CASE REPORT/KAZUISTIKA

Isolated Lateral Subtalar Dislocation Due to Low-Energy Trauma

Izolovaná laterální subtalární luxace v důsledku nízkoenergetického traumatu

NURI KORAY ÜLGEN[1], BATUHAN GENCER[2], TEOMAN BEKIR YENI[3], ÖZGÜR DOĞAN[3]

[1] Sincan Training and Research Hospital, Ankara, Turkey

[2] Marmara University Pendik Training and Research Hospital, Istanbul, Turkey

[3] Ankara City Hospital, Ankara, Turkey

Corresponding author:

Nuri Koray Ülgen
Sincan Training and Research Hospital
Orthopaedics and Traumatology Clinic, Ankara
Gökçek, 250. Cadde 2/A, 06949 Sincan/Ankara, Turkey
nurikoray@gmail.com

Ülgen NK, Gencer B, Yeni TB, Doğan Ö. Isolated Lateral Subtalar Dislocation Due to Low-Energy Trauma. Acta Chir Orthop Traumatol Cech. 2025;92:114–117.

SUMMARY

Isolated subtalar dislocations constitute 1% of all dislocations and are extremely rare. They frequently occur as a result of high-energy trauma. Dislocations are classified based on the direction of the dislocation, with 80% being medial. Closed reduction under anesthesia without delay is the optimal treatment method. In our case, we present an extremely rare instance of an isolated lateral subtalar dislocation resulting from a low-energy injury. Although isolated subtalar dislocations are frequently reduced with closed reduction, open reduction was necessary in our case. The structure obstructing reduction in lateral dislocations is often reported to be the tibialis posterior tendon. During open reduction, we identified and documented the tibialis posterior tendon as the obstructing structure. We have also discussed the post-reduction follow-up protocol.

Key words: lateral subtalar joint dislocation, low-energy trauma, open reduction, case reports.

INTRODUCTION

Dislocations of the subtalar and talonavicular joints together form a rare pattern known as subtalar dislocation, accounting for only 1% of all dislocations. High-energy traumas and subsequently high-energy sports injuries are frequently reported in the etiology (1). Rarely, they have been reported to occur due to low-energy trauma, such as sprains (3). Classification is based on the direction of the dislocation relative to the talus, with nearly 80% being medial dislocations. The remaining majority are lateral dislocations, with posterior and anterior dislocations being much rarer (10). Late complications include joint stiffness, osteoarthritis, and avascular necrosis of the talus (2). We present a case of isolated lateral subtalar dislocation without associated Fractures, caused by a very rare etiology, such as a sprain while descending stairs.

CASE PRESENTATION

A 26-year-old male patient sprained his foot while descending stairs at normal speed, resulting in severe pain. Examination in the emergency room revealed severe midfoot pain, absence of open wounds, and widespread ecchymosis medially. The foot appeared laterally dislocated. Neurovascular examination was normal. X-ray imaging in the anteroposterior (AP) view showed lateral dislocation of the foot distal to the talus (Fig. 1). No fractures were detected on the X-ray and computed tomography (CT) scans. After unsuccessful attempts at closed reduction under sedation in the emergency room, the patient was prepared for surgery. Under spinal anesthesia, closed reduction was attempted unsuccessfully, necessitating open reduction. Given the literature indicating that the tibialis posterior tendon often obstructs reduction in lateral dislocations, we made a dorsomedial incision to access the talus. The tibialis posterior tendon was found to be obstructing reduction by crossing over the medial malleolus onto the talus (Fig. 2). Once the tendon was repositioned with retractors, reduction was achieved. Fluoroscopy confirmed the reduction (Fig. 3). The patient was followed with a short leg splint for three weeks. Afterward, the splint was removed and joint mobilization was initiated. Partial weight-bearing was gradually increased from the fourth week onwards. Early outpatient

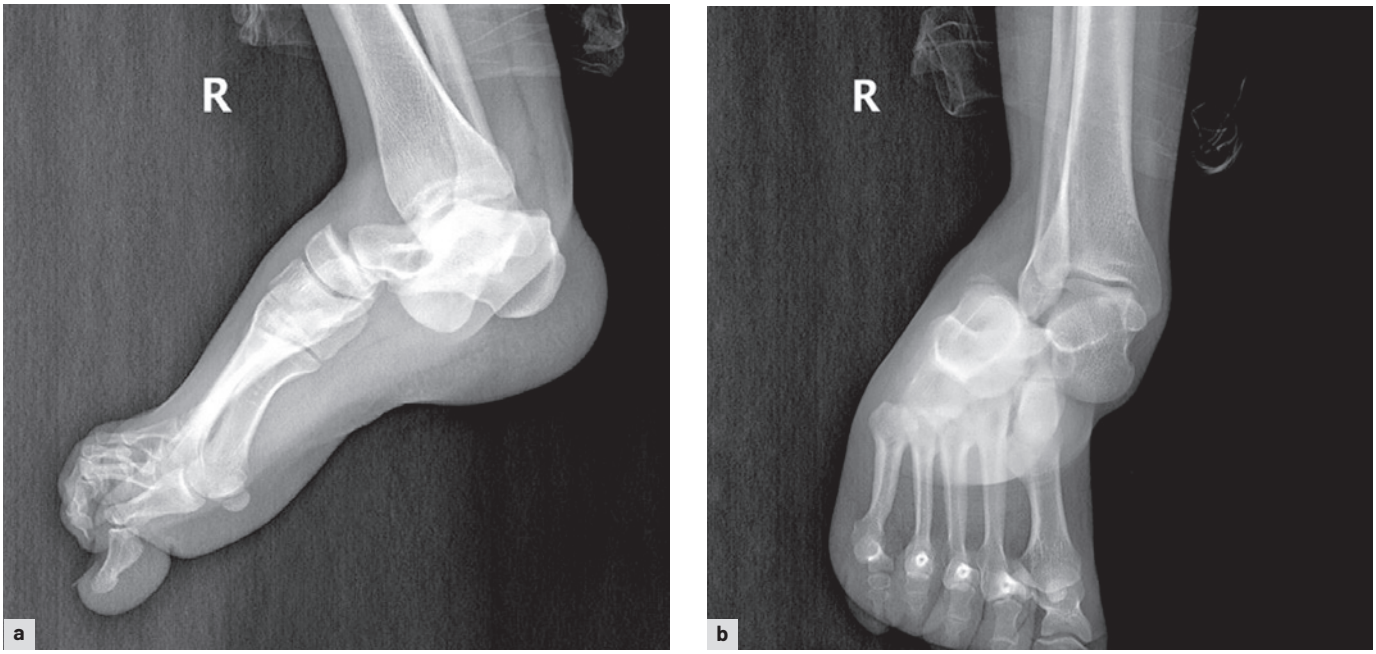

Fig. 1. **Radiographic presentation of a right lateral subtalar dislocation.**

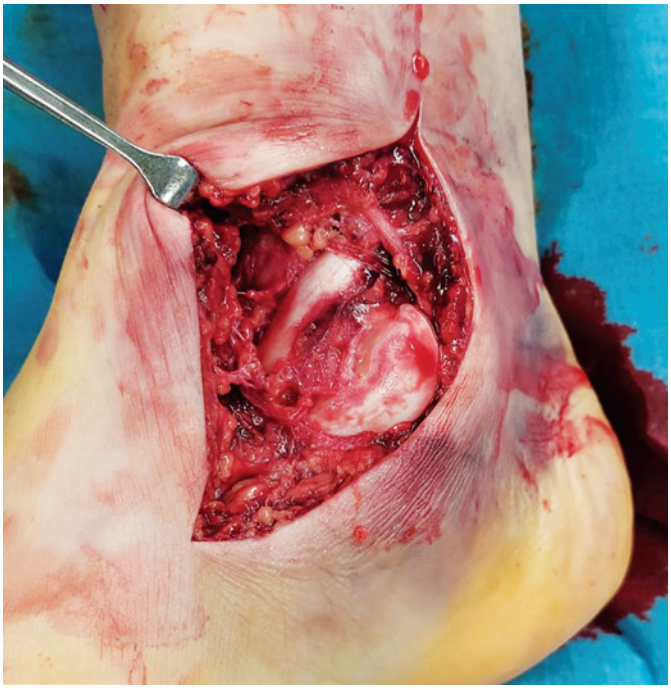

Fig. 2. **Tibialis posterior tendon preventing reduction.**

follow-up MRI showed widespread bone marrow edema in the ankle joints. A rupture of the anterior talofibular ligament was observed, and consultation with foot surgery was sought. At six months, the patient had normal ankle joint range of motion but reported pain after prolonged standing. At the one-year follow-up, he only experienced mild occasional pain and could walk long distances. Joint range of motion was painless and complete, with no signs of arthrosis or osteonecrosis on radiographs. Although the patient did not engage in sports activities, his AOFAS score was 85, indicating a good outcome.

DISCUSSION

Due to the rarity of subtalar dislocations, case examples are limited. High-energy traumas are frequently implicated in their etiology, with cases resulting from simple mechanisms like sprains being much rarer (1, 2). The occurrence of our case due to low-energy trauma, along with its failure to be reduced with closed reduction, makes it extremely rare. The visualization of the tibialis posterior tendon obstructing the reduction increases the significance of our case report.

In their meta-analysis on subtalar dislocations, Byrd et al. found the etiologies to be 38.5% traffic accidents, 30.2% falls from height, 21.9% sports injuries, and 9.4% low-energy injuries (2). In the same study, the authors noted that low-energy injuries were overrepresented because they were included from specific case reports. De Luna et al. associated low-energy injuries with isolated medial subtalar dislocations and found them to have a lower complication rate (4). However, there is no data on this topic regarding lateral dislocations. Classification is based on the direction of the dislocation, with most being medial. Byrd et al. reported 72% medial and 22%

Acta Chir Orthop Traumatol Cech., 92, 2025, No. 2, p. 114–117

Fig. 3. **Postoperative radiographic control.**

lateral dislocations, which is consistent with the literature (2). They are frequently reduced with closed reduction (1, 2, 3, 10). Byrd et al. found the rate of closed reduction to be 80.6% for all isolated subtalar dislocations (2). Our case, which involves a low-energy, laterally directed dislocation that could not be reduced with closed reduction, represents a very rare injury. There are few case examples requiring surgical intervention with documented surgical images. De Palma et al. reported that in two cases of isolated lateral subtalar dislocations that could not be reduced with closed reduction, the tibialis posterior tendon obstructed the reduction and successful reduction was achieved by retracting the tendon (6). Similarly, in our case, the tibialis posterior tendon obstructed reduction. Leitner found that the reason the tibialis posterior tendon obstructs reduction is due to its displacement over the talus during dislocation as a result of the flexor retinaculum tearing (9). Waldrop et al. supported Leitner's theory in their cadaver study (12). Given that the tibialis posterior tendon is the most common obstructing structure in open reductions of lateral dislocations, a dorsomedial incision should be preferred. Our case images show the tibialis posterior tendon obstructing reduction by crossing over the talus.

There is debate in the literature regarding post-reduction fixation. Pavić reported good outcomes with talocalcaneal fixation using K-wires following closed reduction in their case series of isolated subtalar dislocations (11). Byrd et al. reported that short leg circular casting was the most common fixation method in their meta-analysis (2). De Palma et al. preferred long leg circular casting in their study of 30 patients with isolated subtalar dislocations who underwent closed reduction (5). In our case, as we found no signs of instability during post-reduction examination, we deemed a below-knee splint sufficient. We believe that joint immobilization is adequate as long as weight-bearing is avoided. In our case, we initiated joint mobilization three weeks post-reduction and found no evidence of recurrent dislocation. The duration of immobilization is a contentious issue in the literature. To prevent joint stiffness, shorter immobilization periods (four weeks or less) are recommended (7). Byrd et al. found that the most common immobilization period is five to six weeks (2). In eight cases of isolated medial subtalar dislocations, Lasanianos et al. reported similar AOFAS scores to long-term immobilization by applying a protocol of joint mobilization and partial weight-bearing after two weeks of immobilization following closed reduction, and they recommended short-term immobilization. In our case, we initiated joint mobilization after three weeks of immobilization and encountered no adverse outcomes. There is no consensus on the duration of immobilization and

subsequent exercise regimen, necessitating further studies on this topic.

CT is recommended for detecting additional injuries in isolated subtalar dislocations (3, 10). Lasanianos et al. reported that in one case of closed-reduced isolated subtalar dislocation, a CT scan revealed a non-displaced fracture of the talus (8). The necessity of MRI is limited in the literature. In our case, early outpatient MRI showed widespread bone marrow edema and a rupture of the anterior talofibular ligament, which did not alter our treatment approach. The need for MRI should be assessed by the surgeon on a case-by-case basis.

The limitation of our case report is the one-year follow-up period, which does not allow for predicting late complications.

CONCLUSIONS

In conclusion, isolated subtalar dislocations are rare injuries, with lateral dislocations being even rarer. Closed reduction should be attempted first. In cases where lateral dislocations cannot be reduced, the tibialis posterior tendon is most commonly the obstructing structure, and open surgery should begin with a dorsomedial incision. Joint immobilization should be ensured, followed by an exercise program, though the duration is subject to debate. ■

References

1. Anazor FC, Dhinsa BS. Traumatic subtalar joint dislocation. Br J Hosp Med (Lond). 2023;84:1–9. doi: 10.12968/hmed.2022.0211.
2. Byrd ZO, Ebraheim M, Weston JT, Liu J, Ebraheim NA. Isolated subtalar dislocation. Orthopedics. 2013;36:714–720. doi: 10.3928/01477447-20130821-09.
3. Cheruvu MS, Narayana Murthy S, Siddiqui RS. Subtalar dislocations: Mechanisms, clinical presentation and methods of reduction. World J Orthop. 2023;14:379–386. doi: 10.5312/wjo.v14.i6.379.
4. De Luna V, Caterini A, Petrungaro L, Barosso M, De Maio F, Farsetti P. Medial subtalar dislocation from a low-energy trauma. A case report and review of the literature. Int J Surg Case Rep. 2021;83:105954. doi: 10.1016/j.ijscr.2021.105954.
5. De Palma L, Santucci A, Marinelli M, Borgogno E, Catalani A. Clinical outcome of closed isolated subtalar dislocations. Arch Orthop Trauma Surg. 2008;128:593–598. doi: 10.1007/s00402-007-0459-8.
6. De Palma L, Santucci A, Marinelli M. Irreducible isolated subtalar dislocation: a case report. Foot Ankle Int. 2008;29:523–526. doi: 10.3113/fai.2008.0523.
7. Horning J, DiPreta J. Subtalar dislocation. Orthopedics. 2009;32:904. doi: 10.3928/01477447-20091020-17.
8. Lasanianos NG, Lyras DN, Mouzopoulos G, Tsutseos N, Garnavos C. Early mobilization after uncomplicated medial subtalar dislocation provides successful functional results. J Orthop Traumatol. 2011;12:37–43. doi: 10.1007/s10195-011-0126-2.
9. Leitner B. Behandlung und Behandlungsergebnisse von 42 frischen Fallen von Luxatiopedis sub talo im Unfallkrankenhaus Wien in den Jahren 1925–1950. Ergeb Chir Orthop. 1952;37:501–577.
10. Lugani G, Rigoni M, Puddu L, Santandrea A, Perusi F, Mercurio D, Cont F, Magnan B, Cortese F. Subtalar dislocation: a narrative review. Musculoskelet Surg. 2022;106:337–344. doi: 10.1007/s12306-022-00746-x.
11. Pavić R. Talocalcaneal transfixation in total dislocation of the talus and subtalar dislocations. Mil Med. 2009;174:324–327. doi: 10.7205/milmed-d-00-8408.
12. Waldrop J, Ebraheim NA, Shapiro P, Jackson WT. Anatomical considerations of posterior tibialis tendon entrapment in irreducible lateral subtalar dislocation. Foot Ankle. 1992;13:458–461. doi: 10.1177/107110079201300805.