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Case Report

Isolated dorsal dislocation of the distal radioulnar joint: A case report

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ABSTRACT

Isolated distal radioulnar joint (DRUJ) dislocation is a rare injury. Reports of isolated DRUJ luxations, volar or dorsal, are often case reports and rarely a series of cases. We present a case of an isolated acute dorsal dislocation of the distal radioulnar joint in a 25-year-old man. The patient underwent closed reduction and a transcutaneous radioulnar pinning was done followed by cast immobilization in neutral rotation during 6 weeks. After six months follow -up, the functional result was satisfactory, patient experienced no pain and had no restrictions in work or sports-related activities.

Introduction

Isolated acute distal radioulnar joint (DRUJ) dislocation is a rare injury. Reports of isolated DRUJ dislocations, volar or dorsal, are often case reports and rarely a series of cases. This injury is overlooked in as many as 50% of cases, especially when not associated with a fracture [1]. We present a case of an Isolated acute distal radioulnar joint (DRUJ) dislocation in a 25-year-old man victim of a motorcycle accident. Patient underwent closed reduction and temporary stabilization using K-wires. The functional result was satisfactory.

Case report

A 25-year-old man, right hand dominant, was admitted to the Emergency department following a motorcycle accident. He presented with left wrist pain and deformity and inability to rotate his forearm. Physical examination revealed a dorsal prominence of the ulnar head with a positive piano-key test. Movement of wrist was limited, movement of fingers was normal. There were no sensory or motor deficit and distal pulses were intact, and the skin was intact. Anteroposterior and lateral radiographs showed no bone injury. One the lateral view, a posterior displacement of the ulna was shown (Figs. 1, 2). A distal dorsal radio-ulnar dislocation was diagnosed. In the Operating room under general anesthesia, closed reduction was accomplished by applying digital pressure on the distal end of the ulna, while forearm was being gently supinated. The distal radio-ulnar joint was stabilised with percutaneous Kirschner-wire pinning in reduced position (Fig. 3), followed by cast immobilization in neutral rotation during 6 weeks. K-wires were removed at 6 weeks post-operatively followed by progressive physiotherapy for 10 weeks. Six months after surgery, total range of movement was allowed, patient experienced no pain and had no restrictions in work or sports-related activities. His wrist was stable and had the same strength as his uninjured side (Fig. 4).

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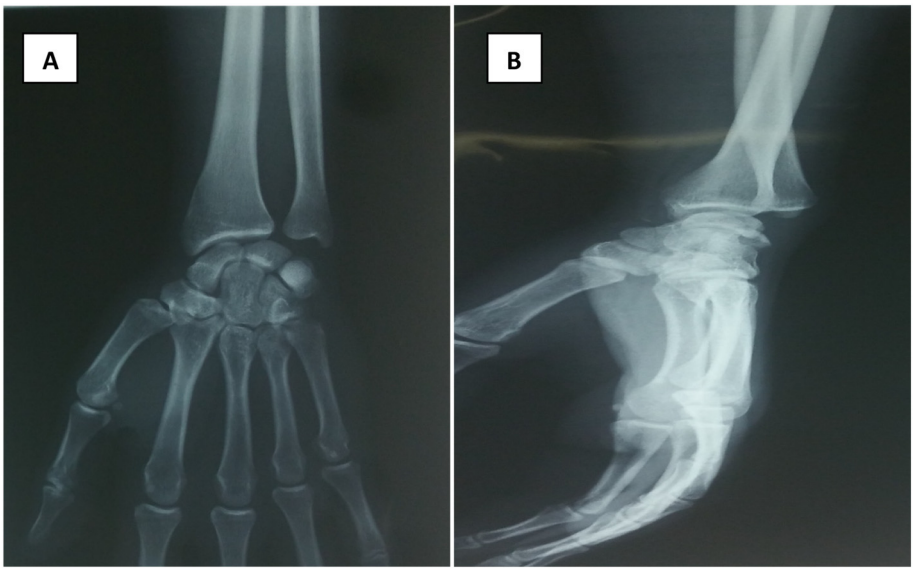

Fig. 1. X-rays of the forearm at initial presentation: A: antero-posterior radiograph, B: lateral radiograph.

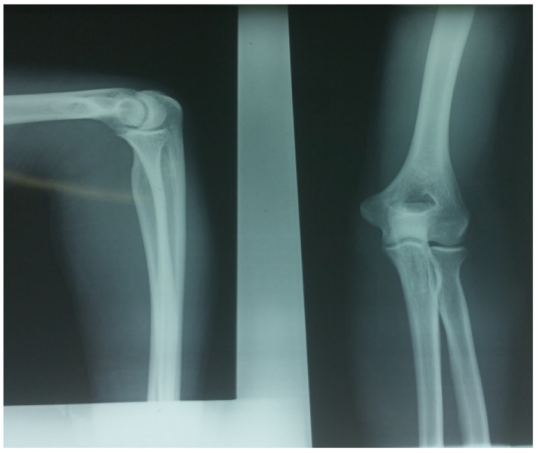

Fig. 2. X-rays of the elbow at initial presentation.

Discussion

The distal radioulnar joint (DRUJ) is a diarthrodial, synovial articulation that provides the distal link between the radius and ulna and a pivot for pronation-supination [2]. The primary stabilizer of the DRUJ is the TFCC, originally described by Palmer and Werner [3]. The TFCC is composed of several structures, including the triangular fibrocartilage (TFC), the ulnocarpal meniscus (meniscus homolog), the ulnar collateral ligament, the dorsal radioulnar ligament, the palmar radioulnar ligament, and the subsheath of the extensor carpi ulnaris (ECU). These structures are not readily distinguishable on anatomic dissection and together are referred to as the TFCC [4].

Dislocation of the distal radioulnar joint (DRUJ) is most often associated with fracture of the radius or ulna, and isolated DRUJ dislocation without fracture is uncommon. Acute isolated dislocation of the distal radioulnar joint without fracture was first described in a cadaver in 1777 by Desault [5]. Since then, information about this particular disorder has come mainly through case reports and a small series of cases [6]. It is an injury that can be missed initially due to subtle signs and interpretation of inadequate radiographs. This injury, if misdiagnosed or mistreated, results in a complete loss of pronation- supination, which entails a great functional limitation [7]. The dorsal dislocation is more common with the ulna moving dorsally in relation to the radius following hyper-extension of the wrist with hyperpronation forces [8]. Clinically, the wrist is locked in pronation with the patient unable to supinate. The diagnosis can be suspected on the basis of the clinical history and of physical examination, and confirmed by radiographic examination. Anteroposterior radiographs in a dorsal dislocation typically show a widened DRUJ with divergence of the radius and ulna when compared with the contralateral normal DRUJ [4]. A true lateral X-ray confirms the diagnosis. Any rotation of the forearm

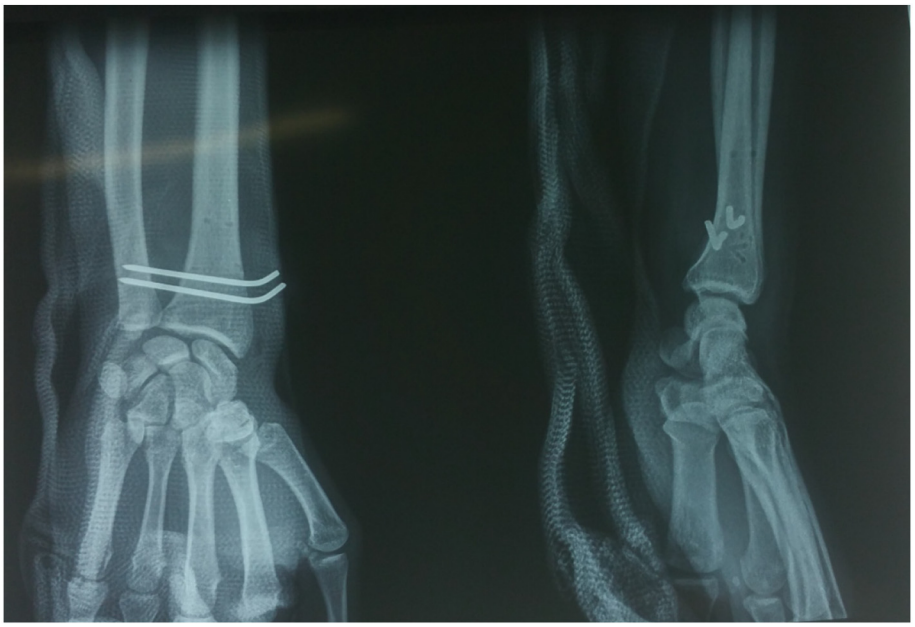

Fig. 3. Postoperative X-rays.

Fig. 4. Final clinical result: A: full pronation, B: full supination.

during radiographic examination will change the relative position of the ulna making the diagnosis difficult. Therefore, one must be careful in the interpretation of these radiographs. Some authors suggest a lateral X-ray showing both wrists on a single film [9]. If the diagnosis is uncertain, it can be confirmed by further imaging like CT scan or Magnetic resonance imaging (MRI), which demonstrates any joint incongruence.

Treatment of the acute dislocation without fracture begins with closed reduction. This treatment is typically accomplished under local anesthesia with or without sedation. In dorsal dislocations of the ulna, reduction is accomplished with gentle traction, dorsal pressure (translational force) over the ulnar head, and supination. The joint must be assessed for instability and typically is most stable in supination [4]. The forearm is immobilized in an above elbow cast in the position of maximal stability for a period of 6 weeks. Because of the vascularity and healing potential of the peripheral TFCC, closed treatment is frequently successful in the restoration of a stable construct [10,11]. If instability persists after reduction, radioulnar pinning is done in reduced position to allow soft tissue healing [7,12], using one or two Kirschner (K) wires just proximal to the DRUJ [4]. If the dislocation proves to be irreducible even with conscious sedation or general anesthesia, open reduction in combination with repair of the TFCC is recommended [9].

Conclusion

Distal radioulnar joint (DRUJ) dislocation without an associated fracture is uncommon. It is an injury that can be missed initially due to subtle signs and interpretation of inadequate radiographs. High degree of clinical suspicion and proper X-ray is required for prompt detection.

Consent

Patient gives informed consent for publication.

Declaration of competing interest

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

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