Chapter 15
Adult Distal Radius Fractures

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Keywords Distal radius fracture • Acute carpal tunnel syndrome

Overview

A common injury, distal radius fractures (Fig. 15.1) require timely sensory and motor evaluation along with associated wounds for possible open fracture. Median nerve paresthesia or pain out of proportion suggests acute carpal tunnel syndrome.

What to Ask

1. Are open wounds present (possible open fracture, often from ulnar styloid)?
2. Are there any associated injuries?
3. Does the patient have paresthesia (concern for acute carpal tunnel syndrome)?

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FIGURE 15.1 AP and lateral radiographs of a distal radius fracture in a skeletally mature patient

What to Request

1. Ensure arm is stabilized, elevated, and iced immediately.
2. X-rays of the wrist, forearm, and elbow.
3. Jewelry be removed, IV access on contralateral arm.
4. 2.5–10 mg of IV valium and local hematoma block lidocaine as adjuncts to reduction.

When to Escalate

1. Open fractures: Should be irrigated in ED and receive antibiotics (will require formal irrigation and debridement in OR)
2. Paresthesia: Acute carpal tunnel syndrome may require emergent fixation and release if it persists after reduction

Imaging

1. AP, oblique, and lateral views of the wrist are necessary for evaluation.
2. Advanced imaging (CT) is generally not required acutely, though it may be useful for operative planning in some complex fracture patterns.
3. Postreduction X-rays of the wrist (AP and lateral) after reduction.

Effective Communication

1. Open versus closed
2. Neurovascular compromise
3. Intra-articular versus extra-articular
4. Stability after reduction
5. Associated injuries
6. Displaced/non-displaced

What to Bring

1. Casting/splinting material (short-arm cast/sugar-tong splint, Chapter 6).
2. Lidocaine for hematoma block (see hematoma block, Chapter 8).
3. Fluoroscopy if reduction required

Key Exam Pearls

1. Sensation (median/radial/ulnar nerves).
2. Motor (EPL/FDS/FDP to index/FDP to small/EDC/IO).
3. Evaluate all wounds: Dermal violation raises suspicion for open fracture.
4. Median nerve paresthesia or pain out of proportion suggests acute CTS.

Reduction

When ready to perform a reduction a hematoma block should be placed at the fracture site and valium administered. An assistant is recommended if available.

For a dorsally angulated fracture (also referred to as "apex volar" or a Colles' fracture, the most common pattern), begin with traction to fatigue the patient's spasm. Exaggerate deformity to hyperextension to release any impaction, and realign with slight pronation. The second member of the team provides countertraction during reduction and maintains the hand in ulnar deviation during casting. Ulnar deviation is key to maintaining alignment and preventing collapse by placing the fracture fragments on stretch through their ligamentous attachments.

Finger traps/weight can be helpful when no assistant is available. The thumb and index finger are set in the traps to ulnarly deviate, with weight over the biceps. Fluoroscopy is recommended to confirm reduction and appropriate mold.

The mold is typically completed with three points. The distal point should be a broad and smooth over the distal fracture fragment (beware, it is often placed too distally). The middle point is placed volar, proximal to the carpal tunnel, and the most proximal mold is placed over the volar forearm to complete a gentle "C" shape. The MCP joints must be left free to allow motion and limit stiffness. Aggressive flexion of the hand and wrist should be avoided. Care should be taken

to avoid skin tears in elderly patients, and gloves should be avoided during reductions if safe.

Adequate Reduction Parameters

1. Palmar tilt (~11° is normal on average) corrected to neutral.
2. Radial height should be within 2 mm of the contralateral wrist.
3. No intra-articular step-offs.
4. Radial inclination should be restored to match the contralateral.

Follow-Up

1. Remain non-weight bearing, and continue to ice and elevate, but actively move fingers to prevent stiffness.
2. See an orthopedic surgeon within one week.
3. Patients should move fingers to avoid stiffness.