Distal radius fracture

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Distal radius #

- Classification
- Management
- Literature
• Incidence
  – Common – 17% of all fractures in adults
  – 10/10000 rising to 120/10000 in women >85y

• Mechanism
  – 90% caused by compressive loading on dorsiflexed wrist (FOOSH)
  – Older women – low energy injury vs
  – Younger pt - high energy injury leads to complex fracture patterns → development of new treatments
Frykman classification

- Gösta Frykman 1967
- Type I to VIII classified according to fracture pattern
- Higher classification have a worse prognosis
- Even numbers have assoc ulnar styloid #
- does not include extent or direction of initial displacement, dorsal comminution, or shortening of the distal fragment
Frykman class cont’d

- I – extra articular
- III – involves radiocarpal joint
- V – involves radioulnar joint
- VII – involves both the radiocarpal and radioulnar joints
- II, IV, VI & VIII incl ulnar styloid
AO classification

- Müller 1986
- Distal radius – 23
- A – extra articular
- B – partial articular
- C – complete articular
AO class cont’d

• A1 # ulna, radius intact
• A2 simple radius
• A3 multifragmentary

• B1 saggital
• B2 coronal, dorsal rim
• B3 coronal, volar rim

• C1 articular simple, metaphyseal simple
• C2 articular simple, metaphyseal multifragmentary
• C3 multifragmentary
Common eponyms

- **Colles’ #** (1814) – extraarticular with dorsal displacement and radial shortening
- **Smith’s #** (1847) – “reverse Colles’”, volar displacement
- **Barton’s #** (1838) – intraarticular #, can be dorsal or volar and is usually unstable
- **Chauffeur’s #** (Edwards 1910) – intraarticular # of radial styloid
- **Die-Punch (Lunate Load) #** - intraarticular depression # of lunate fossa
Measurements

Radial inclination: 23.6° (±2.5°)

Radial height: 11.6 mm (±1.6 mm)

Distal-most point of radial styloid

Distal-most point of ulnar articular surface

Volar tilt: 11.2° (±4.6°)

Distal dorsal rim

Radius

Distal volar rim

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Treatment options

• MUA +/- K-wires
• Ex fix - bridging / non bridging
  -w or w/o add k-wires
• ORIF - dorsal / volar
  -locking / non locking plate
Treatment aims

- Restore anatomy – congruent joint
- Reduce risk of OA
- Function
- ?Shortening more disabling than angulation
What to chose?

• Stability of # is the most important point to consider

• Signs of unstable #
  – Fracture pattern
  – Articular depression >2mm
  – Radial shortening >5mm
  – Dorsal tilt >20°
  – Comminution

• 2° instability
ORIF

- Restore normal anatomy
- Early mobilisation
- Stable fixation
- Locking plates reliable in osteoporotic bone
- Fixed angle device vs poly axial
Literature

• “There is no Level-1 clinical evidence suggesting a superior modality for treatment of distal radial fractures”
  – JBJS 2007 Current concepts review Chen et al

• “There are a number of important unanswered questions which should temper any enthusiasm for fixing fractures of the distal radius with volar locking plates”
  – JBJS 2008 Aspects of current management Downing et al

• “Locked volar plates leads to better patient outcome in the first 3 months after fixation but after 6 months and 1 year there was no difference for ex fix, radial column plate & volar locking plate”
  – JBJS Am 2009 Wei et al

• “No clear advantage could be demonstrated with either exfix + k-wires or volar locking plate”
  – JBJS 2008 Egol et al
Conclusion ORIF

- Allows early mobilisation, fixation of osteoporotic bone and good reduction
- Expensive
- Little evidence locking plates are superior
- Different fracture patterns require different treatment methods