



Texas Children's Professional Education Series  
Orthopedics and Sports Medicine



# The Foot and Ankle

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## Goals and Objectives

- Be able to recall basic ankle anatomy
- Understand the components of the history and physical exam of the foot/ankle
- Understand several common acute and chronic foot/ankle problems



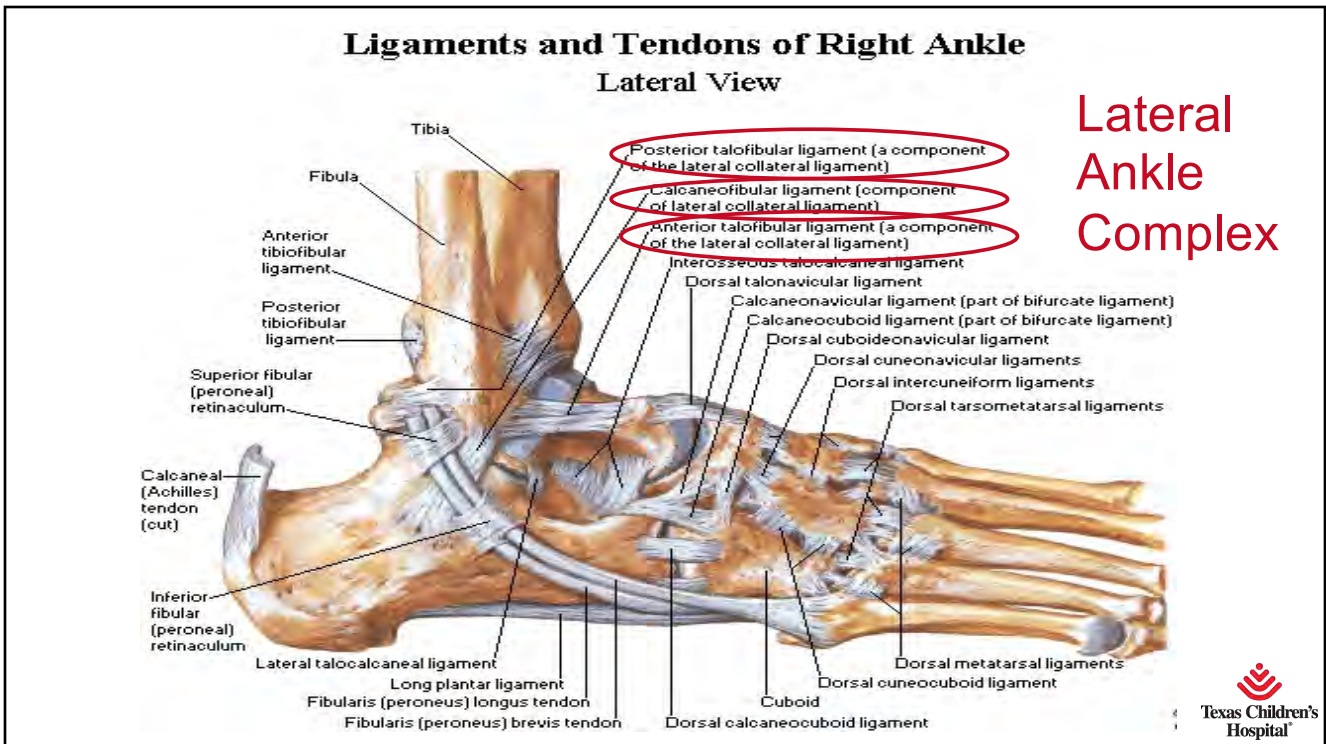
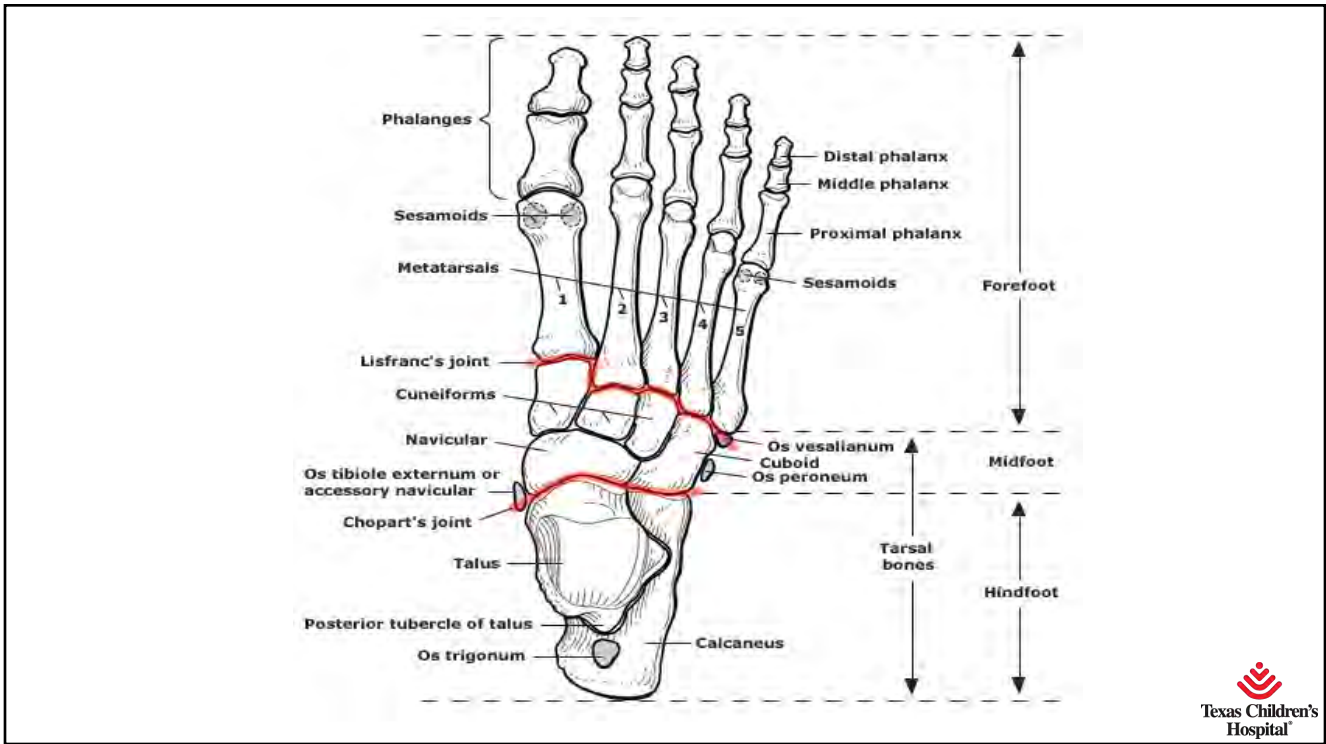
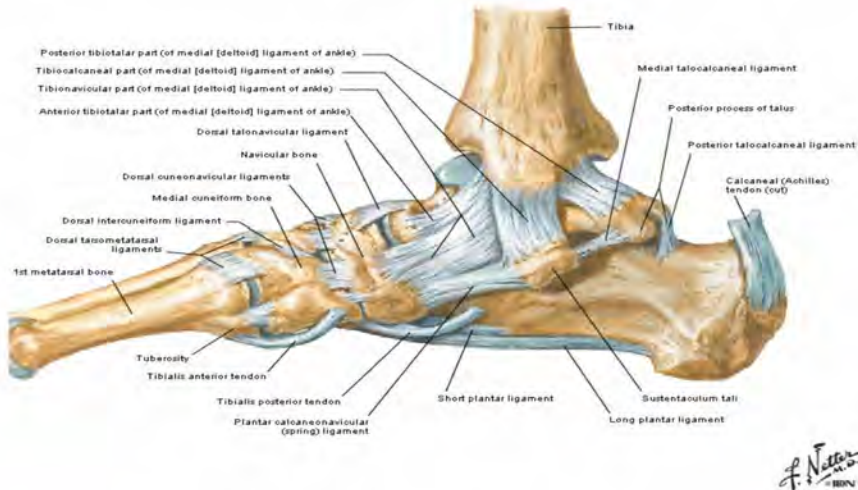


Plate 509B

### Ligaments and Tendons of Right Ankle Medial View



## History

- Date of onset
- Acute or chronic
- Trauma?
- Mechanism of injury
- Swelling? Bruising?
- Severity of pain

# Physical Exam

- Inspection
  - Swelling? Bruising? Deformity?
- Range of Motion
  - Subtalar and midfoot motion
- Palpation
  - Pulses and Sensation
- Strength

# Special Tests

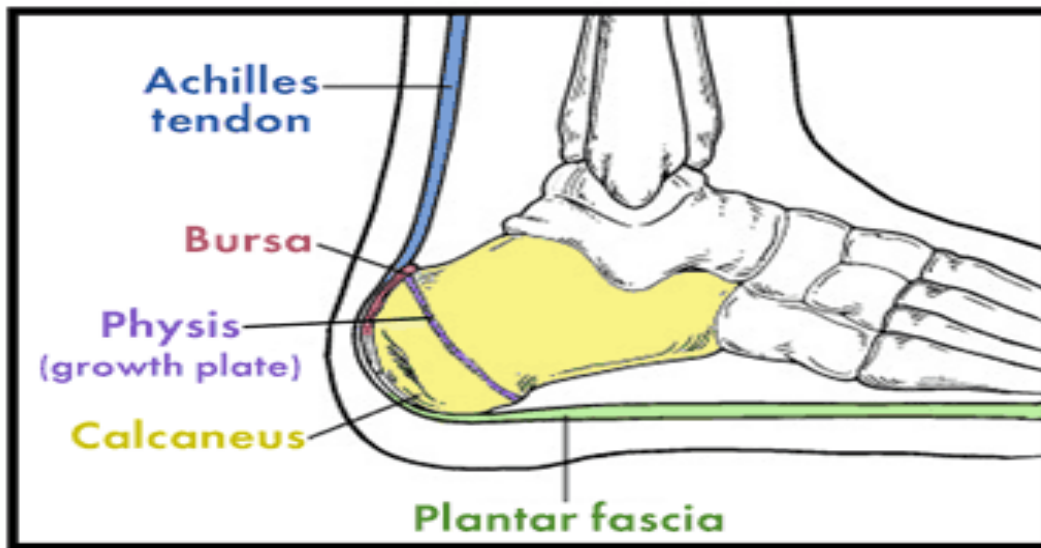
- Anterior Drawer
  - anterior talofibular ligament
- Talar Tilt
  - Anterior talofibular and calcaneofibular ligaments
- Squeeze Test
- Dorsiflexion-eversion
- Thompson test

# Diagnosis

- Apophysitis
- Tendon injury
- Ankle Sprain
- Fracture
- Syndesmotic injury (high ankle sprain)
- Accessory bones
- Tarsal coalition
- Osteochondritis dissecans (OCD)

# Case 1

- 8yo male football player presents with 4 weeks of bilateral foot and ankle pain
- Chronic
- No trauma
- No mechanism of injury
- No swelling
- Now causing athlete to limp while playing



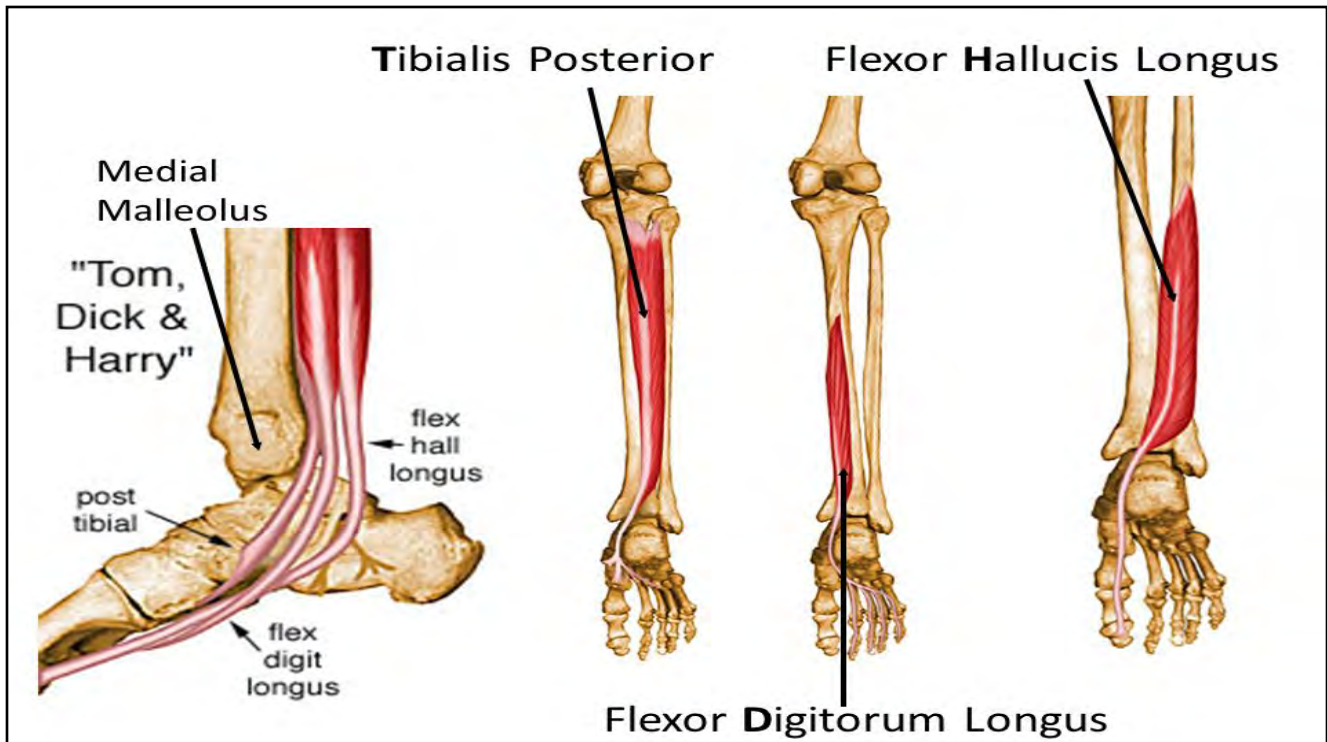
## Calcaneal Apophysitis

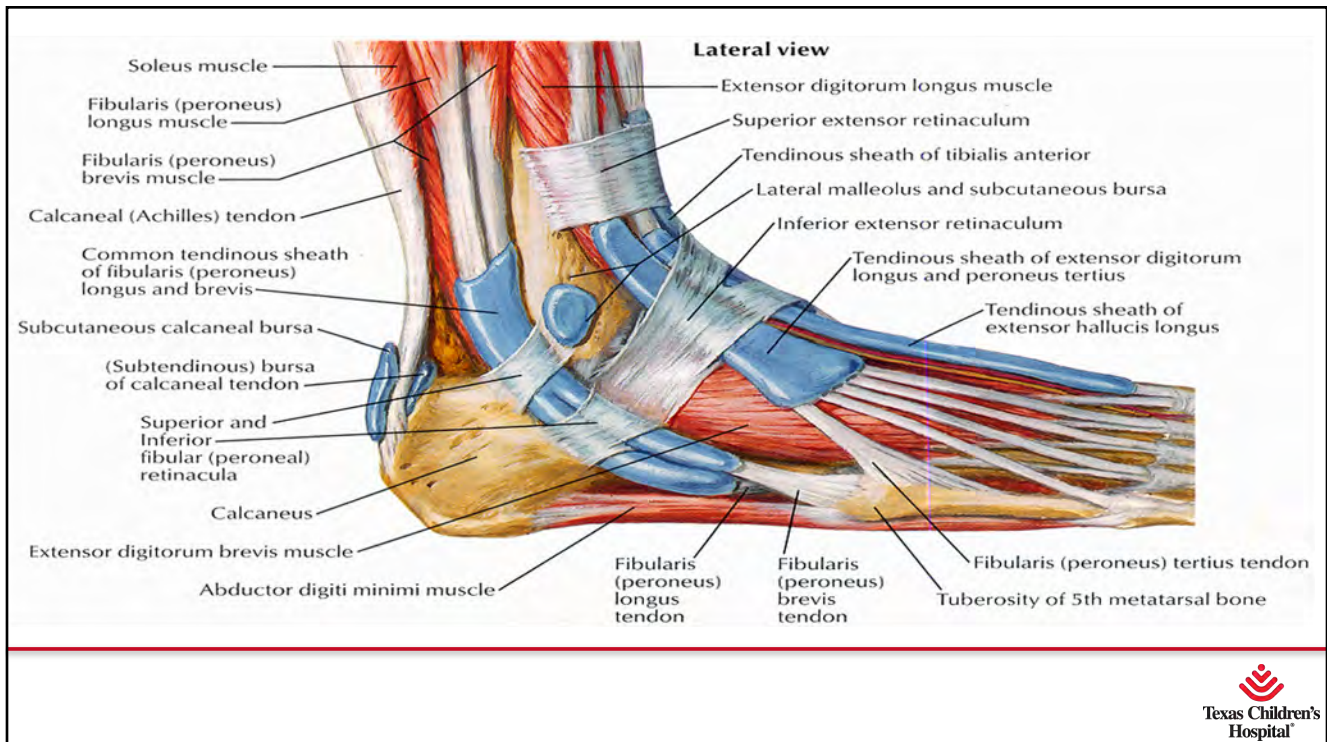
### Treatment

- Heel cups
- Stretching, if tight gastrocs/hamstrings
- Ice massage
- Avoid running around barefoot
- Use good supportive athletic shoes

# Tendonitis

- Posterior tibialis
  - Responsible for plantarflexion and inversion of ankle
- Flexor Hallicus longus
  - Responsible for flexion of great toe
- Peroneal tendons
  - Responsible for eversion and plantarflexion of ankle
- Achilles
  - Responsible for plantarflexion of ankle





# Tendonitis

## Treatment

- Ice massage
- NSAIDs, sometimes scheduled

## Need to address mechanical issues!

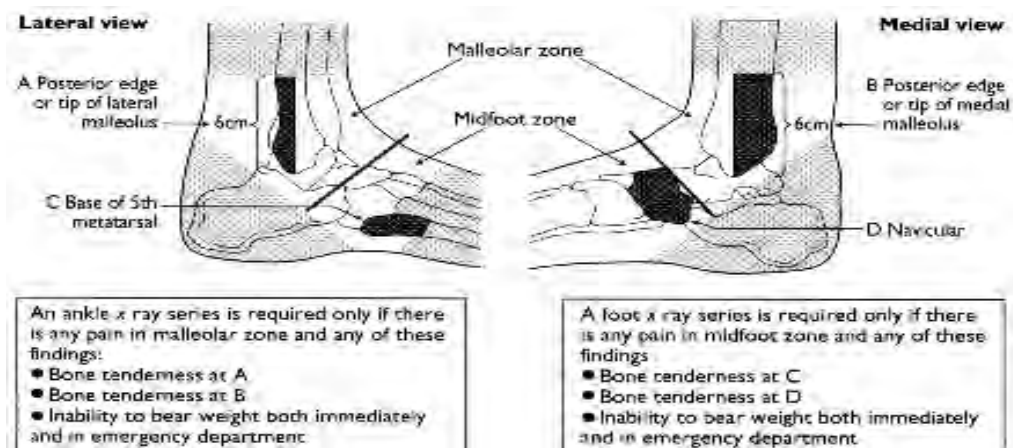
- Weak hips → increased pronation during running → overloading posterior tibialis → inflammation of overused tendon
- Poor hip/core stability is a big culprit
- May need to look at running gait or landing mechanics



## Case 2

- 13yo female dancer presents to your office after coming down from a leap awkwardly and rolling her ankle
- Acute
- Traumatic
- + swelling/bruising to lateral ankle
- Unable to bear weight after injury and in office

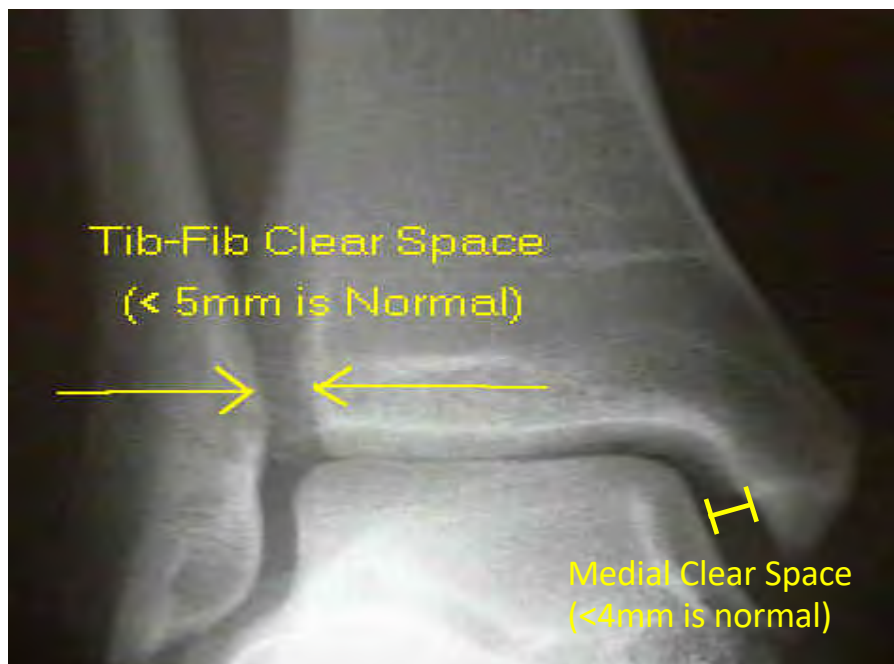
## Ottawa Ankle Rules





**Grades of Ankle Sprain**

<i>Sign/symptom</i>	<i>Grade I</i>	<i>Grade II</i>	<i>Grade III</i>
Ligament tear	None	Partial	Complete
Loss of functional ability	Minimal	Some	Great
Pain	Minimal	Moderate	Severe
Swelling	Minimal	Moderate	Severe
Ecchymosis	Usually not	Common	Yes
Difficulty bearing weight	None	Usual	Almost always



## Treatment

- Rest & elevation
- Ice
- NSAIDs
- Weight bearing as tolerated
- Ankle braces???
- Lace up/semi-rigid > tape or sleeves
- **Rehabilitation**

## A good time to talk about fractures...

- High risk
  - Jones fracture
  - Navicular fracture
- May need to repeat xrays 10-14 days after injury







Posterior malleolar fracture



Distal fibular fracture




### Ligaments

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## High Ankle Sprain

- Injury to syndesmosis
- Can lead to an unstable ankle
- If unstable, often requires surgical fixation



## Unstable ankle fracture



# Stress Fracture

- From excess running/jumping/dancing
- Typically will present with several weeks of worsening pain +/- swelling
- Some mild stress fractures do not show up on X-ray
- Need to rest and immobilize followed by slow return to activity
- Female athlete triad?

4<sup>th</sup>  
metatarsal  
stress fx





## Case 3

- 12yo female soccer player presents with 3-4 months of left medial foot pain
- Chronic
- No trauma
- Mild swelling to medial foot
- Prohibiting her from participating in sports

## Accessory navicular





# Treatment

- Depends on pain level
- If severe pain, MRI may be useful to look for stress injury to bone
- Walking boot or cast may be necessary
- Ice and NSAIDs are useful
- If not responding, surgical removal may be necessary

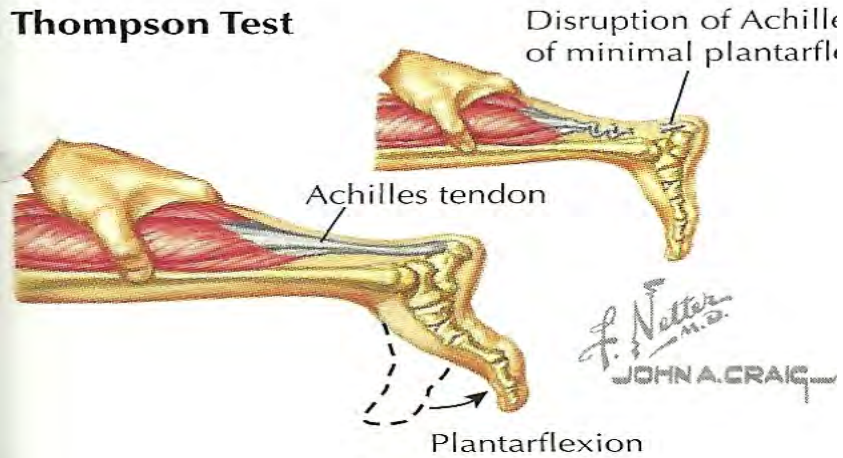
# Case 4

- 18yo male presents to your office after playing basketball and getting “kicked” in the back of the right ankle
- Acute
- Traumatic
- + swelling/bruising
- Walking with a limp and unable to play ball

### Thompson test



### Thompson Test



Normal: Squeezing calf results in gastrocnemius and soleus contraction causing plantarflexion of ankle joint if Achilles tendon is intact

C  
p  
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# Achilles tendon rupture



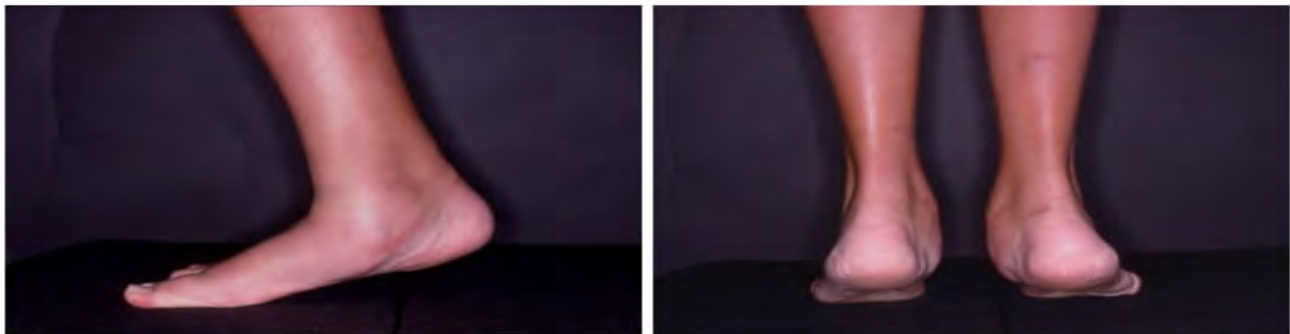
## Treatment

- Protect ankle in walking boot
- Refer to orthopedic surgery



## Case 5

- 11yo male basketball player with left foot pain x 4 months
- Chronic
- No trauma
- Medial foot swelling but no bruising
- Worse when running/jumping
- Limiting his ability to play ball





# Tarsal Coalition - Talocalcaneal



# C-sign in talocalcaneal coalition





## Treatment

- Initial rest, ice, and NSAID use
- Physical therapy is very useful
- Custom orthotics
- May need surgery, but outcomes not great

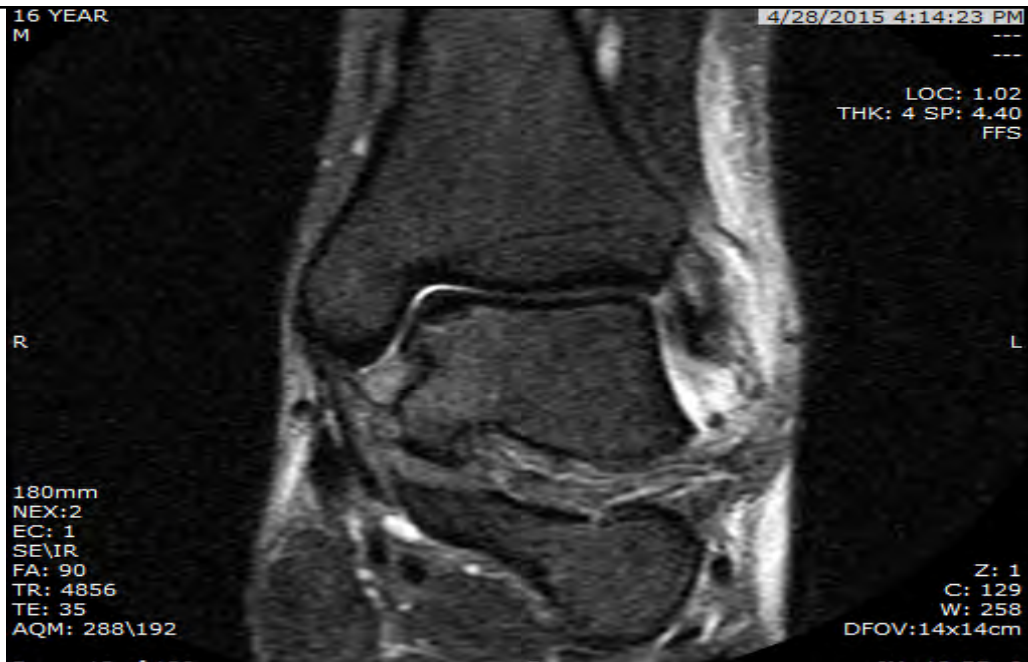


## Case 6

- 16 yo male basketball player with right ankle pain x 4 months
- Chronic
- No trauma
- +occasional swelling of ankle, no bruising
- Worse with running/jumping
- Still able to run/jump but has pain



Left ankle  
X-ray



OCD of the talar dome

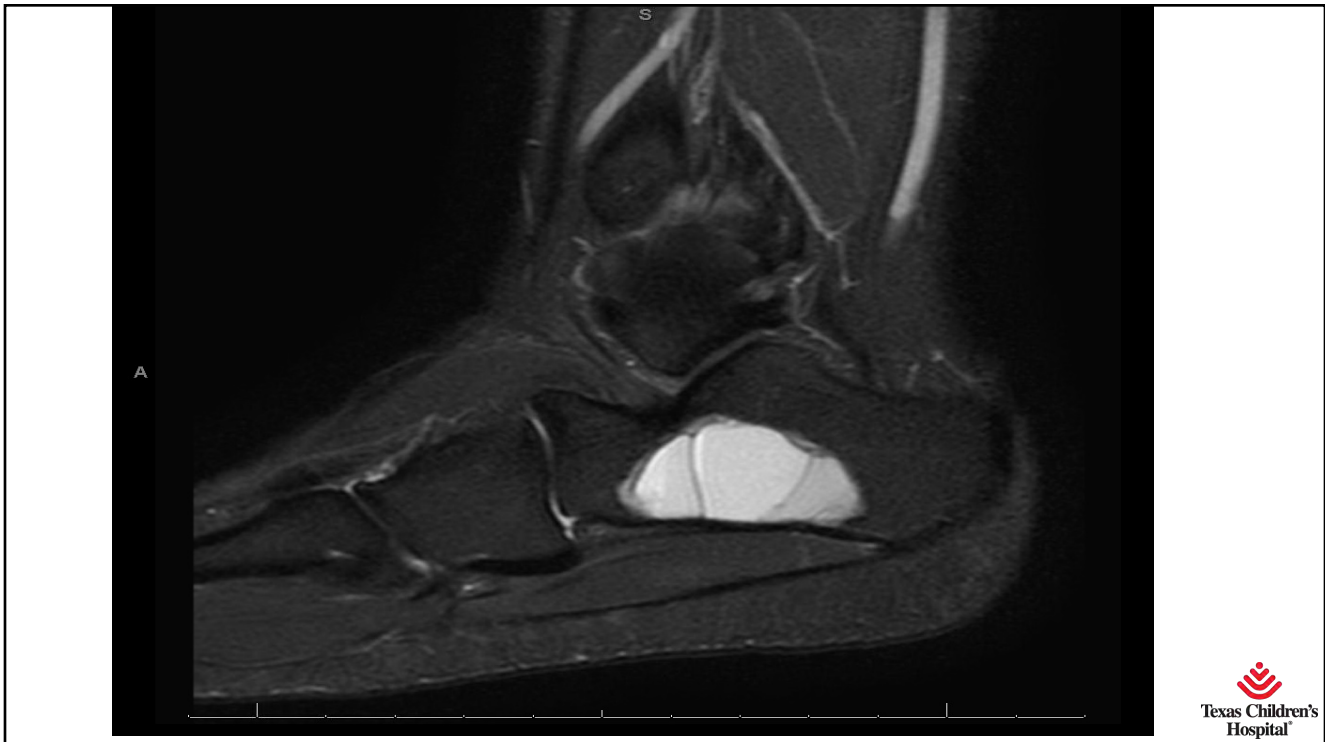
## Treatment

- MRI to evaluate stage of lesion
- Rest!
- Non-weight bearing on crutches if painful walking around
- Monitor at 4-6 week intervals
- May take 6 months to a year to heal
- Surgical intervention for higher stage lesions (if unstable) or if no healing progress by 6 months

## Interesting case

- 16yo female cross country/track athlete with 8 months of right foot/ankle pain. Tried resting for 2 months but it came right back. Has seen several doctors and was told she had tendonitis and to rest
- Chronic
- No swelling/bruising
- Unable to run more than 10-15 minutes before pain begins





## Treatment

- Rest for now
- Orthopedic consultation



Thank you

