Achilles Tendinopathy: When to Intervene and How with Return to Sport

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Epidemiology: Achilles Tendinopathy

- Males “Middle Age”
- Sedentary “Week-End Worriers”
- White-Collar workers
- Cavus foot, Varus knee, Hamstrings Tightness
Achilles Tendinopathy

- Peak- Spring, Early Summer
- Abrupt increase in sports
- Drugs; Fluroquinolones- Steroids
- Increase Uric Acid- Gout
- Since 1950s; 3 FOLD increase
- Location: Insertional Non Insertional
I. Non-insertional Achilles Tendinopathy

- 2-6 cm above insertion
- Common Overuse Injury
- 10-18% of Injuries in Runners
- Over 8 years Follow Up: 71% improved with Non-operative Rx

Tendinopathy - Pathophysiology

• Not always definitive
  – Re-injury
  – Incomplete inflammatory response
    • Etiology Unknown

Relative LACK of inflammatory cells

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<th>Method</th>
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Heavy Slow Resistance Versus Eccentric Training as Treatment for Achilles Tendinopathy: A Randomized Controlled Trial

• Randomized Control Trial; Level of evidence, 1
• 58 patients randomized to HSR training or eccentric training for 12 wks. Functional assessment (VISA-A), pain (visual analog scale), tendon swelling, and patient satisfaction assessed at 0, 12 and 52 wks.

• Results: VISA-A, VAS and tendon thickness improved with no statistical difference between two groups. Patient satisfaction was greater with HSR at 12 weeks (p=.05) but equivocal at 52 weeks.

• **Conclusion:** Both HSR and eccentric training programs are effective conservative treatment of achilles tendinopathy. Patient satisfaction and compliance are greater with the HSR technique.

Shockwave therapy for chronic Achilles tendinopathy: a double-blind, randomized clinical trial of efficacy

• RCT, Level of evidence: 1
• 48 patients, 4 weeks of active ESWT or sham ESWT plus eccentric therapy. AOFAS score and pain (VAS) at 0, 4, 8 and 12 weeks
• Results: AOFAS score improved more in treatment group at 4 weeks (p=.05), 8 weeks (p=.01), and 12 wks (p=.01)
• **Conclusion**: ESWT should be considered an effective adjunctive therapy in conservative management of chronic achilles tendinopathy.

Eccentric loading compared with shock wave treatment for chronic insertional Achilles tendinopathy: a randomized, controlled trial.

- RCT, Level of evidence: 1
- 50 patients (25 eccentric vs 25 shock wave); 4 month & 1 yr f/u
- Results: 4-month VISA-A improved 53 to 63 in eccentric loading and from 53 to 80 in shock wave group. 64% of shockwave group stated they were completely recovered or much improved compared to only 28% in eccentric.
- **Conclusion:** Shock wave therapy is more effective pain relief and satisfaction than eccentric loading therapy at 4-month and 1 year.

Effectiveness of customised foot orthoses for Achilles tendinopathy: a randomised controlled trial

• RCT, Level of evidence: 1

• 140 patients, customized foot orthoses vs sham foot orthoses. VISA-A score at 0, 1, 3, 6, and 12 months.

• Results: No significant difference in VISA-A score at any point

• **Conclusion**: Customized foot orthoses provide no improvement in pain or function to patients with mid-achilles tendinopathy undergoing an eccentric therapy program

One-year follow-up of platelet-rich plasma treatment in chronic Achilles tendinopathy: a double-blind randomized placebo-controlled trial.

- **RCT, Level of evidence: 1**
- **54 patients, PRP injection vs. saline injection (control) with eccentric therapy program. VISA-A score, satisfaction and ultrasound at one-year.**
- **Results:** No statistically significant difference in VISA-A score improvement or ultrasound evaluation. 59.3% satisfaction overall.
- **Conclusion:** No benefit of PRP injections was found at one-year f/u compared to placebo.

Ultrasound and Doppler-guided mini-surgery to treat midportion Achilles tendinosis: results of a large material and a randomised study comparing two scraping techniques

- 103 patients (125 tendons) treated with US+doppler guided scraping technique of ventral tendon. Large group (88 tendons) treated open with scalpel; randomized study (37 tendons) open vs. percutaneous treatment. Measured VAS pain score and patient satisfaction f/u mean 18 months.

- Surgery identifies neurovascular structures outside of ventral tendon with US + doppler and achieves targeted removal.

• **Results:** pre-op VAS mean 77. Post-op 111 tendons (89%) from satisfied patients had mean VAS 3 (p<.005). No significant difference between percutaneous and open scalpel scraping techniques. One wound infection, one achilles rupture, one partial rupture. 14 of 125 tendons had poor patient satisfaction

• **Conclusions:** US + Doppler guided scraping technique is effective at treating pain and allows quick recovery and return to loading activity in the short term.
Isolated gastrocnemius recession for achilles tendinopathy: strength and functional outcomes

- Case-Control study; Level of evidence, 3
- 13 patients received gastroc recession, 10 matched controls.
- VAS, Foot and Ankle Ability Measure, and satisfaction measured. Strength measured by ankle plantar flexion at 60°/sec and 120°/sec at mean 18 months f/u.
- Results: FAAM significant difference in ADL’s and sports subscale(surgery, 89.7 & 71.9; control 98.5 & 95.1; p=.05). No difference in strength at 60°/sec, but significant decrease in strength of surgical group at 120°/sec (21% surgical vs 3% control; p<.05)
- **Conclusion:** Power and endurance activities following achilles resection are inferior to Normal control matched individual. This surgery provides excellent results for most ADL’s and relief of pain.
Surgical treatment of chronic achilles tendinopathy: long-term results of the endoscopic technique

• Level of evidence: 4
• 24 patients (27 tendons), >5 yrs f/u with VISA-A and Achilles Tendon Scoring System.
• Results: VISA-A improved from mean 37.0 to 97.5. Zero infections or systemic complications.
• Conclusion: Endoscopic paratenon debridement and longitudinal tenotomy appears to be safe and effective treatment for chronic achilles tendinopathy. Need for level 1 trials of endoscopic management.

Non Insertional Achilles Tendinopathy

Conclusions

• Non Operative Treatment is Recommended for 12 - 24 weeks (up to 82% improved).
• Surgery is of limited value:
  • Local Debridement + Paratenon stripping
  • + Gastrocnemius Release
  • +/- Plantaris stripping
  • +/- FHL (PB, FDL)
75 – 100% successful in retrospective studies.
11% complication rate, 3% Redo (Paavola, AJSM 2000)
Continuing Weakness is common. RTP ???
II. Insertional Tendinopathy + Haglund’s Deformity + Retrocalenal Bursitis
Insertional Achilles Tendonopathy

- 20-25% of all Achilles Problems
- Obesity, HTN, Diabetes, Hyperlipidemias.
- Gout, Corticosteroid use, Quinolones.
- Inflammatory Arthropathies
- Subtalar instability
- Overuse, inadequate footwear.
Insertional: Current Treatment

- Conservative measures for 12 – 24 Weeks (Hunt et al)

- **A. Bad Tendon (Common):**
  - Open surgical debridement, Haglund’s excision and reinsertion +/- FHL augmentation

- **B. Good Tendon:**
  - Endoscopic Calcaneoplasty
  - Debride Bursa and anterior tendon.
Non Operative Treatment

• 12 - 24 Weeks
• Boot X 6 Weeks
• Stretching, Sleeve
• Eccentric: Not Good
• + ESWT Much Better
• No Evidence = Injections, U/S, Night splint, Prolotherapy, Tapping, Frictional Rx
Endoscopic Calcaneoplasty: An Improved Technique.
Labib & Pendelton. JOSA 2012

- Good Tendon
- Prone positioning/ M-L Portal placement
- C-Arm Fluoro Control
- Scope Monitor Distal
- PL Visualization/ PM Instrumentation
- Visualize down to tendon insertion = Bottom out position
Haglund’s Endoscopic Excision Debride Tendon and Bursa

- 20 patients
- 3.9 ys Follow up
- Prone > Supine.
- Postmedial and posterolateral Portals
- 15/20 excellent
- 4/15 good
- 1/20 fair
Insertional Achilles Tendonopathy
Bad Tendon = Open Repair

- Debride Insertion
- Resection of Zone of Ossification/Calcification
- Resection of Calcaneus Posteriosuperior Process
- Reattachment of Tendon
- Possible Augmentation (FHL)
Technique Video
Post Operative Rehab

• 0-2 Weeks: NWB Splint in 10 Deg Plantar Flexion.
• 2-8 Weeks: PWB with Heel Lifts/ Boot.
• 8-12 Weeks: FWB with Laced Up Brace
• 12- 24 Weeks: Gradual Return to Sports.
Surgical Treatment of Insertional Achilles Tendinopathy With or Without Flexor Hallucis Longus Tendon Transfer: A Prospective, Randomized Study.

• Prospective Randomized; Level of evidence, 1

• 39 patients; Achilles decompression and debridement (18) vs decompression and debridement with FHL transfer (21).

• All patients >50 yo, had failed non-op treatment of chronic insertional Achilles tendinopathy.

• Outcomes were AOFAS score, VAS pain score, ankle and hallux plantar flexion strength, and satisfaction survey at minimum 1-year f/u

Hunt K, Cohen B, Davis W, Anderson R, Jones C. Surgical Treatment of Insertional Achilles Tendinopathy With or Without Flexor Hallucis Longus Tendon Transfer: A Prospective, Randomized Study. Foot Ankle Int. 2015 Sep;36(9):998-1005.
• **Results:** Greater ankle plantar flexion in FHL group at 6 months and 1 year.

• No significant difference in hallux plantar flexion.

• AOFAS and VAS scores improved in both groups at 6 months and 1 year without significant difference between the groups. 87% of all patients satisfied.

• **Conclusion:** FHL is a safe adjunct to tendon decompression and debridement but it does not contribute significant functional improvement.
Results of surgical treatment of calcaneus insertional tendinopathy in middle- and long-distance runners.

Knee Surgery, Sports Traumatology, Arthroscopy
September 2015, Volume 23, Issue 9, pp 2494-2501

• A prospective comparative therapeutic study, Level II.


• AOFAS improved: 48+/- 10 preop to 93 +/- 5.8 Post op. Minimum Follow up 2 years.

Return to Running:

• Haglunds group 6 +/- 3.3 months

• Haglunds + Tendon 10 +/- 4.6 months
Insertional Achilles Tendinopathy

Conclusions

- May respond to non-operative treatment.
- Minor tendon damage: Endoscopic Calacaneoplasty
- Major tendon damage: Open debridement
- +/- FHL transfer in patients > 50 ys old
- Return to sports takes up to 12 months.
THANK YOU
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