

Minimally displaced distal radius fracture: think again!

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Citation

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Abstract

Minimally displaced distal radius fractures are very commonly seen and quite easily managed with closed reduction and cast immobilization. We describe a similar case which was managed in the same way. Gross dorsal angulation at the fracture site 3 months post injury lead us to retrospective review of radiographs which yielded DRUJ disruption. Missed DRUJ disruption or failure to restore it has a telling effect on the final outcome of these seemingly 'easy' fractures. Every distal radius fracture should be looked to see if it is a Galeazzi fracture dislocation. The stability and the need to fix the DRUJ with k wire should be assessed to avoid the series of events as in our case.

CASE HISTORY

A 22 year old male came to us with a deformed right wrist, 3 months post trauma. He had injured his wrist in a fall on his right hand. He had been treated in another hospital as a case of distal radius fracture and managed with closed reduction and short arm cast for 6 weeks.

On examination he had a deformed wrist with prominent distal ulna. Movements were restricted in all planes especially extension. Radiographs of the wrist (fig. 1 & 2) showed gross dorsal angulation of distal radius with dislocated DRUJ.

Figure 1

Figure 1: Lateral view



Figure 2

Figure 2: AP view



Figure 3

Figure 3: AP & lateral view



Review of his earlier radiographs showed minimally displaced (volar angulation) distal radius fracture, ulnar styloid process fracture with disrupted and unreduced DRUJ (fig 3 & 4). We labeled it as a Galeazzi fracture dislocation.

Figure 4

Figure 4: AP view in plaster



Patient was taken up for surgery under general anaesthesia. Pre-operatively osteotomy and fixation was planned. Wrist was approached by volar incision of Henry. Open wedge osteotomy of the radius at the site of angulation was done. Opening was filled with bone graft and fixation with a T plate was done. The reduction and stability of DRUJ was assessed. Fixation of DRUJ with k wire was not done. Post operatively wrist splint was given.

DISCUSSION

Distal radius fractures are very common injuries and extraarticular fractures are managed mostly conservatively. Sometimes these fractures are associated with DRUJ disruption. These injuries are labeled as Galeazzi fracture dislocation. Usually the dislocation is dorsal, but in some cases it may be palmar. Fracture is almost always located just above proximal border of pronator quadratus. Usually there is volar angulation at the fracture site. Mechanism of injury is usually by direct blows or falls. Insertion of pronator quadratus on palmar surface of distal fragment rotates it toward ulna & pulls it in proximal & palmar direction. Brachioradialis causes shortening & rotation of

DRUJ. Weight of hand tends to cause subluxation of DRUJ & dorsal angulation of the distal fragment of radius. DRUJ is supported by palmar & dorsal radioulnar ligaments, and TFCC. Displaced radial fractures must be managed by open reduction and internal fixation. Following fixation of the radius, need to reevaluate DRUJ. A simple DRUJ dislocation is easily reducible but may be stable or unstable. Unstable DRUJ dislocations are managed with k wire fixation of DRUJ in reduced position. It is often difficult to evaluate stability of the DRUJ without opening and directly visualizing the joint. Even if the supinated joint appears to reduce under fluoro, the surgeon's fingers may palpate gross dorsal subluxation. In the report by Rettig ME and Raskin KB, the authors categorized these fracture into type I (fractures within 7.5 cm of midarticular surface of the distal radius) and type II fractures (greater than 7.5 cm from joint surface). In their series DRUJ instability was seen in >50% patients in type I fractures. Type II fractures had <6% intraoperative DRUJ instability after open reduction and internal fixation of radial fracture. In complex dislocation, reduction is not possible because there is soft tissue interposition or a significant tear. After the associated injury is dealt with, treatment for complex injuries requires exploration of the DRUJ, extraction of the interposed tissue, repair of the soft tissues, and open reduction and internal fixation of the ulnar styloid fracture (if present and displaced).

In the case reported by us though the radius fracture is mildly displaced (palmar angulation), DRUJ is unstable even after closed reduction of the radius fracture. Post reduction radiograph shows acceptable position of radius fracture but there is increased gap at DRUJ (instability). The displacing forces acting at the distal radius resulted in dorsal angulation at the fracture site, and dorsal dislocation of distal ulna.

The early recognition and appropriate treatment of an acute DRUJ injury are critical to avoid the progression to a chronic DRUJ disorder, the treatment of which is much more difficult and much less satisfying. After a fracture of the distal radius, whether healed in an anatomic position or malunited, many patients complain about problems on the ulnar side of the wrist with pain and decreased range of forearm rotation. In addition many patients are unhappy with the unpleasant appearance of the wrist joint. The complaints are related to tears of the TFCC, instability, and/or incongruity of the distal radioulnar joint, and ulnocarpal abutment. These initiate irreversible cartilage damage that eventually leads to degenerative joint disease.

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