NYU Langone Health

Department of Orthopedic Surgery

Lateral elbow pain

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Survey of fellowship trained hand surgeons Hand 2018

Niedermeier SR[1], Crouser N[1], Speeckaert A[1], Goyal KS

- 6 most frequently prescribed nonoperative treatments for lateral epicondylitis were
- home exercise program/stretching (81%),
- nonsteroidal anti-inflammatory drugs (75%),
- steroid injection (71%),
- counterforce bracing (68%),
- formal physical therapy (65%)
- , and wrist brace (47%)
- . Less commonly performed nonoperative treatment measures included platelet-rich plasma injection (16%), Tenex procedure (6%), and iontophoresis (2%).

- No consensus amongst specialists
- No consensus in the literature
  - Hand (N Y). 2014 Dec;9(4):419-46

My Philosophy…

- This is a degenerative process , 40-60 year olds " a rite of passage"
- Almost never needs surgery
- Try to avoid injections
- Do a simple open, scrape and close

Non-Operative Management

NSAIDs	PRP Injections
Activity Modification	Steroid Injections
Eccentric Exercises	Iontophoresis/Phonophoresis
Wrist Splints	Prolotherapy
Counter Force Straps	Shockwave Therapy
Friction Massage/TENS	Botulinum Injections

First Line of Treatment

- **Activity Modification**
- **Occupational Therapy:**
  - Eccentric exercises better than concentric
  - Forearm Strapping
  - Wrist Splinting
- **Corticosteroid Injection**

Most Importantly, Tell Patients…. 12-18months

Conrad and Hooper JBJS 1973 – 89% improved/resolved without surgery

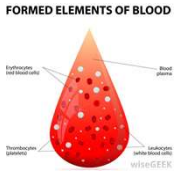
Sanders et al, AJSM 2013 (Mayo Group)
- Of those with symptoms lasting > 6 months the median duration of symptoms was 27 months before resolution

Corticosteroids

- Short term pain relief
- Smidt et al, Lancet 2002
  - Outcomes deteriorate after 6 weeks
  - Short term outcomes show improved pain, function and grip strength
- Multiple blinded, RCT suggest no change or worse long term outcomes with steroid injections compared to a "wait-and-see" group
  - Wolf et al, JHS 2013
  - Olaussen et al, BMJ 2015
  - Coombes et al, JAMA 2013

Autologous Whole Blood

- First reported by **Edwards and Calandruccio, JHS 2003**
  - 22/28 patients who failed multiple other treatment modalities had complete pain relief by 9.5 months
- **Dojode et al, Bone Joint Res 2013** compared AB to CS at 6 months
  - 90% of Autologous Blood group had complete pain relief
  - 47% of the CS group
- **Wolf et al, JHS 2011** compared AB, CS and saline (placebo)
  - No difference between treatments at 2 weeks, 2 months and 6 months



Platelet Rich Plasma

- **Mishra et al. 2006** were the first to study the efficacy of PRP for lateral epicondylitis
  - Unblinded prospective study of 15 patient treated with PRP and 5 with bupivacaine (control group)
  - At 8 weeks, patients who received PRP injections had significantly better VAS scores
  - At final follow up of 1– 3 years, 93% had reduction in VAS pain scores.
- **Peerbooms et al. 2010** compared PRP with corticosteroid injection
  - Double-blind randomized trial of 100 patients
  - At 26 and 52 weeks, VAS and DASH scores were significantly better for the PRP group
  - Resolution in 73% of the PRP group vs. 49% the corticosteroid group.
- **Mishra et al. 2014**
  - Largest randomized controlled study of 230 patients
  - Needling the extensor origin with PRP or nothing
  - PRP had a 71% improvement in their pain scores compared to 56% for the control group
  - Biased by a 48 % loss-to follow up

Operative Debridement: *Indications*

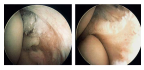
1) Pain limits function, such as ADLs or occupation

2) It is localizable to the attachment area of the ECRB or EDC at the lateral epicondyle and just distal

3) Failed period of nonoperative management (at least 6 months? 1 year? Never?!!)

Operative Debridement: *Open, Percutaneous & Arthroscopic*

- **Nirschl & Pettrone, JBJS 1979**
  - 1,213 cases of tennis elbow, 88 elbows underwent open debridement
  - 85% good to excellent results
- **Dunn et al, 2008**
  - 97 % of patients can expect improvement and 93 % of patients can expect full return of all prior activities
- **Baker et al, 2008**
  - 40 patients treated arthroscopically
  - 87% satisfied with results, VAS 1.9 w/ actvitiy



**** Multiple surgical techniques, very few high quality comparative studies*

Other techniques

- FAST (focused aspiration scar tissue) Tenex (Morrey)

Healthy tendon tissue Scar tissue

Extracorporeal Shock Wave

- Does great on case series (natural history is of a cure!)
- In comparative/ prospective studies no better than placebo
  - Am J Phys Med Rehabil. 2016 Jul;95(7):495-506
  - J Rheumatol. 2008 Oct;35(10):2038-46
  - J Pain Res. 2018 Aug 2;11:1459-1467

Denervation

- Pain mimicking tennis elbow can result from neuritis or neuroma of the posterior cutaneous nerve of the forearm
- 1996: Wilhelm suggested treatment by denervation
- **Successful pre-operative nerve block??**
- **Berry et al, 2011**
- **Rose et al, 2013**
  - Comparative to open debridement with 80% success rate

Epicondylectomy versus denervation for lateral humeral epicondylitis

Nada Berry · Michael W. Nourmeister · Robert C. Russell · A. Lee Bellon

Table 13.2 Results from study comparing return to work in treatment groups [26]

Group	Average time to return to work	Statistical significance
Epicondylectomy	125 days	
Epicondylectomy and denervation	41 days	$p < 0.001$
Denervation	28 days	$p < 0.001$

Radial tunnel?

- Cochrane review: no evidence for treatment
  - Clin J Pain. 2013 Dec;29(12):1087-96.
- "Surgery could help 67-93%"
  - Arch Bone Jt Surg. 2015 Jul;3(3):156-62.
  - Jupiter et al.
- Release the arcade and all 5 sites of compression

Thank You

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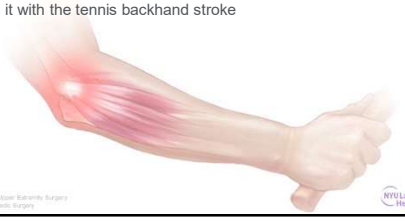
Defining "Tennis Elbow"

Tendinopathy is a broad term that encompasses any number of painful conditions due to the failed healing response of a tendon.

In 1873, Runge made the first diagnosis of lateral epicondylitis

In 1882, Morris coined the term "lawn tennis elbow" and associated it with the tennis backhand stroke



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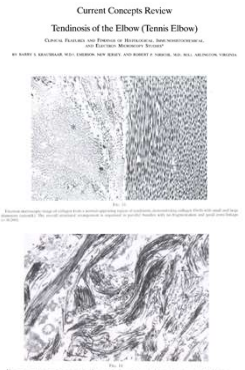
Pathology

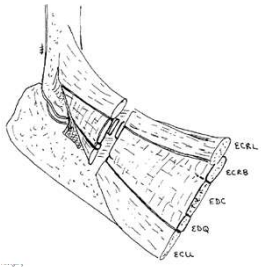
- The term "epicondylitis" falsely implies an inflammatory reaction. It is really a tendinosis/tendinopathy.
- The cause of pain and disability in lateral epicondylitis is likely to be multifactorial with an emphasis on repetitive microtrauma and overuse.
- **Tendinosis is characterized by…**
  1. Dense populations of fibroblasts
  2. Vascular hyperplasia
  3. Disorganized collagen


Current Concepts Review

Tendinosis of the Elbow (Tennis Elbow)

Anatomy

- The ECRB is most often involved
  - Additional involvement of the EDC in up to 50% of cases



Mackey et al, 2003
Van Kollenberg et al, 2009
Steinborn et al, 1999