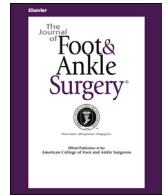




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## Case Reports and Series

## Isolated Acute Traumatic Subtalar Dislocations: Review of 13 Cases at a Mean Follow-Up of 6 Years and Literature Review

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## ABSTRACT

Isolated acute traumatic subtalar dislocations are quite rare. They correspond to talotarsal dislocation, including the talonavicular and talocalcaneal joints. The purpose of the present study was to evaluate the functional and radiologic outcomes of the treatment of acute traumatic isolated subtalar dislocations. The present retrospective study included 13 patients who had sustained isolated subtalar dislocations during a 10-year period. Of the 13 cases, 10 (76.9%) were medial dislocations and 3 (23.1%) were lateral dislocations. All the patients underwent immediate closed reduction under anesthesia followed by immobilization. No open reduction was required. The mean follow-up period was 72.6 (range 24.4 to 124.8) months. The mean American Orthopaedic Foot and Ankle Society ankle-hindfoot score was 80.1 of 100 (range 66 to 90). The score result was good in 69% of cases and poor in 31% of cases. The subtalar mobility was reduced for 8 (61.5%) patients and significantly affected the American Orthopaedic Foot and Ankle Society score ( $p = .002$ ). Subtalar osteoarthritis was present in 6 (46.1%) cases with talonavicular osteoarthritis in 3 (23.1%) cases. No cases of avascular necrosis of the talus were noted. In accordance with the published data, the prognosis of isolated acute traumatic subtalar dislocations is favorable. Medial dislocations are more frequent than lateral dislocations. Emergent closed reduction makes it possible to remove soft tissue injuries. The risk of post-traumatic subtalar osteoarthritis is significant, even without an initial subtalar lesion. A postreduction computed tomography scan will enable the diagnosis of osteochondral lesions.

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Acute subtalar or talotarsal dislocations are rare entities in traumatology, because they affect 1% to 1.5% of all leg trauma cases (1–3). Associated fractures have often been described, and isolated dislocations are uncommon (4,6,8,16). Acute subtalar dislocations are generally the result of high-energy trauma (2–6). These dislocations represent about 1% of all types of acute traumatic dislocations (2,4). Open dislocations may occur in this type of trauma (3.7% to 57%) (3,4,7–11).

An acute traumatic subtalar dislocation involves simultaneous disruption of the talocalcaneal and talonavicular joints, thus corresponding to a talotarsal joint dislocation. The talus remains in its place

in the tibiofibular mortise, and the calcaneocuboid joint remains intact (6,12–14).

In 1811, Judey (15) and Defaurest (16) described the first cases of subtalar joint dislocation. Later, Leitner (2) related a series of 42 cases of trauma that occurred from 1925 to 1950. In 1967, Lapeyrie et al (17) studied these dislocations and mentioned the term *talocalcaneonavicular dislocation*.

Medial subtalar dislocations have also been called *acquired clubfoot* because of their similarity to the clinical aspect of congenital clubfoot (Fig. 1) (7,18,19). The lateral dislocations acquire the aspect of “acquired flatfoot” (14,20–22).

The main purpose of the present study was to evaluate the clinical and radiologic outcomes of a series of 13 cases of acute traumatic isolated subtalar dislocations.

## Patients and Methods

From January 2003 to December 2013, 13 cases of isolated acute traumatic subtalar dislocations were treated in the orthopedics and

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**Fig. 1.** (A and B) Clinical aspect of a medial isolated acute traumatic subtalar dislocation of the left ankle with medial prominent of the head of talus (and cutaneous injury by ischemia over the talar head).

traumatology department of our institution (Table 1). We retrospectively reviewed the data from these 13 patients.

The inclusion criteria were acute traumatic subtalar dislocations without intra-articular or extra-articular fracture of the talus, calcaneus, or ankle. Young patients whose growth cartilage was opened at the moment of trauma were excluded.

The mean age of the patients was 38.5 (range 17 to 71) years at the moment of trauma. Of the 13 patients, 12 were males and 1 was female. Dislocation affected the right foot 8 times (61.5%) and the left foot 5 times (38.5%; Table 1). The mean body mass index was 26 (range 23 to 30) kg/m<sup>2</sup>.

Of the 13 patients, 10 had a medial dislocation (76.9%; Fig. 1) and 3 a lateral dislocation (23.1%; Table 1). No cases of anterior or posterior subtalar dislocation were included. The mechanisms responsible for dislocation were a fall from an elevated place in 9 (69.2%), an accident on the public road in 1 (7.7%), after a jump during a basketball game in 2 (15.4%), and a football tackle in 1 patient (7.7%). The dislocation was

the right side in 8 (61.5%) and the left side in 5 (38.5%; Table 1). No case of extruded open dislocation was identified in the treated population and no case of neurovascular injuries was reported.

The dislocations were all reduced in the operating room by manual manipulation with the patient under general or spinal anesthesia. Traction on an orthopedic table using a transcalsal pin was necessary to reduce 1 case of lateral dislocation. No open reduction was necessary. Four patients (30.7%) underwent postoperative computed tomography (CT) of the foot and ankle after reduction and immobilization (Table 1).

The patients were immobilized in a below-the-knee plaster cast (ankle flexed to 90°) and kept non-weightbearing for 6 weeks in 12 cases (92.3%) and for 5 weeks in 1 (7.7%; Table 1). After removal of the plaster cast, the patients underwent physiotherapy and progressive weightbearing.

The patients' cases were reviewed by clinical examination and completion of the American Orthopaedic Foot and Ankle Society

**Table 1**  
Summary of data from 13 patients

Patient No.	Sex	Age at Trauma (y)	Side	Dislocation Type	CT Scan	Immobilization Duration (wk)	Follow-Up (mo)	AOFAS Score	Subtalar Motion	Subtalar Osteoarthritis	Talonavicular Osteoarthritis
1	M	40	L	Lateral	Yes	6	41	88	Conserved	No	No
2	M	23	R	Medial	No	6	123.3	85	Conserved	No	No
3	M	46	L	Medial	No	6	25.5	82	Reduced	No	No
4	M	31	R	Medial	No	6	75.6	75	Reduced	Yes	No
5	M	49	R	Medial	No	6	57	82	Reduced	Yes	No
6	F	30	R	Medial	Yes	6	54.9	80	Reduced	No	No
7	M	25	L	Lateral	Yes	6	106.2	66	Reduced	Yes	No
8	M	52	R	Lateral	No	6	104.1	72	Reduced	Yes	Yes
9	M	31	L	Medial	No	6	124.8	66	Reduced	Yes	Yes
10	M	60	L	Medial	Yes	6	24.4	82	Reduced	Yes	Yes
11	M	71	R	Medial	No	5	46	90	Conserved	No	No
12	M	26	R	Medial	No	6	53.5	90	Conserved	No	No
13	M	17	R	Medial	No	6	107.4	83	Conserved	No	No

Abbreviations: AOFAS, American Orthopaedic Foot and Ankle Society (ankle-hindfoot scale); CT, computed tomography (after reduction); F, female; L, left; M, male; R, right.

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