1 **THE FAB FIVE OF FOOT AND ANKLE**

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2 **DISCLOSURES**

- Consultant/Speaker/Educator-Arthrex
- Consultant/Speaker/Educator-Bioventus
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*All relevant financial relationships have been mitigated.

3 **THE FABULOUS FIVE….BUT NOT SO FABULOUS**

- The High Ankle Sprain (syndesmosis injury)
- Lisfranc injuries
- Achilles ruptures
- Plantar fasciitis and Plantar Fascia ruptures
- 5th metatarsal fractures

4 **NOT ALL SPRAINS ARE THE SAME…**

5 **THE HIGH ANKLE SPRAIN**

- Syndesmosis
  - Anterior inferior tib/fib ligament
  - Posterior interior tib/fib ligament
  - Transverse ligament
  - Interosseus ligament
  - Interosseus membrane
- Sprain “above” the ankle
- Connection of the tibia and fibula
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6 **EXAMS ARE SOOO IMPORTANT**

- Twisting or rotational
  - Most commonly ER
- May or may not have a fracture
- May WB
- Pain above ankle
- Don’t forget pain at deltoid

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7 **SOME DIAGNOSTIC TESTS…**

- Squeeze test
- ER stress test
- Syndesmosis palpation
- Heel thump test
- Cross leg test

8 **DON’T LET YOUR GUARD DOWN**

- Don’t forget the tib/fib xray
- Beware the isolated medial malleolus fracture
- Beware the isolated posterior malleolus fracture
- Go the distance!!!
  - Measure the distance/space
  - Contralateral xray
  - Stress xray

9 **OBJECTIVE PARAMETERS TO HELP**

- AP
  - 42%!!!!
- Mortis
  - Tib/fib overlap
    - > 1mm
  - Tib/fib clear space
    - < 5 mm

10 **MRI’S ARE GREAT BUT…**

- Consider the mechanism
- Apply to patient
- Have to touch the patient and correlate
- Understand the static limitation
- Convert to a dynamic diagnosis

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WHEN TO REFER

12 **POINTS TO TAKE AWAY**

- DO your DUE diligence
  - TOUCH the patient
- Don’t forget the WB or stress xray
- MRI to assist
- Consult when in doubt
- DO NOT MISS IT

13 **THE LISFRANC**

- Jacques de Lisfranc de St Martin-Napoleonic army
- Can be high or low energy
- Low energy are missed
- Keystone critical
- Soft tissue strength
- No connection of first to second metatarsal

14 **MECHANISM OF INJURY**

- Football and soccer
- Twist and fall
- Hyperplantarflexed axial load
- Fall from height

15 **REMEMBER…ALWAYS BE SUSPICIOUS**

- Plantar ecchymosis
- Pain with palpation of midfoot
- Abduction pain
- Piano key test
- Single rise
- Fleck sign

16 **YOU WILL MISS IT UNLESS…**

- Get a WEIGHT BEARING xray
- Comparison view
- Fractures that are suspicious=CT
- Normal xrays with suspicious exam=MRI

17 **IF DIAGNOSED…**

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- Keep patient non-weight bearing
- No boot if possible-SPLINT!
  - Needs soft tissue rest

18 **WHAT NEXT?**

- If wide/instability on Xray you are DONE!
  - Refer because likely surgery
- No widening + high suspicion = Advanced imaging(MRI)
  - Close f/u and repeat xray
  - Plantar ligament injury = BAD
  - Isolated dorsal ligament injury = BETTER
    - May be conservative
    - NWB for 6- 8 weeks

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19 **POINTS TO TAKE AWAY**

- Don't be scared to do the WB xray
- MRI or CT if suspicious-I use fracture as a guide…
- Keep them NWB until you are sure
- Rest the soft tissues
- Refer ASAP with ANY instability

20 **EVERY YEAR I SEE AT LEAST ONE THAT IS MISSED**

- The achilles rupture

21 **AMAZING THE FORCE…**

22 **ACHILLES RUPTURES**

- Largest tendon in the body
- Vulnerable to injury
- Gastroc/soleus to calcaneus
- Most common watershed
- Beware the avulsion
- MTJ do better

23 **WHAT HAPPENED?**

- Injections?
- Antibiotics-Quinolones
- Pre-existing disease
- Audible pop-"felt like I was kicked"
- Sometimes can walk
- "I was told it was just a sprain"

24 **DON'T MISS IT!**

- Contour
- Palpable defect
- Thompson test
- Matle's Test

25 **AFTER YOU RECOGNIZE IT…**

- Forget plantigrade
- EQUINUS immobilization or equinus WB
- MRI only if needed
  - If obtain, do STAT!

26 **HOW DO I KNOW WHAT TO DO?**

- YOU SHOULD ALWAYS FEEL COMFORTABLE REFERRING HOWEVER…
- Great evidence suggesting nonop management
  - *** HAVE TO HAVE functional rehab
- Athletes-referral
- Quicker return to sport-referral
- Comorbid-keep

- Splinted in PF and want nonop-keep
- Musculotendinous junction-keep
- Insertional-refer
- Diseased tendon-refer

27 **POINTS TO TAKE AWAY…**

- No harm done if place in plantarflexion
  - May need surgery but won't burn bridge if not
- Don't delay for an MRI
  - Remember your reliable tests!
    - Matle's
    - Thompson
    - Defect?
- Remember good evidence to suggest you can take care of them too!

28 **PLANTAR FASCIITIS AND PLANTAR FASCIA RUPTURES**

- Most common cause of heel pain
- Medial plantar heel pain at the MCT
- Extends to arch
- "First steps in the morning"
- Microtears
- Can be associated with tarsal tunnel

29 **WHAT CAUSES THE PAIN?**

- Acute microtears
- Tight GSC/Achilles and PF
- Inflammation/Degeneration
- Not so much the spur
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- Silverskold Test

30 **HOW DO I EXAMINE/SEE IT?**

- Inspect the area
- Arch contour
- Plantar bruising
- Palpate medial plantar heel
- DF ankle/DF toes
- Windlass mechanism
- Can they WB?
- Xrays-assist mostly in alignment/spur?
- U/S and MRI
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31 **TREATMENT**

- 84 Ortho MD's responded: @ 4 months
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- 37(44%) favored PFSS
- 20(24%) supervised PT
- 17(20%) night splinting
- 5(6%) CSI
- 3(4%) custom orthosis
- 2(2%) cast or boot immobilization
- 46(55%) surgery at 10 months (Strayer+/- PF release)

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- Foot Ankle Int. 2012 Jun; 33(6):507-12. Preferred management of recalcitrant plantar fasciitis among orthopedic foot and ankle surgeons. DiGiovanni BF, Moore,AM, Zlotnicki JP, Pinney SJ.

32 **TREATMENT RECOMMENDATION**

- Non surgical at least 9 months and preferably 12 months
- Heel padding, orthosis, PT/stretching and NSAIDs
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- If RUPTURE then……NON SURGICAL
  - PRICE
  - Boot/NWB
  - PT
  - Orthosis
  - RTP about 9 weeks or sooner!
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33 **IF THEY HAPPEN TO NEED SURGERY**

- Failed all non-operative attempts
- Strayer procedure=Gastroc recession
- Plantar fasciotomy and partial fasciectomy

34 **5TH METATARSAL FRACTURES**

- Stubborn bone
- Needs a long time
- Think about the zone
- Think about the mechanism

35 **KNOW THE BLOOD SUPPLY AND ANATOMY!**

- Watershed area-WORST!!!
  - Metaphyseal vessels
  - Diaphyseal nutrient arter
  - PB and PT insertions
  - Lateral band PF insertions

36 **SO, WHAT IS THIS JONES FRACTURE EVERYONE TALKS ABOUT?**

- Zone 1(pseudojones)
  - Proximal tuberosity

- Rarely enters the 4/5 joint
- Symptomatic nonunions rare/uncommon

- Zone 2 (jones)
  - Metaph/Diaph Junction
  - Enters 4/5 joint
  - Watershed area
  - Nonunion risk
- Zone 3
  - Diaphyseal fractures
  - Distal to 4/5 joint
  - Foot deformities
  - Stress fractures
  - Nonunion risk

37 ☐ **SOME "FAMOUS" JONES FRACTURES?**

38 ☐ **TREAT THE ZONE**

- Zone 1
  - Non-operative
  - CAN WB protected
- Zone 2
  - Elite athletes= surgery=screw
  - Joe Blow may be able to have non-op BUT…prolonged NWB
  - Boot
  - No return to sport until union
- Zone 3
  - Stress fx's usually surgical if nonunion
  - Met neck's/oblique shafts=zone 1 and CAN WB protected

39 ☐ **SUMMARY**

- Never think anything is a slam dunk
- Keep a mindful eye and a suspicious mind
- Ask to see the video
- Don't forget to touch the patient

40 ☐ **THANK YOU!!**