Whoops! Management of Missed Midfoot Injuries

Paul T. Fortin, MD
Royal Oak, Michigan

Overview

- The foot is the most common site of missed orthopaedic injury
  - Wei et al: 2400 patients presenting to ER with extremity injury
  - 8% incidence of missed foot fractures
- The talus is the most common site of missed foot and ankle injury
  - Brandser et al: retrospective review of 556 ankle radiographic series presenting to ER
  - “Transitional Zone” injuries (where the ankle becomes the foot) easily overlooked
- Missed injuries of the foot commonly associated with permanent physical impairment and often present limited salvage options
  - Often involve ‘essential joints’ (talonavicular, subtalar, ankle)
- Missed injury reported to occur in 10% of multiply injured patients
- Polytrauma patients with foot injury have greater morbidity than those without foot injury
  - Stiegelmar et al: poorer outcome scores than randomly matched cohort of polytrauma patients without foot injury
- Patterns of foot injury and radiographic clues can help identify occult injuries
  - Greater awareness/education has seemed to decrease the incidence of lisfranc and lateral talar process injury but that may not be the case with tranverse tarsal joint injury

Commonly missed midfoot injury

- Talus
  - Talar head fracture
    - Commonly coexists with transverse tarsal joint injury/dislocations
    - Typically missed on ankle series alone
    - **RADIOGRAPHIC CLUE:** DOUBLE DENSITY SIGN (on lateral foot and ankle xray)
• **Midtarsal joint injury**
  - Literature is very sparse
  - Main and Jowett classification
  - Medial column
    - **RADIOGRAPHIC CLUE**: dorsal subluxation of navicular on cuneiform
  - Lateral column
    - **RADIOGRAPHIC CLUE**: Subtle CC joint diastasis/incongruity

• **Tarsometatarsal joint injury**
  - Less commonly missed due to heightened awareness
  - **Radiographic CLUE**: 1-2 base diastasis, fleck sign, nutcracker C-C joint injury
  - Relative 2nd metatarsal length predisposition for ligamentous lisfranc (Gallagher JBJS 2013)
  - Inadequate initial treatment often now what leads to the need for secondary midfoot reconstruction

**Evaluation**
- Are essential joints salvageable?
- Assessment of deformity (location, magnitude, direction, flexibility)
- Soft-tissue status/ feasibility of acute deformity correction
- Bone loss?
- Muscle imbalance or soft tissue contractures
- Co-morbid factors (neuropathy, vasculopathy, dystrophy)

**Treatment**
- Salvage arthrodesis often all that is possible after delayed diagnosis
- Treatment principles
  - Salvage essential joint function whenever possible
  - Maintain medial lateral column length
  - Restore normal forefoot weightbearing transfer
  - Address equinus
- Osteotomy and reduction with preservation of joint motion if possible

**References**


