Pearls of Forefoot Fixation: Those Damn Pins!

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Objectives

• Discuss incidence of forefoot fractures and indications for surgery

• Review surgical techniques

Epidemiology

• Most common injury to the foot
  • Fifth metatarsal most common
  • 10x more frequent than Lisfranc injury

• Often occur in conjunction with other foot injuries

• Metatarsal shaft fractures rarely displace in isolation due to interosseous ligament attachments

• Metatarsal neck fractures may require surgery due to lack of structural support
Anatomy

- Intermetatarsal ligaments
- Lisfranc joint
- Capsule and collateral ligaments

Surgical Indications

- Multiple metatarsal fractures
- Loss of column support (medial or lateral)
- Joint dislocations
- Articular fractures
- Jones fractures

Treatment options

- Nonop
  - Stabilization: cast, boot, shoe
  - Protected weight bearing?
- Percutaneous stabilization
  - Pinning
  - External fixation
- Open reduction internal fixation
Nonop
- Cast or boot immobilization
- Period of protected weight bearing, varies by injury
- Progressive weight bearing as fracture heals

Percutaneous Pinning
- Interphalangeal or metatarsophalangeal dislocations
- Significant shortening/angulation
- Multiple metatarsal fractures
- Provisional or definitive treatment

External Fixation
- Column fractures
- Comminuted fractures
Open Reduction Internal Fixation

- Weight bearing metatarsals need improved fixation
- If unable to hold length/rotation/alignment with K-wires
- As soft tissues allow

Jones Fractures

- Fifth metatarsal base
- Increased risk of nonunion with nonoperative tx
- Intramedullary screw for acute fractures
  - Higher risk failure with screw < 4.5mm diameter

Joint Dislocations

- Tarsometatarsal and interphalangeal joint mobility loss better tolerated
- Metatarsophalangeal joint mobility needed for normal gait
- First MTP: turf toe more common, true dislocation rare
- Other MTPs: dorsolateral dislocation most common
- Reduction and percutaneous pinning if unstable
Outcomes

• Metatarsal fractures:
• Jones fractures:
• Joint dislocations:
• Phalangeal fractures:

Summary

• Restoration/maintenance of the normal foot alignment is necessary for restoring gait
• Percutaneous fixation can be useful for joint dislocations and some metatarsal fractures
• Consider external fixation or ORIF for restoration of column length on first metatarsal injuries

Thank You