

## Unstable Elbow Dislocation with Ipsilateral Distal Radius Fracture: A Rare Combination of Fracture Dislocation

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### ABSTRACT

Elbow dislocation with coronoid process fracture and bony avulsion of lateral collateral ligament is an unstable type of dislocation. An associated distal radius fracture is a rare type of injury which increases the probability of the distal radius fracture being missed by the attending orthopaedic surgeon. We report a 54 year old male patient with this type of injury whose dislocated elbow joint was reduced and stabilized with an ulno-humeral K wire, and the distal radius fracture was reduced and fixed with multiple K wires. The ulno-humeral K wire was removed at three weeks while K wires in distal radius were removed after six weeks. The range of motion of both elbow and wrist joint was nearly normal, except for 15 degrees of FFD at the elbow joint six months after the surgical intervention.

**KEY WORDS:** Bony avulsion, Coronoid process, Distal radius, Elbow dislocation

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### INTRODUCTION

The elbow joint is the second most common joint to dislocate after shoulder joint in adults<sup>1</sup>. Elbow dislocation may be associated with fracture of the coronoid process, radial head, capitulum, medial epicondyle, and medial or lateral collateral ligament avulsion that renders the elbow more unstable and requires complicated surgical treatment<sup>2</sup>. Elbow dislocation with ipsilateral distal radius fracture is a rare combination of injuries and very few cases are reported in literature<sup>3,4,5</sup>. Unstable elbow dislocation with coronoid process fracture, bony avulsion of lateral collateral ligament and ipsilateral intra-articular fracture of distal radius is very uncommon and not well described in literature. This combination of injury requires carefully planned surgical intervention and follow-up. Because of pain, massive swelling and deformity at the elbow joint, there is a possibility of missing the distal radius fracture which makes the treatment of this combined injury more complicated.

### CASE REPORT

A 54 year old male patient presented to our emergency department following a fall from height with pain, swelling, deformity and loss of movement of Left elbow joint. On examination there was huge swelling, abnormal bony prominences, diffuse tenderness, loss of contour of elbow joint and bruising on its lateral side. Neurovascular status of the limb distal to elbow was intact. Although the patient did not complain of intense pain at the wrist, there was mild swelling and tenderness at the region of distal radius. X-rays of both elbow and wrist joints, antero-posterior and lateral views, was requested. X-rays revealed postero-lateral dislocation of the elbow joint along with a type I coronoid process fracture and a small bony fragment on the postero-lateral aspect of distal humerus. There was an intra-articular impacted distal radius fracture in the wrist as well.

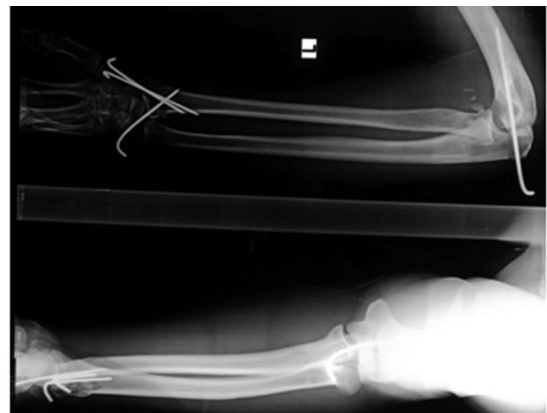


**Fig.1A** Antero-posterior and **Fig.1B** lateral views of elbow joint showing postero-lateral dislocation



**Fig. 2** Antero-posterior view of wrist joint showing impacted intra-articular distal radius fracture.

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 Patient was posted for surgical intervention. First, the elbow joint was reduced by pushing the olecranon forward with thumb and applying traction on the forearm. However the elbow joint was not stable and re-dislocated when it was flexed less than 50 degrees. So the elbow joint was reduced and fixed at 90 degrees by passing a K-wire through the olecranon into the humerus. After the elbow joint was fixed, the intra-articular impacted distal radius fracture was reduced by giving traction and counter traction, and fixed by three K wires holding the opposite cortex.



**Fig.2** Antero-posterior and lateral view of both elbow and wrist joints showing fixation of distal radius with three K wires, stabilization of elbow with ulno-humeral K wire, avulsed bony fragments of coronoid process and bony avulsion of lateral collateral ligament.

The elbow joint was supported post operatively with an above elbow posterior slab. Both the slab and ulno-humeral K wire were removed at three weeks. After three weeks, the elbow joint was mobilized while distal radius fracture was protected by a below-elbow cast for a further three weeks. Six weeks after the surgery, K wires for the distal radius were removed and both wrist and elbow mobilization exercises were started. At 6 months after surgery, wrist movements were normal and there was a 15 degree lag in elbow extension.

## DISCUSSION

Elbow joint is a stable hinge joint, but also a common joint to dislocate in the adult population<sup>3</sup>. Dislocation of the elbow joint is sometimes associated with fractures of the radial head, coronoid process, capitellum, olecranon, as well as radial and ulnar collateral ligament avulsion that renders the elbow unstable and requires more complicated treatment<sup>2</sup>. Although isolated pure dislocation of elbow joint can be managed conservatively, dislocated elbow joint associated with these fractures may require surgical intervention in one or two stages. This type of injury in the elbow joint when associated with other fractures in the same limb, makes these other injuries liable to be missed. Posterior elbow dislocation associated with coronoid process and radial head fracture, known as the terrible triad of elbow, has been well described in literature<sup>3</sup>. There are a few case reports describing elbow dislocation associated with ipsilateral Galeazzi fracture<sup>6</sup> and ipsilateral radial head fracture with posterior dislocation of elbow<sup>7</sup>. Similarly elbow dislocation with diaphyseal fractures of both ulna and radius has also been reported<sup>4</sup>.

Even though pure dislocation with ipsilateral distal radius fracture has been reported, unstable postero-lateral elbow dislocation associated with the coronoid process fractures, bony avulsion of lateral collateral ligament and ipsilateral intra-articular impacted distal radius fracture is not described in literature. Since there is a high probability of missing the less serious injury in the distal radius because of more attention being paid to the fracture dislocation of elbow, both by patients and the attending physician, we should be careful about doing a thorough clinical examination and x-ray of one joint above and below the injury site. Missed distal radius fracture in this type of injury leads to permanent disability of ipsilateral limb that could otherwise have resulted in normal function of both wrist and elbow joint. The mechanism of injury for this type of injury is quite atypical<sup>8</sup>. The probable mechanism would

be a fall on the outstretched hand so that direct contact with the ground causes the impacted distal radius fracture. Rebound force generated from the ground would be transmitted along the longitudinal axis of forearm and causes postero-lateral dislocation of elbow joint as well as bony avulsion of lateral collateral ligament. At the time of dislocation impingement of coronoid process on the distal end of humerus causes the coronoid process fracture.

In our case, because of unstable elbow joint after reduction of dislocation, we fixed the joint at 90 degrees with a ulno-humeral transarticular K-wire. After stabilization of elbow joint, the distal radius fracture was reduced and fixed with two K-wires through radial styloid process and one K-wire through the medial side. Since there was injury at two sites on the same limb and the elbow joint was unstable after reduction, there may be the chance of re-dislocation of the elbow joint with application of posterior slab only. Stabilization of unstable elbow joint simply with an ulno-humeral K-wire without doing an invasive procedure gives good stability of elbow joint three weeks after surgery. Since the avulsed bony fragment along with lateral collateral ligament is very small it is not feasible to fix the fragment with K-wires. A simple transarticular ulno-humeral K-wire for three weeks is sufficient to prevent the elbow joint from valgus as well as flexion-extension instability.

## CONCLUSION

Thorough clinical assessment of the whole limb apart from the apparent major injury, proper radiological examination one joint above and below the obvious injury, and appropriate planning and treatment may reduce the chance of missed concurrent fractures and permanent disability of the limb.

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