1 Comprehensive Orthopaedic Review
Carpal Instability
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2 Mayfield Classification of Progressive Perilunar Instability
- I – Rupture SLIL, RSCL
- II – CL dissociation
- III – Rupture LTIL, dorsal carpal dislocation
- IV – Palmar lunate dislocation (LRL & SRL ligaments intact)

3 Initial Treatment of Perilunate Disl is Immediate Closed Reduction
- Prompt reduction to decompress median nerve in carpal canal
- IV sedation in emergency room setting
- Longitudinal traction for 5-10 minutes
- Dorsal-directed pressure on lunate with wrist palmar flexion

4 Perilunate Dislocation and Fx-Disl: A Critical Analysis of the Volar-Dorsal Approach. Sotereanos et al., JHS 1997; 22A: 49-56.
- 11 pts, mean age 38 yrs, mean time to OR 13 hrs
- 7 of 11 satisfactory pain relief at F/U 30 months
- Flex-ext arc of motion 71%, grip strength 77%
- XR – no SL dissociation, no DISI, one SLAC wrist
- Combined volar-dorsal approach safe & effective

5 Transient vascular compromise of the lunate after fracture-disl or dislocation of the carpus. White & Omer, JHS 1984; 9A: 181-84.
- 24 perilunate injuries from 1970-84 were studied
- 3 of 24 (12.5%) had increased lunate radiodensity 1-4 months after treatment
- 2 of 3 cases resolved, third case improved
- No progression to classic avascular necrosis
- Benign, self-limited course should be expected

6 Scapholunate Interosseous Ligament
- Prime stabilizer SL joint
- C-shaped 3-part ligament. Dorsal is thickest, strongest. Palmar is thinner, weaker. Proximal is thin, weakest.
- Secondary stabilizers are RSC, DRC, DIC, ST ligaments

7 Scaphoid Shift Test
- Apply pressure to scaphoid tuberosity as the wrist is moved from ulnar deviation and slight wrist dorsiflexion to radial deviation and slight wrist volar flexion
- SLIL tear allows scaphoid proximal pole to subluxate dorsally wrt scaphoid fossa
- Release pressure, scaphoid reduces into scaphoid fossa with reduction “clunk”

8 Comparison of Radiographic Stress Views for SL Dynamic Instability in a Cadaver Model. Lee et al., JHS 2011; 36A: 1149-57.
- Which stress XR best to show SL instability?
- Cadavers w/sectioned SLILs were studied by XR
- 8 different SL XR stress views examined
- Clenched pencil view showed widest SL gaps and was better than clenched fist view
- Allows for contralateral control w/single XR view

9 Incidence of Scapholunate Ligament Dissociation in Patients With Aspiration-Confirmed Gout. Beck et al., JHS 2010; 35A: 1938-42.

- Geisinger Med Ctr database examined 1998-2008 for codes for gout and wrist radiographs
- Wrist XRs reviewed for presence SL dissociation
- Of 20 pts w/aspiration confirmed gout, 60% had one or more XR findings c/w SL dissociation
- Incidence of SL dissociation in pts w/gout in any joint was 51%
- Prognostic Level IV study (Geisinger Ortho, PA)

10 Biomechanical Evaluation of Ligamentous Stabilizers of Scaphoid and Lunate: Part III. Short et al., JHS 2007; 32A: 297.e1-297e.18.

- Cadaver wrists tested after sequential sectioning of ligaments stabilizing scaphoid & lunate
- SLIL is primary stabilizer of the SL articulation
- DRC, DIC and scaphotrapezial ligament are secondary stabilizers of the SL joint

11 Most Common Carpal Instability Question

- Which joint is spared in SLAC? Radiolunate joint
- Which joint is spared in SNAC? Radiolunate joint
- Untreated SL dissociation affects which joint first? Distal radioscaphoid joint
- In SLAC wrist, which joint is at greatest risk for arthritis? Distal radioscaphoid jt

12 Symptomatic carpal coalition
Simmons & McKenzie , JHS 1985; 10A: 190-93

- Congenital carpal coalition, failed differentiation
- Lunate-triquetrum coalition most common
- Incidence 0.1% general population, 9.5% blacks
- 2:1 predilection females, bilateral in blacks
- Usually asymptomatic, incidential XR finding
- Can be cause ulnar-sided wrist pain (Minaar type I, pseudarthrosis)

13 Lunotriquetral Interosseous Ligament

- Primary stabilizer of the LT joint
- C-shaped, 3-part ligament. Palmar is strongest vs translation. Dorsal is strongest vs rotation. Proximal is thin membraneous part.
- Secondary LT stabilizers are ulnolunate, ulnocapitate, ulnotriquetral, DRC, DIC

14 Posttraumatic ulnar translation of the carpus
Rayhack et al., JHS 1987; 12A: 180-89

- Small series, 8 pts
- Failure volar radial ligaments
- Proximal row migration ulnarward
- Ligament repairs fail
- Radioscapholunate arthrodesis best option

15 Intracarpal Soft Tissue Lesions Associated with Intra-Articular Distal Radius Fractures. Geissler et al., JBJS 1996; 78A: 357-65.

- Multi-center study 60 DRFx rx w/manipulation, redux, fixation w/fluoro & arthroscopic control
- 26 pts (43%) had TFC tears, 19 pts (32%) had SLIL tears, 9 pts (15%) had LTIL tears
- Soft tissue injuries (41 of 60 pts = 68%) were most often associated w/lunate facet DRFx

16 Midcarpal instability caused by malunited fractures of the distal radius. Taleisnik & Watson, JHS 1984; 9A: 350-57.

- 13 pts w/DR malunions developed midcarpal pain and instability weeks or months after injury
- Loss volar tilt DR results in midcarpal collapse
- 9 of 13 pts had DR corrective osteotomy w/relief
- 1 pts had midcarpal ligament recon w/late failure

17 The vascularity of the scaphoid bone
Gelberman & Menon, JHS 1980; 5A: 508-13

- 15 fresh cadavers injected
- 70-80% intraosseous blood flow is from radial artery through dorsal ridge
- Collateral flow is from anterior interosseous artery, dorsal branch