



## Monteggia Type 4 Fracture -A Case Report of an Unusual Presentation of a Rare Injury

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### Abstract

5 year old girl presented to A&E following a fall from the swing. On examination there was tenderness along her right arm, with visible gross deformity. X-rays confirmed that she has a Monteggia type 4 fracture showing multiple fractures along the ulna and radius with dislocation at the proximal radius and dorsal radial displacement. The prompt diagnosis and management of the injury resulted in a favourable outcome.

### Introduction

Monteggia fracture is described as a dislocation of the proximal radio-ulnar joint involving fractures along the forearm. It accounts to less than 5% of forearm fractures.

The ulna fracture is usually clinically and radiographically visible; however the associating radial head dislocation may be missed. Therefore it is important to obtain x-rays in both AP and true lateral views including the elbow and the wrist. The posterior border of the ulna should be carefully assessed, especially if it's a greenstick fracture of the ulna which is not obvious. If the border is 'bowed' it is most probably a greenstick fracture [1,2].

If Monteggia fractures are left untreated it can have dire complications such as malunion and peripheral inflammatory neuropathy. Bado classification is commonly used to describe Monteggia fractures (Table 1) [3].

### Case Presentation

5 year old girl presented to Accidents and Emergency unit with visible gross deformity, swelling of right arm. Resulting from an unwitnessed fall while playing on the swing in padded play area. The child explained that she fell on a step landing on her extended right arm. There after she found it difficult to mobilise her arm. She had no significant past medical history, no history of recurrent fractures. Development milestones were appropriate for her age.

On Physical examination there was swelling extending from the elbow to the wrist, mostly at the mid shaft area, and increased curvature along the forearm. Neurovascular status was not compromised. She was able to move her fingers and shoulder. Movements along the elbow and wrist were affected in all directions (Figure 1).

### Treatment

Patient was taken to theatre the following morning. Manipulation under anaesthesia was done initially to reduce the ulna and distal radius fracture, radial head reduced spontaneously. Unfortunately the reduction remained unstable. Therefore intramedullary fixation of ulna was done through an incision over the proximal ulna. 2.5 mm drill hole was made; titanium wire was passed through the ulna.

**Table 1:** Bado Classification of Monteggia fractures.

Bado Classification		
Type I	Fracture of the proximal or middle third of the ulna with anterior dislocation of the radial head (most common in children and young adults)	70%
Type II	Fracture of the proximal or middle third of the ulna with posterior dislocation of the radial head (70 to 80% of adult Monteggia fractures)	5%
Type III	Fracture of the ulnar metaphysis (distal to coronoid process) with lateral dislocation of the radial head	25%
Type IV	Fracture of the proximal or middle third of the ulna and radius with dislocation of the radial head in any direction	Rare

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**Figure 1:** X-rays were taken at A&E on admission. The findings suggested Monteggia Type 4 fracture.

Distal radial fracture was stabilised with 1.6 mm K wire, which was bent and cut, wound closed with 3'0 vicryl

### Outcome and follow-up

Uneventful post operatively, discharged home day 5 post op. Seen at fracture clinic 10 days post op. X-rays on 10<sup>th</sup> post op day was satisfactory (Figure 2). No complications noted.

She was seen in the fracture clinic regularly and the pins were removed on 08/03/2016. She was sent home with a broad sling. Further follow up is planned for the following week.

### Discussion

It is important to understand that suspected Monteggia fractures should be urgently referred to orthopaedics. Most of the common complications can be avoided with early intervention. Treatment following delayed diagnosis is more complex and can lead to poor outcome [4].

The commonest complication is injury to peripheral nerves, mainly to the radial nerve or the posterior interosseous nerve. These are usually affected in type I and II fractures. It usually presents as a neuropraxia where the nerve function usually returns within 9-10 week. It is very important on the first consultation itself peripheral nerve examination is thoroughly assessed and documented, to avoid litigation issues.

Periosteal calcification occurs in about 3% of the cases, usually associated with high energy injuries, fractures involving the radial head and following multiple attempts at manipulations. It can involve the annular ligament or around the radial head affecting the ROM if the elbow.

There are several ways of treating Monteggia fractures. Closed reduction with manipulation is usually successful in children with type I and II fractures [5,6]. ORIF of ulna shaft is required in open or unstable fractures, comminuted fractures and most Monteggia fractures in adults. If it involves a fracture of the radial head, which is



**Figure 2:** Post-operative x rays.

not stable once ulna shaft is fixed, open reduction of the radial head is also required. Transverse and oblique fractures will inevitably require IM nailing.

If the patient is discharged post operatively, ideally they should followed up 7 days post reduction with imaging, then at 2 weeks with x-ray, 3 weeks to review cast and plaster and then at 6 weeks to assess healing with imaging. At 6 weeks if mobility if the elbow and wrist are preserved with satisfactory healing, they can be discharged to the community with advice to see their GP if there is any deterioration. Contact sport should also be avoided for the next 2-3 months to ensure full recovery.

### Conclusion

Prompt diagnosis which requires high index of suspicion and following basic principles of managing fracture i.e. examining and radiologically investigating the joint above and below the fracture yield in favourable outcome and good results.

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