
From the Section of Orthopedic Surgery and Division of Hematology and Oncology, University of Michigan Medical Center, and the Veterans Administration Medical Center, Ann Arbor, Mich.
Reprint requests: Susan Urba, MD, 4673 Veterans Administration Medical Center, 2215 Fuller Rd, Ann Arbor, MI 48105.

DISLOCATION OF THE CUBOID

F. Stig Jacobsen, MD

The foot is functionally divided into medial and lateral columns. The cuboid articulation with calcaneus is saddle-shaped with limited motion, creating a rigid stabilization on the lateral side. The talonavicular joint is comprised of a ball and socket, allowing for multidirectional motion, making the medial column a more elastic dynamic structure. Medial column fractures or dislocations are, therefore, more frequent, while injuries to the lateral column are rare with infrequent fractures or dislocations. Only five cases of cuboid dislocation could be found in the literature, making this case interesting, as injuries to the lateral column are frequently overlooked.

CASE REPORT

While logging, a 56-year-old man had a tree fall on him. One of the main branches hit the outside of his right foot. He also sustained chest trauma with rib fractures, a right pneumothorax, and face lacerations.

On admission to the hospital, an appropriate chest tube was placed, and facial lacerations sutured. The right foot was swollen, especially on the dorsal and lateral aspects, but neurovascularly intact.

Radiograph revealed calcaneocuboid dislocation and chip fractures from the medial facet of the calcaneus in the subtalar joint, without dislocation.

The patient was taken to the operating room the day of admission, and closed reduction was unsuccessful. An Ollier incision was made over the lateral aspect of the foot, and the extensor brevis muscle was reflected distally. It was found that the cuboid was wedged under the anterior process of the calcaneus, and securely locked in that position. Following several attempts, the joint was reduced by applying longitudinal traction on the lateral rays, and direct pressure on the cuboid in a dorsal direction. It was possible to reproduce the dislocation with moderate force, so a pin was placed over the calcaneocuboid joint to secure the reduction.

As there also was a slight subluxation in the talonavicular joint, bone chips were suspected, but none were found. The subtalar joint was not explored. The patient was treated in a cast.
Fig 2: lateral (A) and AP (B) radiographs of the foot following reduction and securing the cuboid-calcaneus joint with a smooth K-wire.

Fig 3: Oblique (A) and lateral (B) radiographs of the foot 1 year after the dislocation. The oblique view shows a normal calcaneocuboid joint, while the lateral shows plantar osteophyte.

Discussion

Injuries involving midtarsal joints are rare and frequently overlooked. Main and Jowett classified the midtarsal joint injury according to the force directed toward the foot. They found the most common force was medial, followed by lateral, longitudinal, and plantar. They also noted it was important to look at the other midtarsal joints, not only consider an isolated fracture.

Direct medial force to the foot can cause medial displacement of the calcaneocuboid and talonavicular joints. A medial-swivel dislocation is also described, where the talonavicular joint dislocates, and the calcaneus, along with the cuboid and rest of the foot, rotates under the talus. A plantar directed force is described, creating a plantar displacement of the navicular and cuboid. Main and Jowett describe 71
patients with midtarsal injuries, but none had isolated cuboid dislocations.

Five reports can be found in the literature describing cuboid dislocations, all with plantar medial displacements of the cuboid. In all cases, the force has been directed medially and plantarly on the outside of the foot. This mechanism is similar in the case described.

If the hindfoot is in valgus, the axis of the talonavicular and calcaneocuboid joints will be parallel, allowing some motion. A plantar-medial force on the cuboid will allow the cuboid to be dislocated under the calcaneus, while slight rotatory subluxation will take place in the talonavicular joint. At the time of impact, slight displacement will also occur in the subtalar joint, giving rise to small chip fractures in that joint, but without dislocation.

Cuboid dislocations are rare and can easily be overlooked on a radiograph. Three of the five cases in the literature had delayed diagnoses. When recognized, immediate reduction should be performed. Closed reduction under general anesthesia can be attempted, hanging the foot with the toes in a finger trap and applying force in the opposite direction as the trauma. This was not successful in our case, but was in two of five cases in the literature. Open reduction is usually necessary, and pin fixation of the joint for a short period of time can be performed to secure the reduction. Routine exploration of other subtalar joints is not recommended.

REFERENCES


EDITORIAL COMMENT

While this is an unusual injury, it is important for it to be recognized. One should have a high index of suspicion when assessing a patient with a history of major trauma and significant foot swelling. As emphasized by the author, there is frequently a delay in diagnosis. While this particular patient appeared to have a fair result with 1-year follow up, this is not the case in a large proportion of patients with major midtarsal injuries. The long-term results of these injuries is not known, as the literature is replete with case reports and other clinical studies reporting the outcome of a variety of injury patterns.

From the Department of Orthopedic Surgery, Marshfield Clinic, Marshfield, Wis.
Reprint requests: Finn Stig Jacobsen, MD, Department of Orthopedic Surgery, Marshfield Clinic, 1000 N Oak, Marshfield, WI 54449.

DISCOGENIC VERTEBRAL SCLEROSIS: A POTENTIAL MIMIC OF DISC SPACE INFECTION OR METASTATIC DISEASE

Thomas Lee Pope, Jr, MD
Goo Wang, MD
Richard Whitehill, MD

Sclerosis at the vertebral endplate is a commonly encountered plain film radiographic abnormality, caused by primary or secondary tumors, infection, aseptic necrosis, inflammatory arthritis, trauma, or degenerative disease. The most frequently encountered lesion is probably degenerative, appropriately called discogenic vertebral sclerosis (DVS). The exact cause for the sclerosis is unknown, but this entity has received much attention in the radiologic literature and has been referred to by a variety of names: non-neoplastic sclerosis, pseudoinfection of the intervertebral disc and adjacent vertebrae, discogenic vertebral sclerosis, atypical degenerative lesion, hemispherial spondylosclerosis, idiopathic segmental or vertebral sclerosis, vertebral rim lesions, or degenerative spondyloarthropathy. However, the disease has been reported infrequently in the orthopedic literature.

Patients with DVS may show a variety of radiographic changes on plain radiographs, ranging from minimal sclerosis around a Schmorl’s node, to intense vertebral body sclerosis resembling the “ivory” vertebra of metastatic disease. The sclerosis may also involve primarily two adjacent vertebral endplates and be mistaken for infection.

We report three patients with DVS on plain films and describe other radiographic abnormalities which may be encountered in this entity. The appropriate radiographic work-up in patients suspected of having DVS is also included. Orthopedists and radiologists should be familiar with this entity because of its mimesis of more sinister pathology.