Distal Radius and Ulna Fractures: Understanding Common Forearm Injuries

Fractures of the distal forearm are the most common upper extremity fracture, with over 250,000 cases annually in the US. These injuries significantly impact wrist function, mobility, and overall quality of life across all age groups.

Forearm Anatomy: Radius and Ulna

Radius

The larger, lateral bone, bearing approximately 80% of the axial load at the wrist joint. It forms the main part of the radiocarpal joint.

Ulna

The medial bone, primarily providing crucial stability for forearm rotation (pronation and supination).

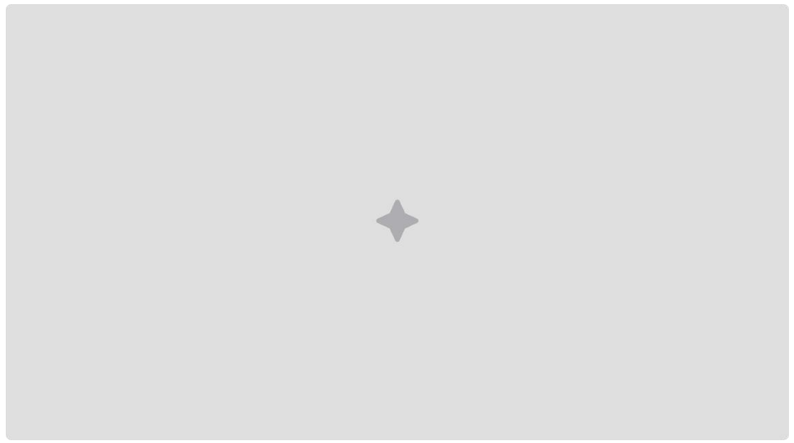
Distal Radioulnar Joint (DRUJ)

A critical articulation between the radius and ulna, essential for the rotational movements of the forearm.

Mechanism of Injury & Epidemiology

Common Mechanism: FOOSH

Over 75% of distal radius fractures result from a **Fall Onto Outstretched Hand (FOOSH)**, where impact forces travel up the arm, fracturing the distal radius.



Bimodal Distribution

These fractures show two peak incidences:

Young, active males: Due to high-energy trauma from sports or motor vehicle accidents.

Older females (50+): Often from low-energy falls, strongly associated with osteoporosis.

> One in four fractures in adults aged 65 and older are distal radius fractures, highlighting the importance of fall prevention and osteoporosis management.

Common Distal Radius Fracture Patterns

Colles Fracture

Most prevalent (>90%), characterized by dorsal displacement and angulation, creating a "dinner fork" deformity.

Smith Fracture

Known as "reverse Colles," featuring volar displacement and angulation (less common, ~5% of cases).

Barton's Fracture

An intra-articular fracture involving the dorsal or volar rim of the distal radius, often with associated carpal displacement.

Chauffeur's Fracture

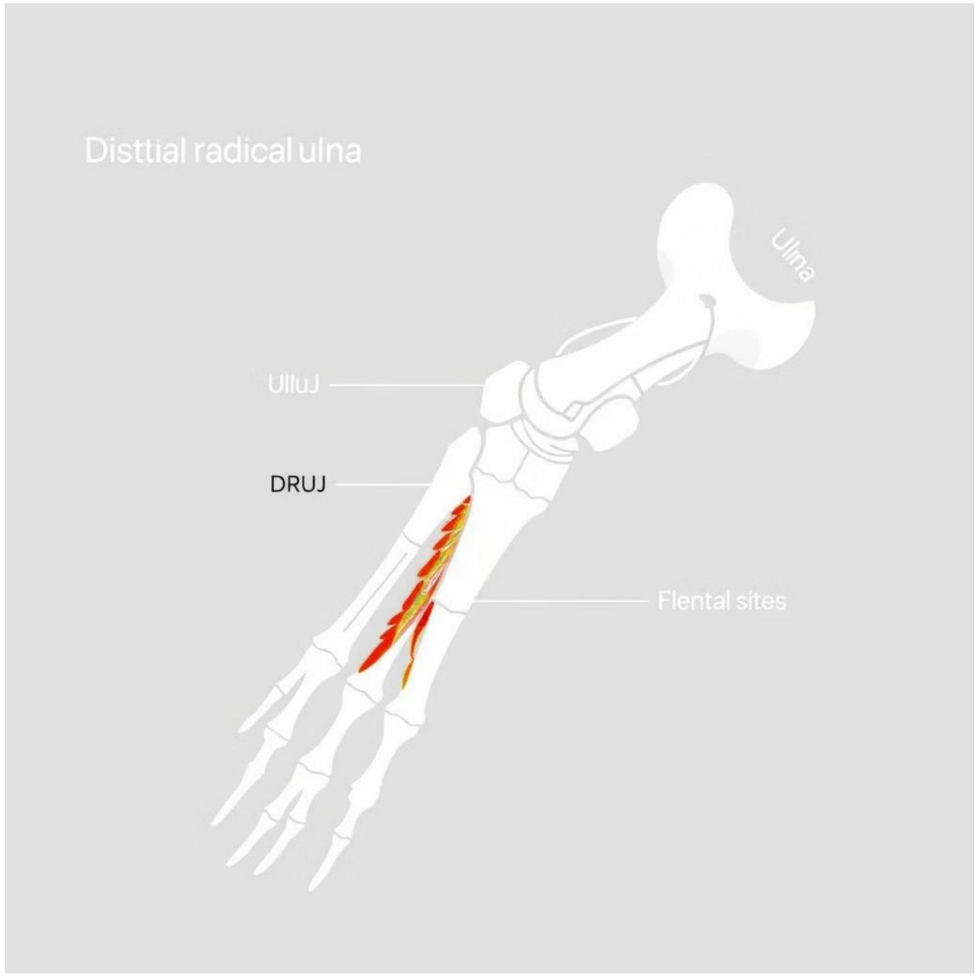
A fracture of the radial styloid, frequently linked to injury of the scapholunate ligament.

Distal Ulna Fractures & DRUJ Instability

Distal ulna fractures frequently accompany distal radius fractures, occurring in 50-60% of cases. The primary concern is their potential impact on Distal Radioulnar Joint (DRUJ) stability.

Ulna Styloid Fractures: Small tip fractures that are often benign unless displaced by more than 2mm or directly involve the DRUJ articulation.

Larger Ulna Head/Neck Fractures: These can directly compromise DRUJ stability, leading to rotational instability of the forearm.



Diagnosis & Initial Management

Clinical Presentation

Patients typically present with acute pain, significant swelling, visible deformity (e.g., "dinner fork" appearance), and severely limited wrist motion. A thorough neurovascular assessment is crucial to check for median nerve compression.

Imaging

Standard X-rays (AP, lateral, oblique views) are the primary diagnostic tool. For complex intra-articular fractures, a CT scan is often used pre-operatively to precisely identify articular step-off greater than 2mm and assess comminution.

Initial Management

Immediate steps include immobilization using a splint or cast to stabilize the fracture, effective pain control, and ongoing neurovascular monitoring to prevent complications such as median nerve compression.

Treatment Options: Non-Surgical vs. Surgical

Non-Surgical

Closed reduction and cast immobilization (4-6 weeks) is suitable for stable, minimally displaced fractures that meet specific criteria for angulation and shortening.

Surgical Indications & Techniques

Surgery is indicated for significant displacement (>20° angulation), articular step-off (>2mm), comminution, open fractures, or DRUJ instability.

Volar Locking Plate: Most common for distal radius fractures, allowing stable fixation and early motion.

K-wires (Percutaneous Pinning): Used for simpler, extra-articular fractures.

External Fixation: For highly comminuted fractures or severe soft tissue injury.

DRUJ Fixation/Repair: Addresses associated ulna fractures causing instability (e.g., TFCC repair).

Rehabilitation & Long-Term Outcomes

4-6 weeks

Cast immobilization period.

8-12 weeks

Return to light activities.

4-6 months

Return to full sports/heavy lifting.

Rehabilitation is crucial for regaining full function. Early range of motion is often encouraged post-surgery, followed by physical and occupational therapy focusing on mobility, strengthening, and daily activities. While recovery can take up to a year, good long-term outcomes are expected with appropriate management. Potential complications include malunion, stiffness, carpal tunnel syndrome, and Complex Regional Pain Syndrome (CRPS).