Posterior Ankle Impingement: Don’t Get Pinched

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Disclosures

• I have nothing to disclose relative to this talk
Objectives

• Discuss the etiology of posterior ankle impingement

• Explain the relative anatomy associated with posterior ankle impingement

• Explore non-surgical treatment

• Explore surgical treatment options

• Look at outcomes and return to sport after non-surgical and surgical treatment
What is it?

• Numerous names
  – Posterior ankle impingement syndrome (PAIS)
  – Os trigonum syndrome
  – Hindfoot impingement
  – Talar compression syndrome

• Clinical disorder characterized by posterior ankle pain associated with ankle plantar flexion
Anatomy

- 2 posterior tubercles (processes)
  - Lateral larger (Steida process)
  - Medial
  - FHL runs between

- Posterior talo-fibular ligament attaches to lateral tubercle

- Secondary ossification center arises between 8 and 13 years
Anatomy

- Os trigonum
  - Failure of fusion of the ossification center (synchondrosis)
    - From 7 to 14% of people
  - Stress fracture of lateral tubercle
Etiology of Posterior Ankle Pain

• Most commonly associated with an os trigonum (bony impingement)
  – Fracture
  – Osteochondritis
• Flexor hallucis longus tendinitis
• Scar tissue (soft tissue impingement)
• Tibiotalar pathology
  – Osteochondral lesion
  – Arthritis
• Subtalar joint disease
Mechanism

• Overuse injury resulting from ankle plantar flexion

• Acute trauma
  – Fracture of the Steidia process
  – Disruption of the synchondrosis
  – Avulsion of the posterior talo-fibular ligament
  – Os trigonum fracture
Clinical Presentation

• Associated with numerous sports
  – Ballet
  – Soccer
  – Any kicking sport
  – Running downhill

• History of ankle sprain

• Posterior ankle pain worse with plantar flexion

• Worse with aggravating activities

• Better with rest
Clinical Presentation

- Exam
  - Posterolateral ankle tenderness
  - Between Achilles and peroneal tendons
  - Worse with maximal passive plantar flexion
  - Pain with dorsiflexion of great toe may suggest FHL tenosynovitis
Imaging

- Standard ankle X-rays AP, lateral and mortise
- Typically sufficient to diagnose with history
- Maximal plantar flexion stress radiograph
- May show the ankle impingement
Imaging

- MRI
  - Can show marrow edema of os trigonum/Stieda process
  - Can allow you to differentiate causes of PAIS
  - Not always associated with an os trigonum
Nonsurgical Treatment

• Nonsurgical
  – Rest
  – Ice
  – NSAID’s
  – Boot immobilization

• Activity modification
Nonsurgical Treatment

• Corticosteroid injections
  – Under flouro or US guided
  – Can lead to complete symptom resolution

  • 19 patients received injection under flouro
  • 10 complete resolution, 6 had resolution after 2 injections
Nonsurgical Treatment

• Albisetti et al 2009
  – Nonsurgical protocol in ballet dancers
  – Activity restriction (demi-pointe, pointe work)
  – NSAID’s
  – PT with proprioception training
  – Goal is to minimize the role of the gastrocnemius when relevé position performed
  – 9 out of 12 had success, 3 went on to surgical management
Surgical Treatment Open Excision

• Excision of the Os trigonum or Stieda process
• FHL tenosynovectomy

Posteromedial
• Labs et al 2002
  – 24 ballet dancers
  – 54% very good, 21% good
  – 72 days average to return to dance
  – Tibial neuropraxia (1), hematoma (1)
Surgical Treatment Open Excision

Posterolateral

• Marotta and Micheli 1992
• 12 dancers (15 ankles)
• Average time to full recovery 3 months
• All returned to pre injury function
Surgical Treatment Posterior Ankle Endoscopy

Posterior ankle endoscopy

- Van Dijk CN et al 2000
- Prone patient
- Posterolateral and posteromedial portal

- Standard of care for surgical management

- Earlier return to play/training
Guo et al 2010

• Open vs. posterior endoscopic excision of os trigonum
• 41 patients
• 16 open excision, 25 posterior endoscopy
• No difference at mean 38 months follow up
• RTS open group 11.9 weeks
• **RTS endoscopy group 6 weeks**
Post Op Protocol

- Open
  - Splint for 2 weeks for wound healing
  - Transition to boot
  - WBAT
  - PT for ROM, proprioception

- Endoscopy
  - Immediate boot
  - WBAT
  - Start early ROM
  - PT at 2 weeks
Case

• 20 y/o college football player
  – Initially injured ankle in March 2016
  – Treated conservatively and responded
  – August 2016 planted foot and had a forced plantar flexion injury
  – Felt pop and had similar pain to what he had in March
  – Exam
    • TTP posteromedial and lateral ankle
    • Worse with plantar flexion
Treatment Options

• Nonsurgical
  – Boot
  – RICE
  – NSAID’s
  – PT
  – *Likely out for season*

• Surgical treatment
  – Open vs. Endoscopic excision
Treatment

• Posterior ankle endoscopy

• Boot post op

• Weight bearing as tolerated

• PT at 2 weeks

• Returned to training at week 6

Excised Stieda process
Summary

• Most likely cause of PAIS is an injury to an Os Trigonum or Stieda process

• Diagnosis is usually made by history and physical exam

• MRI is beneficial to rule out other causes

• Nonsurgical management helpful about 50% of time

• Posterior endoscopy is very successful surgical management with good outcomes and early return to play
Thank You