

Achilles Tendinopathy

Background

1. Overuse injury to Achilles tendon resulting in pain, collagen degradation, occasionally a partial tear
2. Often referred to as non-insertional tendonopathy
 - Occurs 2-6 cm above insertion of Achilles tendon on calcaneus
 - Entity encompasses tendonitis, tendinosis, and peri or paratendonitis

Pathophysiology

1. Pathophysiology
 - Repeated stress on tendon leading to microtrauma
 - Running, jumping, lifting associated with poor tendon flexibility
 - Evidence of inflammatory markers is lacking
 - Poor blood supply (particularly 2-6 cm from calcaneal insertion)
 - Collagen fibril density diminishes with age
 - Surrounded by a paratenon instead of a true synovial sheath
 - Able to stretch 2-3 cm with movement and allow for maximal gliding motion
 - Trauma leads to fibrous adhesions or thickening of tendon (tendonosis).
2. Incidence/prevalence
 - 24% of competitive athletes over a lifetime
 - 10% of runners, also dancers, tennis players
 - Increasing prevalence in a more active elderly population^{1,4}
3. Morbidity/mortality
 - Males >30
 - Increased activity
 - Obesity
 - Improperly fitted footwear
 - Poor running mechanics
 - Overpronation
 - Fluoroquinolone use
 - In elderly and those with concomitant corticosteroid use (SOR:B)⁵
4. Recovery:
 - Tendonopathy/tendonitis: can take weeks to months of rest and physical therapy
 - Tendon Rupture: can require surgery or long-term immobilization
 - Recovery of 6-12 months

Diagnostics

1. History
 - Time of onset, duration, previous history of similar symptoms, exacerbating/relieving factors, history fluoroquinolone use
 - Sudden increase in activity or overtraining
 - Symptoms
 - Sharp pain over tendon
 - Heel pain
 - Morning stiffness
2. Physical exam

- Thorough lower limb exam including evaluation of
 - Leg length
 - Ankle stability
 - Running technique
 - Tenderness with palpation of tendon
 - Pain with ROM
 - Thickened tendon
 - Crepitus over tendon
 - Foot exam-evaluate feet for
 - Pes planus/pes cavus
 - Foot malalignment
 - Properly fitted footwear
 - Shoe wear pattern
 - Thompson test: patient prone, contraction of calf should extend ankle if tendon intact
 - Copeland test: patient prone, legs 90° flexion
 - Blood pressure cuff placed around calf w/100 mmHg of pressure
 - Passive flexion of ankle should raise pressure 40 mmHg in a normal tendon
3. Diagnostic imaging
- US
 - Dynamic assessment-during corticosteroid injection
 - Tendon appearance/function-thickening or hypoechogenicity
 - Operator dependent
 - MRI
 - Highly detailed exam for surgical planning
 - Best study to evaluate for complete vs. partial tendon rupture
 - Higher cost and more time required⁶

Differential Diagnosis

1. Achilles tendon rupture
2. Calcaneal bursitis
3. Ankle sprain
4. Sever's disease (calcaneal apophysitis)

Therapeutics

1. Tendonopathy
 - Acute
 - Rest
 - AirHeel brace
 - Icing after activity
 - Analgesics: NSAIDs 7-10 days for acute pain (SOR:B)²
 - Chronic
 - Stretching: eccentric calf-muscle training⁴
 - Alfredson's intensive heel-drop protocol
 - Stand with the heel of the affected foot beyond the edge of the step or platform with the foot plantar flexed. Slowly lower the heel, bringing the foot into dorsiflexion

- Perform the exercise both with the knee straight (gastrocnemius) and with the knee bent 45° (soleus)
 - Avoid concentric exercise by raising the foot back to the plantar flexed starting position using the unaffected foot, and hands if a railing is available
 - Number of exercises
 - Perform 3 sets of 15 repetitions with straight knees, then 3 sets of 15 repetitions with bent knees
 - Perform this cycle twice daily (180 drops/day)
 - Continue the program 7 days per week for 12 to 24 weeks
 - Exercise progression
 - The exercises must be uncomfortable; when heel drops are no longer painful add weight by using a backpack, dumbbells, or a weight machine
 - Weight loss
 - Emerging treatments
 - Shock wave therapy
 - Topical glyceryl trinitrate
 - Low-dose heparin injections, heel pads, topical laser therapy, peritendinous steroid injection produced no significant decrease in pain compared to placebo^{2,3}
 - Steroid injections can increase risk of tendon rupture
2. Tendon rupture
- Non-weight bearing
 - Immediate orthopedic consult
3. Long-term care
- Patient's with chronic tendinopathy who have failed conservative measures after 3-6 months may benefit from surgery (SOR:C)²

Follow-Up

1. Return to office
 - Time frame for return visit
 - 3-6 months after completing physical therapy
 - Recommendations for earlier follow-up
 - Suspected tendon rupture based on exam
 - Patient unable to perform physical therapy without significant pain
2. Refer to orthopedics
 - Suspected tendon rupture
 - No improvement in symptoms despite conservative measures

Prognosis

1. Good with proper treatment/physical reconditioning

Prevention

1. Ensure proper fitting shoes/running technique
2. May consider orthotics for over or under pronators
3. Gradually increase exercise regimen, proper training, weight loss
4. Calf flexibility/strengthening (SOR:B)²

Patient Education

1. Familydoctor.org
 - Running: Preventing Overuse Injuries
 - <http://familydoctor.org/online/famdocen/home/healthy/physical/sports/147.html>

References

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