PERILUNATE AND LUNATE DISLOCATIONS

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Perilunate and Lunate dislocations

- Introduction
- Definition
- Anatomy
- Clinical presentation
- Mechanism of Injury
- Radiographic signs
- Treatment/Imaging
Perilunate and Lunate dislocations

- Range of ligamentous injuries
- High Impact
- Young men
- Associated with scaphoid fractures
- Uncommon Injuries, 10% of all carpal injuries
- Long term complications
- Can be difficult to diagnose
Clinical Presentation

- Pain, swelling and decreased ROM
- Possible median nerve signs
- Subtle deformity
- Other injuries may detract from wrist injury
Anatomy

• Complex anatomy prone to injury
• Proximal Row – allows most of the movement
• Distal Row – Stabilises
What is a perilunate dislocation?

• Whole of the carpus apart from lunate is dislocated posteriorly
• Lunate and radius remain in articulation
What is a lunate dislocation?

- Lunate dislocates anteriorly
- Radius and capitate remain in a straight line
- Concavity of lunate is empty
Ligaments

Intrinsic – Link adjacent carpal bones.

Extrinsic – Link radius/ulna to carpus.

Interosseous – allow carpal bones to rotate in respect to one another.
Space of Poirier – Area of Weakness between Volar radiocapitate and Volar radiotriquetral ligaments.

Greenspan 2004
Mechanism of injury

Axial force to dorsiflexed, ulna deviated wrist.
Stages of perilunate dislocations  
(Mayfield 2005)

1. Radioscaphoid-capitate ligament and scapholunate interosseous ligament rupture (TT sign)
2. Dislocation of capitolunate joint (PLD)
3. Lunotriquetral interosseous ligament ruptures (Midcarpal dislocation)
4. Complete lunate dislocation
Radiographic signs

- In a study undertaken by Saunders 2007, PL injuries were missed in 25%? Why?
- Systematic approach to radiological analysis
- Nelson - Parallel lines
- Gilulas lines
- Triangular appearance of the lunate
Nelsons lines

Lateral view most diagnostic of Perilunate and Lunate dislocations

Rogers 2002
Gilulas lines

Greenspan 2004

www.Imageinterpretion.co.uk
Appearance of the lunate on the AP/DP view

Lunate indicative of a lunate dislocation

Greenspan 2004
Stage 1 Terry Thomas sign

- Indicative of scapholunate dissociation
- Tear of radioscapoid, palmer radiocapitate, and scapholunate ligaments.
Stage 2 Perilunate dislocation

• Tear of radioscapoid, palmer radiocapitate, scapholunate ligaments and radiocapitate ligaments
Stage 3  Midcarpal dislocation

Tears of volar and dorsal radiotriquetral and ulnotriquetral ligaments.
Stage 4 lunate dislocation

Most severe, lunate is without ligamentous structure.

Tear of radiolunate fascicle of the dorsal radiocarpal ligament and of volar ligaments.
Imaging

- Plain film gold standard for diagnosis providing the images are good quality
- CT valuable for complex fracture-dislocations or when PF indeterminate
- MR excellent for non ossessous structures
- MR arthrography supercedes conventional wrist arthrography
- Recent advances in CT Arthrography
Treatment

- Accurate Prompt Treatment - Carpus reduced in A&E to reduce nerve damage (if possible)
- Historically closed reduction only now ORIF advocated.
- Dorsal or Volar?
- K wires or screws?
- 6 weeks POP and 6 weeks splint.
Summary

- Understanding the complex injury patterns
- Systematic radiological analysis – gilulas lines etc
- Diagnosis from PF, CT and MR useful for surgical planning
- Prompt accurate treatment fundamental in ensuring good recovery
References
