Common Tendon Disorders of the Upper Extremity

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Tendonitis

- **History**
  - Pain and swelling (any tendon, any location)
  - Overuse
- **Physical examination findings**
  - Localized swelling
  - Pain with resistance of that particular tendon’s function
- **Imaging**
  - Possible US or MRI to look for tear
- **Consider systemic disease**
- **Treatment**
  - Almost always non-surgical
  - Steroid Injection
  - Rest and immobilization
Introduction

Tendinosis

- Histology- collagen degradation, absence of inflammatory cells, vascular ingrowth
- Mechanical strain
- Altered remodeling response leads to failed repair of tendon
Tendovaginitis

- Entrapment of tendon within fibrous sheath
- Thickening of tendon sheath
- Degeneration of tendon (tendinosis)
Trigger Digit

- **History**
- ** Symptoms**
  - Pain, clicking, catching, limited grip
    - Physical examination findings
      - A 1 pulley tenderness (volar MC head)
      - Finger may catch on extension or lock into the palm
  - **Imaging**-usually normal

Figure 1. The digital pulley system of the fingers.
Trigger digit

Pathophysiology

– Changes in A1 pulley and flexor tendon
– Fibrous metaplasia of A1 pulley
– Histological changes of tendonosis
Trigger digit

- Epidemiology
- Women: Men 6:1
- Lifetime risk 2-3%
  - Higher in diabetics
  - Associated with gout, hypothyroid, renal disease, rheumatologic disease
Trigger Digit

Treatment

• Splinting (short time only)
• Symptomatic management
• Steroid injection
  – SubQ equally effective as intra-sheath
  – How long: “1 week to 15 years”
  – 56% recur by one year
  – Diabetics: Higher recurrence

Valdes 2012 JHT
Trigger digit

- Surgical treatment
  - Release
    - Open
    - Percutaneous
  - Equal Efficacy (Sato 2011)
    - Concern regarding injury to NV bundles, A2 pulley, or incomplete release
DeQuervain’s Disease

History
• Radial sided wrist discomfort
• Swelling
• Pain along thumb ray
  – Exertional
    • Ulnar deviation activities
  – Post-partum, pregnancy, lactation
Dequervains

Stenosing tenosynovitis of the first dorsal compartment

- Impaired gliding of APL/EPB
- Pathology
  - Degenerative changes, fibrocartilage metaplasia, mucopolysaccharide deposition
Dequervains

Physical Exam

• Finkelsteins’
• Pain to palpation of radial styloid

Prevalence

• 0.5% men/1.3% women
Dequervains

• Treatment
• Splinting
  – Prevents motions and encourages rest
  – 14% effective in isolation (Richie&Briner 2003)
• NSAIDS (topical or oral)
• Steroid injections
Dequervains

Corticosteriod Injection
• 82% resolution after 6 weeks.
• 52% “freedom from recurrence” at 6 months
• 81% “freedom from intervention” at 6 months
• Beware of steroid soft tissue atrophy
  – Typically temporary but can be permanent
Intersection syndrome

- Proximal to DeQuervain’s
- Tenosynovitis of first (APL/EPB) and second dorsal compartment (ECRB/L)
- Audible and palpable crepitation
- Classically
  - Rowers, gymnasts
Intersection syndrome

Treatment

• Splint (15 degrees wrist extension)
• Injection
  – 60% respond
• Surgery
  – Release
ECU tenosynovitis

- Ulnar sided wrist pain
- Can be incited by traumatic ulnar deviation or repetitive heavy loading
- May occur after twisting injury
  - ECU subluxation/TFCC pathology
Clinical Examination ECU

- Tenderness along 6th compartment
- Differential injection test
Clinical Examination ECU

- FUSS maneuver: wrist flexion-ulnar deviation, supination maneuver to elicit instability
- Compare to opposite side and assess for ligamentous laxity
Clinical Examination ECU

• ECU synergy test (Ruland 2008)
  – Forearm held in full supination and patient resists thumb-index abduction recreating pain
ECU tenosynovitis

• Treatment
• Initial treatment splint, NSAIDS, injection
• Surgical treatment
  – Synovectomy
  – Tendon debridement or repair
  – Bone spur excision floor
  – Sulcus deepening
  – Subsheath repair vs. reconstruction
Lateral Epicondylitis
-Background

• Coined “tennis elbow” in 1880s due to association with lawn tennis
• However, most patients will point out they don’t play tennis.
• Most common ages 35-60
• Varying rates of male:female reported
  – Equal vs. 4x more common in men
• Dominant arm more common
Lateral Epicondylitis
-Anatomy

- Lateral Epicondyle
  - Origin of ECRL/ECRB (extensor carpi radialis longus/brevis)
  - Long wrist extensors insert at base of 2nd and 3rd metacarpal.
Lateral Epicondylitis
-Anatomy

- Pathologic change within ECRB tendon
  - Angiofibroblastic dysplasia
  - Undersurface of tendon is avascular to 2-3cm distal to insertion
  - High stress area likely leads to micro tears.
  - Tendonosis is probably a more accurate description.
  - Underlying periostitis of the bone can be present as well as inflammatory changes in the surrounding tissues
Lateral Epicondylitis
- Physical Exam

• Inspection
  – Skin normal with no visible deformity

• Palpation
  – Exquisitely tender over lateral epicondyle
  – The patient will show you the spot!

• ROM
  – Generally normal

• Provocative Tests
  – Resisted wrist extension
  – Resisted long finger extension
Lateral Epicondylitis
-Diagnostic Modalities

• Plain X-ray of elbow
  – 16% show change
    • Generally calcification along tendon
    • Only changed management in 2/294 patients.

• MRI
  – Limited benefit, but can visualize diseased tendon
    – 80-90% sensitive

• Ultrasound
  – 64-82% sensitive

• Largely a clinical diagnosis
Lateral Epicondylitis
- Non operative Treatment

- NSAIDs
  - Oral and Topical
- Rest
- Therapy
  - Modalities (Iontophoresis)
  - Motion/stretching >> immobilization
- Bracing
  - Counterforce (Limits excursion of muscles decreasing stress on origin)
  - Wrist brace (Limits wrist extension decreasing stress on origin)
- Activity Modification
- Injection
  - Corticosteroid, PRP, Whole Blood
Lateral Epicondylitis
-Non operative Treatment
Lateral Epicondylitis

• Which nonoperative treatment?
  – Success rate at 1 year
    • Injection 69%
    • Therapy 91%
    • Observation 83%
  – Multiple other studies showed no difference

• Which brace?
  – No difference at 6 weeks between counterforce/wrist brace

• Does therapy help in addition to brace?
  – Mixed results
  – Eccentric strengthening protocol may improve outcomes
Lateral Epicondylitis

• The mainstay of treatment of lateral epicondylitis is non-surgical treatment.

• Most patients will improve and symptoms will “burn out” in 2 years.
  – Recurrence is low (<3%)
Lateral Epicondylitis
- When to Refer

- Surgery should be done sparingly
  - 4-8% of patients
- Surgery involves release of the diseased ECRB tendon from its origin
  - Open vs Arthroscopic
    - 80-90% success rate
    - No differences in success between procedures
Lateral Epicondylitis
-Evidence with an Opinion

• “Evidence suggests that lateral epicondylitis may be best conceived of as a self-limited rite of passage through middle age that most people handle effectively, we should be mindful that our well-intentioned actions risk promoting a potentially counterproductive approach of returning to the physician for increasingly invasive treatments in a search of an as yet elusive disease-modifying agent. Until we have a treatment that consistently outperforms a placebo (natural history), we should not encourage our patients to see themselves as disabled and in need of our services—rather we should do everything possible to encourage a sense of health and wellness that will decrease pain intensity and limit disability while waiting for this self-limited disorder to resolve. “

• -David Ring, MD, PhD—Mass General
Medial Epicondylitis

- The less common cousin of lateral epicondylitis
- “Golfer’s Elbow”
- 5x less common
- Involves the origin of the flexor pronator mass which takes its origin from the medial epicondyle.
- Men=Women
- 75% dominant extremity
- Often co-existent with ulnar nerve symptoms
Medial Epicondylitis

• Examination
  – Tender over medial epicondyle
  – Pain with resisted wrist flexion

• Differential diagnosis
  – Ulnar neuropathy (possible subluxation)
  – Fracture
  – Ligament Instability

• Diagnostic Modalities
  – Plain x-ray to look for osteophyte formation
  – MRI vs US can help
  – Mostly a clinical diagnosis
  – EMG/NCV for ulnar nerve symptoms.
Thank You