Distal Radius and Forearm Fractures
Orthopaedic Trauma Association PA/NP Course
Vancouver, Canada
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Distal Radius Fractures

- Soft tissue injuries
  - Distal radial ulnar joint—must be checked at the conclusion of operative case
  - TFCC injury
  - Scapholunate ligament
  - Lunotriquetral

- Common Eponyms
  - Die-punch fx—depressed fracture typical Lunate fossa
  - Barton’s fx—Fx dislocation of the volar or dorsal lip with associated radiocarpal dislocation
  - Chauffer’s fx—Radial styloid fx (sign of high energy)
  - Colles’ fx—dorsally displaced extra-articular fx
  - Smith’s fx—Volarly displaced extra-articular fx
  - Galeazzi fx—Extra-articular distal radius with DRUJ disruption

- Radiographs
  Common radiographic measurements are listed in table 1. Scrutinize radiographs for a separate volar lunate facet fragment. CT scans are indicated to evaluate intra-articular comminution.

<table>
<thead>
<tr>
<th>Radiographic view</th>
<th>Measurement</th>
<th>Norm</th>
<th>Acceptable alignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anteroposterior</td>
<td>Radial height</td>
<td>13mm</td>
<td>&lt;5mm shortening</td>
</tr>
<tr>
<td></td>
<td>Radial inclination</td>
<td>23 degrees</td>
<td>&lt;5 degrees</td>
</tr>
<tr>
<td></td>
<td>Articular step off</td>
<td>Anatomic</td>
<td>&lt;2mm step off</td>
</tr>
<tr>
<td></td>
<td>Ulnar variance</td>
<td>Positive, neutral, negative</td>
<td>Symmetric to contralateral side.</td>
</tr>
<tr>
<td>Lateral</td>
<td>Volar tilt</td>
<td>11 degrees</td>
<td>Dorsal &lt;5 degrees or within 20 degrees of contralateral wrist</td>
</tr>
</tbody>
</table>

- Treatment Options

Non-operative-indications listed above. Comminution and initial angulation predicate collapse after reduction and splinting. Repeat reductions fail 50% of the time
Closed reduction and pinning-length stable fracture with intact volar cortex

External fixation-reduction via ligamentotaxis and preserved for high-energy trauma with swelling and geriatric patients. Over distraction ~ chronic regional pain syndrome

Open Reduction and Internal fixation-
   Volar locked plating is work horse of fixation.
   Dorsal plating indicated for displaced intra-articular fracture with dorsal comminution

- **BEWARE:**
  - Acute carpal tunnel-surgical emergency
  - EPL rupture-more common in extra-articular fractures
  - Chronic regional pain syndrome-prescribe vitamin C post-injury for 6 weeks.

**Forearm**

- **Anatomy-**
  - axis of rotation- A Line is from radial head to ulna fovea (distal radius rotates around the ulna
  - Interosseous membrane-collection of ligaments holding the radius and ulna together

- **Radiographs-**
  - AP/Lateral forearm, AP/Lateral elbow, AP/Lateral/Oblique wrist
  - Galeazzi Fx-Distal radius with DRUJ
  - Montaggia Fx- Ulna fracture with radial head fracture or dislocation

- **Treatment**
  - Nonoperative-indicated for middle 2/3 of isolated ulna shaft with <50% displacement and <10 degrees of angulation. Ulnar gutter splint for 4-6 weeks
  - Open Reduction and Internal fixation: Work horse for displaced fractures in adults- Must restore radial bow to preserve rotation. Compress simple and bridge comminuted fractures.

- **BEWARE:**
  - Compartment syndrome
  - Nonunion- smokers, comminuted, open fractures