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Reinsertion of an Inverted Osteochondral Lesion of the Talus: A Case Report

Tim Schepers, MD, PhD [1], Philippe P. De Rooij, MD [1], Esther M.M. Van Lieshout, PhD [2], Peter Patka, MD, PhD [3]

[1] *Trauma Surgeon, Department of Surgery–Traumatology, Erasmus Medical Center, University Medical Center Rotterdam, Rotterdam, The Netherlands*
[2] *Research Coordinator, Trauma Surgery, Department of Surgery–Traumatology, Erasmus Medical Center, University Medical Center Rotterdam, Rotterdam, The Netherlands*
[3] *Professor in Traumatology, Emergency Department, Erasmus Medical Center, University Medical Center, Rotterdam, The Netherlands*

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ABSTRACT

Osteochondral lesions of the talus (OLTs) occur infrequently and are missed at the initial presentation in up to 67% of cases. Probably more than 1500 OLTs have been reported in published studies, of which, thus far, only 5 cases have been an inverted anterolateral OLT. An anterolateral OLT results from a hypersupination trauma, in which the talar dome is caught behind the fibula. Apparently, if the forces are large enough a "flip of the coin" phenomenon occurs, causing the fragment to invert 180° upside down. We present the case of a young female patient with an inverted OLT that was treated with open reduction and internal fixation using bioabsorbable pins. Follow-up radiographs and computed tomography showed a congruent joint and complete healing of the osteochondral fragment. At the short-term follow-up visit, the functional outcome was promising.

Osteochondral lesions of the talus (OLTs) occur infrequently and are missed at the initial presentation in up to 67% of cases (1). One of the earliest descriptions of an osteochondral lesion was by Monro in 1737; he described the removal of a loose body from the ankle that was believed to be of traumatic origin (2, 3). The term "osteochondritis dissecans" was first introduced by Franz Konig in 1888, who hypothesized a vascular origin for the avascular bone fragments that he found in the knee joint (2, 3). Since then, several investigators have reported on osteochondral lesions of the talus. Kappis in 1922 described a loose fragment that originated from the talus, and Rendu in 1932 was the first to report a traumatic articular lesion of the talar dome (2, 3). The etiology of chronic osteochondral lesions is still debated, because a significant percentage of patients with osteochondral lesions report no initial trauma (3–7). However, in a review by Flick and Gould (8) of more than 500 patients with OLTs, 98% of the lateral dome lesions and 70% of the medial dome lesions were associated with a history of acute trauma. Traumatic osteochondral lesions of the talus have been reported in up to 50% of patients sustaining ankle distortions or fractures (3, 9–11).

The controversy on the treatment of OLTs is reflected in the numerous treatment modalities (3–6) and is especially true for Berndt-Harty grade 1 to 3 injuries. For displaced grade 4 injuries, surgical management is generally preferred. A special presentation of a Berndt-Harty grade 4 OLT is the "inverted osteochondral fragment." This type of lesion typically occurs on the anterolateral part of the talus and is of traumatic origin. Probably more than 1500 cases of OLTs have been reported in published studies, of which, thus far, only 5 cases have been of an inverted anterolateral OLT. We present the case of a patient with an inverted OLT that was treated by open reduction and internal fixation with bioabsorbable pins.

Case Report

A white woman aged 20 years sustained a supination injury of the right ankle during a soccer match. She instantly lost the ability to bear weight on the affected foot. At the emergency department, a swollen ankle was seen, with pain at the distal fibula. Conventional radiographs were obtained in 2 orthogonal directions (Figure 1). In these radiographs, a loose fragment was visible that was initially thought to originate from the distal tibia or plafond. The next day, she was seen at the outpatient department and a computed tomography (CT) scan was obtained for suspected OLT.

The CT scan with reconstruction in 3 planes showed a large osteochondral fragment, 7 by 10 mm, that was 180° inverted (Figure 2). Nine days after the initial trauma, she underwent surgery using an anterolateral approach (Figure 3). The anterior talofibular ligament appeared torn. The inverted fragment was located and debrided. The original location at the talar dome was prepared with small drill holes. Next, the fragment was reinserted and fixated using 2 divergent 1.3 mm PDS Orthosorp pins. After reconstruction of the anterior talofibular ligament and closure of the wound, a nonweightbearing lower leg cast was applied for 6 weeks, followed by 6 weeks of

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Address correspondence to: Tim Schepers, MD, PhD, Trauma Surgeon, Department of Surgery–Traumatology, Erasmus Medical Center, University Medical Center Rotterdam, Room H-822k, P.O. Box 2040, Rotterdam 3000 CA The Netherlands.
E-mail address: t.schepers@erasmusmc.nl (T. Schepers).

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Fig. 1. Initial conventional radiographs showing wafer-shaped osteochondral lesion at anterolateral portion of talar dome. (*A*) Anteroposterior and (*B*) lateral radiographic views of ankle showing loose fragment anterolaterally.

nonweight-bearing full range of motion exercises. At 15 weeks after surgery, a follow-up CT scan was performed to assess consolidation (Figure 4). A fully congruent talar dome was seen, with adequate bony healing at the previous fracture site. At this time, the patient was fully weight bearing without complaints of pain, no loss of flexion or extension at the ankle, and minimal swelling. The patient had returned to work fully and was eager to resume playing soccer.

Discussion

In the present case, an inverted osteochondral lesion was successfully reinserted using absorbable pins. The anterolateral OLT results from a hypersupination trauma, in which the talar dome is caught behind the fibula. Apparently, if the forces are large enough, a "flip of the coin" phenomenon occurs, causing the fragment to invert 180° upside down.

The oldest description of an inverted OLT can be found in the study by Canale and Belding (12) from 1980. In a series of 31 OLTs, 1 patient, who was thought to have a Berndt-Harty grade 3 injury, appeared to have an inverted OLT. However, the type of OLT and the treatment provided were not described (12).

One year later, Kenny (13) reported the case of a 16-year-old white girl, with an anterolateral 2-part OLT, of which 1 was inverted. This injury occurred during an inversion trauma at a soccer match. The fragment was treated by removal and curettage.

Verzin and Henderson (14) presented a 17-year-old girl with an anterolateral inverted OLT and ruptured anterior talofibular and calcaneofibular ligaments, after slipping in the snow. The fragment and base were debrided, and the fragment was put back in place without fixation.

In 2007, Chandran et al (15) presented the case of a 26-year-old male patient who injured his ankle after a fall from a height, with an anterolateral OLT that appeared to be inverted during arthrotomy of the ankle. The fragment was placed back and fixated with 3 absorbable pins. An excellent result was found at the 1-year follow-up visit.

The fifth reported case was described by Wade and Bustillo (16). A 22-year-old male patient experienced an inversion trauma during ice hockey 8 weeks before presentation (16). An anterolateral OLT was identified on the conventional radiographs; however, the idea of the fragment being inverted was made during ankle arthroscopy. The fragment was removed and the base debrided.

In the 2 cases in which the OLT fragment was put back in place, the fragment healed without signs of avascular necrosis (14, 15). The duration of follow-up for these patients was 12 (15) and 24 (14) months, without signs of secondary collapse, which has been reported even after bony union on reinsertion in chronic cases (17). Our present patient had a similar age (i.e., 26 years) as the previously

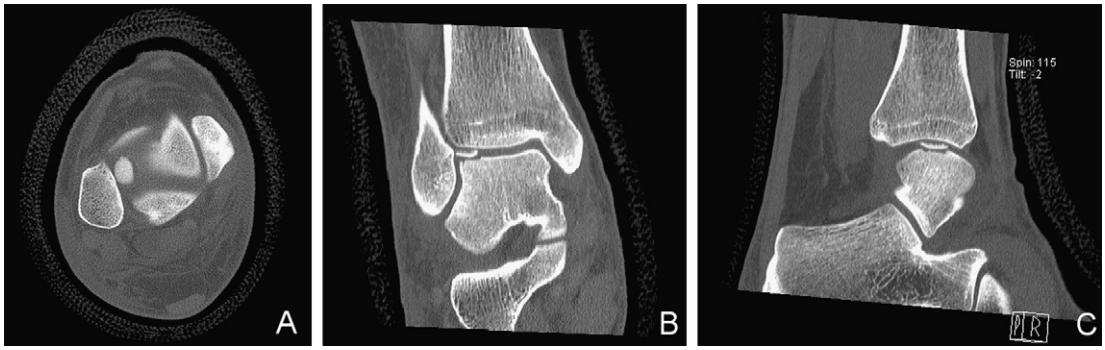

Fig. 2. CT scan of inverted OLT. (*A*) Axial, (*B*) coronal, and (*C*) sagittal CT reconstructions clearly showing inverted fragment.