Concepts in Orthopaedic Care: Lateral Epicondylitis

Scott M Wein MD
Raleigh Orthopaedic Clinic
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Lateral Epicondylitis

- Originally described in *Lancet*, 1882 as “Lawn Tennis Elbow”
Epidemiology

- Overall incidence 1-2% over course of lifetime
- Tennis players account for less than 5% of overall cases
- 4th to 5th decade of life
- 10-50% of tennis players will suffer from lateral epicondylitis
- Common in construction, gardening

Symptoms

- Tenderness and pain localized to the lateral epicondyle
- Pain with activities involving wrist extension
- Difficulty with grasping objects
Symptoms

- Nirschl’s Phases of Lateral Epicondylitis
  I. Mild pain after exercise <24h
  II. Pain after exercise >48h
  III. Pain with exercise
  IV. Pain that alters ability to exercise
  V. Pain caused by heavy ADLs
  VI. Pain caused by light ADLs, intermittent rest pain
  VII. Constant pain at rest, interferes with sleep

Physical Exam

- Maximal tenderness 2-5 mm distal and anterior to the midpoint of the lateral epicondyle
- Resisted wrist extension should worsen pain
- Objective measurement
  - Diminished grip strength with the elbow extended vs flexed
Imaging Studies

- 16% may have radiographic evidence of calcification in the soft tissue about the lateral epicondyle
- Ultrasound imaging
  - calcification of the extensor tendon, presence of hypoechoic fluid adjacent to the tendon, thickening, decreased echogenicity, and tearing of the tendon

Imaging Studies

Ultrasound
- Sensitivity 64-82%
- Specificity 67-100%

MRI
- Sensitivity 90-100%
- Specificity 83-100%
Imaging Studies

Normal

Signal change in ECRB tendon

Differential Diagnosis

- LCL sprain/insufficiency
- Radial tunnel syndrome
- Bursitis
- Arthritis or other intraarticular pathology
- Fracture
- Triceps tendonitis
- Referred pain
Anatomy

Pathophysiology

- ECRB microtears
- Tendon is grayish, friable, edematous
- Fibrillation of tendon
- Some with gross tendon rupture
Pathophysiology

  - “The lesion that was consistently identified at surgery was immature fibroblastic and vascular infiltration of the origin of the extensor carpi radialis brevis. “
  - Angiofibroblastic dysplasia

Treatment Options

Rest
NSAIDs (Oral vs. Topical)
Physical Therapy
Bracing (CF or wrist brace)
Injection
Bracing

Meyer et al. JHS, (2002)
– Counterforce brace may result in force reduction of at the ECRB origin of approximately 13-15% throughout a range of activity levels

Topical NSAIDS

  – Compared 2% topical diclofenac to placebo in 14 symptomatic patients.
    ▪ Randomized, double blinded
  – Improved pain on VAS at 3 and 14 days
  – No difference in scores at 1 month

Physical Therapy

- 3 phase home exercise program
- Phase 1: massage
- Phase 2: active stretching
- Phase 3: passive stretching

- May include ultrasound, iontophoresis, PEMF, electrical stimulation

Injections

[Image of injection procedure and medical diagram]
Steroid Injections

- Complications
  - Subcutaneous atrophy, skin lesions, depigmentation
  - Crystal deposition
  - Permanent tendon changes

Iontophoresis

  - Iontophoretic administration of steroids to 199 patients
    - Randomized, double blinded, placebo controlled
  - Improved VAS by patient and physician
  - Side effects included skin reactions (n=12 in treatment, n=11 in placebo)
Shock Wave Therapy

- Exact mechanism unclear
- "shock waves can provoke a painful level of stimulation that leads to pain relief or analgesia through hyperstimulation and increased vascularity."
- Short term success 58-73% at 12 weeks

Shock Wave Therapy

  - Randomized, multicenter trial:
  - SWT vs. placebo (272 patients)
    - Pain relief: 25.8% (SWT) 25.4% (placebo)
Shock Wave Therapy

- 2005 Cochrane review concluded that included 9 trials concluded that ESWT provided “little or no benefit in terms of pain and function.”

Surgical Indications

- 5-10% of patients will require surgical management
- Failure of non-operative measures for AT LEAST 6-12 months
Surgical Procedures

- Release of the extensor origin
- Excision of the pathologic tendon +/- reattachment
- Lengthening the ECRB tendon
- Arthroscopic excision of the synovial fringe and portion of the tendon
- Anconeus rotation

V-Y advancement

  - 22 patients, 16 followed up at 3 ½ years
  - VAS improved from 9 to 1
  - Grip strength 57 to 99 lbs
  - 95% no limitations with normal activities
  - 32% limited with high demand activities

V-Y advancement


Debridement and Reattachment
Debridement and Reattachment

Results (Kerlan-Jobe, 1997):
- 1200 patients, 60 operative (95%)
- 94% dramatic improvement 2-10 yrs follow-up
- 36% with limitations with heavy lifting
- 15% with grip strength weakness

Debridement
Debridement

  - 57 patients, 5 year follow-up
    - 91% no pain
    - All had improvement compared to 1 year after surgery
    - No association between preoperative findings and outcome were found


Percutaneous Release

- *JBJS-Br*, (2004):
  - Prospective, randomized trial of 45 patients
    - Significant improvements for patient satisfaction (*p* = 0.012),
    - Time to return to work (*p* = 0.0001),
    - Improvements in DASH score (*p* = 0.001)
    - Improvement in sporting activities (*p* = 0.046)
    - Quicker return to work (3 weeks)

Arthroscopic Release

  - 40 patients, 1 year of pain, 2.8 year follow up
    - Type I lesion (frayed undersurface) 31%
    - Type II lesion (linear tears) 38%
    - Type III lesion (partial/complete avulsion) 33%
  - Average pain 1.4/10
  - Function 11.1/12
  - Return to work 2.2 weeks
  - Grip strength 96% vs. unaffected limb


Arthroscopic Release

  - 16 patients, failed conservative management
  - 2 year follow up
    - Type I lesion (frayed undersurface) 31%
    - Type II lesion (linear tears) 38%
    - Type III lesion (partial/complete avulsion) 33%
  - All patients noted improvement in symptoms
  - Avg return to work=6.0 days


- Retrospective review of 109 patients treated surgically over 7 years
  - 41 open, 24 percutaneous, 44 arthroscopic
  - Consistent improvement in all patients preop vs postop, but no significant difference among the groups

My approach

- Counterforce brace, NSAIDs, HEP, pt education first line treatment
- Injection, wrist brace, therapy
- Surgery if symptomatic AT LEAST 6 months and failed conservative tx
- ECRB tendon debridement, drilling of epicondyle
  - 5 days in LAS, then therapy. Goal back to normal activities at 6-8 weeks.
Conclusions

- Lateral elbow pain with point tenderness
- 95% success with conservative treatment
- 90% success with surgical treatments for patients failing conservative treatment

Thank You