Calcaneocuboid Joint Dislocation

A Case Report

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Tarsal bone dislocation is a rare entity. It is usually undiagnosed in the emergency department. We present the case of a 44-year-old man who was diagnosed as having calcaneocuboid joint dislocation in the emergency department. The dislocation was reduced in the emergency department, and a below-the-knee cast was applied. Successful clinical and radiologic results were obtained during follow-up. In this case, unlike the previous reports in the literature, conservative management succeeded in the treatment of calcaneocuboid joint dislocation. (J Am Podiatr Med Assoc 104(6): 644-648, 2014)

Dislocation of the tarsal bones is uncommon.[1-6] The pathologic abnormality may be easily missed owing to the unfamiliarity of the injury.[2,5] Furthermore, tarsal bone dislocations may be overlooked on plain radiography because in two dimensions it is difficult to appreciate the displacement of a single bone or disruption of its articulation. Dislocation of the calcaneocuboid joint was first reported by Drummond and Hastings[2] in 1969 and then by Kollmannsberger and De Boer[3] in 1989; both of the cases were treated operatively. Herein, we report a rare injury with total dislocation of the calcaneocuboid joint and a fourth metatarsal base fracture treated with closed reduction and cast application.

Case Report

A 44-year-old man had an occupational accident in which he was trapped under heavy packages. He was taken to the emergency department. On physical examination, there was swelling and tenderness on the dorsolateral aspect of the right foot. The ankle moved freely, but subtalar movement was stiff and painful. Initial dorsoplantar, lateral, and medial oblique radiographs of the foot revealed total inferomedial dislocation of the cuboid bone with fracture of the fourth metatarsal base (Fig. 1). Closed reduction was performed by pushing the forefoot-midfoot dorsally and laterally. The deformity disappeared as soon as the reduction was performed, and a below-the-knee cast was applied. The immediate post-reduction radiograph confirmed that the calcaneocuboid joint was reduced (Fig. 2). When the patient was medically stabilized, computed tomography of the right foot was evaluated for the associated pathologic abnormalities, and an associated fracture of the fourth metatarsal basis was detected (Fig. 3).

A nonweightbearing below-the-knee cast was worn for 6 weeks, with close observation of the patient with weekly radiographic reduction control. At the end of 6 weeks, the cast was removed and partial weightbearing (~20–30 kg) was allowed. At the end of the first week of partial weightbearing, the patient had minimal swelling on the dorsum of the foot and tenderness over the lateral aspect. The control radiographs revealed maintenance of the reduction (Fig. 4). The patient was seen 3 months after the injury. Swelling over the dorsolateral aspect of the right foot was moderate. He had no limping, and he could walk on tiptoes without pain and difficulty (Fig. 5). Fourteen months after the injury, the patient was seen in the clinic for follow-up. He was able to walk and jog without limping. On radiographs, the cuboid bone was in its anatomical position and the calca-

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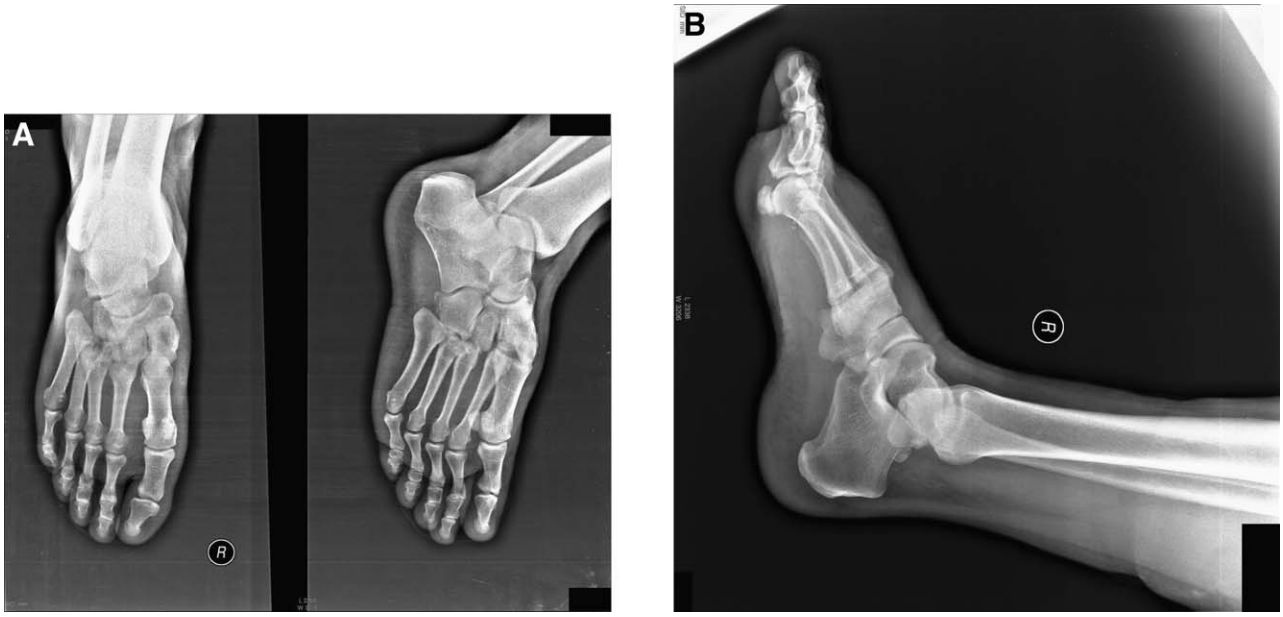

Figure 1. Dorsoplantar and oblique (A) and lateral (B) radiographs of the dislocated cuboid bone.

neocuboid joint was congruent, without any evidence of arthritis. However, some degenerative changes were visible on the metatarsocuboid joint because of the fourth metatarsal bone basis fracture (Fig. 6).

Discussion

The cuboid bone is an important stabilizer of the lateral aspect of the foot. It has a very stable relationship with the five bones that it articulates. The firm ligamentous attachments, rigid fibrous capsule, close relationship to the peroneus longus tendon, and saddle shape of its articular surfaces make this bone very stable, which makes isolated cuboid dislocation an uncommon injury.[1-6] Undiagnosed cuboid instabilities may further cause painful midfoot pathologic abnormalities. Realignment of the axes and columns is crucial in midfoot dislocations because loss of length of a

Figure 2. Dorsoplantar and lateral (A) and oblique (B) radiographs after closed reduction.

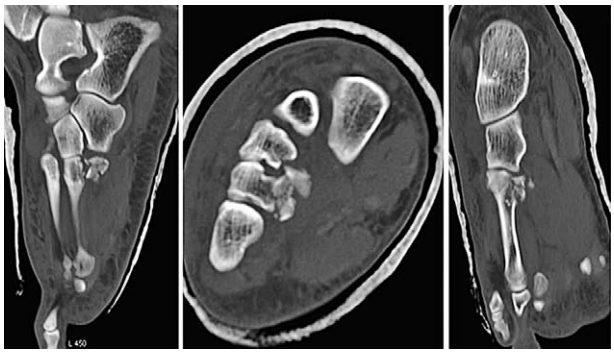

Figure 3. Computed tomographic images of the foot after reduction and casting. Reduction of the cuboid bone and fracture of the basis of the fourth metatarsal bone are seen.

Figure 5. Photographs of the patient at 3-month follow-up.

foot column or shift of the foot axis in the horizontal or vertical direction substantially affects gait quality and the development of midfoot arthritis.[7]

In 1969, Drummond and Hastings[2] reported the first case of isolated calcaneocuboid dislocation. In their case, the patient was discharged from the emergency department after the first examination with a diagnosis of soft-tissue injury. Cuboid bone dislocation was discovered the next day when the patient had continuing pain and an extremely swollen foot. Closed reduction was unsuccessful, and open reduction and fixation was performed. The second case was reported by Kollmannsberger and De Boer[3] in 1989. The patient was involved in a motorcycle accident and had a severe contusion with massive swelling of the foot. Closed reduction failed, and open reduction and fixation was performed, as in the case reported by Drummond and Hastings.[2]

Figure 4. Dorsoplantar and lateral radiographs of the foot after cast removal with partial weightbearing.

Punwar and Madhav[5] described a case of late-diagnosed recurrent dislocation of the calcaneocuboid joint in a ballet dancer in which open reduction and joint stabilization by ligament reconstruction were performed.

Isolated calcaneocuboid joint dislocation is a rare entity, but it should be considered in patients experiencing atypical symptoms after an ankle sprain or foot trauma. The diagnosis of dislocation of the calcaneocuboid joint might be easily overlooked with routine dorsoplantar and lateral radiographs. A medial oblique view of the joint is the recommended application for the diagnosis.[4,8]

In the present case, the patient was evaluated in the emergency department, and proper radiographic examination revealed an early diagnosis of calcaneocuboid dislocation. The absence of massive swelling and early diagnosis of the dislocation are probably the most important factors that enabled the closed reduction. Once the closed reduction was successful, the inherent stability of the joint preserved the reduction.[9] Unlike the previous reports in the literature, closed reduction was achieved, and immobilization in a cast preserved the reduction without a requisite for open reduction and surgical fixation.[6,10,11] This case emphasized the importance of early diagnosis of the calcaneocuboid joint dislocation in which a closed reduction might be managed and a good

Figure 6. Dorsoplantar (A), oblique (B), and lateral (C) radiographs of the foot at 14-month follow-up. Arrows in the oblique view show the congruent calcaneocuboid joint.

clinical result can be achieved without a need for surgical intervention.

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