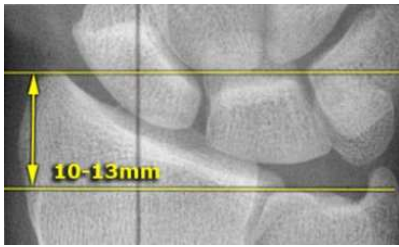
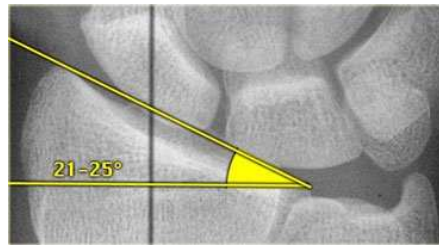


Features:

- 25% of all fractures esp in elderly (osteoporosis/falls) & children/young adults
- 75% are distal radius and ulna #s. Carpal #s much less frequently.
- Norm XR:



Radial length ~11mm



Radial inclination ~22°



Volar tilt ~11°

- On exam remember to do full neurovascular exam of hand. ASB. ROMs, Elbow.
- XR- AP & lateral + scaphoid views if ASB tenderness.

Classification

- Probably easiest in ED to describe as Right →
- The common wrist fractures that occur are:
 - Colles' fracture (distal radius - dorsal)
 - Smith's fracture (distal radius - volar)
 - Barton's fracture (# dislocation of the radio-carpal joint)
 - Chauffeur's fracture (radial styloid #)
 - Fracture of ulnar styloid
 - Scaphoid fracture
 - Other carpal fractures

Fracture Description	
Location	Extraarticular or Intraarticular
Configuration	Simple: transverse or oblique or Comminutive
Displacement	Radial tilt Radial length Radial angle Intra-articular incongruity: - offset of 2 mm in any plane
Ulna / DRUJ	Fracture at the tip, mid portion or base Subluxation or instability - compare to non-involved side

Management of wrist fractures

- Normal # general management.
- Indications for reduction as Right →
- Specific Mx as below.
- Usually short arm cast acceptable

Indications for Reduction	
Dorsal tilt	> 10°
Articular step-off	> 2 mm
Radial shortening	> 5 mm
Radial inclination	< 15°

Colles' fracture

- Definition: transverse # through the distal 4cm (some say 2.5cm) of the radius, with dorsal displacement, dorsal angulation & radial deviation. May also have ulna styloid # (60%) & intra-articular extension
- FOOSH with wrist extended up to 90°
- Often a dinner fork deformity.
- The median nerve can be damaged.

**Management**

- Reduction if: deformity apparent clinically or normal tilt reduced by $\geq 10^\circ$. Open reduction if intra-articular/unstable. Closed reduction technique - Procedural sed / IV regional anaesthesia / GA. Traction→extend→flex→ulnar deviate wrist.
- POP (short arm for elderly) x 6w.

Complications

- Median and/or ulnar nerve damage. There can be an acute carpal tunnel syndrome.
- Compartment syndrome rare.
- Deformity can occur on healing and result in long term loss of mobility and functional problems. Chronic pain can occur.
- Malunion/non-union are possible, as with all fractures.
- Arthritis is a late complication.
- Reflex sympathetic dystrophy (Sudeck's atrophy).
- 1-2mo later EPL may rupture from loss of blood supply.

Smith's fracture

- 'Reverse' Colles' fracture.
- Definition: distal radius # ± ulna involvement with volar displacement and angulation
- Usually caused by landing with the wrist in flexion or a backward fall on to the palm
- So called 'garden spade deformity' on exam.
- Fracture may be extra-articular (I), intra-articular (II), or part of #-dislocation (III).



Management

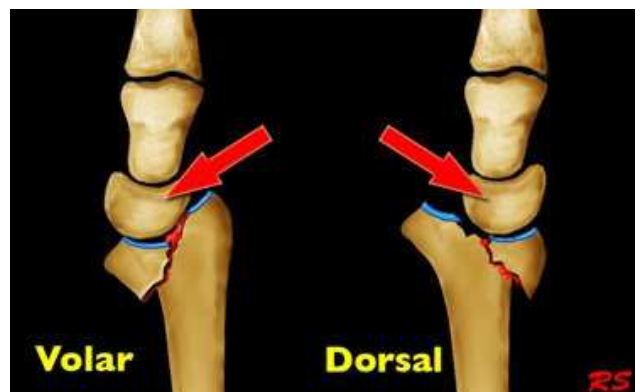
- Reduction if: deformity apparent clinically or volar tilt excessive. Open reduction if fracture dislocation. Closed reduction technique - Procedural sed / IV regional anaesthesia / GA. Traction in supination → extend → ulnar deviation.
- POP x 6w.

Complications

- Similar to Colles'.

Barton's fracture

- This is a distal intra-articular radial # with dislocation of the radio-carpal joint.
- It can be dorsal or volar depending on the direction of dislocation.
- Basically it is a Colles' or Smith's fracture with dislocation. A volar Barton's fracture is a Smith's type III fracture.
- Carpal bones follow smaller radial fragment.
- There may be entrapment of tendons and/or the ulnar nerve/artery.
- Usually operative reduction with external or ORIF is required.



Chauffeur's or Henderson's fracture

- Isolated fracture of the radial styloid. Usually undisplaced.
- Kick back injury or fall.
- Associated injuries:
 - Scapholunate dissociation
 - Trans styloid, perilunate dislocation
 - Dorsal Barton's #
- Usually ORIF



Ulnar styloid process fracture

- Suggested by local tenderness. ECU runs in shallow dorsal longitudinal groove.
- May be associated with a distal radius fracture.
- Minimally displaced #s can be treated by a long arm POP for 3-4w.
- Fractures at the base (where the triangular fibrocartilage complex is attached) can → instability of the DRUJ requiring OT for stabilisation.

Scaphoid fracture

- Most frequently injured carpal bone (~80% of carpal #). Usually FOOSH >90° extension
- Easily missed (5-10% on initial XR) with potentially serious consequences.
- 50% waist, 38% proximal, 12% distal
- It tends to occur in a younger age group than a Colles' fracture.
- Classical signs are tenderness in anatomical snuff box, pain on axial compression of thumb & tenderness of scaphoid tubercle (extend patient's wrist & push on scaphoid tuberosity at the proximal wrist crease)

Management

- XR: scaphoid views. If not seen on XR but suspected → # clinic for rpt XR (10-14d), CT or MRI (no delay req., sens ~100%, also can see AVN (later), lig inj & carpal stability) or bone scan (less sens than MRI, 72h delay, radiation, higher false pos rate - arthritis etc).
- Although little evidence, normally recommended that placed in scaphoid POP (can do full plaster if no swelling) - wrist in about 10° of flexion with slight radial deviation and the thumb and middle finger just able to appose. (Pen-holding position).
- The duration of immobilisation depends upon the # site: distal 6-8w; middle 8-12w; proximal 12-24w.
- Operative treatment may be needed for displaced fractures.

Complications

- Avascular necrosis: the blood supply enters the scaphoid near its waist & distal pole. Fractures in waist area can potentially interrupt the blood supply to the proximal part of the scaphoid, leading to AVN, non-union and arthritis.
- Scaphoid non-union/delayed union
- Reduced grip strength and reduced range of motion
- Osteoarthritis of the radiocarpal joint

Other carpals

- Uncommon-rare.

Triquetral fracture

- Most common after scaphoid
- May be assoc with perilunate dislocation
- Cast 6-8w

Lunate fracture

- Unusual
- Can → AVN
- Scaphoid POP & Ortho r/v.

Hamate fractures

- More common in golfers & racquet sports
- May need special oblique XR views
- Splint & analgesia