



Keywords:

Cedell's fracture; Posteromedial talus fractures; Endoscopy; Tibial nerve neurolysis

Introduction:

Fracture of the medial tubercle of the posterior process of the talus is a rare injury, described by Cedell and named after him as Cedell's fracture [1].

The posterior process of the Talus is a bony projection that helps to maintain the relationship between the anatomical structures and as an attachment point for ligaments. It is composed of two tubercles, medial and lateral, with a groove between them that allows the passage of Flexor Hallucis Longus (FHL) tendon. The next anatomical structures to the medial side are the neurovascular bundle, Extensor Digitorum longus and Tibialis anterior tendons in this order. This fracture can present only as a local posteromedial ankle pain, but it can also block or irritate the adjacent structures, especially the FHL and neurovascular bundle and by this cause irradiating pain.

Combination of difficulty to observe this fracture on plain x rays due to its anatomical location, and low index of suspicion due to its rare incidence, explains why this injury is often misdiagnosed as ankle sprain and treated accordingly [2]. This may lead to unsatisfactory results with persistent chronic pain and difficulty to return to sport [3].

The treatment of such injury depends on the size of the fragment, the amount of translation, and the time passed since the injury [4]. Usually for acute nondisplaced fractures, conservative treatment with cast immobilization is indicated [5]. For displaced or nonunion cases, a surgical treatment is advised that can be either ORIF for large fragments or excision for small fragments. For ORIF, the open posteromedial approach is usually used while excision can be done in open surgery or in an endoscopic fashion [6,7]. Endoscopic excision for this fracture was previously described and recently a series of 9 Cedell's fractures that went through endoscopic excision was published with good results [7,8]. We report here an endoscopic treatment of Cedell's fracture nonunion, the uniqueness of the case described here is that the fragment is in contact with the Tibial nerve as well as the FHL tendon. The patient gave informed consent to publish this case.

Case Report:

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Arthro CT – Fracture of the medial part of the posterior process of the Talus with nonunion in all 3 axes. Note that the subtalar joint is not involved (Figure 2).

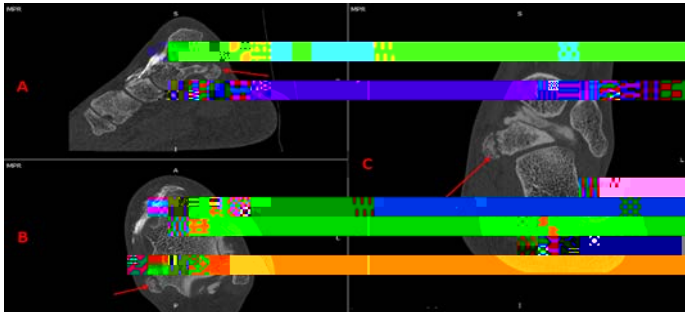


Figure 2: Preoperative CT scan: The red arrow shows the nonunion fragment in sagittal (A), Axial (B) and Coronal (C) views. Note that the fragment is relatively small and does not involve the subtalar joint.

MRI axial view, Fragment that impinges the posterior neurovascular bundle and irritates the FHL tendon (Figure 3), no abnormalities were found in the medial or lateral ligaments of the ankle (not shown).

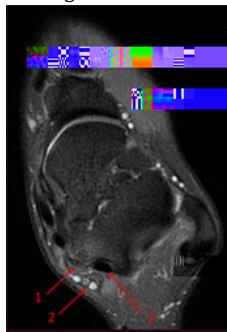


Figure 3: Preoperative MRI- T2 Proton Density fat saturation sequence. Axial view: The fragment is detached from the posterior process (1) and is in contact with the neurovascular bundle (2) and the FHL tendon (3).

Due to the time passed since the injury, the persistent symptoms, and the failure of the conservative treatment, we proposed a surgical treatment endoscopic excision of the fragment and liberation of the Tibial nerve.

Surgical approach

We used the posterior approach as described by Van Dijk [9]. Under spinal anesthesia the patient was placed in a prone position, the legs were beyond the edge of the table on a padded bar to allow free movement of the ankle (Figure 4A). A tourniquet was placed on the thigh and standard sterilization and sterile cover were set in place. Medial and lateral malleolus, Achilles tendon and calcaneus were outlined and a line connecting the tip of the medial and lateral malleolus is drawn. The two portals are on this line, just medial and lateral to the Achilles tendon (Figure 4B). First, the lateral portal is created with only skin incision followed by blunt deep dissection with mosquito forceps to avoid damage to the Sural nerve. With a mosquito clamp we pass just under the Achilles tendon directing to its medial side pressing the skin from the inside as a marker to create the medial portal.

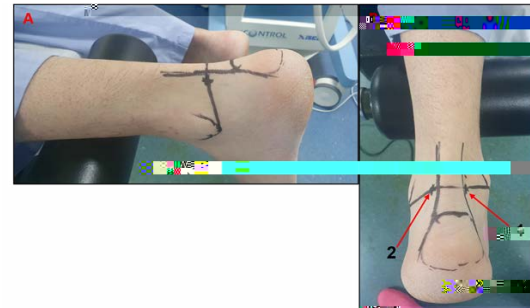


Figure 4: Patient (A) and portals (B) setting: A) The patient is in a prone position, the legs are beyond the edge of the table on a padded bar. B) We outline the medial and lateral malleolus, Achilles tendon and calcaneus, then a line connecting the tip of the medial and lateral malleolus is drawn. The two portals are on this line, just medial and lateral to the Achilles tendon (1+2).

An optic cannula with a trocar is introduced through the lateral portal pointing to the 2nd ray until a bony groove is felt (the subtalar joint) and the trocar is replaced with a camera (30° 4.5 mm). A 3.5 mm straight shaver blade (Dyonics Smith and Nephew) introduced through the medial portal pointing to the lateral side. First, we found a big amount of synovitis and under vision we carefully cleaned it and looked for the subtalar joint. When we see the joint line, the priority is to identify the FHL tendon that serves as a landmark. To do so we carefully glide medially along the subtalar joint.

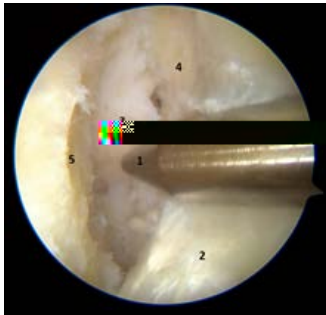


Figure 6: Blunt dissection of fragment: With the use of the tip of trocar (1) we push the FHL tendon (2) and separate between the bony fragment (3) and the tibial nerve (4). the medial wall of the talus is seen (5).

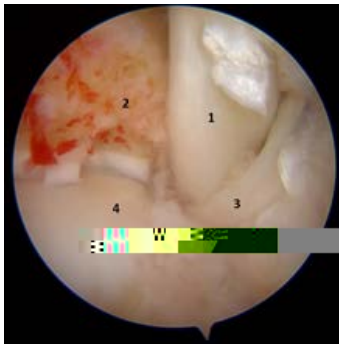


Figure 7: At the end of the procedure the FHL tendon (1) is in his place between the excise lateral process of talus (2) and its retinaculum (3). The upper surface of the calcaneus is seen (4).

Postoperative care

The patient was discharged on the same day, he was allowed immediate full weight bearing. For the first week he was asked to keep his leg up while resting and using cold compression a couple of times per day to

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