ORTHOPAEDICS

FOR PRIMARY HEALTH CARE

LION

LEARNING INNOVATION VIA ORTHOPAEDIC NETWORKS

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Foot fractures

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Learning objectives

1. Understand the basic anatomy of the foot.
2. Diagnose a foot fracture.
3. Manage a foot fracture.

Introduction

Foot fractures comprises 10% of all fractures and is the most common foot injury seen by general practitioners. The metatarsal and toes are most commonly affected.

Applied anatomy

The foot consists of 26 bones, which make up the forefoot (metatarsals, phalanges), midfoot (tarsal bones) and hindfoot (talus, calcaneus). Within the foot, the Lisfranc joint connects the forefoot and midfoot and the Chopart joint connects the midfoot and hindfoot.

Clinical findings

- **History:** Patient typically presents with a painful swollen foot following an injury. Typically the patient cannot bear weight on the affected foot.
- **Examination:** Swollen, possible deformity, ecchymoses (classically with lisfranc injury) present. Palpation reveals bony tenderness over the affected area. Comparison to the uninjured foot elicits abnormalities.
- **Additional injuries to take note of:** Remember to examine the knee, hip and back for associated injuries with calcaneus fractures sustained by falling from a height. Exclude compartment syndrome of the foot.

Plantar ecchimoses often associated with lisfranc injury

Lisfranc injury with dorsal displacement of the metatarsal bones

Imaging

- Important to rule out fractures.
- If possible, request weight bearing X-rays when lisfranc injuries are suspected.

Specific fractures

Calcaneus

- Often high energy injury (fall from height / motor vehicle accident) with associated injuries.
- Look for associated injuries (spine, hip and knee).

Lisfranc

- The midfoot joint is a complex structure that needs extreme stability. Even subtle injuries can lead to long-term problems.
- Injuries can be pure ligamentous or associated with a fracture.
- High energy associated with bony fractures and low energy often with twisting-type sports injuries.
- Often missed, high suspicion if plantar ecchymosis and inability to weight bearing.

Fifth metatarsal base

- Fractures of the base are common.
- Three types exist with type 2 having a increased risk of non union.

Phalynx

- Common injury from direct blow to the foot.
- Most can be treated with buddy strapping only.

Management

Non-surgical

- Indications:
  - Undisplaced or minimal displaced fractures.
  - Hard-soled shoe/ Cast and crutches for 4–6 weeks.
- Elevation, rest, ice, non-steroidal anti-inflammatory drugs.
- Calcaneus fractures need prolonged non-weight bearing up to 3 months.

Surgical

- Indications:
  - Open fractures.
  - Lisfranc injury with displacement.
  - Displaced calcaneus fractures.
  - Some type 2 fifth metatarsal fractures.
- Surgical treatment includes open reduction and internal fixation using wires, screws and plates.

Key takeaways

- Foot fractures are common and most can be treated conservatively.
- Lisfranc injuries can occur without an associated fracture.
- Calcaneus fractures can have associated injuries.
- Base of fifth metatarsal fracture is the most common metatarsal fracture.

Assessment

A 21-year-old rugby player presents after injuring his foot in a scrum. The dorsum of the midfoot is swollen with plantar ecchymosis. He is however able to weight bear on the foot with pain. What is the most likely diagnosis?

A. Ankle fracture
B. Ankle sprain
C. Achilles tendon injury
D. Lisfranc injury
E. Unlikely to have any injury

Answer: (D) is correct. Plantar ecchymosis is associated with a Lisfranc injury.

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ABOUT THE BOOK

Informed by experts: Most patients with orthopaedic pathology in low to middle-income countries are treated by non-specialists. This book was based on a modified Delphi consensus study* with experts from Africa, Europe, and North America to provide guidance to these health care workers. Knowledge topics, skills, and cases concerning orthopaedic trauma and infection were prioritised. Acute primary care for fractures and dislocations ranked high.

Furthermore, the diagnosis and the treatment of conditions not requiring specialist referral were prioritised.

* Held et al. Topics, Skills, and Cases for an Undergraduate Musculoskeletal Curriculum in Southern Africa: A Consensus from Local and International Experts. JBJS. 2020 Feb 5;102(3):e10.

THE LION

The Learning Innovation via Orthopaedic Network (LION) aims to improve learning and teaching in orthopaedics in Southern Africa and around the world. These authors have contributed the individual chapters and are mostly orthopaedic surgeons and trainees in Southern Africa who have experience with local orthopaedic pathology and treatment modalities but also in medical education of undergraduate students and primary care physicians. To centre this book around our students, iterative rounds of revising and updating the individual chapters are ongoing, to eliminate expert blind spots and create transformation of knowledge.

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The information in this book is meant to supplement, not replace, Orthopaedic primary care training. The authors, editor and publisher advise readers to take full responsibility for their safety and know their limits. Before practicing the skills described in this book, be sure that your equipment is well maintained, and do not take risks beyond your level of experience, aptitude, training, and comfort level.

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