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Case Report

Flipped Talar Osteochondral Fracture Fragment Presenting as a Locked Ankle: A Case Report

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Abstract

Osteochondral injuries are described as a disruption between the cartilage and sub-chondral bone which leads to damage to the joint cartilage and ultimately can lead to separation of the fragment. Osteochondritis dissecans, osteochondral lesions and osteochondral fractures or defects are the various terms that have been used in the literature to describe these injuries. They are common injuries and can occur concurrently with ankle fractures. Most of these injuries are in the talar dome region [1].

To our knowledge, there have been no reports of osteochondral fractures of the talus leading to a completely locked ankle joint. Though locked knee is a common presentation due to meniscal tears, loose bodies or displaced osteochondral fractures, it is unusual for the same to occur in the ankle [2]. Locked ankles have been reported in the literature post displaced ankle fractures or ligament injuries. However, locked ankles due to a displaced osteochondral talar fragment are rare.

We report a case of a young male who sustained a twisting injury to his right ankle while playing recreational football and presented with a painful locked ankle. He was successfully treated by open reduction and internal fixation of the displaced talar osteochondral fracture fragment using a TwistCut screw. He made an excellent recovery post-operatively with full ankle function.

This report highlights osteochondral fracture of the talus as a rare cause of a locked ankle and will help physicians in keeping this possibility in mind while treating a case of locked ankle.

Keywords: *Locked Ankle; Osteochondral Fracture; Talus; Injury; Fixation*

Abbreviations

BMI: Body Mass Index; MRI: Magnetic Resonance Imaging

Introduction

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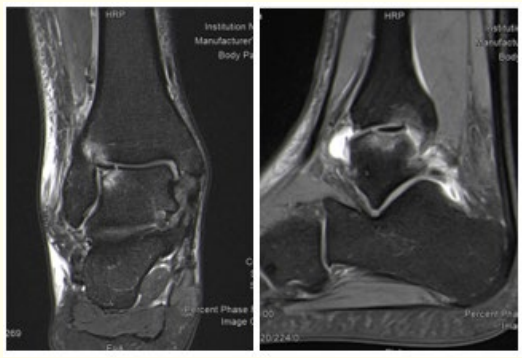
Case Presentation

An 18-year-old male with a BMI of 22.6 presented to the Orthopaedic clinic with a ten-day history of a twisting injury to his right ankle while playing recreational football. Prior to presenting to the clinic, he had tried oral anti-inflammatory medication to ease his symptoms. He presented to the clinic with severe pain and total loss of movements of his ankle. He was unable to move the ankle as it was fixed in 10 degrees of dorsiflexion and unable to weight bear (Picture 1). He had severe tenderness over the anterior aspect of the joint line with swelling and deformity of the joint. Radiographs demonstrated a flipped osteochondral fracture of the talar dome on the lateral aspect (Picture 2). He underwent 3 Tesla Magnetic Resonance Imaging (MRI) scans, which revealed traumatic bone bruises with a separated fracture involving the lateral articular surface of the talus with edema of the opposing tibial surface. The loose fragment seemed to have flipped over and measured 13 mm x 9 mm (Picture 3).

Picture 1

Picture 2



Picture 3

Picture 4

Surgical technique

After due informed consent, the patient underwent anterolateral arthrotomy of the right ankle by a short skin incision. A large displaced piece of the osteochondral fracture fragment was identified trapped in the joint between the talar and tibial plateau articular surfaces. It was retrieved with difficulty. The bed of the fracture was cleaned, drilled and prepared. The fragment was then seated in its bed and secured with a 13 mm TwistCut screw. Good fixation was achieved. The ankle joint moved freely without any block.

Postoperative protocol

After the procedure, the patient was placed in a short leg plaster splint and instructed not to put any weight on his operated leg for two weeks. His wounds healed well without infection. Radiographs at the two-week post-operative stage revealed good fixation of the fracture fragment and he was allowed partial weight bearing from week 4 onwards. He progressed to full weight bearing by week 6 and was advised to refrain from contact sports for a month. Recent radiographs have confirmed full healing of the osteochondral fracture fragment. He is walking full weight bearing with no pain.

Discussion

The dome of the talus is a common site for osteochondral lesions. The usual cause is trauma. Most studies in the past have proven that these injuries are more common on the medial side of the talar dome. A meta-analysis has confirmed that close to 60 percent of these injuries are on the medial side of the talus [3].

Hamilton., *et al*. have shown that posteromedial injuries to the talus occur with milder trauma, but the lesions are deeper and wider whereas antero-lateral fractures are wafer like or flake shaped [4]. Medial talar dome fractures usually occur following inversion injuries due to plantarflexion or direct and severe trauma to the bone. In contrast, fractures of the lateral side, which are related to dorsiflexion, usually occur following shearing injuries. Most reports have proved that the lateral dome fragments are usually stable [5,6]. However, this is in contrast to our case where the fragment flipped upside-down causing the ankle joint to be locked. To our knowledge, this is the first case where a lateral osteochondral fracture fragment has flipped upside-down to cause a completely locked ankle.

Several classification systems have been described for osteochondral lesions of the talus. Hepple., *et al*. described a classification system based on MRI scans [7] (Figure 1). Our case is a classic example of stage IV wherein the fracture fragment is detached and displaced. The recommended treatment is an arthroscopic or open reduction and internal fixation [8]. In this case, we opted for open reduction and internal fixation as arthroscopy was difficult due to the locked ankle and the large size of the fracture fragment. Internal fixation of these fragments have shown to preserve hyaline cartilage, preserve the original talar dome morphology and restore subchondral bone morphology [8].

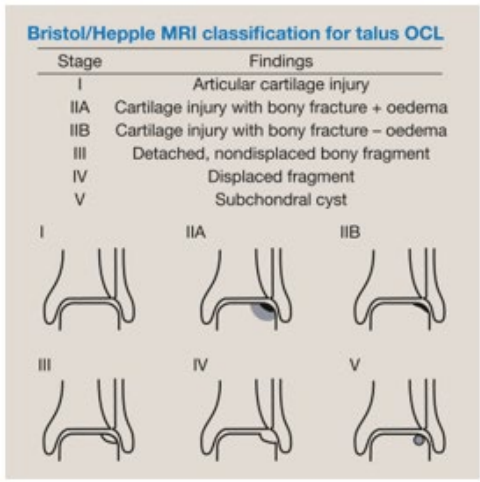


Figure 1

Different fixation methods have been described in the literature for large displaced fragments of the talus. The minimum amount of bone required on the fragment side to facilitate fixation is 3 mm in thickness and 10 mm in diameter [8,9]. However, the shape of the fragment also plays an important role. A recent consensus group publication has advised using two devices for fixation out of which one should be a compression device [9]. In this case, we opted to use a single compression device due to the size constraint of the fracture fragment. Sealing of the defect after fixation is not necessary as per the consensus group and we did not seal the defect.

Conclusion

Clinicians need to be aware that displaced osteochondral fractures of the talus can present as a completely locked ankle. MRI imaging helps to ascertain the size and geometry of the fracture fragment to help plan the treatment. Prompt open reduction and anatomic internal fixation is the treatment of choice. Fixation methods may vary but a compressive device is mandatory to achieve optimum fixation.

Patient Consent

Complete informed consent was obtained from the patient for the publication of this study and accompanying images.

Conflict of Interest

None.

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