



Podcast Notes: 5th Metatarsal Fractures w/ Dr. Behrens

Etiology

- Peak in 2nd to 5th decades
- Accounts for 68% of metatarsal fractures

Metatarsal Zones

- Zone I-
 - most proximal
 - cancellous bone (tuberosity) w/ good blood supply
 - includes insertion of PB and calcaneometatarsal ligamentous branch of plantar fascia.
 - Fx usually extend into 5th metatarsocuboid joint
- Zone II-
 - includes the more distal tuberosity
 - Fx extends into the area of articulation of 5th metatarsal w/ 4th metatarsal.
 - The ligaments holding the 4th and 5th metatarsals together proximally are secure on both dorsal and plantar aspect of zone II
- Zone III-
 - just distal to ligamentous structures and extends distally into tubular portion of diaphysis for 1.5cm

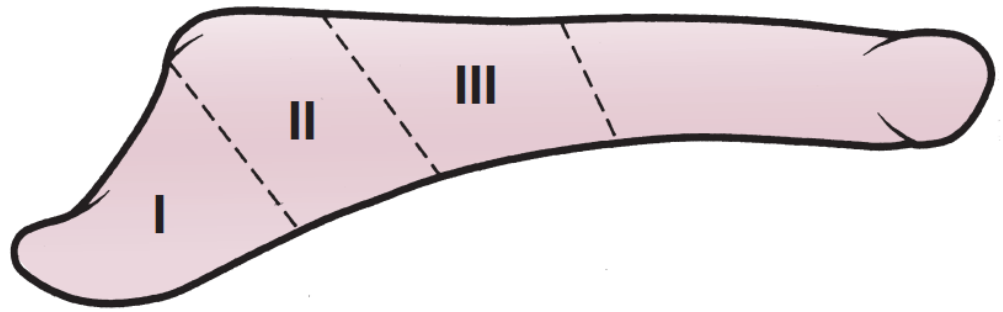
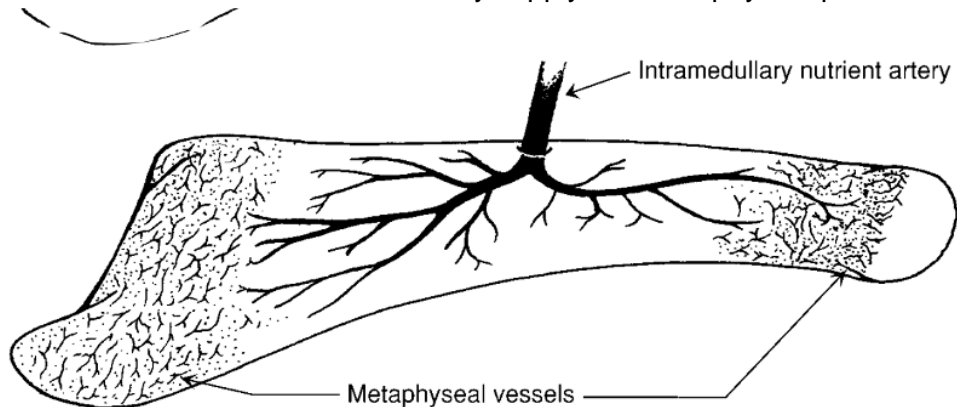


FIGURE 62-37 Three zones of proximal fifth metatarsal fracture. Zone 1: Avulsion fracture. Zone 2: Fracture at the metaphyseal-diaphyseal junction. Zone 3: Proximal shaft fracture.

Blood supply

- 3 sources: nutrient artery, metaphyseal perforators, periosteal arteries
- Watershed area between nutrient artery supply and metaphyseal perforators



Sir Robert Jones

- Published classic article- "fracture of the base of the fifth metatarsal bone by indirect violence"
- 6 cases of 5th metatarsal fractures
- He sustained a fx while dancing

Classification

- Zones
- Torg
 - Type I- acute fx at site of pre-existing stress concentration on lateral cortex- extends across entire diaphysis
 - II- delayed union- previous injury or fx w/ radiographic features of widened fx line w/ evidence of intramedullary sclerosis
 - Type III- nonunion- complete obliteration of medullary canal by sclerotic bone w/ hx of repetitive trauma and recurrent sx's

The Fifth MT Jones Fracture: Torg Classification

Classification

Torg Type I

- Lateral sclerosis, no-med.
- Stress fracture-Acute fx

Torg Type II

- Medullary sclerosis/prodromal
- Stress fracture +/- acute

Torg Type III

- Nonunion, across canal
- Gap with medullary canal blocked



History/Mechanism

- Acute foot trauma or repetitive trauma to forefoot
- Zone I
 - Mechanism is forefoot supination w/ plantar flexion (lateral band of plantar fascia + peroneus brevis)
 - Fx usually begin laterally on tuberosity and extend proximal into metatarsocuboid joint
 - Tx elastic brace + hard soled shoe



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- Zone II
 - Acute episode. Possible large adduction force applied to forefoot w/ ankle plantarflexion
 - Fx begin laterally and extend to medial cortex where 5th metatarsal articulates w/ 4th
 - Usually more painful



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- Zone III
 - Most often stress fx
 - Slow to heal
 - Symptomatic before the break sometimes



Imaging

- Xrays
 - lateral/AP/oblique
- w/ more complex midfoot trauma- CT can r/o lisfranc dislocation



Tx

Bracing- metatarsal functional bracing

Some use for zone 1 fx, or zone II fx or low activity tp w/ zone 3

Non-op management

- Some zone I fx, zone II/III in a low active level patient
- Elastic dressing + rigid shoe, short leg walking cast, posterior splint, or hard plastic cast shoe, Metatarsal functional bracing
- Zone III stress fx- Prolonged immobilization up to 20 weeks may be required

Operative Indications

- Zone I
 - Displacement >3mm/ comminution- fix
 - Fix if 30% or more of cubometatarsal joint is involved
 - Fx w/ >2mm step off
 - Fixation: K wires, tension band wiring, small ASIF screw



- Zone II
 - Any displaced fx- fix
 - Acute non-displaced- less consensus
 - Many recommend intramedullary screw fixation for acute fx in active population
 - Quicker return to sport in athletes
 - Delayed union- relative indication for surgical intervention

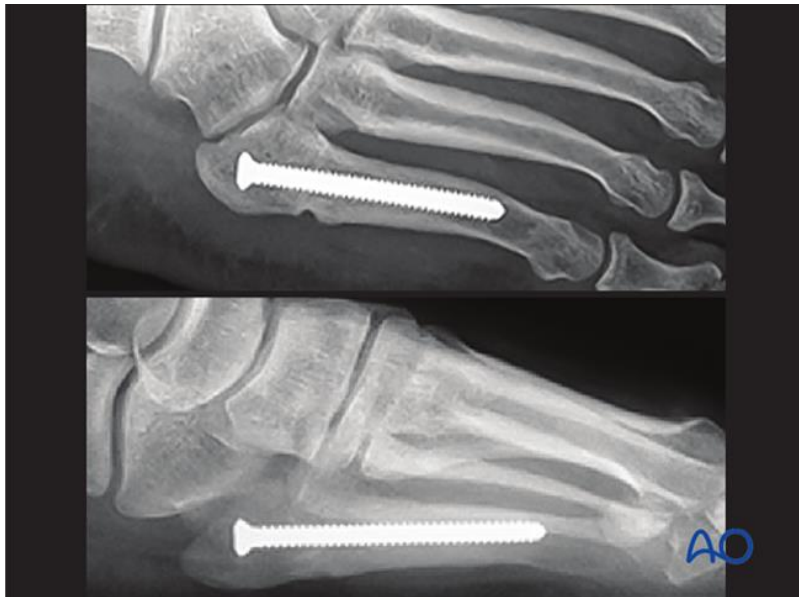


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- Zone III
 - Surgical intervention for stress fx esp in athlete



Operative tx contd:

- Zone II/III
 - Percutaneous intramedullary screw fixation
 - Assoc w/ decreased healing time w/ accelerated mobilization
 - Solid 4.5mm screw (vs 6.5 cancellous or 4.0 cancellous)
 - avg healing 7.5 wk and RTP 8.5 wk



- Nonunion-
 - Open curettage of nonunion site > fixation



- Does hindfoot varus play a role?
 - Lateral heel wedge + forefoot post inserts for stress fx?

Post op

- Immobilized + NWB

Sources:

Bowes, J., & Buckley, R. (2016). Fifth metatarsal fractures and current treatment. *World journal of orthopedics*, 7(12), 793.

Dameron Jr, T. B. (1995). Fractures of the proximal fifth metatarsal: selecting the best treatment option. *JAAOS-Journal of the American Academy of Orthopaedic Surgeons*, 3(2), 110-114.