Fractures around wrist

Colles Fracture
Smiths fracture
Barton’s fracture
Chauffer’s fracture
Scaphoid fracture
Lunate dislocation

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Colles’ fracture

Definition: Fracture of the distal end radius about 2cm proximal to the articular cartilage margin at cortico-cancellous junction characterised by following displacements.

1. Dorsal displacement
2. Dorsal angulation
3. Lateral displacement
4. Lateral tilt
5. Supination
6. Impaction

The intact distal radius has a normal Volar tilt of 11° and radial-tilt of 22° which is disrupted after distal radius #.

The figure shows radial tilt and displacement; and dorsal tilt with dorsal displacement.
Some characteristics of distal radius #

Seen in osteoporotic elderly patients
Due to fall on outstretched hand

C/F:

- Deformity → dinner fork
- Tenderness over distal radius
- Radial styloid no longer distal to ulnar styloid process
- Examine for median nerve injury

Often associated with

- Injury to IRUJ (inferior radioulnar joint)
- # Styloid process
- of ulna
- Injury to TFCC (triangular fibrocartilage complex) of Ulna

Investigations:

1. Postero-anterior & lateral view of wrist
2. CT scan in case of Comminuted displaced fracture

Treatment:

1. Undisplaced fracture: BE cast for 6 weeks
2. Displaced fracture:
   Closed Reduction → Immobilisation in BE POP cast for 6 weeks

Post reduction, typical position of wrist in Colles’ cast

1. Palmer flexion
2. Ulnar deviation
3. Pronated forearm
3. Displaced unstable Colles’ fracture: other options
   a) CR and percutaneous K wire fixation
   b) ORIF by plate
   c) CR and external fixator application

Rehabilitation later. Finger, wrist mobilisation and strengthening exercises.

<table>
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<th>Why Colles cast in a typical position?</th>
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<td>1. Palmer flexion to counter dorsal tilt and dorsal displacement</td>
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<td>2. Ulnar deviation to counter radial tilt and radial deviation</td>
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<td>3. Pronated forearm to counter supination of fragment.</td>
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Complication of Colles’ fracture:

1. Stiffness of wrist and hand
   - Wrist & finger stiffness
   - Prevention → active movement of fingers in cast should be encouraged
   - Treatment: Physiotherapy

2. Malunion: Most frequent complication leading to “Mannus valgus deformity”
   - Due to re displacement of fracture & dorsal cortex comminution
   - Mostly deformity is asymptomatic, and may not have any functional deficit
   - If symptomatic with decreased ROM: may need corrective osteotomy

3. Carpal tunnel syndrome:
   - Initially, conservative treatment is tried
   - If no response, it may need carpal tunnel decompression (division of flexor retinaculum)

4. Sudeck’s osteodystrophy: Quite common after colles #
   - Treatment is intensive physiotherapy
     Extended form of Sudecks dystrophy is k/a shoulder hand syndrome wherein even shoulder becomes stiff along with wrist and hand
5. Subluxation of IRUJ: leads to decrease in ulnar deviation & rotation of forearm
   - TT: if painful decreased ROM; Darrach’s resection of lower end of ulna (2.5cm) is performed.

6. EPL tendon rupture:
   - Seen as long term complication
   - Commonly seen with “undisplaced #”
   - Leads to thumb drop
   - Treatment: Tendon transfer extensor indices to EPL.
**Barton fracture**

**Definition:** vertical, marginal intra-articular # of distal radius (volar or dorsal) in sagittal plane along with displacement of whole of carpus.

**Classification:**
1. Volar Barton: fracture along volar margin
2. Dorsal Barton: Fracture along dorsal margin

**Treatment:** ORIF with Ellis T buttress plate

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**Smith’s fracture (Reverse Colles’)**

**Definition:** It is like a Colles’ fracture but with reverse displacement on ventral aspect.

**Mechanism of injury:** Fall on dorsum of wrist with palmar flexed

**Displacement:** → volar displacement and volar tilt

**Treatment:**
1. Closed reduction and AE cast application for 6 weeks
2. ORIF with Ellis plate.

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**Chauffeur’s #**

**Definition:** Intra-articular oblique fracture of radial styloid fracture

**MOI:** Happens after the backfire due to car starting handle!

**Treatment:** Colles’ cast for 6 weeks.
Injuries of Carpal bones

Scaphoid fracture

- Commonest carpal # (60-70%)
- Mechanism of injury (MOI): fall on outstretched hand

“Often missed as sprained wrist”

Common sites of fracture

1. Waist: 70%
2. Proximal pole: 20%
3. Distal pole: 10%

C/F:

- Pain at wrist
- Swelling and tenderness in the anatomical snuff box
- Axial tenderness along thumb
- Wrist movements are painful

Investigations:

- Xray wrist: PA, lateral, oblique
Treatment:

1. Undisplaced: Below Elbow (BE) POP cast in “glass holding position”
2. Displaced: CR/OR and IF by Herbert screw

Complications:

1. Avascular Necrosis: of proximal fragment
   Later, osteoarthrosis of wrist.
2. Non-union or delayed union
3. Wrist osteo arthritis

Commonly injured bone next to scaphoid is Lunate. Lunate dislocation can lead to median nerve injury.

Metacarpal and phalangeal fractures

**Bennett’s fracture:** oblique intra-articular fracture dislocation of base of thumb

**Mallet finger:** sudden forcible flexion of DIP on an extended finger may rupture extensor tendon at the base of distal phalanx.