Foot and Ankle Injuries and the Importance of Rehab

Eric James, M.D.

Tuesday, August 6, 2019
Introduction

Undergraduate – University of Florida
  • B.S. – Agricultural and Biological Engineering

Medical School – University of Pittsburgh

Internship/Residency – Orlando Health
  • Orthopaedic Surgery

Fellowship – University of Texas – Houston (FOARR)
  • Foot and Ankle Surgery

Sarasota – Private practice

BayCare Medical Group
What does a Foot/Ankle Orthopaedist Do?

Specialized training after completing an orthopaedic surgery residency

American Orthopaedic Foot and Ankle Society

- [www.aofas.org](http://www.aofas.org)
- Founded in 1969, comprised of ~2100 orthopaedic surgeons internationally

Specialize in management of disorders of the bones, muscles, ligaments and nerves of the foot and ankle
Disclosures
Topics for Discussion

• Evaluation, management and rehabilitation of acute Achilles tendon injuries
• Evaluation, treatment and rehabilitation of lateral ankle sprains
• Evaluation and treatment of syndesmosis sprains
• Evaluation and treatment of osteochondral lesions of the talus
Learning Objectives

Participants should be able to evaluate and initiate treatment for:

- Acute Achilles injuries
- Acute lateral ankle sprains
- Syndesmotic injuries
- Osteochondral lesions of the talus
Achilles Injury: Anatomy

- Confluence of gastrocnemius/soleus muscles
- Watershed zone with relative hypovascularity

Common Conditions of the Achilles Tendon
Mazzone, MF, McCue, T.
*Am Fam Physician.* 2002 May 1;65(9):1805-1811.
Achilles Injury: History

- Frequently 30-40yo males
- “Felt a pop”
- Forceful plantarflexion
- Sense of weakness, difficulty ambulating
- Aching or sharp pain in posterior leg
Achilles Injury: History

• Prodromal pain or history of Achilles injury/tendinitis
• Use of fluoroquinolone antibiotics
• Hx of steroid injections
• Smoking
• Medical comorbidities
Achilles Injury: Examination

• **Inspection**
  - Prone – evaluate resting plantarflexion
  - Ecchymosis

• **Palpation**
  - Palpable gap
  - Thompson test
    - Squeeze calf muscle and look for foot plantarflexion
  - ROM exam, strength in plantarflexion
Achilles Injury: Workup

Ankle series
3 view

• Evaluate for other injuries
Achilles Injury: Workup

Ultrasound or MRI?

• Large study showed no need for advanced imaging if
  – Palpable gap
  – Positive Thompson test
  – Decreased resting tension

• No need for advanced imaging prior to orthopedic evaluation

Achilles Injury: Initial Management

- Splinting in 20 degree plantarflexion
- Non-weightbearing
- Crutches, walker, rolling knee walker
- DVT / VTE prophylaxis?
- Referral to orthopaedic surgery
Achilles Injury: DVT/VTE

- Foot/ankle injuries generally low risk
  - Achilles is exception (up to 36% in some studies)
- Other DVT risk factors
  - smoking, obesity, age >60 years, malignancy, HRT, oral contraception, previous VTE and thrombophilia
- No consensus at this time
  - LMWH best studied, but still no consensus

Achilles Injury: Treatment Options

Non-Surgical
• Functional rehab protocol

Surgical Repair
• Open Achilles repair
• Limited incision Achilles repair
Achilles Injury: Treatment Outcomes

Traditional teaching

• Equivalent strength op vs. non-op
• Increased risk of rerupture with non-op
  • 10-40% vs 2%
• Increased risk of wound complications with operative


Achilles Injury: Functional Rehab

- Accelerated functional rehab protocol
- 144 patients randomized to FR vs surgery
- 2 reruptures in surgical group, 3 in FR group
- Similar strength, ROM
- Increase complications in surgical group

Achilles Injury: Decision-making

- Location of tear
- Smoking/overall health status
- Chronicity of tear and early treatment
- Patient preference
Achilles Injury: Rehab Protocol

First 2 weeks

- Splint in plantarflexion
- Non-weight bearing
  - Ice, Elevate
Achilles Injury: Rehab Protocol

Weeks 4 – 6

• Cam boot with Achilles heel wedges
  • Referral to physical therapy
  • Gentle ROM below neutral
• EMS to calf musculature, modalities

Weight-bearing with crutches
  Week 3 – 25%  Week 4 – 50%
  Week 5 – 75%  Week 6 – 100%
Achilles Injury: Rehab Protocol

Weeks 6 - 12

• Wean wedges from boot, then wean out of boot (weeks 6-9)
  • No ROM past neutral until week 12
  • Graduated resistance exercises (open and closed chain)
    • Proprioception
    • Low impact fitness/cardio
Achilles Injury: Rehab Protocol

Weeks 12-16
  • Continue strengthening
    • Light jogging

4-6 months
  • Non-cutting/pivoting sporting activities

6-8 months
  • Return to full sporting activities
Acute Ankle Sprain

- Extremely common
- Generally occurs with inversion injury to the foot and ankle
- Lateral ligaments most commonly injured (90%)
- Recovery is variable depending on severity and additional injuries
Ankle Sprain: Anatomy

- ATFL most commonly injured
- CFL and deltoid can also be involved
Ankle Sprain: Anatomy

- High ankle sprain/ syndesmotic injury
  - Stabilizes articulation between tibia and fibula
  - Multiple ligamentous structures
Acute Ankle Sprain: Risk Factors

- **High impact sports**
  - Indoor court sports with highest risk
- **Previous sprain**
- **Poor balance/proprioception**
- **Limitations in hindfoot or ankle motion**
  - High arched or cavovarus foot
Acute Ankle Sprain: History

- Mechanism of injury
- History of previous injuries
- Location/severity of pain
- Ability to bear weight
- Swelling/ecchymosis
- Locking, catching, giving way
Acute Ankle Sprain: Examination

- Evaluate for swelling/ecchymosis
- Evaluate ROM
- Location of tenderness
- Strength and neurovascular exam
- Stability Testing
  - Anterior drawer
  - Talar tilt testing
  - External rotation stress
  - Squeeze test
Acute Ankle Sprain: Examination

- **Location of pain**
  - ATFL/lateral ligaments
  - Deltoid
  - Lateral or medial malleolus
  - Dorsal midfoot
  - 5th Metatarsal base
  - Syndesmosis
  - Proximal fibula
Acute Ankle Sprain: Workup

• Indication for Radiographs
  • Difficulty bearing weight
  • TTP over areas other than ATFL

• Standard Ankle 3v series
  • Weight bearing if possible

• Add 3v Foot or 2v Tibia/Fibula for pain in other locations
Acute Ankle Sprain: Workup

• Role for MRI in acute setting
  • Suspicion of syndesmotic injury
  • Further evaluation of osteochondral lesion
• MRI more useful 6-8 weeks after injury if pain/symptoms persist
Acute Ankle Sprain: Initial Treatment

Mild sprain – able to bear weight

- Compression wrap, RICE, home exercise program

Moderate sprain – some pain with weight bearing, no/minimal instability on exam

- Lace up brace/functional ankle brace
- RICE, home exercise program
- Referral to ortho if symptoms >2-3 weeks
Acute Ankle Sprain: Initial Treatment

Moderate to severe sprain – unable to bear weight or instability on exam

- Splint or cam boot
- Non-weight bearing, crutches
- Referral to orthopaedic surgery
Acute Ankle Sprain: Other Factors

Suspected syndesmotic injury
Osteochondral lesion
Fractures
Peroneal Tendon Subluxation

Non-weight bearing, splint or boot
Refer to orthopaedic surgery
Acute Ankle Sprain: Rehab

Mild and moderate sprains may be amenable to home exercise program

Range of motion
Strengthening
Balance/Proprioception
Acute Ankle Sprain: Rehab

Proprioception - perception or awareness of the position and movement of the body

• Key factor in ankle rehabilitation
• Can reduce risk of recurrent sprain
• Proprioceptive training reduces overall risk of ankle sprain

Acute Ankle Sprain: Rehab

Proprioception Exercises

- **Home** – single leg balance with eyes open and closed

- **Physical Therapy**
  - Single leg balance with arm motions
  - Wobble board, ankle disc, bosu ball exercises
  - Tandem gait/stance
  - Medicine ball training
Acute Ankle Sprain: Outcomes

• Early functional rehabilitation provides the quickest return to activity
• Ongoing pain or instability can occur following acute sprain in up to 30%
  • Typically results from additional injuries
    – Fractures, osteochondral lesions, syndesmotic injuries, peroneal tendon pathology
• Some swelling typical for 2-3 months
• When in doubt, refer to ortho
Acute Ankle Sprain: Outcomes

- Surgical intervention for chronic instability is infrequent
  - Typically combined with ankle arthroscopy to evaluate for concurrent pathology
Osteochondral Lesion of Talus

• Fragment of cartilage and underlying bone
• Can occur along with ankle sprain
• Fragment may partially or completely detach
• Pain, swelling, locking, catching
• Ankle arthroscopy can be considered if nonoperative care fails
Syndesmotic Injury

- Less than 10% of all ankle sprains
- Often occurs in conjunction with ankle fractures
- Non-surgical for mild sprains
- Surgical fixation for instability
  - Screws vs suture fixation remains controversial
- Poor outcomes seen with chronic instability
Questions?
Where Do I Find More Information

Orthoinfo.aaos.org
  • American Academy of Orthopaedic Surgeons

www.aofas.org/footcaremd
  • American Orthopaedic Foot and Ankle Society

Call for an appointment!

BayCare Medical Group - Orthopedics
Eric James, M.D.
813-877-6748

