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The content of my material/presentation in this CME activity will not include discussion of unapproved or investigational uses of products or devices.

Deepak Patel, MD, FAAFP, FACSM

Director of Sports Medicine, Rush Copley Family Medicine Residency Program, Aurora, Illinois; Assistant Professor, Rush Medical College, Chicago, Illinois

A past FMX presenter, Dr. Patel practices family medicine and sports medicine in Aurora and Yorkville, Illinois, and is medical director for Rush Copley Sports Medicine. His specialty topics include musculoskeletal imaging, concussions, stress fractures, osteoarthritis, joint examinations, pediatric overuse injuries, knee pain, tendonitis/tendonopathy, fractures, and exercise recommendations, as well as evidence-based medicine. He is a fellow of the American College of Sports Medicine. Since Dr. Patel also practices family medicine, he is able to deliver effective presentations to help family physicians address sports medicine and musculoskeletal complaints. He serves as chair for the 2019 AAFP Musculoskeletal and Sports Care course. Dr. Patel has found that staying current with medical advances and evidence-based medicine is the most challenging aspect of family medicine.
Learning Objectives

1. Use evidence-based practices to diagnose patients presenting with joint pain for tendinopathy, and assess for red flags indicating infection or other serious condition.

2. Develop an evidence-based treatment strategy for patients with tendinopathy.

3. Counsel patients diagnosed with tendinopathy on prevention and immediate self-treatment strategies.

4. Coordinate referral to physical therapy for tendinopathy.

Associated Sessions

• (PBL) Tendinopathy: Tackling Troubled Tendons
Overview

Tendinopathy-achilles, lateral epicondylitis, patellar

Deep Bursitis

De quervains tenosynovitis

- Treatments:
  - Exercises
  - Medications,
  - Physical Therapy & modalities,
  - Injections (steroid, prolotherapy, PRP)

- Subacromial
- Greater Trochanteric
Tendonitis/Tendinitis

Tendonitis?

- Tendonitis: acute inflammation (days to few wks)
- Tendinosis: chronic degenerative/diseased
- Tendinopathy: disorder
Tendonitis??

Tendinopathy: disorder

Tendinosis: chronic degenerative/diseased

Tendonitis: acute inflammation (<3 wks)

Tendinopathy

- **History:**
  - Repetitive, overuse activity
  - Suspected imbalance

- **Exam:**
  - Tenderness over tendon
  - Pain w/ resistance on tendon
  - Thickening (Achilles)
AES Polling Question 1

Tendinopathy is best diagnosed by?
A. Clinical (history and exam)
B. Xray
C. MRI with contrast
D. MRI without contrast

Tendinopathy - Imaging

• Xray - limited value
• MRI - uncertain diagnosis
• Ultrasound - subluxation and Doppler changes

Lateral Epicondylitis - Imaging

- ACR: chronic elbow pain: xray best 1\textsuperscript{st} test (SORT: C)
- Chronic epicondylitis, xray neg:
  - MRI w/o contrast or ultrasound (SORT: C)
- ACR - clinical correlation required?


AES Polling Question 2

The most effective exercise treatment for tendinopathy is?
A. Rest with immobilization
B. Stretching prior to exercise/activity
C. Stretching after exercise/activity
D. Eccentric exercise program
E. Concentric exercise program
Tendinopathy Treatment

- Activity modification
- Avoid prolonged immobilization
- Physical therapy, eccentric exercises (SORT: B)
  - Achilles 60-90% cure (SORT: A)


Eccentric exercise
Tendinopathy Treatment

- Avoid NSAIDs and steroids (SORT: B)
- Corticosteroid injections: short-term pain benefits for subacromial, trochanteric bursitis and lateral/medial epicondylitis (SORT: B)


Platelet-Rich Plasma Injection (PRP)

- Cochrane 2014: insufficient evidence (SORT: A)
- Meta-Analysis 2016: Ultrasound guided PRP is effective in tendinopathy (SORT: A)
  - Pain scores,
  - Tendon thickness, or
  - Doppler activity

Prolotherapy & Stem Cells

• Achilles: dextrose prolotherapy + eccentric more effective than either alone (SORT: A)
• Lateral epicondyle: monthly dextrose prolotherapy better than saline (SORT: B)
• Stem cells for tendinopathy: no evidence for benefit (SORT: A)

Cj Covey, C., Sineath, M., Leggit, J., Prolotherapy: Can it help your patient? J Fam Pract. 2015 December; 64(12): 763-768

Lateral Epicondylitis - Steroid Injection

• Without injection resolves in 6-24 months
• Corticosteroid 4-6 wks benefit
  • At 1 yr, no difference
• Recurrence rate: injection 35-50% vs PT 8-29%
• Muscle energy = injection at 1 yr

Lateral Epicondylitis - Injection

- Corticosteroid injection: standard = peppered = via iontophoresis (SORT: B)
- Corticosteroid injection NOT recommended (SORT: A)
- Botulinum toxin A injection, prolotherapy, PRP, or autologous blood some pain benefit (SORT: B)
- Hyaluronate injection, prolotherapy, autologous blood need further study (SORT: B)


Lateral Epicondylitis

- Limited benefit in pain or function (SORT: A):
  - Bracing
  - Physical Therapy
  - Eccentric helps but not superior to other treatment (SORT: B)
  - ESWT

Lateral Epicondylitis - Treatments

- Low Level Laser Treatment: no clear benefit (SORT: A)
- NO benefit of Deep Friction massage for: (SORT: A)
  - Lateral epicondylitis
  - Knee tendinitis


Patellar Tendinopathy Treatment

- Activity modification (limit running, jumping)
- Physical therapy: focus on eccentric exercise


Patellar Tendinopathy Treatment

• NO steroid injection - rupture risk (SORT: C)
• Surgery if refractory
• Shockwave + eccentric = eccentric exercise
• Platelet-rich plasma (Leukocyte rich vs poor) vs saline= no difference
• Topical glycercyl trinitrate patch didn’t help


Achilles tendinopathy

• NO steroid injection- rupture risk (SORT: C)¹
• Eccentricics 60-90% cure (SORT: A)¹
• Custom orthotics not better than sham (SORT: B)²
• Night splint not helpful (SORT: C)³
• ECSWT=HVIGI (10 ml lidocaine, 40 ml saline)⁴

Kinesio Tape

- No benefit vs conventional treatment (SORT: A)

Lim ECW, et al. Kinesio taping in musculoskeletal pain and disability that lasts for more than 4 weeks: is it time to peel off the tape and throw it out with the sweat? A systematic review with meta-analysis focused on pain and also methods of tape application. Br J Sports Med 2015;49:1558–1566. doi:10.1136/bjsports-2014-094151

Deep Bursitis

Subacromial & Trochanteric
Subacromial Bursitis

- Subacromial impingement syndrome: bursitis, cuff tendinitis, cuff syndrome
- Injury and compression within subacromial space
- Repetitive overhead use, activity
- Painful arc 60-120


Subacromial Impingement/Rotator Cuff

- Rotator cuff strengthening - ? Eccentric (SORT: B)
- Scapular stabilization exercise provides some benefit (SORT: B)
- Scapular mobilization and tape need further study (SORT: B)


Subacromial Impingement/Rotator Cuff

- Rehab = surgical treatment, superior vs placebo (SORT: A)
- Rehab first-line treatment (SORT: A)
- Mobilization/manual therapy with exercise helps some in short term (SORT: A)
- Manual therapy alone without obvious benefit & needs further evidence (SORT: A)


Subacromial Impingement/Rotator Cuff

- Limited evidence for microwave diathermy and transcutaneous electrical nerve stimulation (TENS) (SORT: A)
- Short-term limited benefit of low-level laser ultrasound (SORT: A)
- No benefit of Pulsed Electromagnetic Field (PEMF) (SORT: A)
- No evidence for taping (SORT: A)
- Acupuncture needs more study (SORT: A)


Subacromial Impingement/Rotator cuff

• Corticosteroid: minimal benefit and = placebo, <4 wks
• BJSM Sys. Rev.: Steroid vs anesthetic limited benefit <8wks
• Injection + PT > PT at 6 wks, not after
• Ketorolac > triamcinolone
• Cochrane: Injection= ultrasound =acupuncture =NSAIDS
• Ultrasound guided=landmark injection


Rotator Cuff - Injection

• Minimal limited pain benefit
• May accelerate tendon degeneration
• “Wide use may be attributable to habit, underappreciation of the placebo effect, incentive to satisfy rather than discuss a patient’s drive toward physical intervention, or for remuneration, rather than their utility.”

Subacromial decompression

- Defer surgery for after conservative treatment (SORT: A)
  - Similar results early on
- Arthroscopy better than open
- Possibly some long term clinical benefit
- RCT x2: no clinical benefit


Lateral Hip
AES Polling Question 3

A 45-year-old female complains of atraumatic lateral hip pain for 2 months. The most likely diagnosis is?

A. Trochanteric bursitis
B. Femoral acetabulum impingement
C. Hip osteoarthritis
D. Gluteal tendinopathy

Greater Trochanteric Pain Syndrome (GTPS)

- Trochanteric bursitis (acute, rare)
- Gluteus medius tendinopathy
- Gluteus minimus tendinopathy
GTPS History

• Lateral hip pain
• Increased with sitting
• Pain rolling or laying on affected side
• May radiate to gluteal or lateral thigh region
• Due to prolonged hip adduction positioning, pelvic tilt


GTPS Treatment

• Eliminate/reduced iliotibial band/gluteal tension
• Analgesics
• Stretching, strengthening

doi:10.1136/bjsports-2015-095858
GTPS Treatment

• Fluoroscopy-guided injection = landmark (SORT: B)
  • Short-term (<3 month) benefit
• Radial Shock Wave Therapy (RSWT) - little evidence (SORT: B)
• Insoles - little evidence (SORT: B)


Tendinopathy Prevention

• Very limited data
• Balance training limited evidence for patellar/Achilles tendinopathy
• Shock absorbing insoles could for Achilles
• HRT reduces structural Achilles tendon changes in active post-menopausal
• Stretching exercises no evidence
• Prophylactic eccentric training & stretching can increase the risk of injury in asymptomatic patellar tendon abnormalities
• Strength training- acute and overuse prevention

De Quervain’s Tenosynovitis

- Repetitive stress (radial deviation)
- Tenosynovitis/tendinosis of extensor pollicis brevis & abductor pollicis longus tendons
- Pain/swelling to proximal thumb/distal radius
- Pain w/ radial/ulnar wrist deviation & active thumb ext. & abd.
De Quervain’s Tenosynovitis Treatment

• Rest (immobilization)
• NSAIDs
• Brace
• O.T./home rehab
• Steroid injection
  • Cochrane: injection better than bracing (SORT: A)
  • Alone better than injection + splint
  • Effective early treatment (SORT: B)

Practice Recommendations

• Avoid widespread use of NSAIDs for treatment of chronic tendinopathy (SORT: B)
• Reserve corticosteroid injections for when needed for short-term pain benefits for subacromial bursitis, greater trochanteric pain syndrome, lateral epicondylitis and subacromial impingement/rotator cuff tendinopathy (SORT: B)
• Encourage eccentric exercises for treatment of chronic tendinopathy (SORT: B)
• Perform corticosteroid injection early or carpal tunnel syndrome & De quervain’s (SORT: B)

Questions

Thanks!

Deepak.patel@rushcopley.com

www.rushcopley.com/dpatel
Resources/links

- AAFP: Superficial bursitis:
  http://www.aafp.org/afp/2017/0215/p224-s1.html
- AAFP: Chronic tendon injury:
  http://www.aafp.org/afp/2015/1015/p694.html
- NIH: bursitis/tendonitis:
  https://www.niams.nih.gov/health_info/Bursitis/

Bursitis Billing/Coding ICD10

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### Tendinitis Billing/Coding ICD10

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### Billing/Coding CPT

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References

• Cj Covey, C., Sineath, M., Leggit, J., Prolotherapy: Can it help your patient? J Fam Pract. 2015 December; 64 (12): 763-768
• Khan, K.; Scott, A.; Overview of overuse (chronic) tendinopathy. Uptodate Literature review current through: May 2017. | This topic last updated: Apr 04, 2017. accessed 6/8/2017

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• Ortega-Castillo, Miguel, and Ivan Medina-Porqueres. "Effectiveness of the eccentric exercise therapy in physically active adults with symptomatic shoulder impingement or lateral epicondylar tendinopathy: A systematic review." Journal of Science and Medicine in Sport 19.6 (2016): 438-453
References

- Lim ECW, et al. Kinesio taping in musculoskeletal pain and disability that lasts for more than 4 weeks: is it time to peel off the tape and throw it out with the sweat? A systematic review with meta-analysis focused on pain and also methods of tape application *Br J Sports Med* 2015;49:1558–1566. doi:10.1136/bjsports-2014-094151

References

References


