Distal Radius Fractures
The Role of Arthroscopy?

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Advantages of Arthroscopic Assisted Fixation

• Ideal view of joint surface
  – Minimal morbidity
  – Bright light
  – Magnified

• Loose bodies

• Associated soft tissue injuries
Arthroscopic Assisted Fixation

- Fractures without extensive comminution
  - Radial styloid fractures
  - Impacted fractures
  - (Die-punch) fractures
  - 3-part T-fractures
  - 4-part fractures
Fracture-Dislocation
Radial Styloid Fracture-Dislocation
Radial Styloid Fracture

- Post-operative View
Impacted Radial Styloid Fracture

- Associated Scapholunate Ligament Injury
Arthroscopic Reduction
Impacted Radial Styloid

- Post-operative view
Greater Arc Injury
Greater Arc Injury
Intra-articular Distal Radius Fracture

- Combination open and arthroscopic reduction
Distal Radius Fracture
Arthroscopic Assisted Fixation of Distal Radius Fractures

- Evaluate articular reduction

- Manage
  - Loose bodies
  - Osteochondral flaps
    - Evaluate midcarpal space!

- Detect and treat
  - Associated soft tissue injuries
  - Ulnar styloid
ROM at 6 Weeks
3-Part Fractures

- Reduce radial styloid
- Use as landmark to reduce medial fragment
3-Part Fractures

- Articular gaps
  - Bone tenaculum

- Elevate fragments
  - Bone awl
  - Steinman pin
Intra-articular Distal Radius Fracture

• 3-part fracture
3-Part Fracture

- Arthroscopic Reduction
- Stabilization with headless screws
4-Part Fractures

- Medial fracture split volar/dorsal fragments
- Can not reduce volar fragment closed
- Combine ATS with arthrotomy
  - **Do not** open capsule!
Mississippi Redneck
Traction Tower

- **Traction Tower**
  - Provides traction for visualization
  - Ability to manipulate fragments

- **Impeded fluoroscopy**
  - Hard to visualize reduction
  - Placement of hardware
Intra-articular Distal Radius Fracture
Meet Gerd

- World Famous Classic Guitarist
- Travels the world
- Needs hyper-flexible wrists for his profession
Gerd Likes to Dance!!
Gerd Needs Full Motion ASAP!

- Does not want scar on back of hand
  - Shows while playing concert!!
- Arthroscopic reduction
Gerd 5 Days Post Op
Ulnar Styloid Fragment

- What to do with ulnar styloid fragment?
- Arthroscopy helps provide treatment rationale
- Trampoline effect
Ulnar Styloid Fragment

- Intact articular disk
  Do not stabilize

- Lax articular disk
  - Peripheral tear
    - Repair
  - Intact periphery
    - ORIF styloid
Associated Lesions
Arthroscopic vs. Open Reduction Distal Radius Fractures

- Cohort study: 12 open, 12 ATS reduction
  - Frykman VII and VIII
- Arthroscopic reduction
  - Statistically increased ROM
  - 5 excellent, 6 good, 1 fair
- Open
  - No excellent, 10 good, 1 fair

Stewart NJ, Berger RA, AAHS, 1998
Arthroscopic vs. Open Reduction Distal Radius Fractures

- Cohort Study: 38 ATS, 48 open
- **Arthroscopic group**
  - Increased ROM
  - Better outcomes
  - Better articular reduction

Doi K et al, J bone Joint Surg 81A:1093, 1999
Arthroscopic vs. Fluoroscopic Reduction

• Ruch (ASSH, 2001)
  – 15 patients - arthroscopic group
    • 10 TFCC tears (7 peripheral)
    • All peripheral tears repaired
    • No DRUJ instability
  – 15 patients - fluoroscopic reduction
    • DRUJ instability - 4 patients
      – Continued symptoms
Arthroscopic Assisted Reduction Distal Radius Fractures

• 33 patients, F/U 12 - 41 months
• Articular reduction
  – 25 - anatomic
  – 8 - 1 mm step-off
• Results
  – 20 excellent, 10 good, 3 fair
  – Simple articular fractures > complex

Geissler WB, Freeland AE CORR 1996
Interosseous Ligament Tears

• Grade II S-L injuries did not effect result
  – Evenly distributed between Type B and Type C

• Grade III & IV tears:
  – More common in Type C fractures
  – Type C fracture without tear - excellent result
  – Type C fracture with tear - lower result
    • 10 Type C3 fractures
      – 5 excellent results - no tear
      – 4 good, 1 fair - Type III S-L and L-T tears