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Bilateral Elbow Dislocation with Radial Head Fractures in a 33 Year Male – A Rare Case Report

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Authors' contributions

This work was carried out in collaboration among all authors. Authors AR, VM and AA designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors KAS, VBM, FNPBEB and VM managed the analyses of the study. Authors AR, VM and AA managed the literature searches. All authors read and approved the final manuscript.

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Case Report

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ABSTRACT

The authors report a rare case of bilateral elbow dislocation with associated radial head fractures in a 33 year male who presented to our hospital following a road traffic accident. The elbow dislocations were reduced in the emergency room, the left radial head fracture was treated conservatively in an above elbow slab for four weeks and the right radial head and neck fracture was treated operatively with Herbert screw fixation for the radial head fracture and buttress plating for the radial neck fracture. At six months follow-up, the patient was pain free and had functional range of flexion and extension of both elbows with pronation and supination of the right elbow up to 50° and 40° and that of the left elbow up to 60° and 45° respectively.

Keywords: Elbow dislocation; fracture; treatment.

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1. INTRODUCTION

The usual mechanism of injury for unilateral dislocation of elbow is fall on outstretched hand, this generates a vertical component which unlocks the ulnohumeral joint and results in dislocation. It is usually accompanied by torn anterior capsule and collaterals (Hutchison et al.) [1]. Bilateral elbow dislocation with radial head fractures is an extremely rare injury with only about 5 cases reported in international literature [2-12]. The injuries associated with elbow dislocation can include radius' head and neck fractures, medial or lateral epicondyle fractures and coronoid process fractures(8raman). We report an extremely rare case of bilateral elbow dislocation with associated radial head fractures and the management protocol followed for the patient.

2. CASE REPORT

A 33 year male presented to the emergency department of our hospital with history of road traffic accident and injury to both the elbows after landing on the palms with extended elbows during the injury. Clinical examination revealed swelling and deformity of both elbows, tenderness over both elbow joints and radial heads, loss of posterior triangular relationships of the olecranon and epicondyles. No distal neurovascular deficit was detected. The patient was clinically diagnosed to have bilateral posterior elbow dislocation with bilateral radial head fractures.

Radiographs showed bilateral elbow dislocations and a minimally displaced fracture of the left radial head and a displaced fracture of the right radial head and neck (Figs. 1 and 2).

Both the elbow dislocations were reduced immediately in the emergency department. Since the left radial head fracture was minimally displaced, the left elbow was treated conservatively and splinted in 90° flexion for four weeks(Fig. 3). The right radial head and neck fractures were displaced and needed to be fixed with Herbert screw for the radial head and buttress plating for the radial neck fracture-fixation was excellent. After the surgery, the right elbow was immobilized in a splint in 90° flexion for four weeks (Fig. 4).

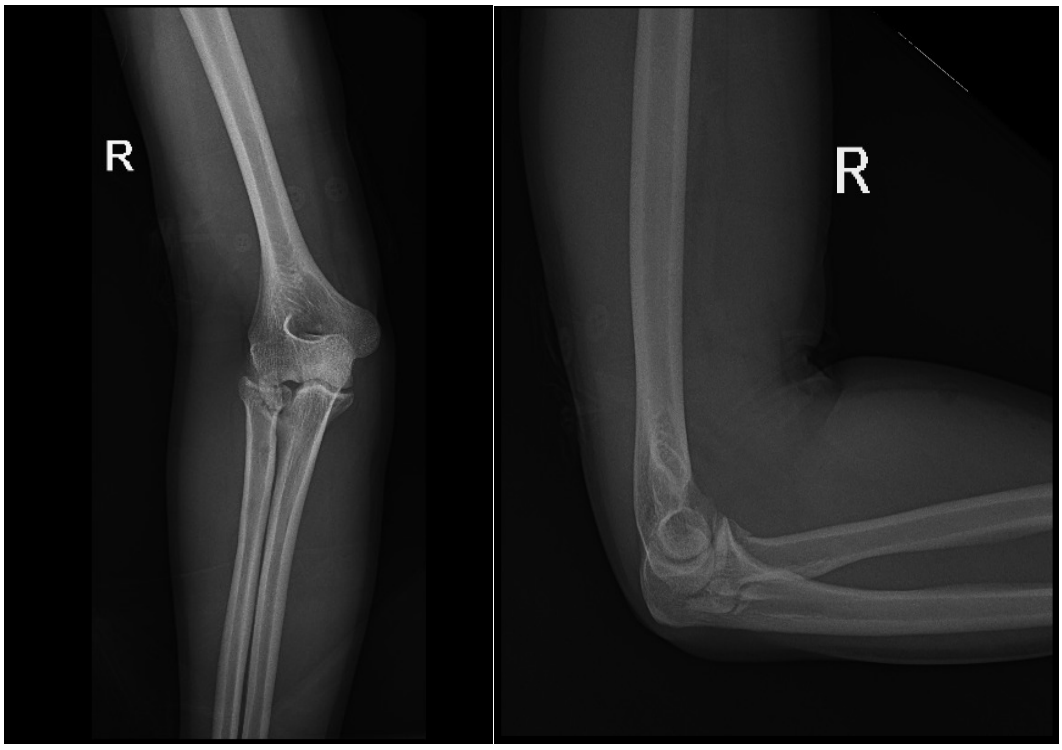

Fig. 1. R side fracture dislocation of elbow-x rays Ap and lateral view

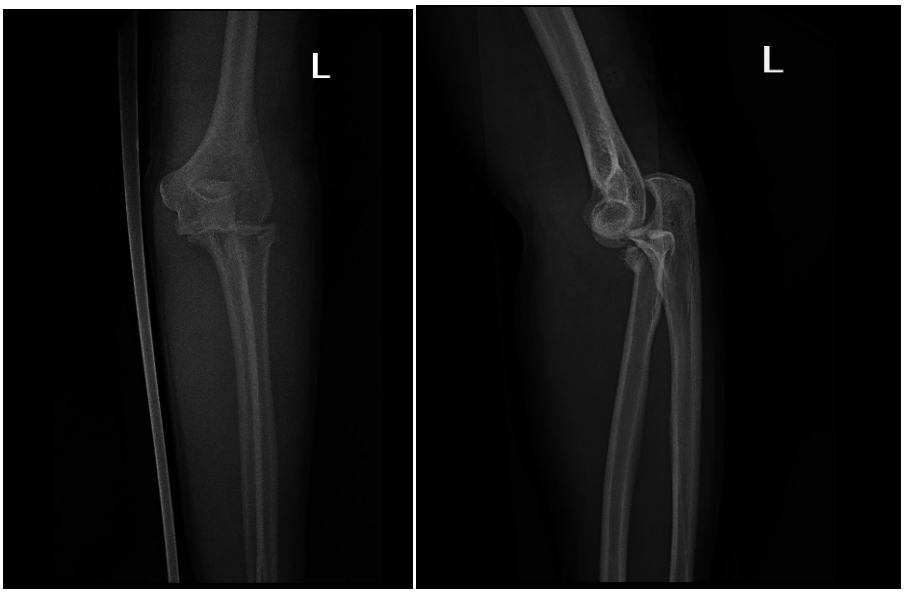

Fig. 2. Left side fracture dislocation of elbow-x rays Ap and lateral view

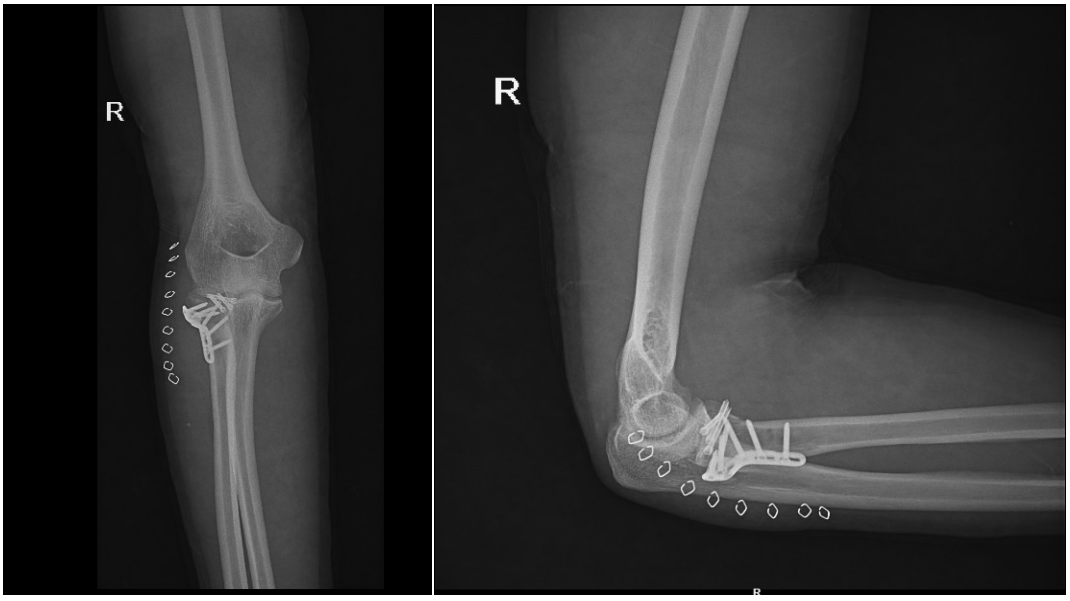

Fig. 3. Right side elbow-s/p closed reduction of dislocation and internal fixation of radial head fracture

Periodic check radiographs were taken to confirm the reduction of the elbow joints. At the end of four weeks, the splints were removed and physiotherapy was commenced for both the elbow joints. By eight weeks, the patient had gained functional range of movement of both elbows and patient was advised to resume his regular activities. At 3 months follow up left elbow had a range of 0-140 which was maintained at 6 months while right elbow at 3 months was 5-130 and at six months was 5-135. Pronation/ supination on both side at 3 and 6 months was 55/55.

At one year follow up-left elbow had flexion /extension of 0-140 and pronation/ supination of 55/55 degrees while right had flexion/extension of 5-135 and pronation/ supination of 55/55. Patient was asympto-matic.

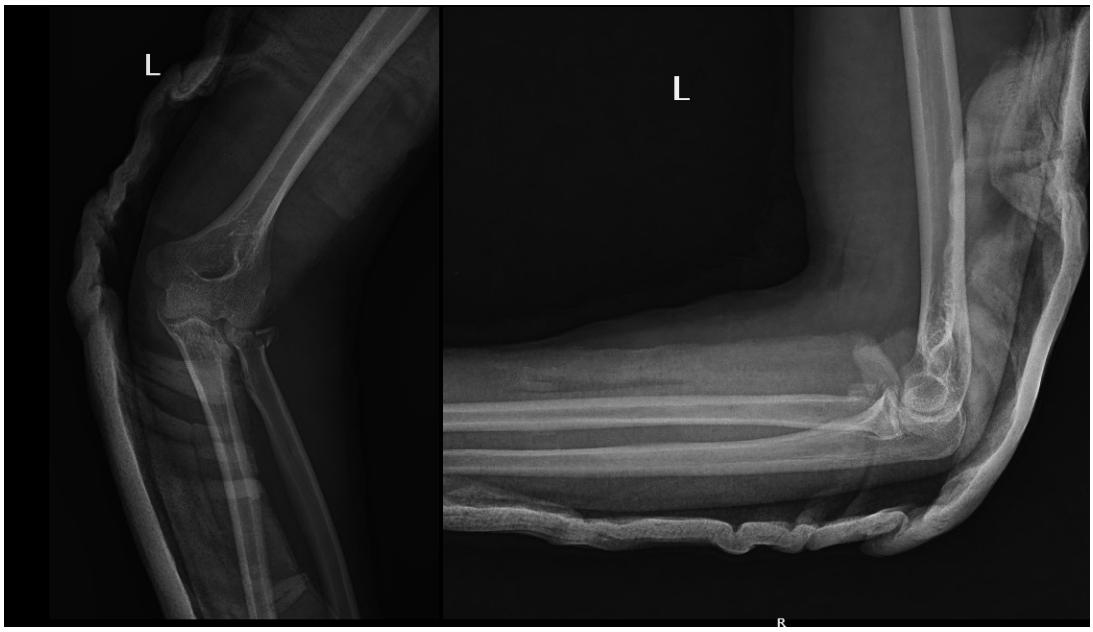

Fig. 4. Left elbow s/p closed reduction of dislocation

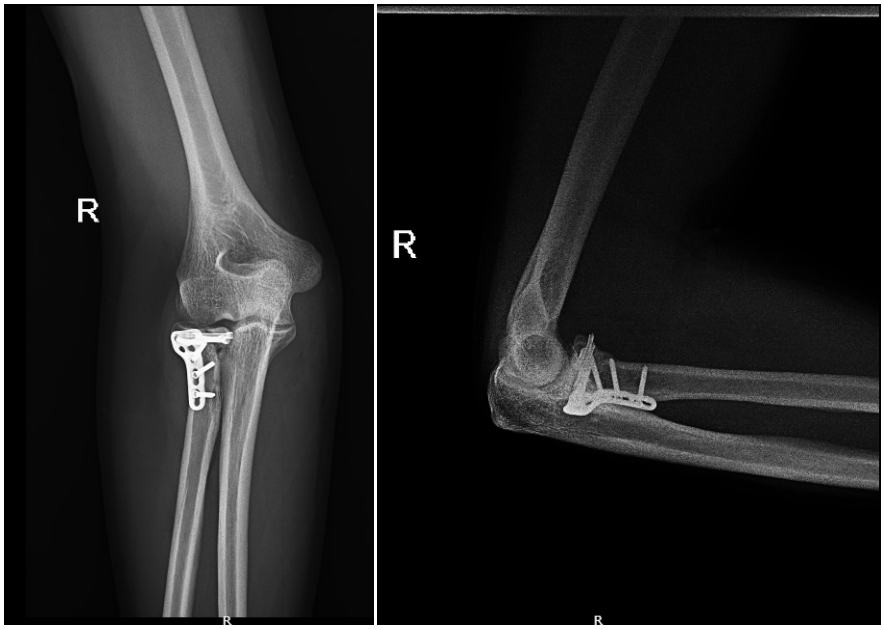

Fig. 5. Right elbow at 1 year follow up

3. DISCUSSION

The elbow joint is the second most commonly dislocated joint after that of the shoulder in adults. The incidence of elbow dislocation in adults is about 5.21 per 100000 [13]. Elbow dislocations are classified as simple dislocation which is characterized by the absence of fractures, and the complex dislocation which is associated with fractures [14]. Elbow dislocations can also be classified by the direction of their displacement. Most dislocations are of the posterior or posterolateral types [14] and are unilateral. Simultaneous bilateral elbow dislocation is an extremely rare type of injury. Most cases have been reported in skeletally

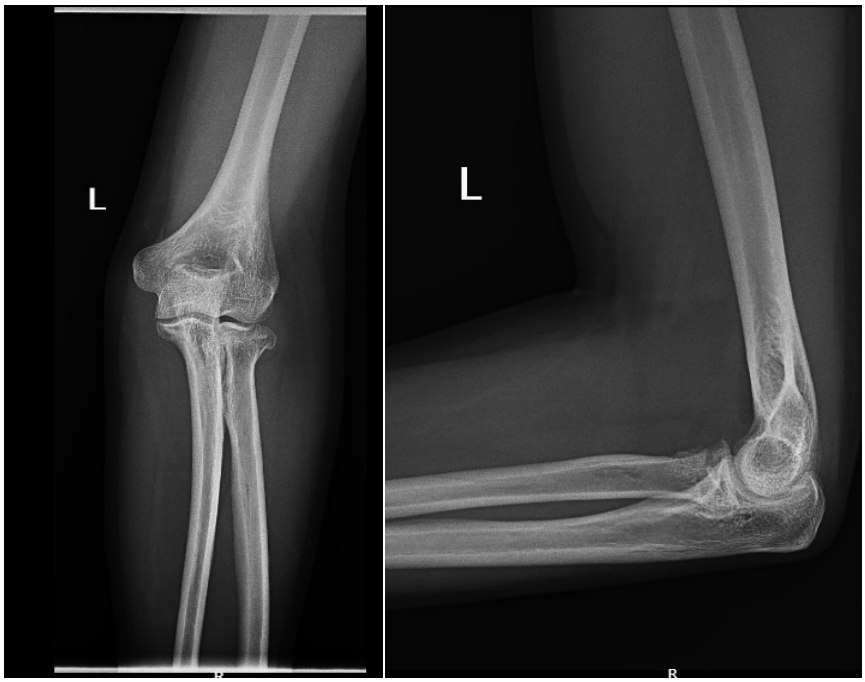

Fig. 6. Left elbow at 1 year follow up

immature patients or in athletes with generalized ligamentous hyperlaxity [10]. The usual athlete is a gymnast and because they are weight bearing on their elbows and with elbows in extended position combined with laxity can precipitate a dislocation. The vertical force precipitates elbow dislocation while the concurrent other forces like axial and valgus cause the radial head to fracture. Unlike the usual cases seen in athletes our patient was trying to prevent his fall and hence landed on both his hands.

The usual treatment protocol is closed reduction, assessment of stability and short period of splinting for 5-7 days which is followed by early mobilization. This is done as longer period of immobilization leads to capsular contracture and reduced range of motion [15-16] which can be devastating for athletes like gymnasts. Syed [10] in his case report suggested early mobilization on day of reduction despite the swelling with patient achieving full range of motion. This was probably suited for the gymnast but might not hold true for the general population. Penning et al [17] reported their observations in bilateral elbow dislocations on 2 cases (3 treated closed and one with open reduction), in their cases post reduction instability was observed and hence they were treated with external fixator. They had excellent outcomes at one year follow up. Hinged external fixation in elbow trauma is suggested for posttraumatic elbow stiffness [18-21], persistent instability in fracture dislocation [16] or simple dislocation without bone injury [17] especially when ligamentous reconstruction is not feasible and for suggested for posttraumatic elbow stiffness [18-19]. The current protocol is leaning towards ligamentous repair and has been reported by many authors [22-24]. The observations of penning et al. [17] were replicated by Ruch et al. [18] who reported excellent outcomes in 8 patients-in both the series no ligament repair was done. Although many authors lean away from hinged elbow fixation and prefer ligamentous repair, Koslowsky et al. [21] reported good results in treatment of unstable elbow dislocation and without ligamentous repair. Authors reported following benefits which includes early motion thereby minimizing stiffness and handicap.

Undisplaced radial head fractures can be treated conservatively. Displaced radial head fractures that cause painful crepitus, restricted motion, or are associated with elbow instability patterns are managed with Open reduction and internal fixation (ORIF). Satisfactory outcomes are reported in case series when anatomic reduction and stable internal fixation is achieved (Rosenblatt) [25]. Ikeda [26] and colleagues reported satisfactory and good results

in patients who had comminuted Mason type III fractures of the radial head and underwent ORIF.

In our case report left side radial head was treated conservatively while right side was treated with open reduction and internal fixation.
In a case like ours Raman et reported bilateral elbow dislocation and radial head fractures which were managed by closed reduction and ORIF of radial heads with plates. In their article they reported other modalities of fixation for radial head like polyglycolide pins [27], K wires [28], AO small fragment screws [28-29], fibrin adhesive system [29], AO thin screws [30] and transfixing wires [31]-each should be chosen based on surgeon's relevant experience. In our case we used the headless screws and combined with a buttress plate based on familiarity and experience.

4. CONCLUSION

Bilateral elbow dislocation with radial head fracture is extremely rare and individualized treatment is needed based on patient requirement and surgeon experience.

CONSENT AND ETHICAL APPROVAL

As per university standard guideline participant consent and ethical approval has been collected and preserved by the authors.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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