

METATARSAL FRACTURES

History

- One of the most common foot injuries.
- Most have minimal or no displacement.
- Common mechanisms are inversion injuries or falls from heights.
- Symptoms include ¹pain with weight bearing, ²swelling, and ³bruising and ⁴tenderness at fracture site.
- Multiple metatarsal (MT) fractures are common.

Physical Examination

- Edema, ecchymosis, and tenderness at fracture site(s) can exist.
- Inspect skin for evidence of open fracture.
- Displaced fractures may result in visual deformity or abnormal angulation of metatarsal.

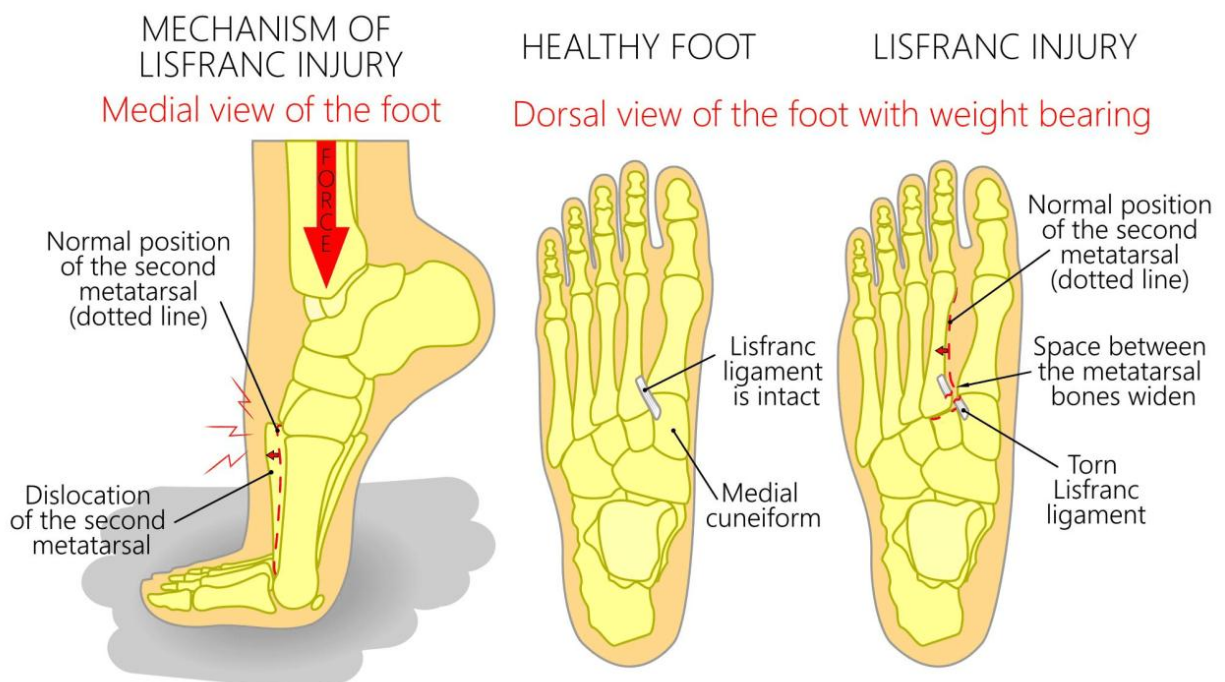


Second, third, and fourth metatarsal fractures. The fourth metatarsal fracture is displaced greater than 3 to 4 mm, so open reduction, internal fixation should be considered.

Note: Non-weight bearing simply means that you can't put any weight on your injured lower limb for a period of time, which can be anything from weeks to months

Imaging

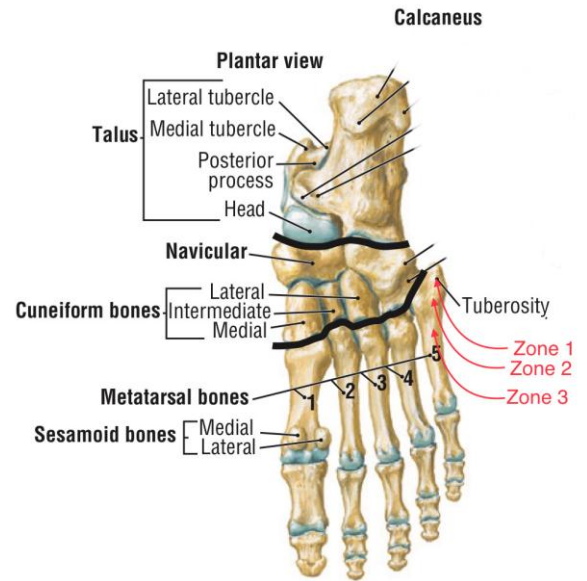
- X-ray: Weight-bearing anteroposterior (AP), lateral, oblique foot.
- CT is often used when there is concern for occult fracture or to evaluate LisFranc injury.
- MRI: is generally not indicated but can be used to evaluate ligamentous structures if there is concern for injury.



Classification System

Fifth metatarsal fractures are classified on the basis of location. Treatment recommendations are based on this classification system.

- Zone 1 (avulsion):
 - Fifth metatarsal tuberosity fracture.
 - Most common type (90%).
- Zone 2 (Jones fracture):
 - Distal to the tuberosity at metaphyseal-diaphyseal junction.
 - Mechanism is adduction or inversion of the forefoot.
- Zone 3:
 - Proximal diaphyseal shaft fracture.
 - Rare, less than 3%.
 - is a stress injury and patients may report prodromal pain.



Initial Treatment

Immobilization in a sugar tong splint, short leg cast, or cast boot, non-weight bearing.

Nonoperative Management



Sugar tong splint



Short Leg Cast
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Leg Cylinder Cast

Long Leg Cast



hard-soled shoe



cast boot

- Large toe (first metatarsal (MT) fractures) nondisplaced, stable:
 - immobilization (short leg cast or cast boot) for 6 weeks
 - weight bearing as tolerated.
- 2nd, 3rd, 4th toes MT fractures nondisplaced or mild displacement (4 mm translation):
 - hard-sole shoe for 4 to 6 weeks
 - weight bearing as tolerated.
- Fifth MT fractures:
 - ✓ Zone 1:
 - hard-soled shoe or short cast boot for 4 to 6 weeks
 - weight bearing as tolerated.
 - Consider open reduction internal fixation (ORIF) for significantly displaced fractures.
 - ✓ Zone 2:
 - short leg cast immobilization for 6 to 8 weeks, non-weight bearing.
 - Concern for nonunion with nonoperative treatment exists, especially in noncompliant patients
(إذا كان العلاج غير جراحي فحدوث عدم التئام العظم وارد بالخصوص في المرضى غير المطوعين لأوامر الطبيب)
 - ORIF is recommended for high-level athletes.
 - ✓ Zone 3:
 - **high risk of nonunion**, most surgeons recommend ORIF.
 - If nonoperative treatment used, short leg cast immobilization with protected weight bearing (يستعمل عكازات ليتجنب ثقل الجسم على القدم) for up to 3 months.

Operative Indications

- Significantly displaced fracture or fracture in Zone 2 or 3.
- Treatment of Zone 2 fractures is controversial and can be treated operatively or nonoperatively.
- ORIF is recommended for fractures with significant displacement.
- Approach and exact procedure **depend** on location and fracture type.