

Case Report

Unusual combination of Bado type I Monteggia lesion and ipsilateral humerus lateral condyle fracture with intercondylar extension in an adult following high velocity trauma: a case report

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ABSTRACT

Monteggia fracture dislocation is a rare injury pattern which accounts for less than 2% of all forearm fractures (in both adults and children) and accounts for 0.7% of all elbow fractures and dislocations in adults. The present case involves a 22-year-old male with Bado type I Monteggia fracture dislocation with ipsilateral lateral condyle humerus fracture with intercondylar extension with no distal neurovascular deficits which is the first case to be reported in literature to the best of our knowledge. A successful outcome was achieved due to early diagnosis, anatomical reduction, stable internal fixation and early mobilization. This case report aims to highlight this rare presentation and in adding data to literature for describing this injury pattern in Bado type I equivalents. These injuries require a comprehensive clinical and radiological evaluation for diagnosis as well as management.

Keywords: Case reports, Monteggia equivalent, Internal fixation, Lateral condyle humerus fracture, Intercondylar humerus fracture

INTRODUCTION

Monteggia fracture dislocation is an injury pattern defined by radial head dislocation with proximal 1/3rd ulna shaft fracture. First described in 1814 by Monteggia, these are one of the rare and serious injuries of the forearm. This rare combination accounts for less than 2% of all forearm fractures (in both adults and children) and accounts for 0.7% of all elbow fractures and dislocations in adults.^{1,2} Bado classified Monteggia lesions into four types based on the direction of radial head dislocation and angulation of the fractured ulna in 1967.³ About 60-70% of the cases fall under Bado type I (anterior dislocation of radial head, anterior angulation of ulnar diaphyseal fracture) and six equivalents of type I pattern. This case report presents a patient with an undescribed variant of Bado type I Monteggia fracture dislocation with left elbow anterior dislocation of radial head with proximal ulna fracture with

anterior angulation with ipsilateral lateral condyle humerus fracture with intercondylar extension with no distal neurovascular deficits which does not fit into any of the previously described Bado types and their equivalents. To the best of our knowledge this is the first case to be reported in literature with this pattern of injury in adults. An informed written consent was obtained from the patient authorizing the use and disclosure of data relating to his health for educational purposes.

CASE REPORT

A 22-year-old man presented to our emergency with severe pain, swelling and deformity of his left elbow and forearm following a road traffic accident where the patient was riding a two-wheeler and has hit an excavator parked on the side of the road. Patient underwent a thorough head to toe clinical and radiological examination and was

diagnosed to have blunt injury abdomen with grade II splenic injury and left elbow anterior dislocation of radial head with proximal ulna fracture with anterior angulation (Bado type I Monteggia lesion) with lateral condyle of distal humerus fracture with intercondylar extension (AO classification 13-B1) (Figure 1A and B). There were no distal neurovascular deficits and movements at the elbow were painful and grossly restricted. Patient was admitted under general surgery initially for the splenic laceration and he underwent exploratory laparotomy with peritoneal lavage. Once the patient was hemodynamically stable, he was taken over to Orthopaedics for definitive management of left elbow and forearm injury.



Figure 1 (A and B): Plain X-ray left elbow and forearm anteroposterior and lateral view showing anterior dislocation of radial head with anterior angulation of proximal ulna fracture with lateral condyle of distal humerus fracture with intercondylar extension.

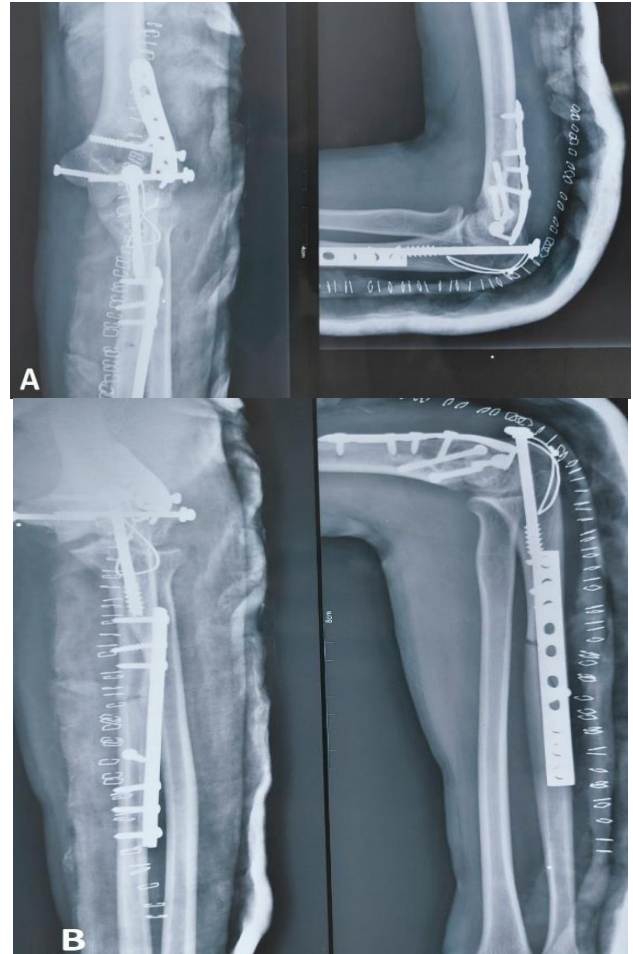


Figure 2 (A and B): Immediate post-operative plain X-ray of left elbow and forearm anteroposterior and lateral view showing the reduction and stable fixation of the fractures.

Surgical procedure

Patient in right lateral position with left elbow hanging over a bolster under general anaesthesia using a standard posterior extensile approach firstly the Monteggia fracture dislocation was reduced by open reduction and internal fixation of ulna proximal one third shaft fracture using a 3.5 mm lag screw and 10 holed 3.5mm dynamic compression plate. Following the ulna fracture fixation radial head reduced without any additional need for an open reduction. A transolecranon approach with chevron osteotomy of olecranon was used to expose the distal humerus articular surface.

Two 4.0 mm partially threaded cannulated cancellous screws were used-one inserted from medial to lateral and the other from lateral to medial-to achieve anatomical reduction of the articular surface of distal humerus lateral condyle fracture with intercondylar extension. One 4.0 mm partially threaded cannulated cancellous screw was used to reduce lateral condyle to the main fragment of distal humerus, and stabilisation was completed using a 4 holed 3.5 mm posterolateral distal humerus plate and

screws. Olecranon osteotomy was fixed with a 6.5 mm cannulated cancellous screw and tension band wiring. Fracture reduction and fixation was confirmed under C-arm. Ulnar nerve was protected with umbilical tape throughout the procedure.



Figure 3 (A-C): Images showing full flexion of left elbow and 30 elbow flexion contractures at the end of 12-months follow-up.

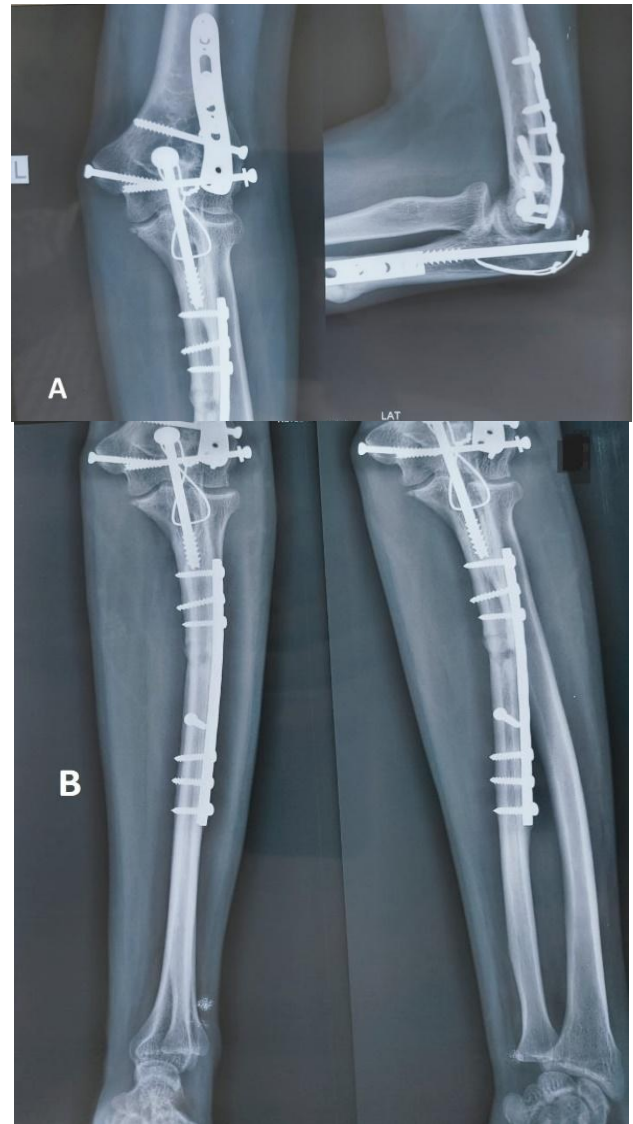


Figure 4 (A and B): Radiograph of the left elbow and the forearm at the end of 12-months follow-up. Image shows maintenance of the concentric reduction of all 3 articulations of the elbow joint with united distal humerus and ulna fracture.

An above elbow slab in 90 degrees of flexion and maximal supination position was applied for 2 weeks to allow for soft tissue healing (Figure 2A and B). The patient was started on a gradual range of motion exercises immediately after slab removal. He was followed up for 1 year after the surgery. He regained a range of 30-130 degrees and had a 30-degree flexion contracture at the last follow-up (Figure 3 A, B and C, 4 (A and B)). Pronation and supination were complete and he was able to carry out his daily activities independently.

DISCUSSION

Monteggia fracture dislocation in itself is a complex fracture pattern consisting of radial head dislocation with proximal 1/3rd ulna shaft fracture. In this case report, we

have presented a case of young adult with Bado type I Monteggia fracture dislocation with ipsilateral lateral condyle distal humerus fracture with intercondylar extension (AO classification 13-B1) which makes this fracture pattern even more complex. This fracture pattern is an uncommon and undescribed variant of Monteggia fracture dislocation which does not fall into any of the previously described Monteggia types or its equivalents. The mechanism of injury of Bado type I has been reported using three different theories.

Direct blow to posterior elbow. Hyper-pronated force on an outstretched arm. Contracted biceps resists forearm extension causing dislocation and followed by impact leading to ulna fracture.^{4,5} These fractures in adults are often seen in cases of high energy trauma unlike pediatric population. In our case, it was a motor vehicle accident and mostly a direct blow to posterior elbow can be hypothesized. Anatomical reduction of ulna helped spontaneous reduction of radial head without requiring open reduction. Trans olecranon approach to distal humerus with chevron osteotomy of olecranon helped us to visualize the anatomical reduction of the distal humerus articular surface directly. Rigid stable fixation was achieved at both ulna and distal humerus which allowed early mobilisation and regain early functional range of motion.

CONCLUSION

Monteggia fracture dislocation (Bado type I) with lateral condyle humerus fracture with intra-articular extension (AO classification 13-B1) is a very rare and complex injury pattern which is not described in the Bado classification system of Monteggia lesions or its equivalents. This case report aims to highlight this rare presentation and in adding data to literature for describing this injury pattern in Bado type I equivalents. These injuries require a comprehensive clinical and radiological evaluation for diagnosis as well as management. The

classification systems and associated complex variants are important for understanding the mechanism of injury, fracture pattern and guides for a detailed surgical planning. Anatomical reduction and stable rigid internal fixation in these cases allows early mobilisation and gives a satisfactory functional outcome.

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Ethical approval: Not required

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