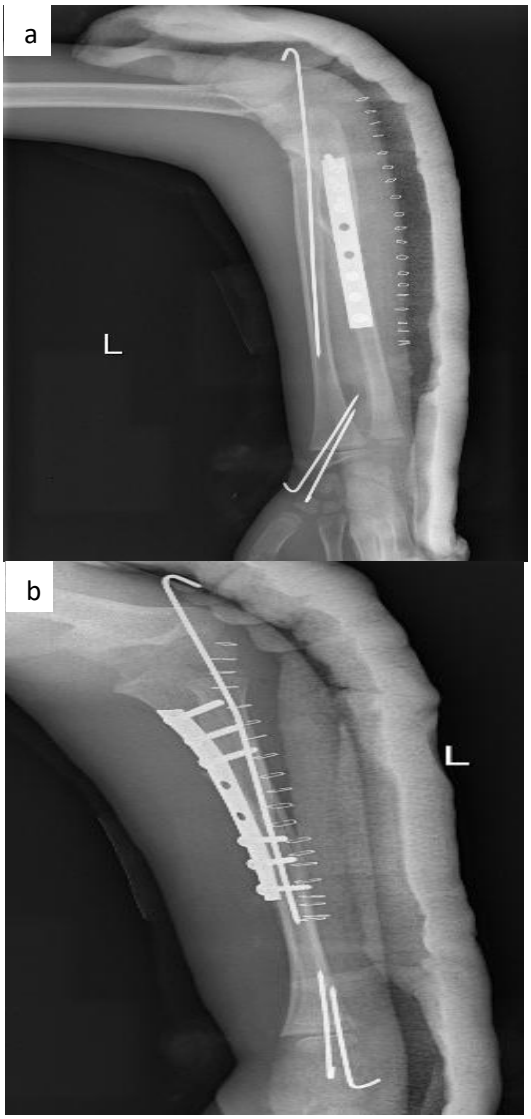

Figure 2 (a, b): X-ray immediate post-op showing good reduction of fracture.

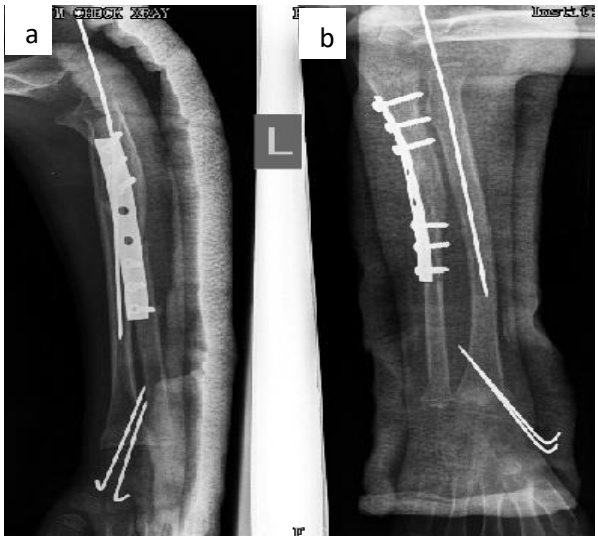

Figure 3 (a, b): X-ray at 4 weeks post-op.

Table 1: Cases of Monteggia fracture with ipsilateral distal radius physis injury in the past.

Study	Year	Monteggia (Bado)	Distal radial physis (Salter Harris)	Age (in years)	Treatment of Monteggia	Treatment of distal radius physis injury	Outcome	Follow up
Song et al[5]	2004	Type III	Type II	8	ORIF with plate	CRIF with K-wire	Full ROM	2 years
Sood et al[6]	2008	Type I	Type II	11	ORIF with plate	CR	Full ROM	7 months
Sreenivaas[7]	2011	Type III	Type I	10	CRIF with K-wire	CRIF with K-wire	Good functional outcome	-
Williams et al[8]	2014	Type III	Type II	5	CR	CR and K-wire	Full ROM	6 months
Kamudin et al[9]	2015	Type II	Type II	12	ORIF with K-wire	CR with K-wire	Full ROM	2 months
Mani et al[110]	2015	Type III	Type II	10	CRIF with K-wire	CRIF with K-wire	Full ROM	3 months
Singh et al[11]	2016	Variant	Type II	11	ORIF with K-wire	ORIF with K-wire	Near Normal ROM	6 months
Mundada et al[12]	2017	Type I	Type II	11	ORIF with plate	CRIF wit K-wire	Satisfactory Outcome	6 months
Tiwari et al[13]	2017	Type III	Type II	8	ORIF with plate	ORIF with K-wire	Full ROM	4 months
Tsuji et al[14]	2022	Type III	Type II	12	CRIF with K-wire	CRIF with K-wire	Full ROM	7 months
The Case	2024	Type I	Type II	12	ORIF with plate	CRIF with K wire and radial head also fixed with K-wire	Full ROM	3 months

DISCUSSION

Monteggia fracture dislocation is defined as fracture of proximal ulna with disruption of proximal radioulnar joint. Bado classified Monteggia fracture dislocations into four types depending on direction of radial head displacement.[4] Bado's type II injuries are the most common variety in the adult population whereas Bado's type I is common in paediatric population.[4] This case was Bado's Type I. Authors reviewed the literature and found that there were ten such cases reported, of which Monteggia Bado type III with distal radius Salter Harris type II were most commonly seen.

Two cases of Bado Type I with salter Harris Type II of distal radius physeal injury have been reported.[5-13] To authors knowledge this is the third case. In majority of cases, proximal ulna fracture was treated with open reduction and distal radius with close manipulation and had full range of motion (ROM). In this case along with open reduction of the fractured ulna we required closed K-wire stabilization of the distal radial physeal injury. This is the first case where we had to fix the radial head with transcapitullar K-wire as it was unstable. The exact mechanism of injury causing this type of forearm fractures is not clearly understood. As these types of injury are very rare, a good clinical examination and full-length forearm radiographs should be taken to avoid missing ipsilateral wrist injuries in cases of elbow injuries.

CONCLUSION

A good functional outcome in Monteggia fracture dislocation includes complete diagnosis of associated injuries, single stage stabilization of fracture and aggressive physiotherapy. A thorough clinical examination and full-length forearm radiographs involving one joint above and one joint below should be taken to avoid missing associated injuries.

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