Hey Doc, My Wrist Hurts!

Wrist Pain Evaluation and Treatment

Introduction

- Very common presenting complaint
- Complex regional anatomy
- Extensive differential diagnosis

Agenda

- De Quervain’s Stenosing Tenosynovitis
- Intersection Syndrome
- Basilar Joint Arthritis
- Nerve Compression/Entrapment Syndromes
- Wrist Ligament Injuries
- Occult Fractures/AVN

Overview

- History important in sorting out cause of pain
- Physical examination and special tests help to establish diagnosis

Vocabulary

- de Quervain’s Disease/Stenosing Tenosynovitis/Radial Styloid

  Tenosynovitis: Acute or chronic inflammation of extensor tendons of thumb (Abductor Pollicus Longus & Extensor Pollicus Brevis) in 1st dorsal compartment

- Intersection Syndrome: Acute or chronic inflammation of the thumb and digital extensor tendons in the dorsoradial aspect of the distal forearm, proximal to the extensor retinaculum, at the intersection of the 1st and 2nd dorsal compartments and their respective tendons
Vocabulary

- Basilar Joint Arthritis/CMC Joint Arthralgia/Arthritis, aka: Trapeziometacarpal Osteoarthritis: Pain, swelling, instability and crepitance with or without radiographic changes at the base of the thumb metacarpal in the dorsoradial aspect of the wrist.

- Wartenberg’s Syndrome/Compression of the Radial Sensory Nerve: causes a burning dysesthesia, paresthesia, or frank numbness (anesthesia) along the dorsal aspect of the thumb, web space and index finger.

- Kienbock’s Disease/Avascular Necrosis of the Lunate: Most common AVN of carpal bones, etiology often unclear.

- Preiser’s Disease/AVN of Scaphoid: AVN of scaphoid without trauma/fracture (rare).

Vocabulary

- Palpable tenderness along 1st Dorsal Compartment
- Possible crepitance with palpation
- Positive Finkelstein’s Test
- Increased pain with resisted thumb extension
- 6x more common in women than men.

Topic #1: de Quervain’s Disease

- History: recurrent pain with reaching and gripping activities
- Pain generally confined to dorso-radial wrist, but may radiate more proximally to forearm
- May have history of antecedent trauma to area
- Fritz de Quervain 1895

- Topic #1: de Quervain’s Disease
Topic #2: Intersection Syndrome

- History: Pain and swelling dorsoradial distal forearm
- Often associated with strenuous repetitive activity (rowing, weight lifting, etc.)
- Often painful wrist and/or index finger extension

Finkelstein’s Test

- Pain & swelling more proximal and dorsal than deQuervain’s Disease
- Occurs at intersection of 1st & 2nd Dorsal Compartments proximal to Extensor Retinaculum
- Pain with resisted thumb and index finger extension
Topic # 3: Basilar Joint Arthritis

- History: Increasingly painful pinch
- Increasing difficulty with simple tasks, i.e. opening jars, turning keys, etc.
- Pain over dorsal thumb metacarpal, occasionally radiating to thenar eminence

- Ligamentous laxity/instability at the CMC joint of the thumb
- Prominence at CMC joint dorsally due to dorsal subluxation of thumb metacarpal
- Fusiform swelling, pain with palpation
- Crepitance and pain with ‘Shuck Test’ and axial loading of joint (Grind Test)
Dorsoradial Wrist Pain, Evaluation and Treatment

**Topic # 4: Nerve Entrapment Syndromes**

- Radial Sensory Nerve AKA: Radial Cutaneous Nerve
- First described by Wartenberg 1932, also known as Wartenberg’s Syndrome
- Pain/paresthesias radiate **dorsally** across the wrist, index finger and thumb
- Provocative maneuver: pronation/ulnar deviation, tug on thumb

- Generally characterized by **burning**, **stinging** type pain associated with **paresthesia**
- Not generally associated with swelling
- May be secondary to remote trauma on dorsoradial aspect of wrist/forearm
- Fairly common complication of external fixation device for distal radial fractures

**External Fixation Device**

**Topic # 4: Nerve Entrapment Syndromes**

- Must distinguish from Finkelstein’s Test/de Quervain’s Tenosynovitis by absence of pain with resisted thumb extension
- Paresthesias are on dorsal thumb and index finger, not on volar aspect, therefore **not** Carpal Tunnel Syndrome
- Prior trauma, consider Neumroma
Topic #5: Wrist Ligament Injuries

- Generally associated with FOOSH
- Pain with wrist extension or forceful use
- Minimal to no pain at rest
- May lead to SLAC Wrist
- Observe carpal bone alignment and intercarpal intervals on x-ray
- May need MRI/Arthrogram

Palmar Wrist Ligaments

- Palmar radioscaphocapitate ligament
- Palmar radioscapholunate ligament
- Palmar scapholunate ligament
- Palmar lunotriquetral ligament
- Short radiolunate ligament
- Short radioscapholunate ligament
- Short radiolunate ligament
- Long radiolunate ligament
- Long volar radioscapholunate ligament
Topic # 6: Occult Fractures

- Fall on outstretched hand (FOOSH)
- Anatomic snuff-box tenderness = Scaphoid
- Scaphoid most common carpal bone fracture
- May need bone scan, CT or MRI to diagnose

Position of carpal bones with hand in abduction: anterior (radioulnar) view
Topic # 6: Avascular Necrosis

- Osteonecrosis or Avascular Necrosis of Lunate most common (Kienbock’s disease Robert Kienbock 1910)
- AVN of Scaphoid w/o fracture uncommon (Preiser’s disease)
- AVN of other carpal bones rare
- Disease progression involves fragmentation and collapse

Preiser’s Disease

Blood Supply of Lunate

Staging for Kienbock’s Disease

Dorsoradial Wrist Pain, Evaluation and Treatment
History
- Mechanism of injury
- Prolonged forceful repetitive use?
- Description of pain/location of paresthesia
- Precipitating/Alleviating Factors
- Prior similar symptoms
- Prior injury or surgery to area
- Past medical history
- Family history

Physical Examination
- Observe for localized swelling, erythema, discoloration, deformity
- Palpate for increased warmth, localized tenderness, crepitance, step-off deformities
- Understand anatomy in order to know what you’re palpating and why
- Gently percuss area over radial sensory nerve for Tinel’s sign
Special Tests

- Shuck Test: Gently distract thumb, exert force over proximal thumb metacarpal. Positive result = crepitance, instability, reproduction of pain at thumb CMC jt.
- Axial Load Test/Grind Test: Axial compression, flexion, extension, thumb circumduction causes crepitance and pain.

Grind Test

- Tinel’s sign over radial sensory nerve = Neuroma
- Finkelstein’s Test = deQuervain’s Disease
- Resisted thumb extension reproducing pain = deQuervain’s Disease
- Pronation/Ulnar deviation reproducing shooting burning pain = Wartenberg’s Syndrome (pull on thumb)

Radiographs

- Look for fracture of radial styloid or scaphoid, lateral view for lunate
- Look for degenerative changes
- Look for widening of intercarpal intervals indicating wrist ligament disruption
- Look for changes in bone density possibly indicating AVN/Kienbock’s Disease

Axial Load Test
Treatment

- **de Quervain’s Disease**
  - Corticosteroid injection into 1st dorsal compartment 70%-80% effective
  - Abducted thumb spica splint for 7-10 days
  - Oral NSAID, analgesics as needed
  - Restrict forceful repetitive pinch/grip
  - If not improved, surgical release of area

Injection Technique

Injection Technique

Thumb Spica Splint

Thumb Spica Splint

Treatment

- **Intersection Syndrome**
  - Corticosteroid injection more proximal at intersection of 1st and 2nd dorsal compartments
  - Cockup wrist splint
  - Oral NSAID, analgesics as needed
  - Restrict forceful, repetitive pinch and grip

Treatment

- **Basilar Joint Arthritis**
  - CMC Joint restriction support
  - Oral NSAID’s, analgesics
  - Fluoroscopic-guided intraarticular steroid injection
  - Instability-VOL reconstruction
  - Degenerative change- arthroplasty or arthrodesis
Treatment

- **Nerve Entrapment/Neuromas**
- May benefit from local nerve blocks
- Neuromas may respond to small amount of corticosteroid into area (may cause numbness)
- May need surgical decompression to resolve symptoms

**Wrist Ligament Injuries**
- Generally require open repair or reconstruction
- If significant degenerative changes present, may need intercarpal arthrodesis
- For advanced cases, Proximal Row Carpectomy

**Scapholunate Ligament Injury**

**SLAC Wrist**
Avascular Necrosis/Osteonecrosis
- Generally follow Lichtman Classification for staging
- Stage I: Immobilize for up to 3 months
- Stage II: Consider revascularization procedure, or unloading procedure
- Stage III: Radial shortening osteotomy, capitate shortening, intercarpal arthrodesis
Treatment

- Stage IV- Proximal row carpectomy, total wrist fusion (salvage procedures)
- PIN/AIN excision for central wrist denervation

Summary

- Take a careful history
- Inspect area for abnormality
- Palpate carefully being cognizant of structures being palpated
- Perform special tests to confirm diagnosis
- Obtain radiographs if indicated
- Treat patient based upon findings and tests performed

Summary

If you’re able to distinguish between de Quervain’s Disease, Basilar Joint Arthritis and Wartenberg’s Syndrome, you’ll be incredible!

Finkelstein/Resisted Thumb Extension Test=de Quervain’s Disease

Positive Shuck/Axial Load/Grind Test=Basilar Joint Arthritis

Summary

- Burning/Paresthesias/Wartenberg Manuever=Wartenberg’s Syndrome
- If those tests are negative, look for other causes, i.e., occult fractures, wrist ligament injuries and avascular necrosis
Wartenberg Maneuver

- Pronate hand and wrist
- Ulnar deviation of wrist
- Gently tug on thumb
- Reproduction of burning dysesthesia and/or lancinating pain across dorsum of thumb and index finger indicates compression of Radial Sensory Nerve

Where to Get More Information

- Magee, David J. *Orthopedic Physical Assessment.* W.B. Saunders 1987