1 Comprehensive Orthopaedic Review
Carpal Instability
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February 3, 2017

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 Dislocation 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

- 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

- 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”

- 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

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)

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

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 radioscapoid jt

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, incidental XR finding
Can be cause ulnar–sided wrist pain (Minaar type I, pseudarthrosis)

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

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

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
- 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