

Case Report

Acute plantar midtarsal dislocation with intercuneiform dislocation: Case study, diagnosis and management



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ARTICLE INFO

Article history:
Received 2 October 2016
Accepted 16 October 2016
Available online

Keywords:
Midtarsal
Chopart
Transverse tarsal
Talonavicular
Cuneiform
Foot

ABSTRACT

The midtarsal joint, also known as the Chopart or the transverse tarsal joint, is composed of the talonavicular and calcaneocuboid articulations.¹ Midtarsal joint dislocations are rare injuries given the strong periarticular ligamentous support.^{2,3} Medial, lateral, dorsal, and rarely plantar dislocations have been reported from multiple high-energy mechanisms.^{4,5} We describe the case of a 24-year-old male who sustained talonavicular and calcaneocuboid plantar dislocations associated with a middle and lateral intercuneiform dislocation, open proximal 5th metatarsal fracture, 2nd–4th metatarsal base fractures, and lateral cuneiform fracture. The mechanism of injury, diagnosis, management, operative intervention, and follow up are discussed.

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1. Introduction

The midtarsal joint, which consists of the talonavicular and calcaneocuboid articulations, are firmly stabilized by the plantar periarticular ligaments and requires significant force to disrupt.¹ The talonavicular joint is stabilized by the superior medial and inferior aspects of the calcaneonavicular (spring) ligament.^{2,3} The calcaneocuboid joint is supported inferiorly by the superficial and deep inferior calcaneocuboid ligaments and superiorly by the lateral limb of the bifurcate ligament.³ Dislocations of the midtarsal joint, although uncommon, have been reported from a variety of high-energy mechanisms including motor vehicle crashes and falls from height, and often have associated injuries in the polytrauma patient.⁵ An isolated dorsal midtarsal dislocation from a low-energy mechanism has also been reported.⁶ Although more energy is required to cause a dorsal midtarsal dislocation, it is the most often reported direction of dislocation given the frequent mechanism of a dorsally directed force to the forefoot.⁷ In contrast, plantar midtarsal dislocations are rare, accounting for only 7% of midtarsal dislocations.⁷ We describe the case of a 24-year-old male who sustained a plantar midtarsal dislocation associated with an intercuneiform dislocation, open

proximal 5th metatarsal, and closed midfoot fractures from a blunt force trauma.

2. Case report

A 24-year-old man presented was transferred to a level 1 trauma center from an outside facility after his foot was caught under the hydraulic elevation bar of a construction excavator. The patient presented complaining of severe right foot pain, with no neurovascular deficits found at the time of initial evaluation. An 8 cm laceration with exposed bone was found over lateral aspect of the right foot, along with substantial swelling, dorsal prominence and early signs of dorsal skin necrosis. Radiographs (Fig. 1), CT scan (Fig. 2) and 3D reconstructions (Fig. 3) of the right foot revealed a plantar midtarsal dislocation, middle and lateral intercuneiform dislocation, proximal 2nd–5th metatarsal fractures, and a lateral cuneiform fracture. Two grams of cefazolin and a tetanus immunization were administered. The open 5th metatarsal fracture was irrigated with 2 l of sterile saline, and the right foot was placed into a short leg splint that was iced and elevated. The patient was then admitted to the orthopedic surgery service and taken to the operating room for emergent irrigation, debridement, midtarsal joint reduction, and placement of a negative pressure wound device. Post-operative radiographs (Fig. 4), CT scan (Fig. 5), and CT scan 3D reconstructions (Fig. 6) of the right foot demonstrated concentrically reduced talonavicular and calcaneocuboid joints as well as reduction of the middle and lateral

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Fig. 1. Injury radiographs of the right foot demonstrating plantar dislocations of the talonavicular and calcaneocuboid joints, middle and lateral intercuneiform dislocation, and proximal 2nd–5th metatarsal and lateral cuneiform fractures on lateral (A), oblique (B), and anteroposterior (C) views.

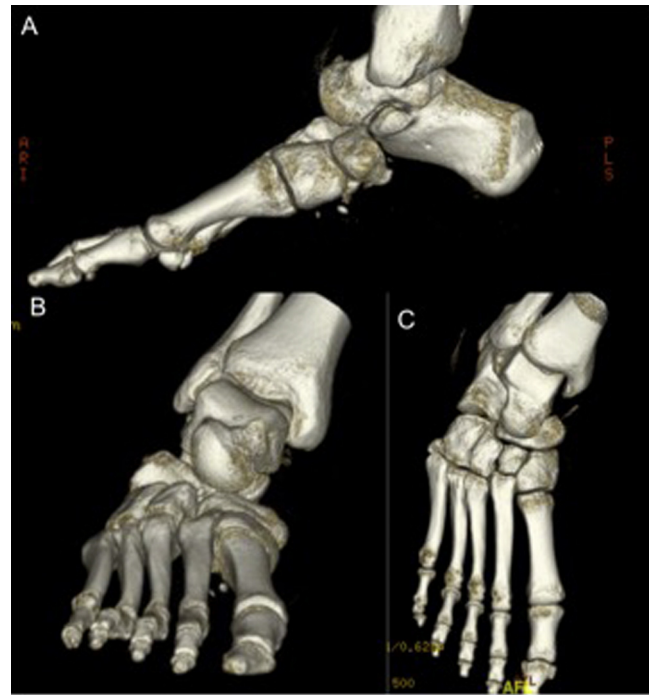


Fig. 3. Pre-operative 3D CT reconstructions of the right foot demonstrating plantar dislocations of the talonavicular and calcaneocuboid joints, and intercuneiform dislocation on sagittal (A), coronal (B), and axial (C) views.

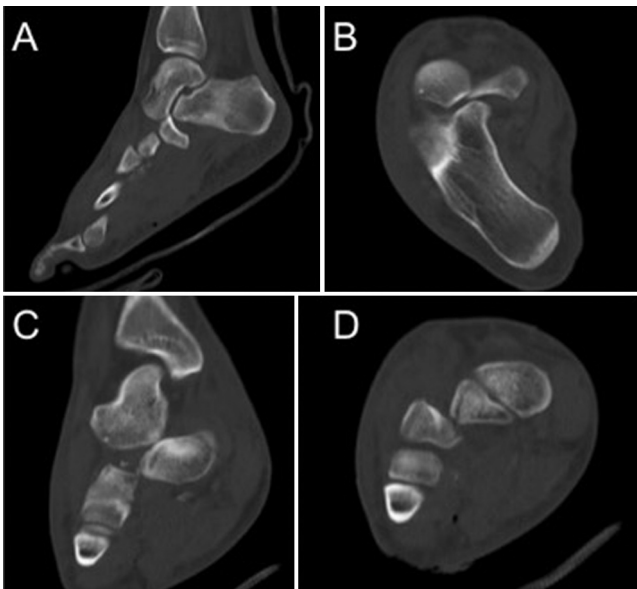


Fig. 2. CT scan of the right foot demonstrating plantar talonavicular and calcaneocuboid dislocations on sagittal (A), axial (B), and coronal (C) views. Associated intercuneiform dislocation on coronal (D) view.

intercuneiform dislocation. At the 2-week follow up visit, the talonavicular and calcaneocuboid joints maintained reduction (Fig. 7). The dorsal skin and lateral foot wound appeared to be healing uneventfully. Conservative treatment consisted of immobilization in a short leg cast for a total of 6 weeks with strict nonweightbearing. Radiographs at the 6-week follow up visit demonstrated interval healing of the metatarsal and cuneiform



Fig. 4. Post-operative radiographs of the right foot demonstrating concentrically reduced talonavicular, calcaneocuboid, and intercuneiform joints on oblique (A), anteroposterior (B), and lateral (C) views.

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