My Experience as a Foot and Ankle Trauma Surgeon in Montreal, Canada

What's Not in the Books

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KEYWORDS

• Foot trauma • Ankle trauma • Talus • Calcaneus • Tips and tricks

KEY POINTS

- Although ankle fractures are common and usually simple to treat, there are several potentially complex injuries that require special attention.
- Talar fractures are common high-energy fractures characterized by a high degree of comminution, large displacement, and significant soft tissue injury.
- Anatomic open reduction with internal fixation is the goal of calcaneal fractures, although the high-energy nature of some of these injuries makes them surgically challenging and technically complex.

INTRODUCTION: NATURE OF THE PROBLEM

One of the most challenging aspects of a foot and ankle practice is learning to address the vast number of uncommon disorders that are generally not discussed in regular textbooks and that make returning patients to previous function following foot trauma demanding. Obtaining good outcomes can be helped with meticulous preoperative evaluation, surgical planning, and optimal surgical technique. This article uses illustrative cases to provide tips to avoid the common complications and facilitate the surgical process. Four injury types are reviewed: the nonsimple ankle fracture, the talus fracture, the calcaneus fracture, and the midfoot injury.

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THE NONSIMPLE ANKLE FRACTURE

Background

Although ankle fractures are common and usually simple to treat, there are several potentially complex injuries that require special attention. The primary goal of ankle fracture treatment is recreating normal anatomy with a centered tibiotalar joint. This article discusses several techniques to help avoid potential pitfalls.

Preoperative Assessment

1. Not all ankle fractures require surgery. However, those that do should be easily identified (**Box 1**).
2. Syndesmotic integrity cannot be evaluated solely based on fracture pattern. Although Weber type C fractures are generally associated with syndesmotic disruption, more than half of Weber type B fractures also have syndesmotic injuries.[1] Any fracture pattern with potential syndesmosis incompetency should undergo thorough intraoperative testing.
3. Preoperative computed tomography (CT) scan is useful after initial reduction, for both subtle (posterior malleolus) and complex (tibial plafond) fractures. CT helps to evaluate articular impaction and interfragmentary debris, and allows the surgeon to plan both surgical approach and fixation strategy (**Fig. 1**).
4. Soft tissue status should dictate the timing of definitive fixation. Although acute open reduction and internal fixation (ORIF) may be successful in carefully selected patients, the authors opt for fixation following normalization of soft tissues. Any grossly displaced or unstable pilon fracture should be initially treated with an external fixator to allow soft tissue swelling to resolve. Pins are placed far from the zone of injury so as not to interfere with definitive surgery. A standard delta frame is augmented with a pin in the foot (first metatarsal or cuneiforms) to control sagittal plane deformity and ensure adequate dorsiflexion.

Box 1
Surgical indication of an ankle fracture

- Open fractures
- Bimalleolar fracture and bimalleolar-equivalent fracture
- Medial malleolar displacement greater than 2 mm or lateral malleolar displacement greater than 3 mm
- Any coronal plane tibiotalar malalignment (medial clear space > superior joint space)
- Any fibular shortening
- Syndesmotic injury
- Significant posterior malleolar fracture (>25%, >2-mm step-off, or syndesmotic equivalent)
- Marginal impaction of the tibial articular surface
- Displaced intra-articular fractures of the tibial plafond
- Malalignment of the distal tibial articular surface
- Dynamic instability based on stress views