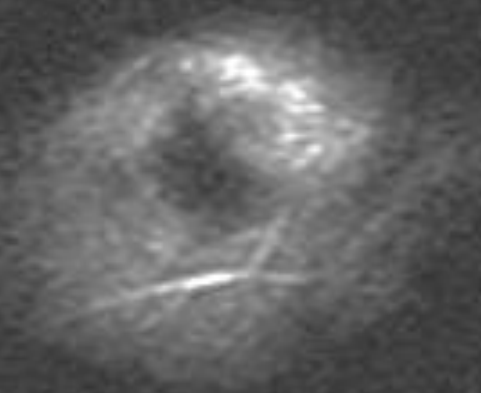
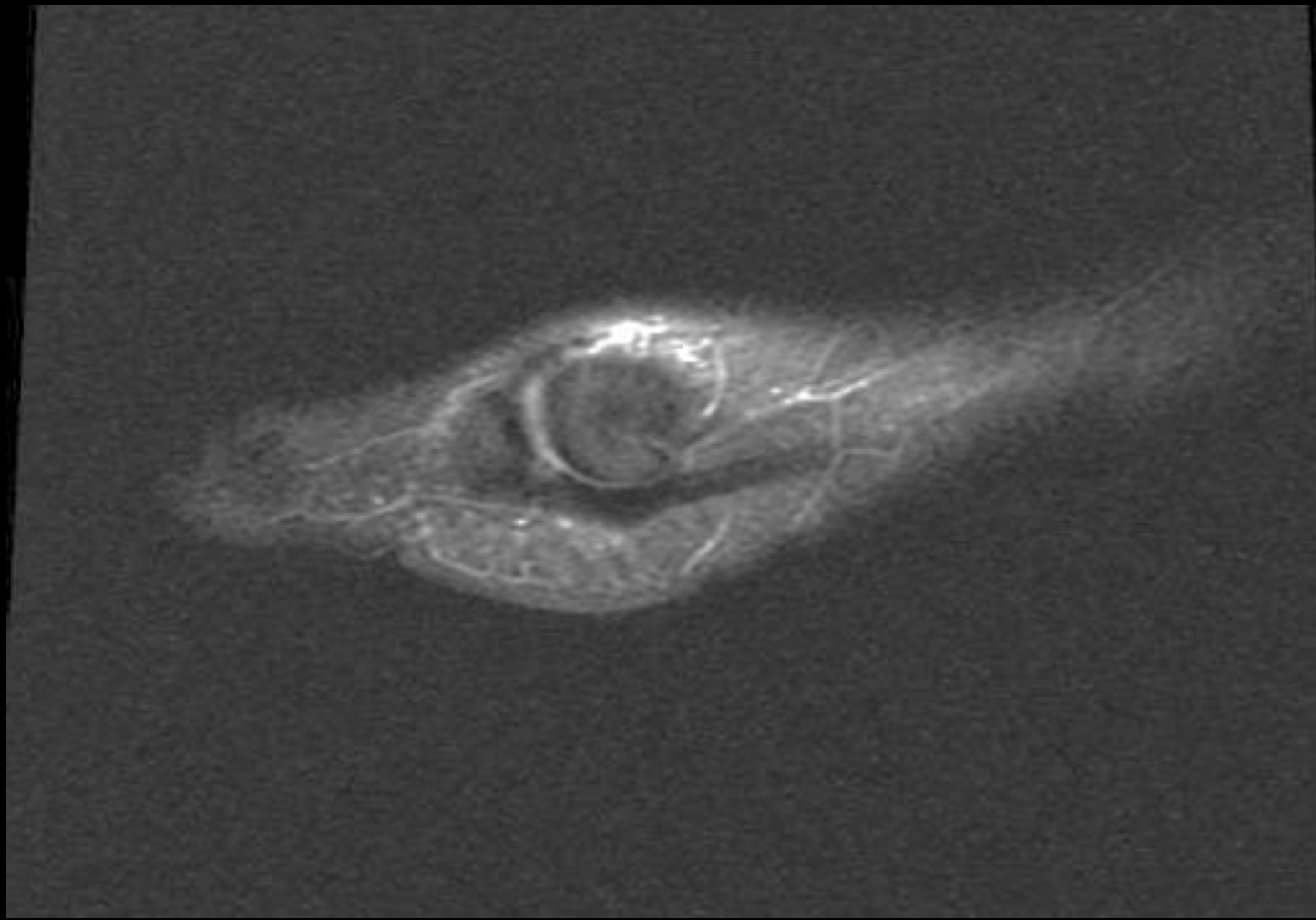


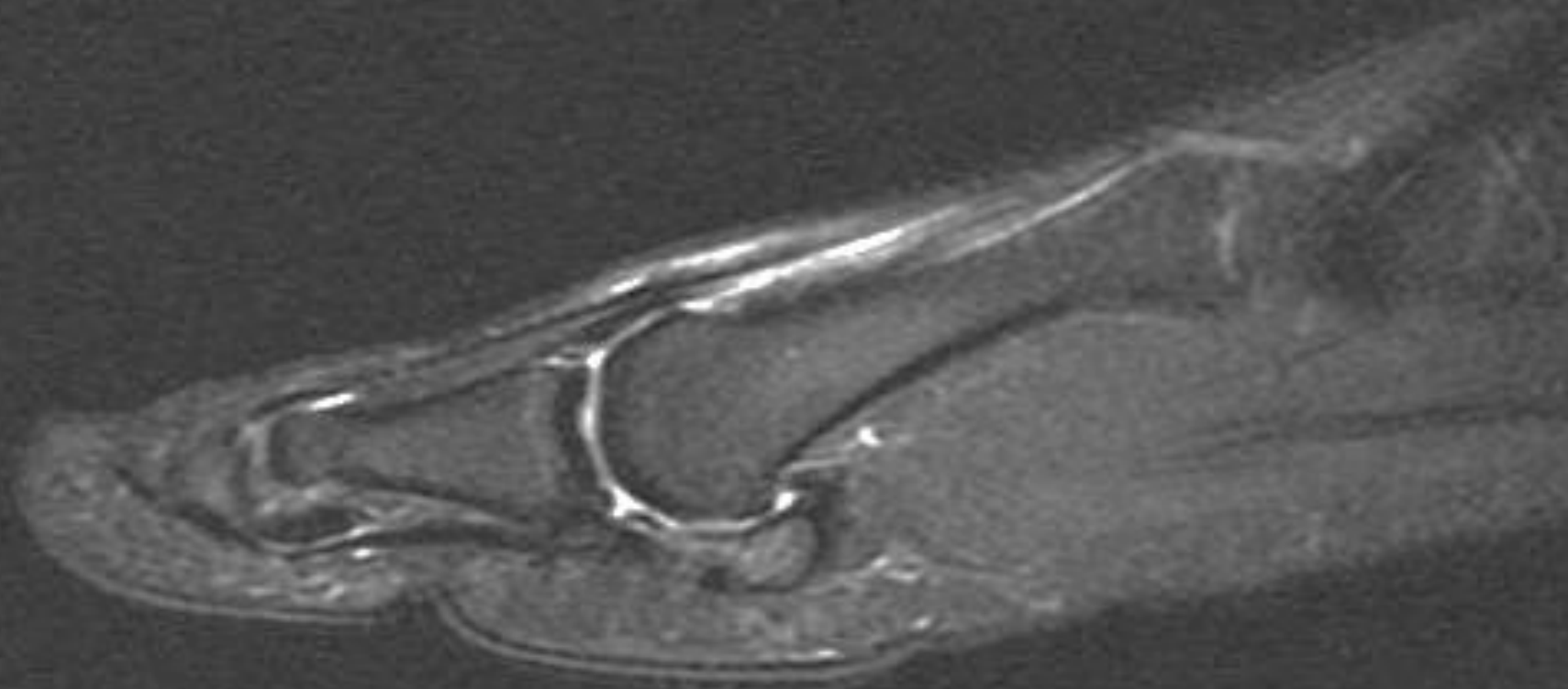


16 yo with injury to 1st toe during gymnastics
class 1 month prior to presentation.

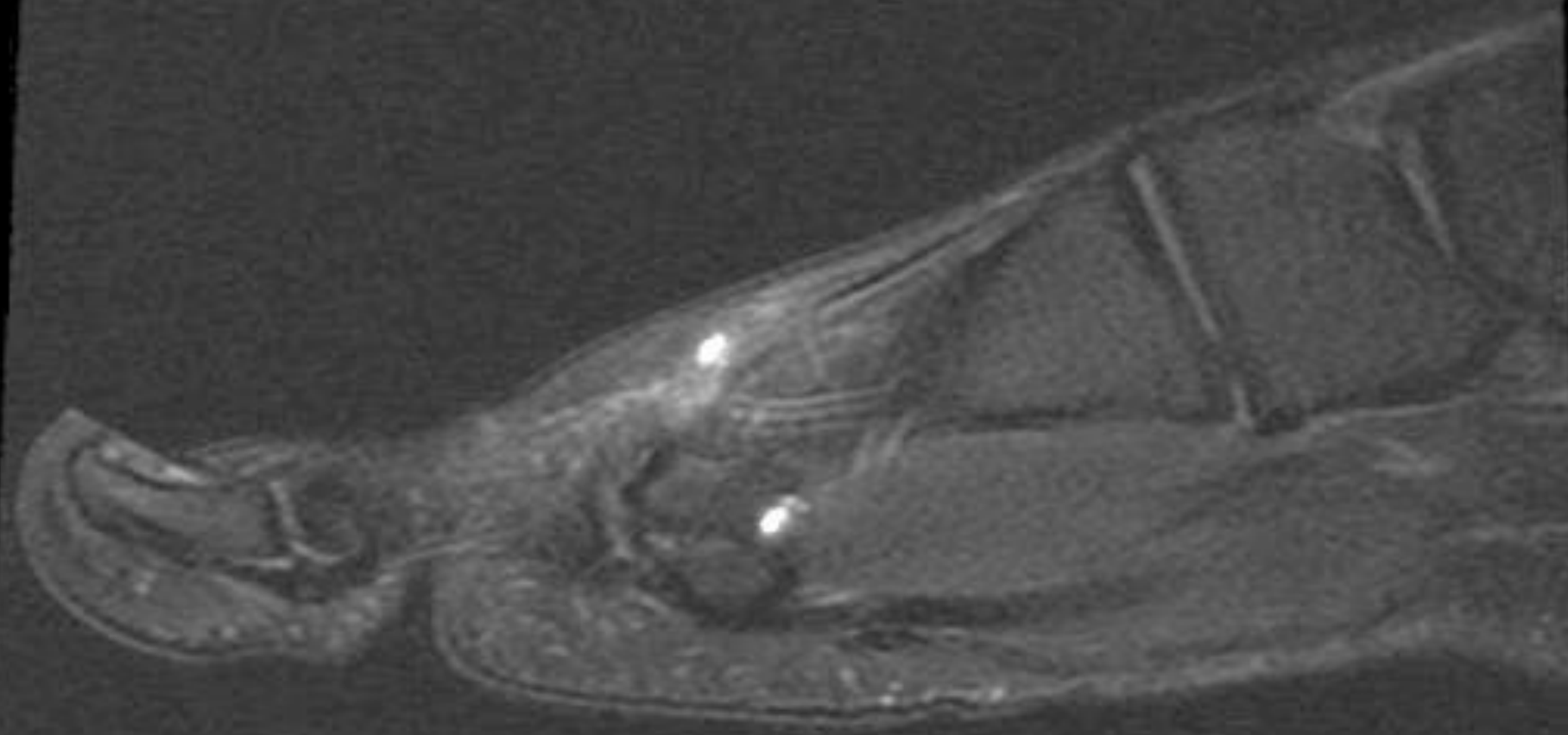


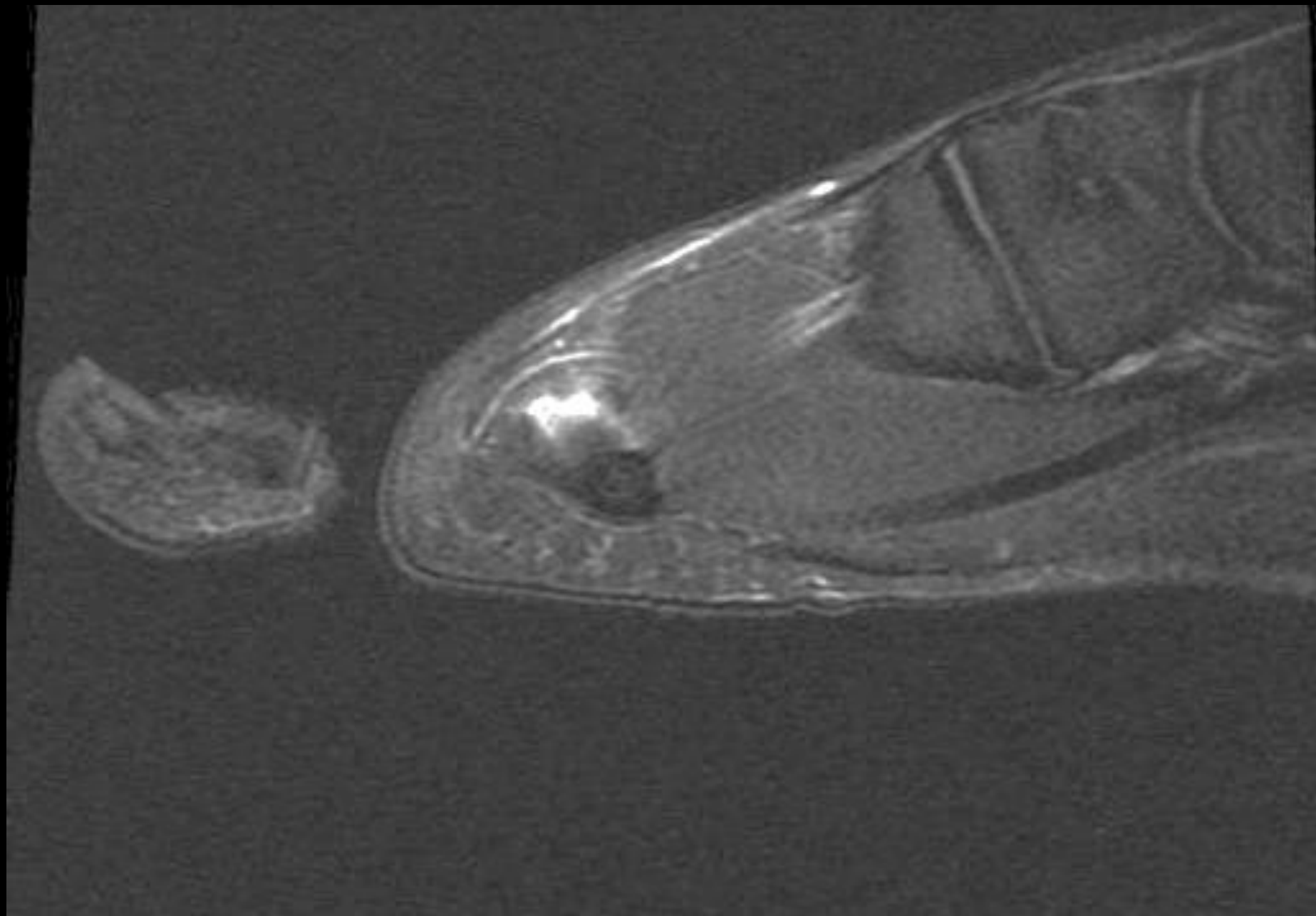


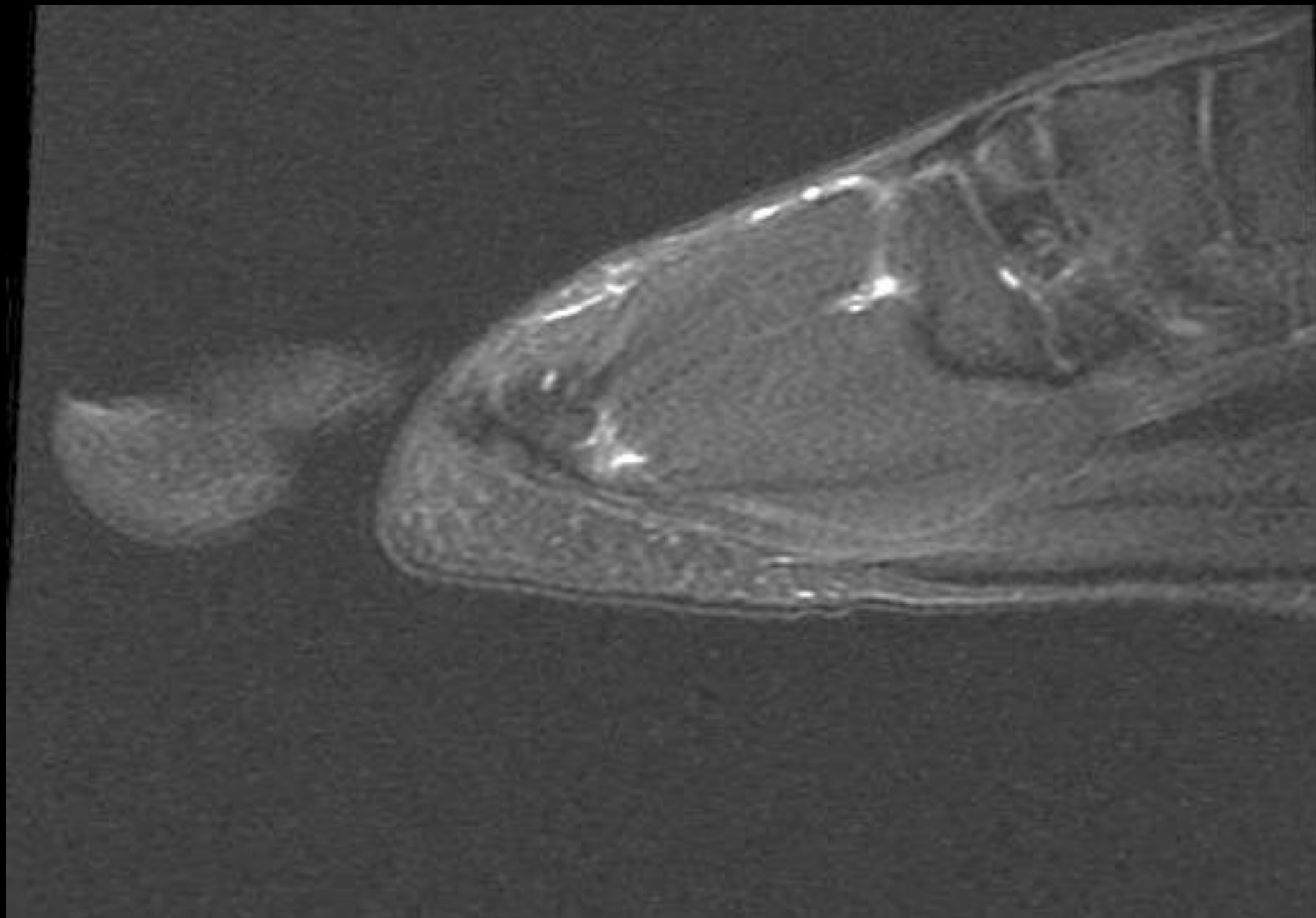




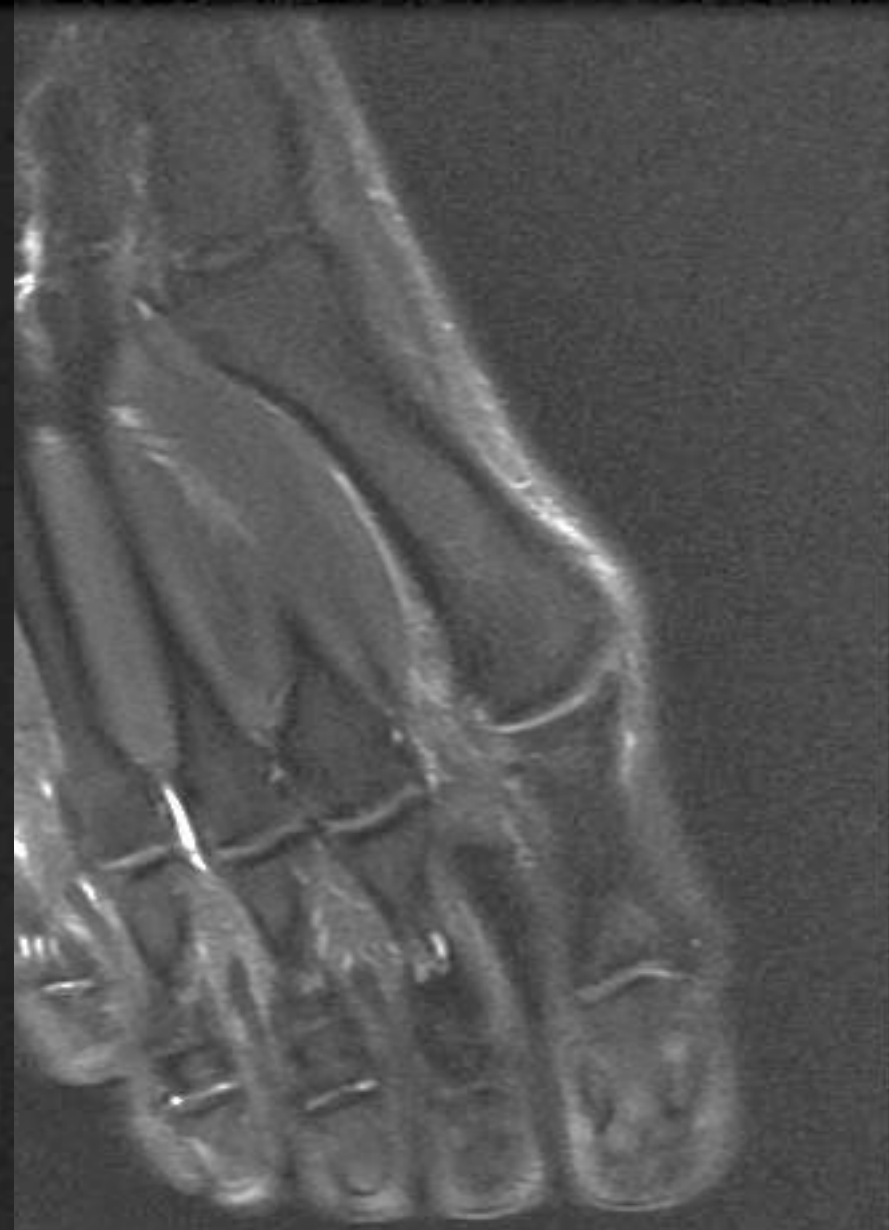








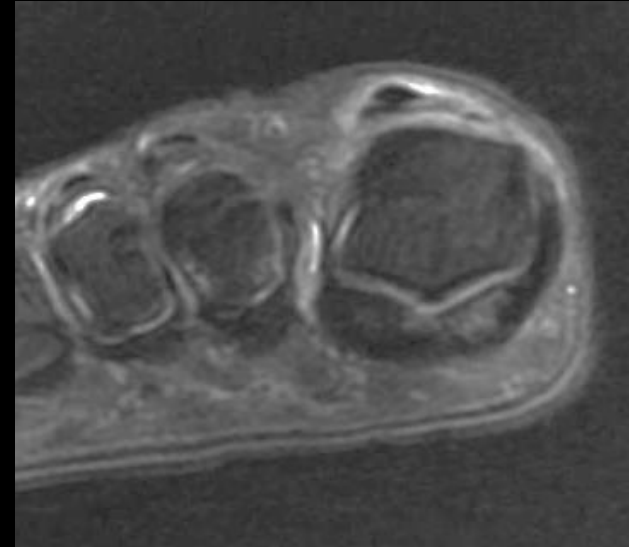






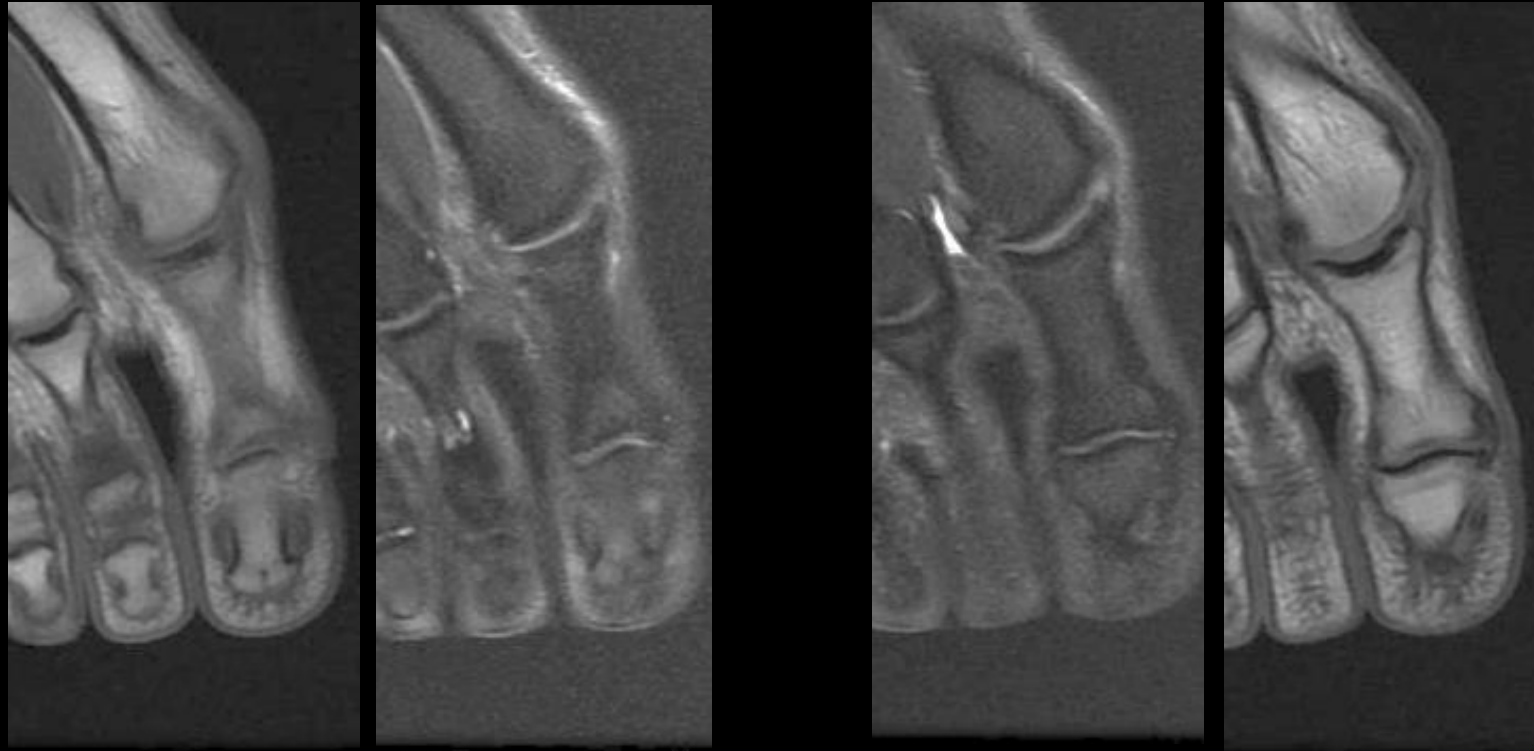
SUMMARY:

DORSAL CAPSULE INJURY



- Edema in the dorsal hood surrounding the extensor hallucis longus and brevis tendons
- Partial avulsion of the proximal phalangeal attachment of the extensor hallucis brevis tendon with a possible tiny osseous component
- Partial tearing of dorsal aspects of the medial and lateral collateral ligaments
- Intact extensor hallucis longus tendon

SUMMARY:



Partial tearing of the dorsal aspect of the medial and lateral collateral Ligamentous complex of the 1st metatarsophalangeal joint

TWO MECHANISMS, SAME RESULT

Dorsal capsule injury of the 1st MTP



1. "Skimboarder's Toe" - Hyperdorsiflexion injury

CONTRADISTINCTION:

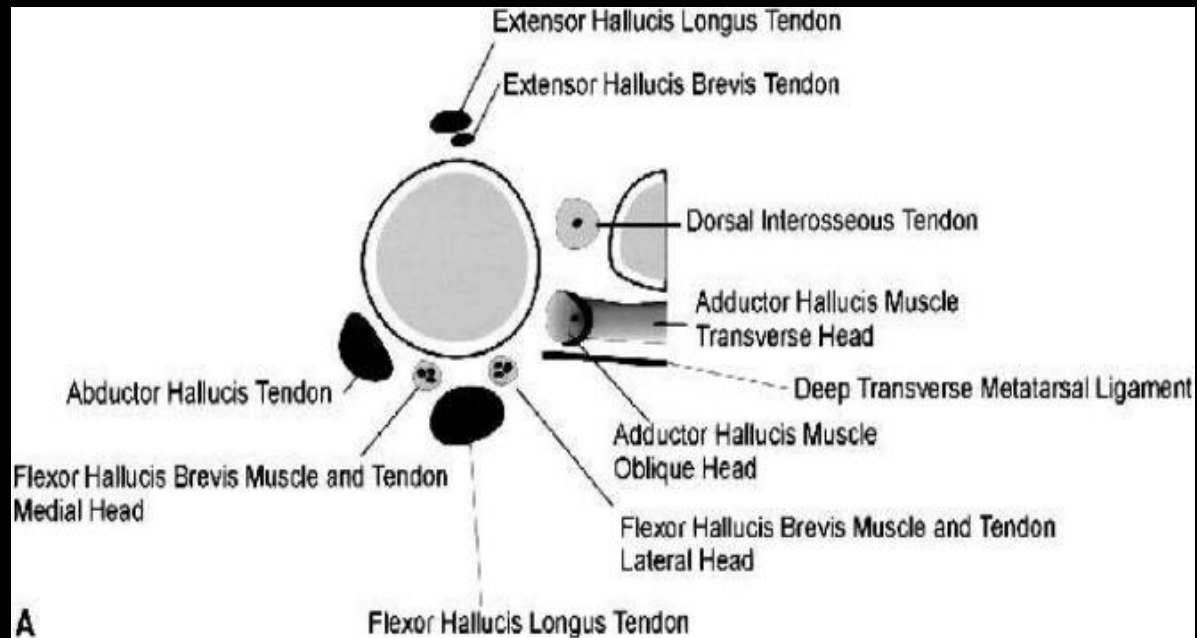
"Turf Toe" - Hyperdorsiflexion injury resulting in PLANTAR capsuloligamentous injury, common in athletes participating in pivoting or cutting sports (e.g. football)

2. "Sand Toe" - Hyperplantarflexion injury

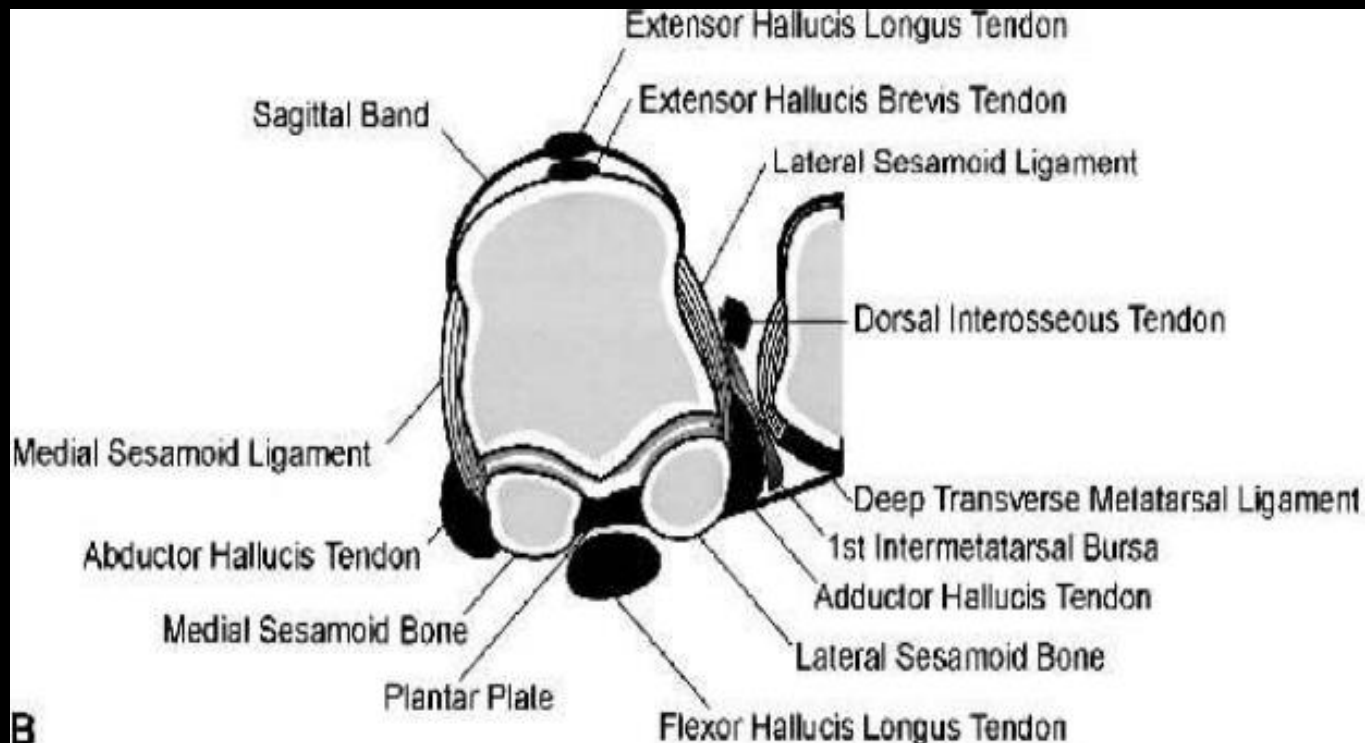


STRUCTURES OF THE GREAT TOE MTP

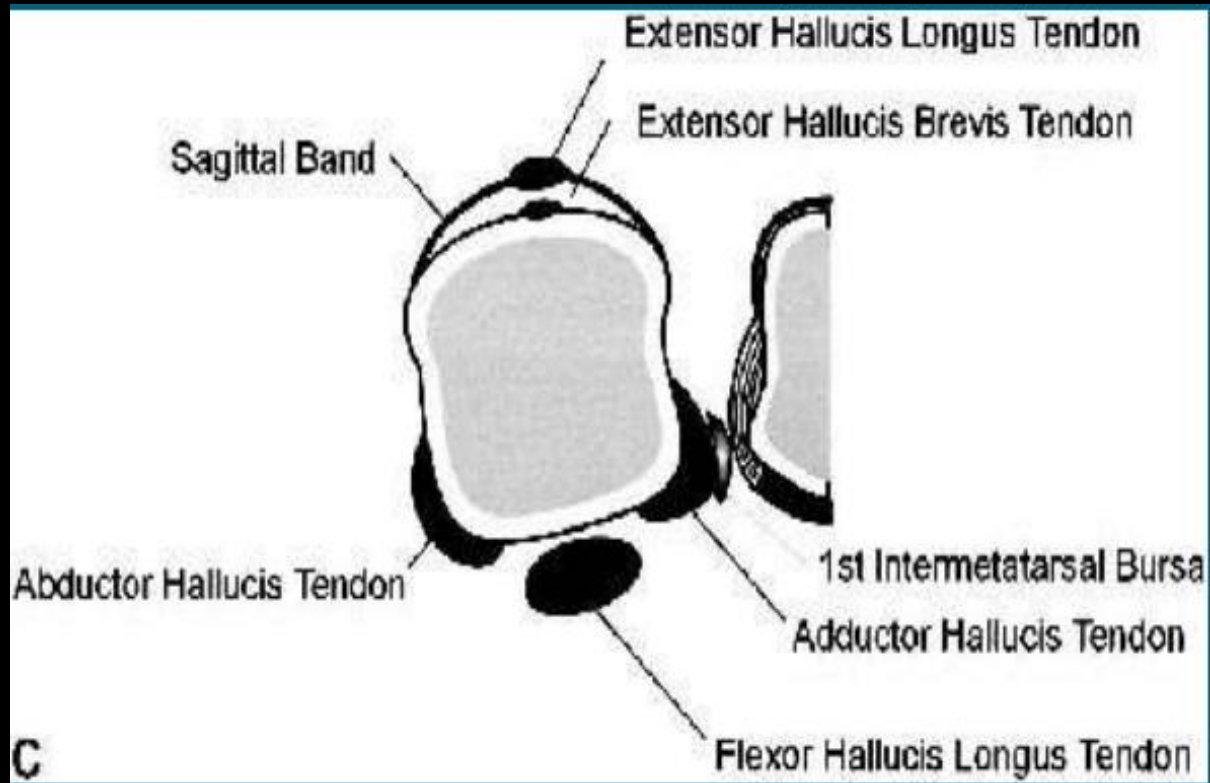
1st MTP PROXIMAL TO SESAMOIDS



1st MTP AT SESAMOIDS



1st MTP AT BASE OF PROXIMAL PHALANX



SKIMBOARDING



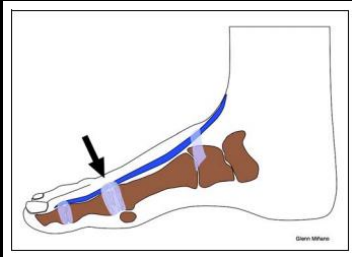


Skimboarders use toes to grip and control board...

If the board slips posteriorly in relation to the skimboarder, hyperdorsiflexion at the MTP joint may occur.

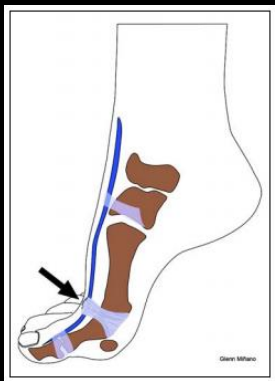
Commonly at the great toe but can occur at the lesser MTPs.

Skimboarder's Toe: Mechanism of Injury



NEUTRAL

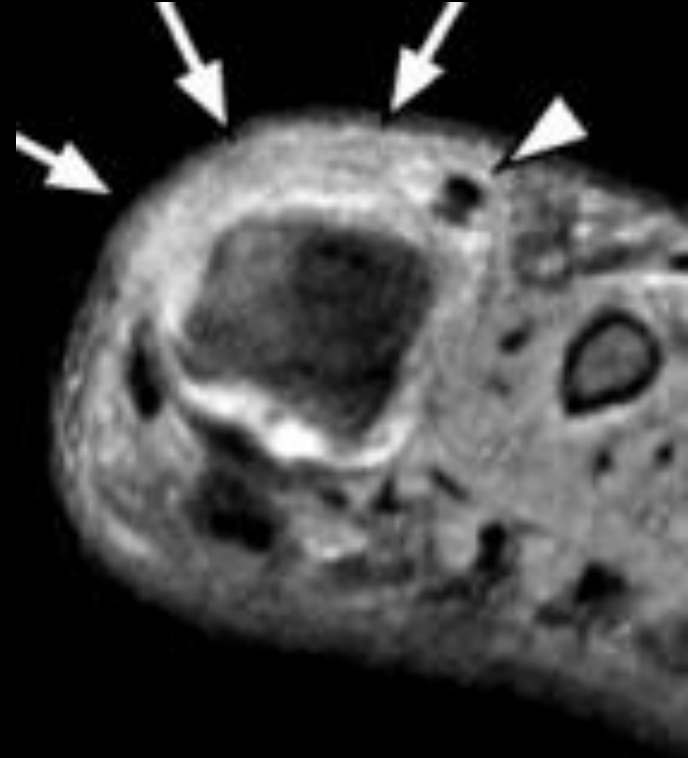
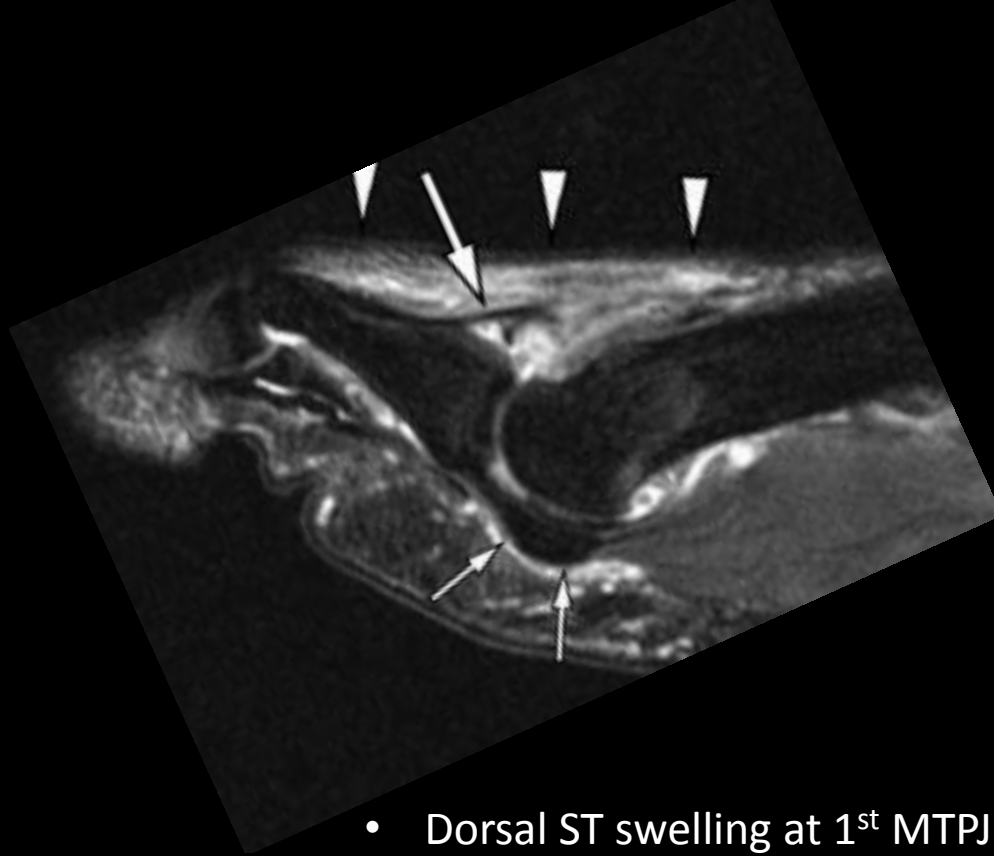
- In neutral position, EHL tendon traverse under the extensor expansion at the level of the MTP joint.



HYPERDORSIFLEXION

- In hyperdorsiflexion, EHL tendon exerts force in the dorsal direction at the level of the metatarsophalangeal joint leading to disruption of the dorsal hood (extensor expansion). +/- Avulsion of the EHL tendon.

CASE: 39 yo skimboarder who sustained hyperdorsiflexion injury of the first metatarsophalangeal joint



- Dorsal ST swelling at 1st MTPJ
- Disruption of the extensor hood medially
- Intact plantar plate and extensor hallucis longus tendon

TURF TOE VS SKIMBOARDER'S TOE



BAREFEET!

Renders EHL tendon
more apt to
hyperdorsiflex &
tear the extensor hood

Why anatomic distribution of injury differ despite
similar mechanism- hyperdorsiflexion?



“Sand Toe”

Same anatomic injury to
“Skimboarder’s Toe”

Different mechanism

“Sand Toe”: Mechanism of Injury

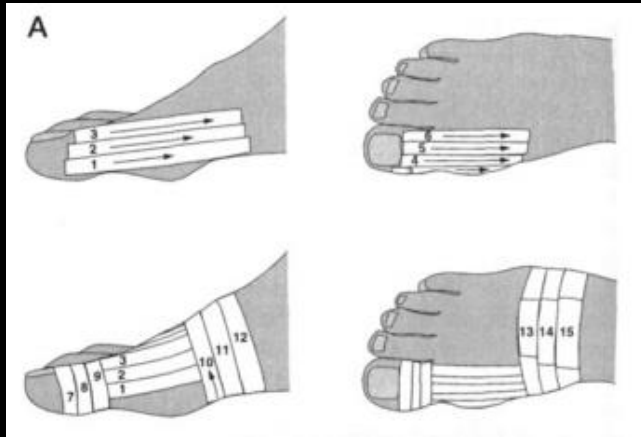
- Caused when the weight of the body lands on neutral or slightly plantar flexed toes causing buckling or hyperplantarflexion of the MTPJ with the weight of the body driving the foot in the sand
- Hyperplantarflexion injury at the MTP
- Also results in dorsal capsuloligamentous injury
- Commonly seen in sand volleyball players
- Most common scenario involves a running approach from a jump serve or a running spike



“Sand Toe”

- Being barefoot thought to increase risk of this injury since footwear would most likely prevent the vast majority of these injuries.
- Commonly 1st MTP commonly affected but can affect the other MTPs.
- Typically takes 6 months to recovery

“Sand Toe”:Treatment



- Toe taping most effective
 - 1st MTP taped in neutral position
 - Buddy taping of lesser toes
- Anti inflammatory medications
- Shoe wear modification
- Ice
- Rest
- Rehab with toe strengthening program
- Steroid injection not recommended → lead to weakening of capsule and further disability
- Surgery rarely needed



References

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Frey et al. Plantarflexion injury to the metatarsophalangeal joint ("Sand Toe"). American Orthopaedic foot & ankle society. 1996 Sept; Vol 17, Issue 9.

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Ashman CJ, Klecker RJ, Yu JS. Forefoot pain involving the metatarsal region: differential diagnosis with MR imaging. RadioGraphics 2001;21:1425-1440

Watson TS, Anderson RB, Davis WH. Periarticular injuries to the hallux metatarsophalangeal joint in athletes. Foot Ankle Clin 2000;5:687-713

Theumann et al. Metatarsophalangeal joint of the great toe: normal MR, MR arthrographic, and MR bursographic in cadavers. J Comput Assist Tomogr. 2002 Sep-Oct;26(5):829-38

<http://radsourc.us/clinic-turf-toe/>