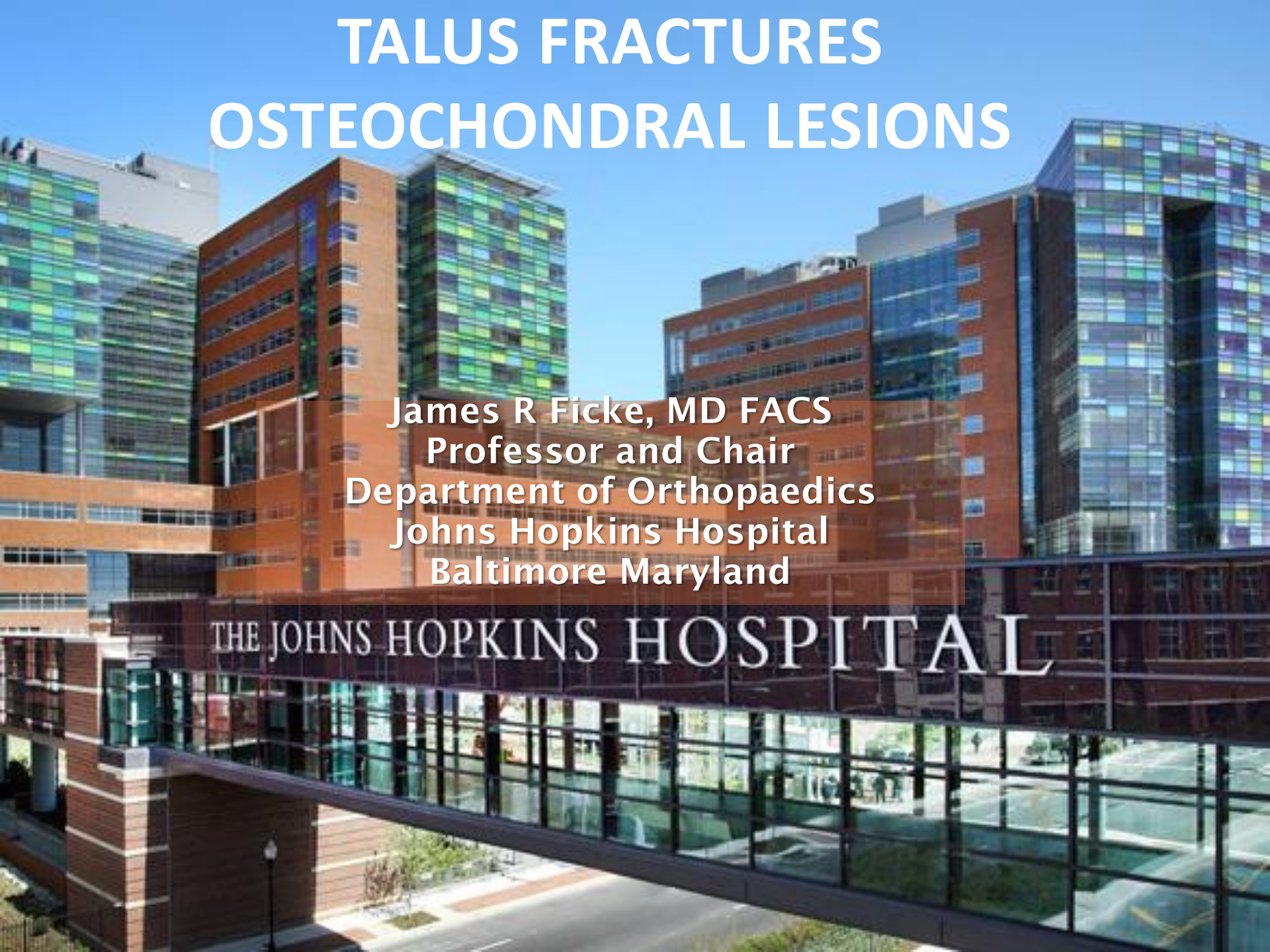
TALUS FRACTURES
OSTEOCHONDRAL LESIONS



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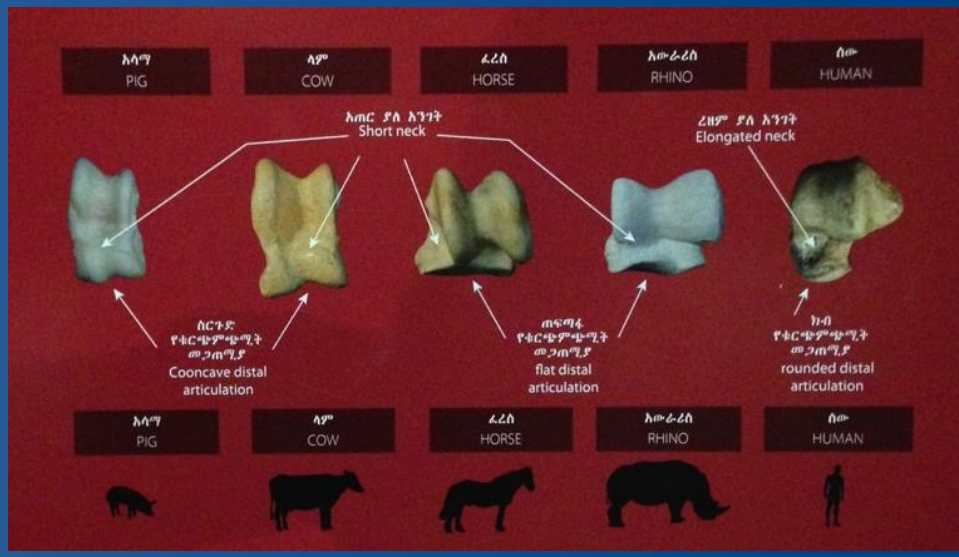
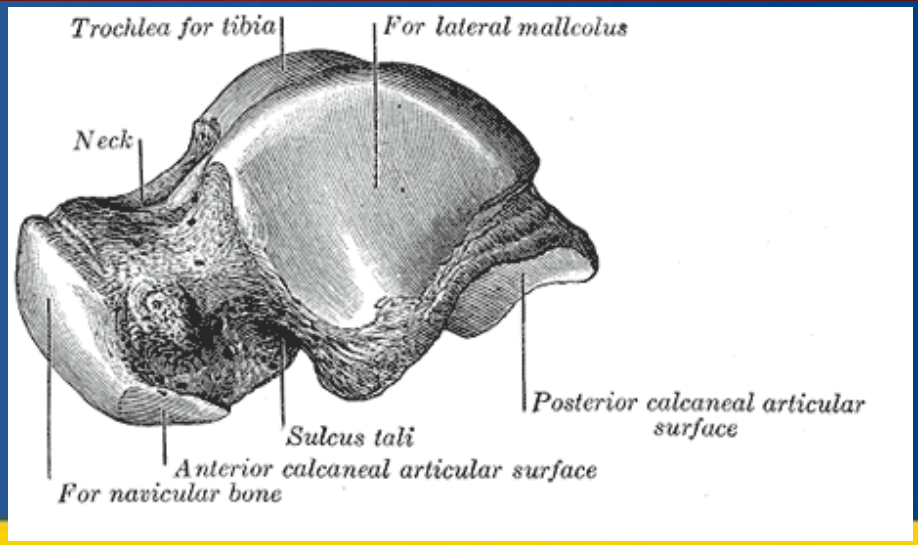
The Talus (aka Astragalus)

JOHNS HOPKINS MEDICINE

ORTHOPAEDIC SURGERY

- Roman- Taxillus (Dice)
  - *Horses Talus= "cast lots"*
- Diversity in mammals
- 2nd Largest Tarsal
- 60% cartilage
- No muscular attachment

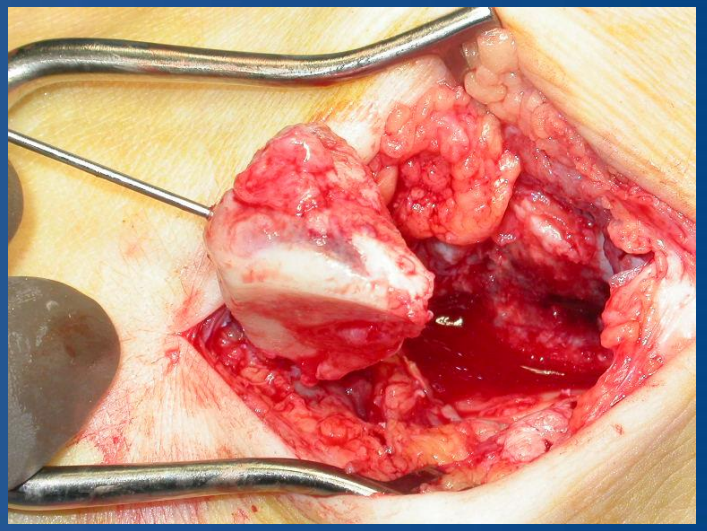




Talus Fractures

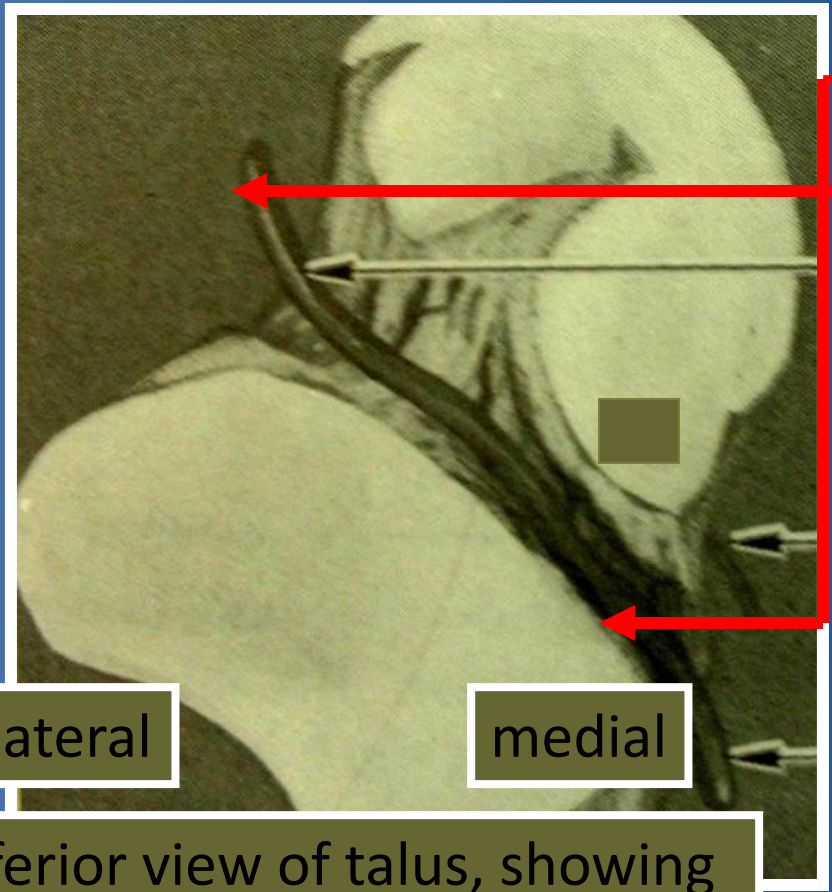
JOHNS HOPKINS MEDICINE

- Neck- most common
- Body
- Lateral Process
- Avulsions
- Osteochondral lesions



ORTHOPAEDIC SURGERY

Blood Supply



Inferior view of talus, showing vascular anastomosis

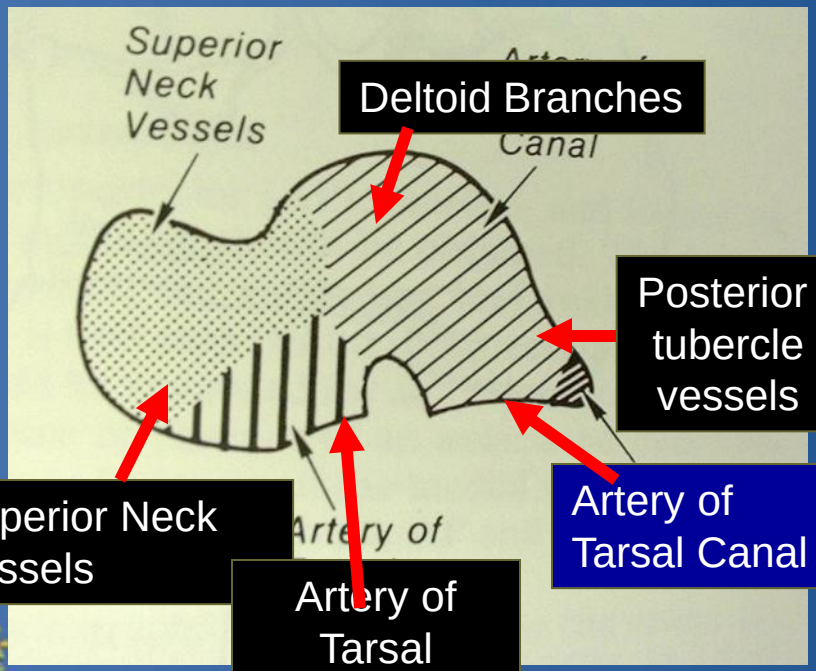
4 primary arterial sources:

- Artery of tarsal canal
- Artery of tarsal sinus
- Dorsal neck vessels
- Deltoid branches

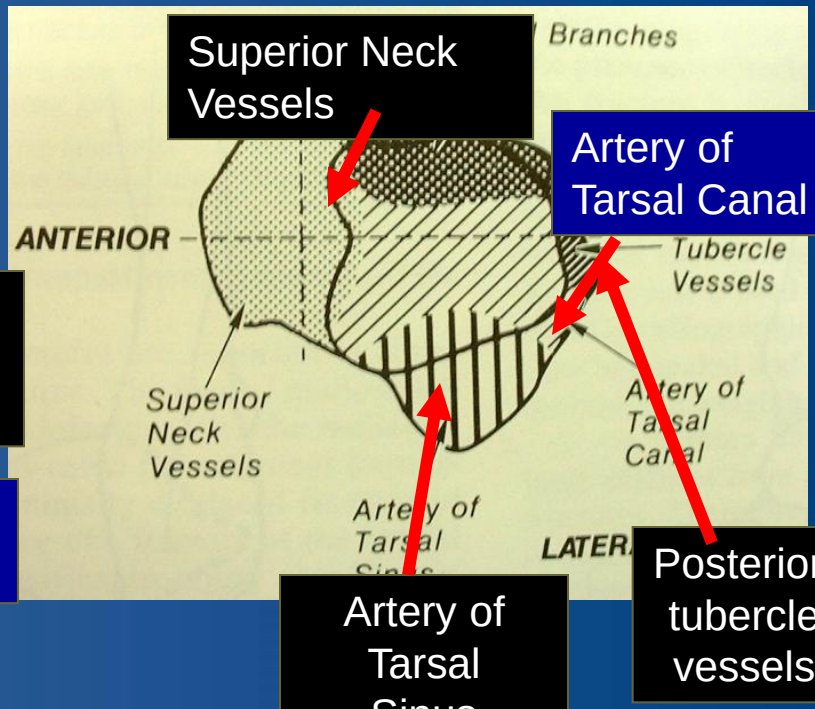
Vascularity

- Artery of tarsal canal supplies majority of talar body

Top View



Side View



ORTHOPAEDIC SURGERY

Mechanism of Injury - Neck

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- 50 % patients- multiple traumatic injuries
- MVC or fall from height
  - *Hyper-dorsiflexion*
  - *Dorsal Medial impaction*
  - *External Rotation and Adduction*
  - *Lateral tension failure*

ORTHOPAEDIC SURGERY

"Aviator's Astragalus" (Anderson 1919)

Hawkins Classification

Hawkins, LR, JBJS, 52A: 991, 1970

JOHNS HOPKINS MEDICINE

ORTHOPAEDIC SURGERY

I.	Nondisplaced	<10%
II.	Subtalar Displaced	<40%
I.	Subtalar & Ankle	~90%
II.	*Pantalar	100%

Imaging

- Complex 3-D structure
- Multiple views- articular congruity
- AP, Lateral, Broden, & mortise
- Canale view: longitudinal alignment 15˚ internal oblique to clear calcaneus
- MRI- assess chondral surfaces & viability

ORTHOPAEDIC SURGERY

AP/ Lateral Hindfoot & Canale View

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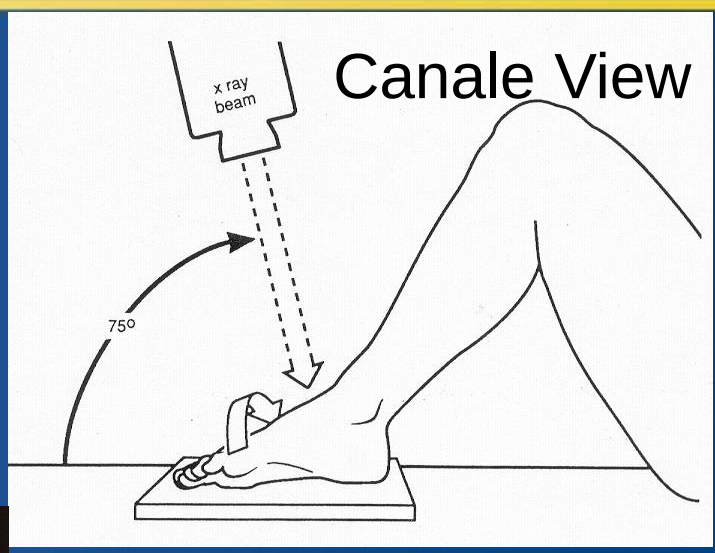
- Slight ankle plantarflexion with knee bent to rest foot on table
- 15 degree pronation
- Xray Tube
  - *15 degree from vertical*



C SURGERY

Treatment Principles: Reduction and Fixation

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- **Ensure Anatomical Reduction!!!**
- Anteromedial **and** Anterolateral Approach
  - *For optimum visualization and fixation*
- Two screws – lag
- Medial malleolus osteotomy if needed

Timing of Fixation

JOHNS HOPKINS MEDICINE

- Life threatening injuries/ resuscitation top priority
- Emergent reduction of dislocated joints
- Timing (fixation) has no relation to AVN risk
- Definitive treatment when the soft tissues allow

ORTHOPAEDIC SURGERY

Vallier 2004

Goals of Management

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- Immediate reduction of dislocated joints
  - *Vascularity*
  - ***Cutaneous tension***
  - ***Vascular compromise***
- Anatomic fracture reduction- timing?
- Stable fixation
- Facilitate union
- Avoid complications

ORTHOPAEDIC SURGERY

1st Approach: Anteromedial

- Medial to Tibialis Anterior
- More posterior incision for talar body fractures to facilitate medial malleolar osteotomy

ORTHOPAEDIC SURGERY

1st Approach: Anteromedial

- Views neck alignment & medial comminution
- Extensile distally to talonavicular joint
- Hardware placed distal to proximal
- Countersunk to avoid impingement

2nd Approach: Lateral

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- Tip of fibula directly anterior
- Sural nerve at risk
- Mobilize EDB as sleeve
- Protect sinus tarsi contents

ORTHOPAEDIC SURGERY

2nd Approach: Lateral

JOHNS HOPKINS MEDICINE

- Visualizes Anterolateral alignment and subtalar joint

- Facilitates Placement of “Shoulder Screw” or lateral plate

ORTHOPAEDIC SURGERY

2 incisions: Skin bridge

JOHNS HOPKINS MEDICINE

- Skin bridge well tolerated
- “2 to 1” consideration
- Generally less soft tissue complication

ORTHOPAEDIC SURGERY

Medial Malleolar Osteotomy

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ORTHOPAEDIC SURGERY

- Predrill malleolus
- Osteotomy aims just off medial corner of mortise to facilitate interdigitation
- Chevron, straight, or stepcut techniques
- Osteotome to crack cartilage helps avoid mortise malalignment

Osteochondral Lesions of Talus

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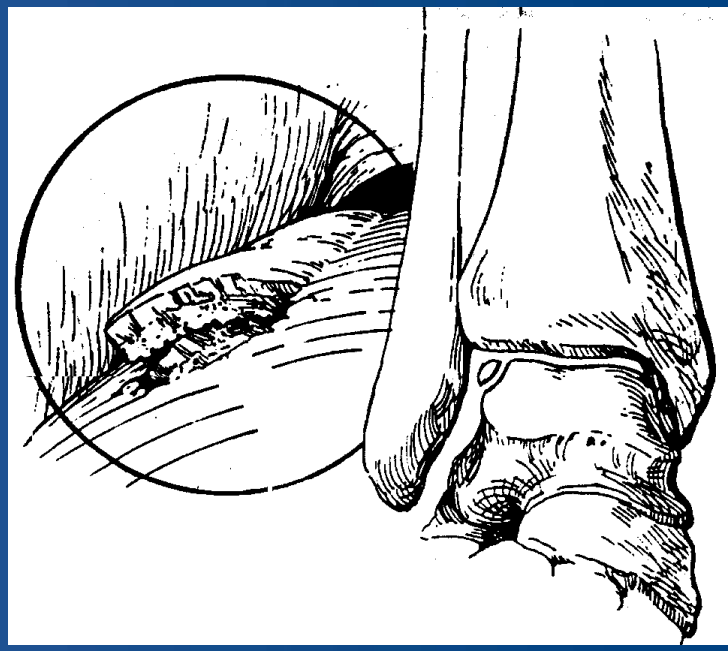
ORTHOPAEDIC SURGERY

History

- Acute injury vs multiple “sprains”
- Ankle pain and swelling
- +/- “Catching” or “locking”

Physical examination

- Local or generalized ankle pain
- Ankle effusion
- Decreased ankle ROM
- Ankle instability?



Osteochondral Lesions of Talus

JOHNS HOPKINS MEDICINE

ORTHOPAEDIC SURGERY

Diagnosis

- Radiographs
  - *AP, lateral, mortise*
- CT scan or MRI
  - *Only if x-rays negative and management will be altered*

Osteochondral Lesions of Talus

JOHNS HOPKINS MEDICINE

ORTHOPAEDIC SURGERY

Treatment:

Undisplaced lesion

- Majority of lesions resolve with time

Persistent symptoms (>4-6 months)

- Arthroscopic Debridement and Microfracture

Displaced lesion

- Remove loose bodies

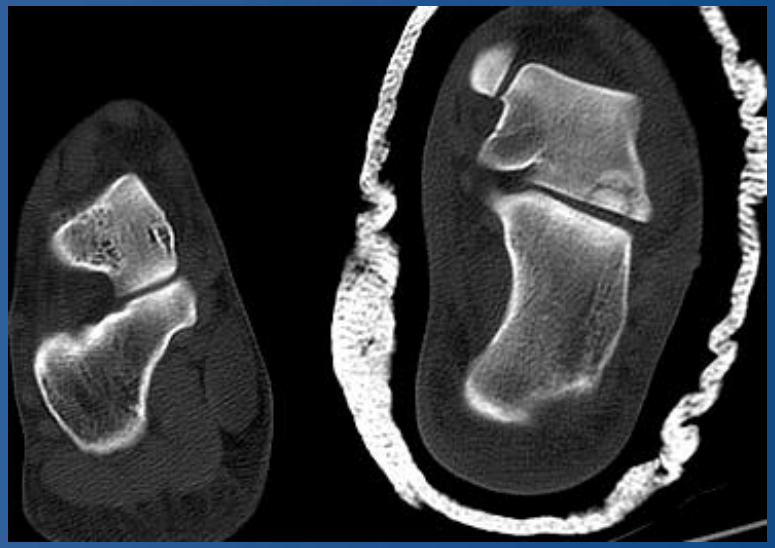
Osteochondral Lesions of Talus

JOHNS HOPKINS MEDICINE

ORTHOPAEDIC SURGERY

Prognosis:

- Better if younger patient (i.e open physes)
- Acute lesions better than chronic



OLT Associated with Ankle Fx

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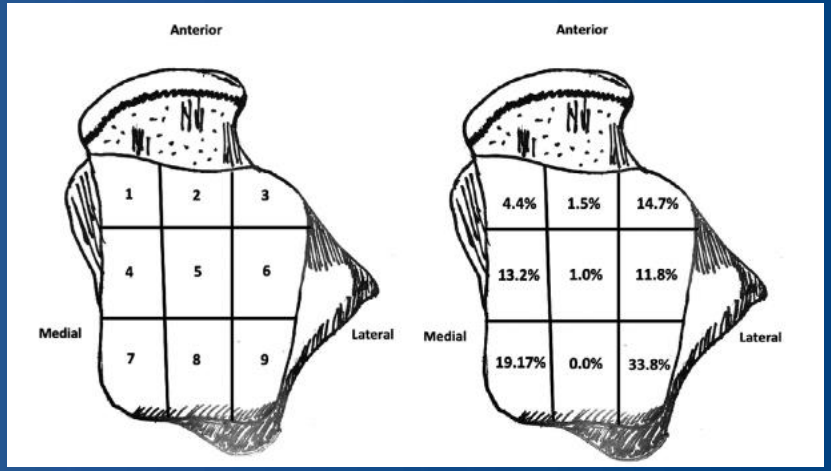
- 108 operative ankle fxs- CT evaluation
  - *39 male; 69 women- avg age 50.7/ BMI 30.9*
  - *55 (51%) had OLT*
  - *Pilon- 64% +*
  - *SAD- 66% +*
  - *SER- 53% +*
  - *PER- 38% +*

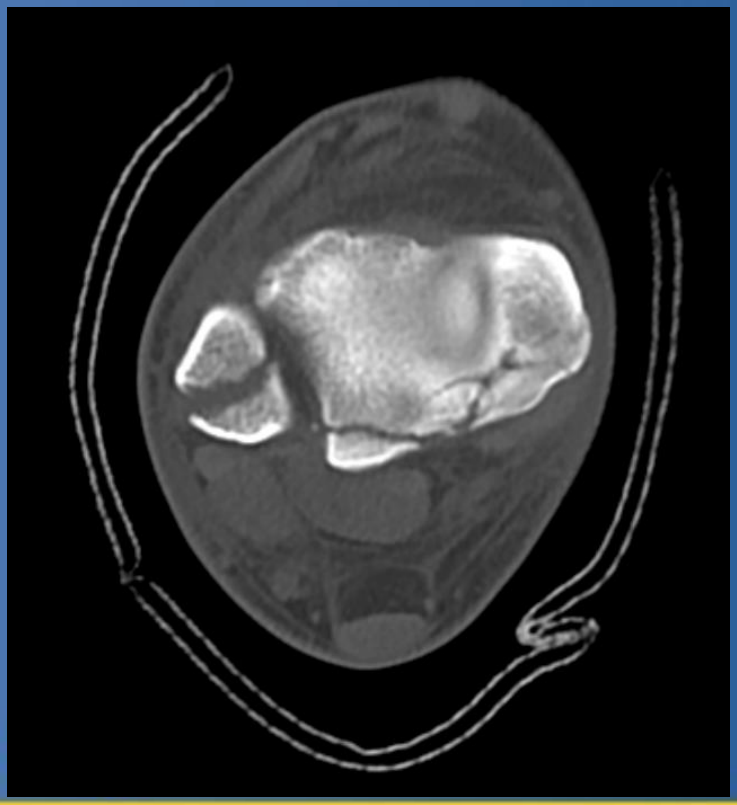


ORTHOPAEDIC SURGERY

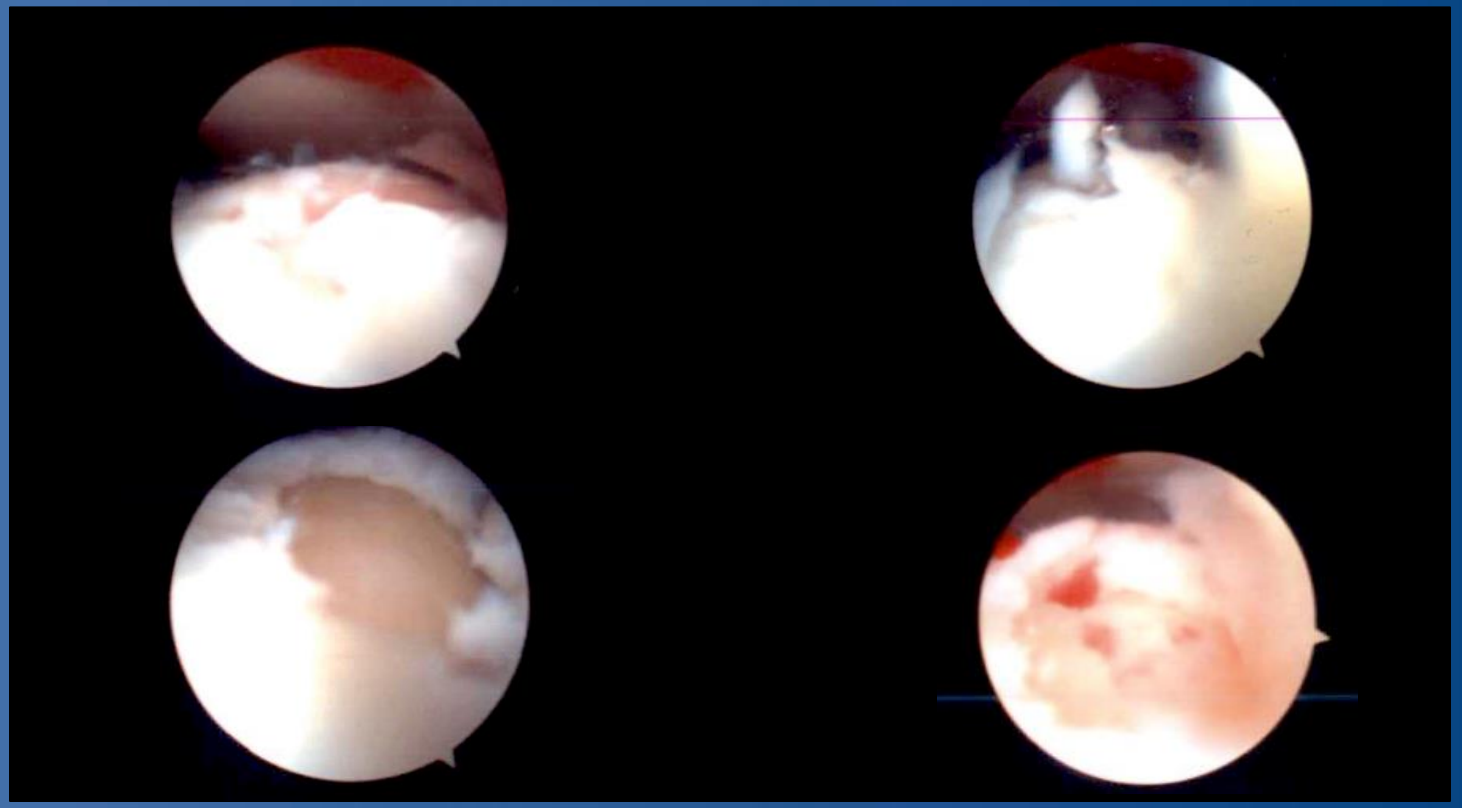
Togher, Reeves; Incidence of Talar Osteochondral Lesions After Acute Ankle Fracture; J Foot & Ankle Surgery 2021

Case 1

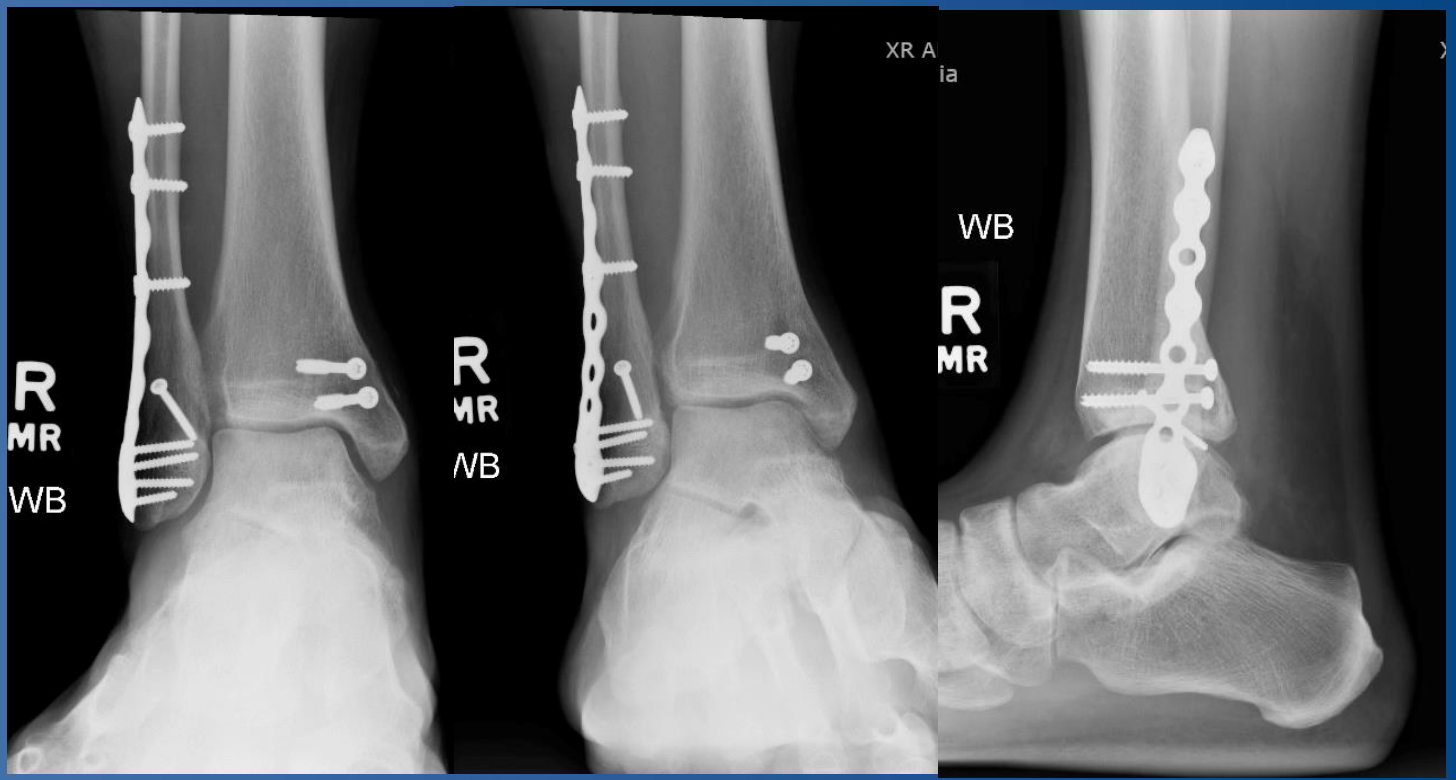
- 34 yo male
- Ankle injury at a ninja gym



Case 1



Case 1



ORTHOPAEDIC SURGERY

OLT with Syndesmotic Injury

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- Systematic Review 2000-2021: 9 studies
  - *Isolated Syndesmotic Injuries*
    - 271 acute 22% +
    - 88 chronic 24%+
  - *Worth assessing – MRI or Arthroscopy*

ORTHOPAEDIC SURGERY

Take Homes

JOHNS HOPKINS MEDICINE

- Talus- “Center of Universe”
- OLT- high association w unstable Ankle fx
- Microfx similar to allograft
- Attentive to soft tissues
- Fixation associated injuries/ pursue stability

ORTHOPAEDIC SURGERY

Thank you!

JOHNS HOPKINS
MEDICINE

ORTHOPAEDIC SURGERY