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An Unusual Case of Simultaneous Bilateral Elbow Dislocation and Associated Injury: A Case Report

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ABSTRACT

Simultaneous bilateral elbow dislocation with distal radius and radial head fracture is an unusual case. Only one case of bilateral elbow dislocation with distal radius fracture has been reported yet. A 58-year old male farmer with a history of fall from a tree presented with bilateral elbow dislocation with a wound over the right elbow, with distal radius fracture along with a radial head fracture. Left side close reduction and right side elbow dislocation reduced followed by external fixator applied. Distal radius fracture is managed by multiple k-wires. The aim of this study is to know the mechanism of such injury and its appropriate management.

Key Words: Bilateral, Elbow dislocation, Wound, Distal radius, External fixator, Medial collateral ligament

INTRODUCTION

The elbow joint is an inherently stable joint and 2nd most commonly dislocated joint in adults. The most common mechanism of injury is indirect by fall on an outstretched hand. The most common type is posterolateral dislocation. Simultaneous bilateral elbow dislocation with the distal end of the radius and radial head fracture is an unusual case, probably the first case with this type of injury. Very few cases of bilateral elbow dislocation are reported in the literature. Our aim is to report this case to know the sequence of mechanisms of injury and their management.

CASE REPORT

A 58-year old male patient farmer by occupation brought to the Emergency Department with a history of fall from a tree, with sustained injury to the bilateral elbow & right wrist along with a lacerated wound over the medial aspect of the right elbow. No history of joint laxity and dislocation previously. No significant family history. Clinically patient presented with severe pain, swelling, deformity, and decreased range of motion in the bilateral elbow joint and right wrist as well as a wound over the medial aspect of the right elbow measuring 5x4x3cm with exposed bone without

any neurovascular deficit. The radiograph showed bilateral posterolateral elbow dislocation with a comminuted distal radius fracture right side (Fig-1) with left radial head fracture (Fig-2). After temporary stabilization, the patient was prepared for the emergency intervention, under general anesthesia, the first closed reduction of left elbow dislocation was done and confirmed under image intensifier followed by above elbow posterior slab in 90-degree flexion was applied. A very small radial head fracture piece was retained as such. Right side dislocation reduced, thorough wound debridement and wound washed with normal saline and joint spanning external fixator was applied (Fig-3), torn medial collateral ligament and capsule repaired. The wound closed with stay suture. The wound swab was taken and sent for culture and sensitivity. Distal radius fracture was reduced and fixed with multiple K-wires and below the elbow, the slab was applied.

Postoperatively alternate day sterile dressing was done until the wound healed. A plastic surgeon's opinion was taken. Secondary suturing was done once the wound healed completely (after one month). After 2 weeks left-sided slab was removed and physiotherapy started. A good range of motion was achieved at 6 weeks. Postoperatively after 6 weeks right side, the external fixator as well as below elbow slab was removed and physiotherapy started for both elbow and wrist.

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Flexion extension achieved at 8 weeks but pronation and supination achieved after 12 weeks (Fig-4) due to distal radius fracture so the full range of motion achieved at 12 weeks with mild medial laxity due to collateral ligament injury.

PRE-OP(R)ELBOW(Fig-1) PRE-OP(L)ELBOW(FIG-2) POST-OP BILATERAL ELBOW

FOLLOW UP-CLINICAL IMAGES(Fig-4)

DISCUSSION

Bilateral elbow dislocations are very rare and very few cases are reported in literature^{1,2}. The elbow joint is an inherently stable joint. Simultaneous bilateral elbow dislocations with distal radius fracture and radial head fracture are an unusual case in adults and non-athletes male gender without any history of ligament laxity.

After extensive searching many literatures, we could not find a similar case, so probably this is the first case reported so far with this type of injury pattern. Syed et al. reported the case of bilateral elbow dislocation which was very much limited to young female gymnasts with proven joint hyperlaxity^{3,4,5}. Bilateral elbow dislocation is frequently associated⁶⁻⁸ with Gymnastics and more in the female gender. The reason behind this is generalized joint laxity⁹ including hyperextension of the elbow leading to elbow dislocation.

One another case reported in the pregnant females is bilateral elbow dislocation with distal radius fracture without any other injury¹.

Meena et al. reported a case of elbow dislocation with ipsilateral distal radius fracture which was managed conservatively¹⁹.

It is very important to know the pathophysiology of this unusual injury pattern. There are various mechanisms of injury described in the literature. Typically, there are a series of events that take place in the simple posterior dislocation of the elbow, which is described as a combination of forces that act on the elbow. When a person falls onto an extended elbow a combination of force acts on the elbow and these

are valgus force, axial loading, and external rotation of the forearm. These impact disturbed the complex anatomy of the elbow joint leads to rupture of the lateral ulnar collateral ligament, on further continuation of force there will be a rupture of the anterior and posterior capsule followed by muscle injuries and finally, total elbow dislocation^{10,11,12}.

Distal radius fracture is very common in elderly populations and the mechanism of injury is very similar to that of elbow dislocation but with less severity. The most common mechanism is falling onto an outstretched hand which transfers axial load from the hand to the distal articular surface of the radius results in shearing force leads to impacted fracture with marked displacement¹³.

O'Driscoll, classified the post-traumatic elbow instability on the basis of five parameters, these are: - 1) time since injury 2) articulation involved 3) the degree of the displacement 4) the direction of the displacement 4) timing and 5) the associated fractures^{10,11}.

A good case history speaks your diagnosis. On the enquiring sequence of events to my patients, the probable mechanism of injuries in my patient could be when the patient fell from a tree primarily direct impact on the hyperextended wrist leads to comminuted fracture of the distal radius and further axial compression load on the extended arm resulting in elbow dislocation and injury by broken stems of the tree leads to the lacerated wound on the medial side of the right elbow.

In our study with 18 months of follow up left elbow functions recovered fully while right side elbow functions recovered delayed at 12 weeks due to two conjugative joint involvements. Mild medial laxity was found on the right side; because of the age and demand of the patient, we feel no need to do any further intervention¹⁴. There is no recurrence so far.

Complication¹⁵ such as stiffness, adhesion, and myositis was not found in our study. O'Flanagan^{3,16} Protzman^{3,17} observed in their study the flexion contracture after prolonged immobilization ranges from 3-21 degrees depending upon the period of immobilization. In our study no flexion contracture on the right elbow but the left side we found 10 degrees of remnant flexion contracture.

The purpose is to report this case to increase the alertness of the presence of associated injury in the forearm with bilateral elbow dislocation¹⁸. A distal radius radiograph must be included in the case of elbow dislocation. In our case, the early and prompt management and keen observation of the wound, timely intervention of physiotherapy, and patient's co-operation during treatment lead to a good result.

CONCLUSION

We recommend that the wrist and shoulder joint should be evaluated clinically and radiologically in each and every

case of elbow dislocation. A high index of suspicion of distal radius fracture, radial head fracture as well as ligament injury should always keep in mind while treating the case of elbow dislocation. The elbow dislocation should be reduced first then only distal radius fracture should be addressed followed by strict physiotherapy for early rehabilitation.

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