

# Minimally Invasive Foot and Ankle Surgery In Work Related Injuries

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# Disclosures



- Consultant for BESPAs
- Consultant for Johnson and Johnson MedTech / Depuy Synthes
- Consultant for Biocomposites
- Consultant for Conventus-Flower Orthopaedics
- Consultant for Paragon 28
  
- Royalty for Dynabunion and Dynaforce Plates (Depuy-Synthes)
  
- No royalties received for any products used in this talk but I am consultant for JnJ, Biocomposites, and Conventus-Flower (products shown)

# Thanks for having me!



# Minimally Invasive (MIS) is NOT Open Surgery



Reassess:  
The First Step of Change

# Case #1



34 year old healthy female. 5'5" 130 lbs.

Bilateral symptomatic bunions (L>R)



Powerful technique - if used correctly!



Happy patients...pretty feet!



# WHY Minimally Invasive Surgery(MIS)?

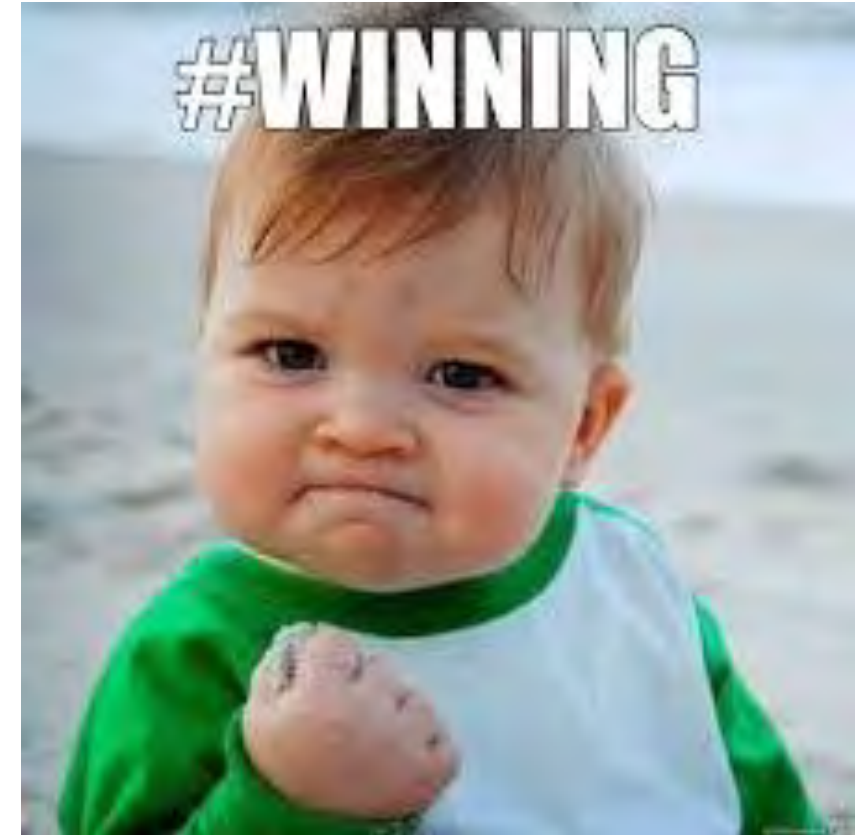


Why discuss this topic at a Work Related Injury Conference?



# Advantages of MIS Foot and Ankle Trauma Surgery

1. Smaller incisions = fewer wound issues
2. Fewer wound issues = lower infection risk
3. Fewer wound issues = fewer additional procedures
4. Lower infection risk = lower hospital readmission risk
5. Smaller/less scarring = less pain
6. Less pain = earlier and more aggressive rehab
7. Earlier rehab = FASTER RETURN TO WORK / MMI



# WHY Minimally Invasive Surgery(MIS)?

1. Wound healing complications
  - THE BANE OF THE FOOT AND ANKLE SURGEON



# Wound Healing Complications

- Bad for patient
- Bad for surgeon
- Slows return to work
- Dramatically increases cost of care!



# Should All Surgery Be Done Minimally Invasively?

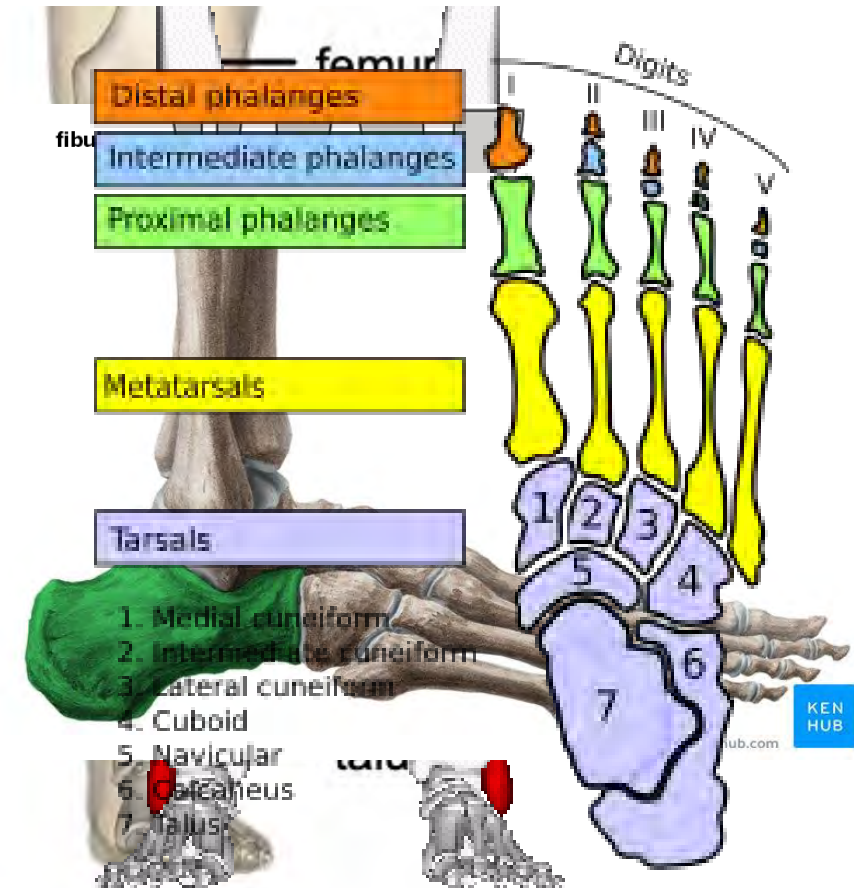


# When do I use Minimally Invasive Surgery for Work Related Injuries?

1. Calcaneal Fractures
2. Pilon / Tibial Shaft Fractures
3. Fibular Fractures
4. Lisfranc Injuries
5. Talus Fractures
6. Metatarsal or Toe (Phalanx) Fractures
7. Minimally Invasive Fusions (for post traumatic arthritis)
8. Minimally Invasive Osteotomies (for post traumatic deformity)

# Quick Boney Anatomy Review – Foot and Ankle

- Ankle
  - Tibia = Shin bone
  - Fibula = Small bone on outside of ankle
  - Talus = Top bone of the foot
- Foot
  - Calcaneus = Heel bone
  - Tarsal Bones = Middle bones of foot
  - Metatarsals = Bones that make the ball of the foot
  - Phalanges = Bones in the toes



# Calcaneal Fractures – Where MIS Started for me

**Minimally invasive surgery for intra-articular calcaneus fractures: a 9-year, single-center, retrospective study of a standardized technique using a 2-point distractor**

## **Conclusions**

Our data supported the assumption that severe wound complications would be less likely to occur after minimally invasive treatment compared to ORIF treatment. The rate of secondary arthrodesis in the study cohort was comparable to that in the literature.

# Calcaneal Fractures – the REAL truth

## Outcome of calcaneal fractures treated operatively and non-operatively. the effect of litigation on outcomes

B S Thorne<sup>1</sup>, A L Collins, M Timlin, J Corrigan

Affiliations + expand

PMID: 15736356 DOI: [10.1007/BF03170505](https://doi.org/10.1007/BF03170505) [↗](#)

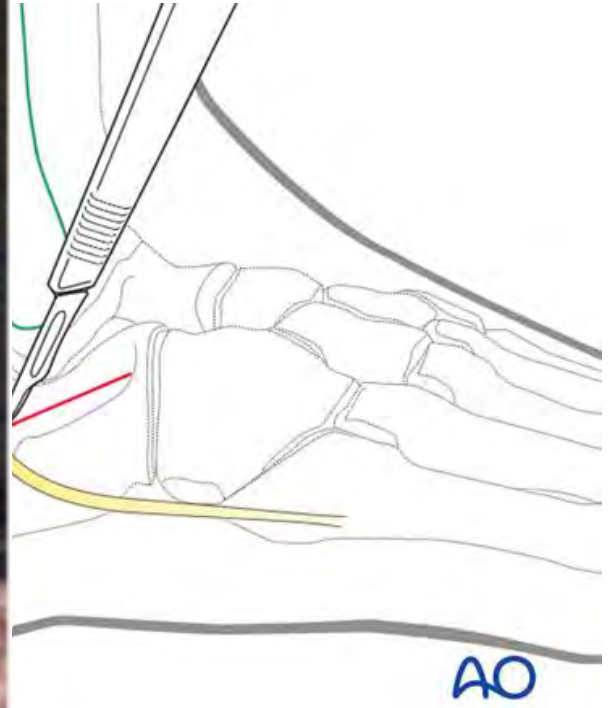
### Abstract

**Background:** The optimum management of calcaneal fractures is controversial. These injuries are frequently associated with compensation litigation, which effects the outcome.

**Conclusions:** Litigation was the major determinant of outcome following calcaneal fracture repair; highlighting the unreliability of subjective evaluation in determining outcome in the face of litigation. No subset of patients appeared to significantly benefit from internal fixation of their fracture.

# Open vs Minimal Incision Calcaneal Fracture ORIF

Old School

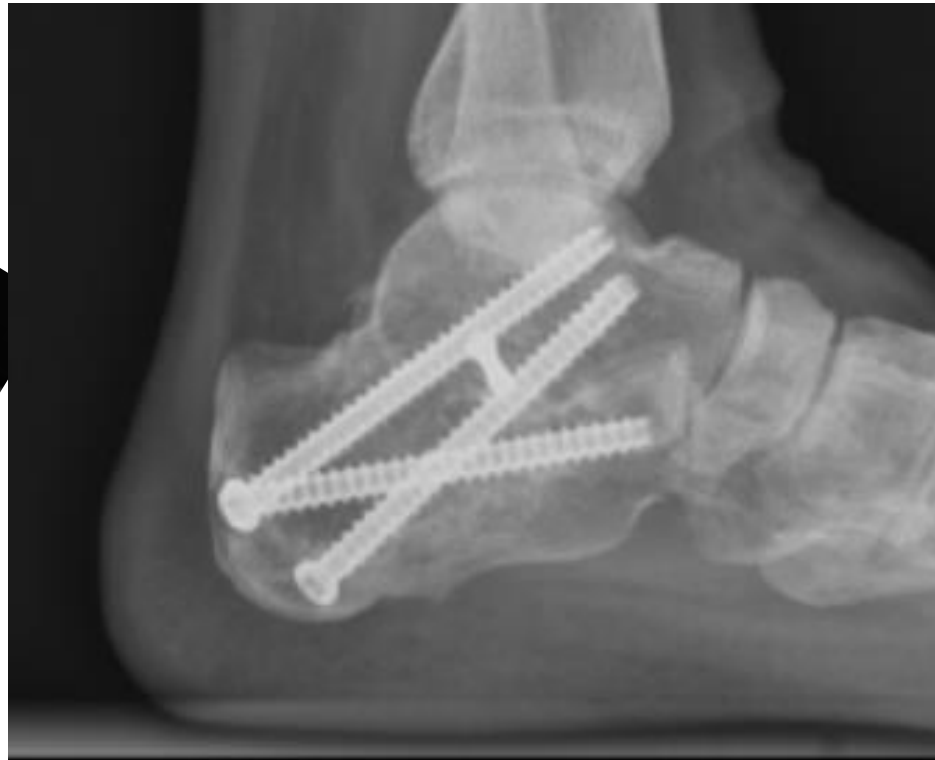


# Open vs Minimal Incision Calcaneal Fx ORIF

Old School

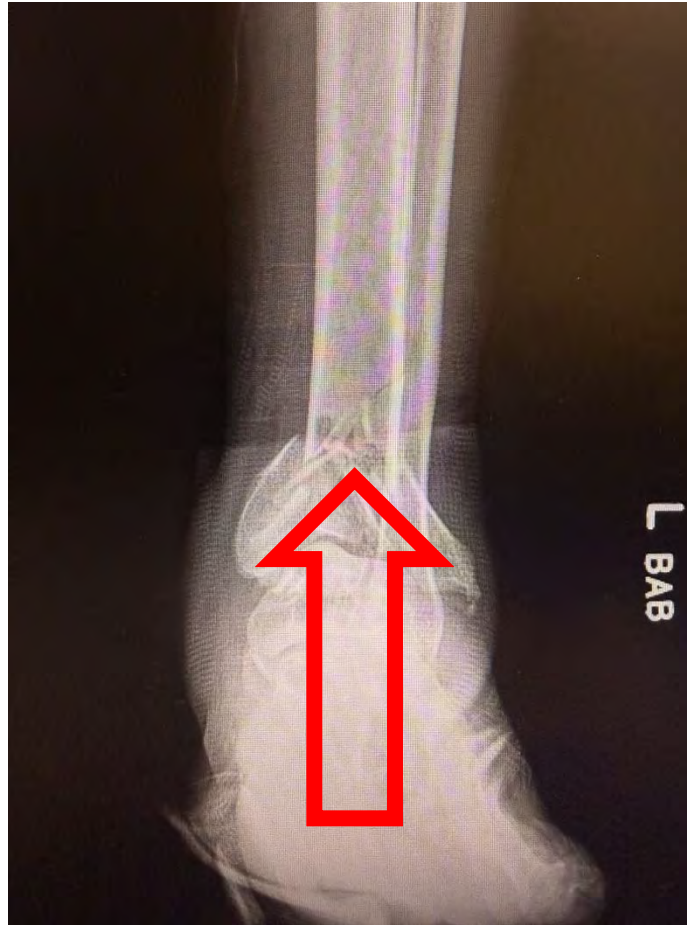


New School



# Tibial (Pilon) Fracture Treatment

- High energy
- Bad swelling
- Lots of arthritis
- Staged treatment
  - 2 surgeries historically to fix
  - An additional future surgery to deal with arthritis



# Pilon Fractures —Similar wound issues to calcaneal fractures

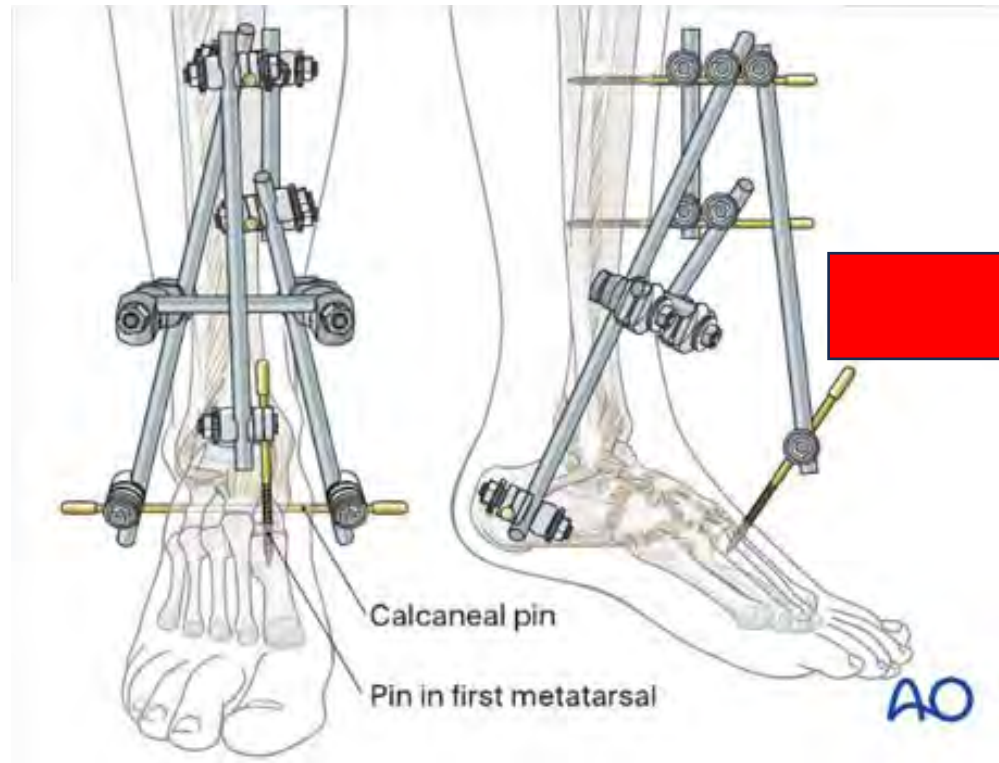
- Fractures of the end of the tibia from impaction of the talus (foot) up into the tibia (shin)
- Different from the classic and common “ankle fracture”

## **A staged protocol for soft tissue management in the treatment of complex pilon fractures.**

[Michael S. Sirkin](#), [R. Sanders](#), +1 author [D. Herscovici](#) • Published in [Journal of Orthopaedics and...](#) 1999 • Medicine

**TLDR** It appears that the historically high rates of infection associated with open reduction and internal fixation of pilon fractures may be due to attempts at immediate fixation through swollen, compromised soft tissues.

“Staged Treatment”: 2 or more trips to the OR

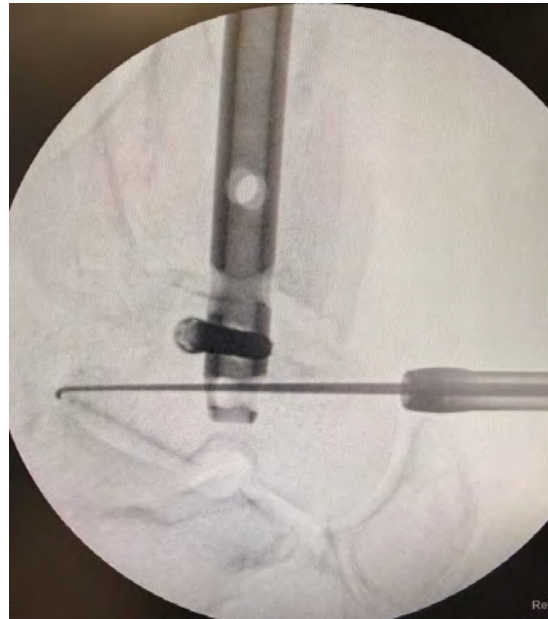


# MIS Primary Fusion and Operative Repair- Pilon Fx



- MIS Burr
- Remove Cartilage
- “Prepare Joint” for fusion
- Done through portal (key hole incision)

# MIS Primary Fusion and Operative Repair- Pilon Fx



# Minimal Incisions --- Maximal Results



For comparison sake – 2015 version of same case



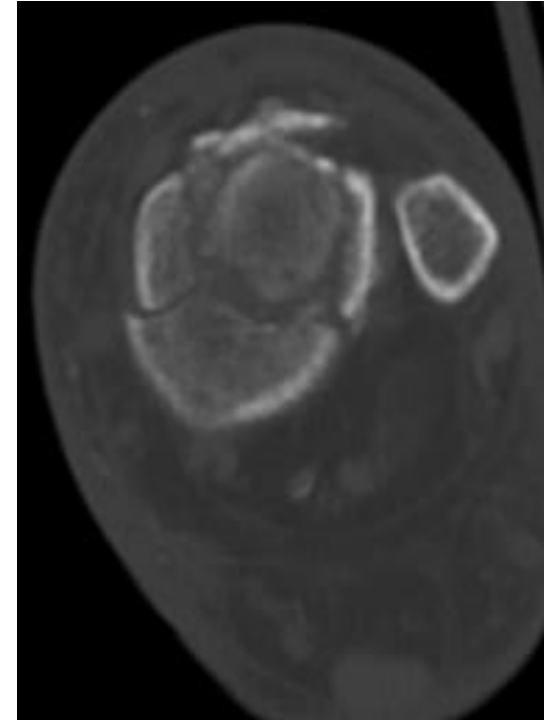
# Another Example: NOT A HEALTHY PATIENT



# *“Post Reduction Film”*



How about a terrible CT scan?



# MIS approach in the sick 78 year old patient



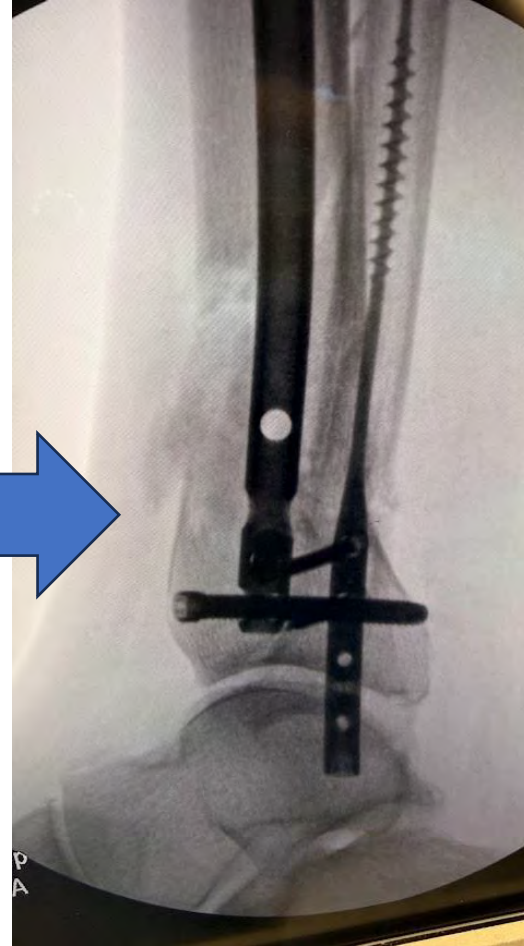
# IM Stimulan (Calcium Sulfate) for infection prevention



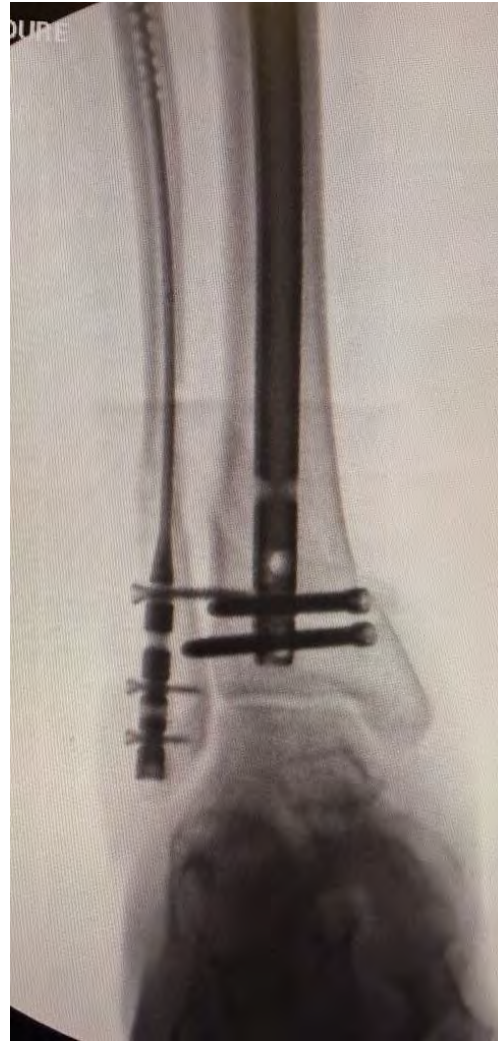
# MIS Prep and percutaneous fixation



MIS is HARDER than open surgery



# Minimally Invasive Tibia and Fibula Fixation



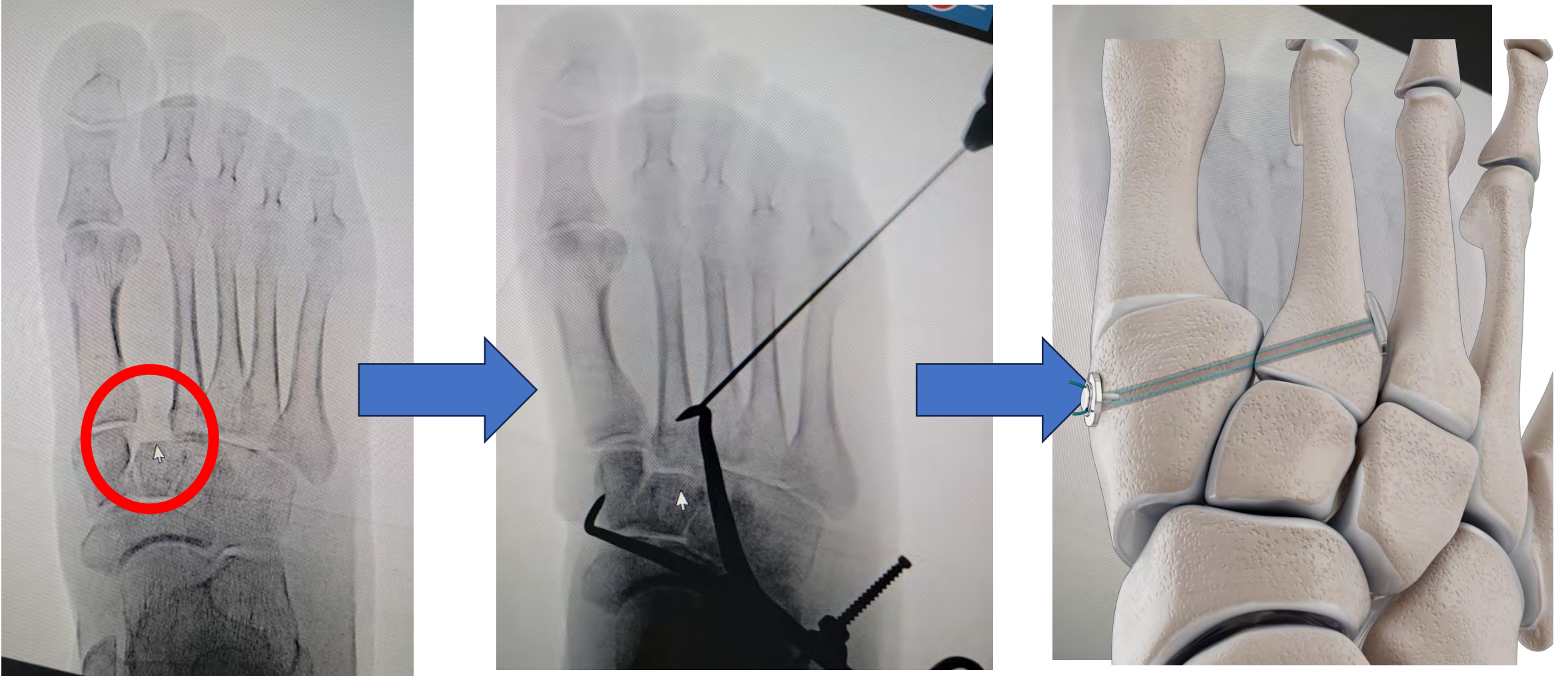
# Talus Fractures - BAD Actors...



# MIS Talus Fracture Repair – preserve blood supply!



# Lisfranc - Minimally Invasive Surgery



# Lisfranc - MIS



# In Summary

- Foot and Ankle Anatomy Review
- Common Foot and Ankle Injuries
- Minimally Invasive Surgery Advantages
- How and where it can be used in foot and ankle trauma
- Avoid multiple surgeries and complications when possible
- MIS surgery is varsity!
  - Harder to do but worthwhile if done well!



# Thank you for your time! MIS FTW!!!

- Please reach out if I can ever help one of your patients!
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