

UNUSUAL ANKLE FRACTURE: A LITERATURE REVIEW

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ABSTRACT

Background:- Fractures of the talus are unusual, and talar body fractures in the sagittal plane are still rarer. Its treatment aims a crucial anatomic reduction to reimpose congruency of the ankle and decrease the risk of avascular necrosis by conserving any remaining blood supply. We present the case of a body talar fracture in the sagittal plane related to fracture of the medial malleolus in an adult. The mechanism of the fracture was, internal rotation, plantar hyperflexion, and axial compression. We performed an open reduction and stabilization with two screws for the talus and screwed the medial malleolus.

Material & Methods:- We included 30 patients in this study among which a 25 years old man presented in Department Of Orthopaedics, Mgmch, Jamshedpur, Jharkhand with a grossly expand and deformed right ankle. Radiographs revealed a displaced vertical fracture of the neck of the talus traversing through the body with vertical fracture of the medial malleolus and medial talar shift.

Results:- Fractures of the talus have a relatively little incidence accounting for 0.3% of all bone fractures and 3% to 6% of all foot fractures.[1, 2] Union of the fracture in such a case is extremely slow as it depends on a new blood supply growing into the avascular bone.[3] Hence, the fracture needs preservation for a long time, and non-weight bearing is recommended for three months or until the union has occurred. Malunion can produce substantial alteration in load across the ankle and subtalar joints and result in arthrosis. The reported case should have the best prognosis as it was closed and underwent immediate operative reduction with early signs of revascularization. After 13 months following the injury, the patient had the best range of movement with some pain.

Conclusion:- Talar body fracture associated with ankle fracture is very rare. Still, the malleolar fracture that allows adequate visualisation, anatomical reduction, and appropriate fracture fixation can give us hope to reduce complications.

KEYWORDS : Ankle fracture, Talar body Sagittal fracture, Medial malleolus Screw

INTRODUCTION:-

Fractures of the talus have a relatively little incidence, accounting for 0.3% of all bone fractures and 3.4% of fractures of bones in the foot. Type of these injuries affect the neck of the talus more frequently than its head or body because of the combined traumatic mechanism; sagittal fracture of the talar body is extremely rare. The major complications are the development of avascular necrosis or post-traumatic arthritis. But medial malleolar fracture may preserve the blood supply from the deltoid ligament branches.

MATERIAL & METHODS:-

This study was performed in the Department of Orthopaedics, Mgmch, Jamshedpur, Jharkhand, from April 2020 to May 2021. A 25-year-old man fell while walking on the ground, sustaining a hyper plantar flexion and internal rotation injury to his right ankle. He presented to the Accident and Emergency department with a grossly swollen and deformed right ankle. The skin was intact, with a minor abrasion over the lateral malleolus. There was no neurovascular deficit. Radiographs demonstrated a displaced vertical fracture of the neck of the talus extending through the body with vertical fracture of the medial malleolus and medial talar shift [Fig. 1 (a,b)].

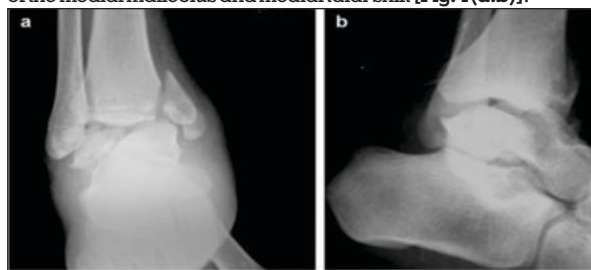


Fig. 1 – (a) Anterior-posterior and (b) lateral radiographs at time of presentation.

Six hours after the presentation, open reduction was performed primarily through an anteromedial approach. A medial malleolar osteotomy was not necessary as this was already fractured, giving adequate access, as described by Rammelt and Zwipp.^[4] The deltoid ligament was protected. The lateral half of talar dome was found rotated posteriorly along with some small loose fragments. These were removed, and the fracture was fixed with two AO cancellous lag screws under fluoroscopy. The medial malleolus was fixed with malleolar cancellous screw and K-wire [Fig2].

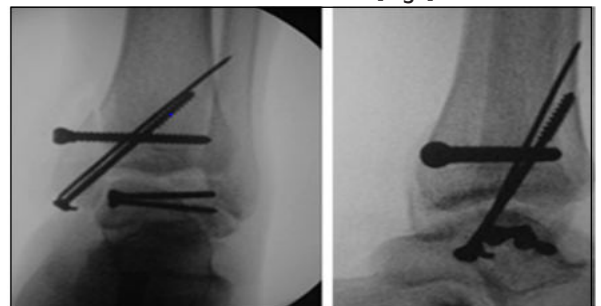


Fig.2- Anterior-posterior and lateral radiographs post reduction

He remained non-weight bearing for six weeks, where upon the frame and K-wires were removed. The left ankle was kept in a below-knee non-weight bearing plaster for six weeks. Radiographs at six weeks demonstrated Hawkins's sign. The plaster was removed, and the patient was kept non-weight bearing for another six weeks, followed by progressive weight-bearing and physiotherapy. The range of movement continues to improve, the present range is plantar flexion 20 degrees, dorsiflexion 10 degrees, and eversion 10 degrees. At 14 months follow up, a functional assessment using the AOFAS rating scale showed 87 out of 100 points. Ankle radiographs

showed minimal post-traumatic osteoarthritic changes of the ankle joint, no collapse of the talar body and no joint incongruity [Fig-3[a,b]]



Fig. 3 Lateral (a) and anterior-posterior (b) X-ray after removal of the screw fixation.

RESULTS AND DISCUSSION:-

Fractures of the talus have a relatively little incidence accounting for 0.3% of all bone fractures and 3 to 6% of all foot fractures. Talar body fractures of the talus are uncommon, accounting for 7 to 38% of all talus fractures.^[5] Sneppen et al. defined fractures that occur in the vertical plane as shearing fractures.^[6] They explained fractures whose plane is close to the sagittal plane as sagittal shearing fractures. S. Inokuchi et al.^[7] described sagittal fractures which run from the lateral, not the medial, approach of the sinus tarsi to the sulcus of the flexor hallucis longus on the inferior surface of the talus. We could get only a few cases in English literature with a similar injury. The fracture pattern in our case suggests axial loading while the foot is in plantar hyperflexion associated with an inversion seems to distribute forces to the medial structures, producing a vertical split of the talar body and the medial malleolar fracture. Such a force would result in severe soft tissue and ligamentous damage around the talus, resulting in a severe vascular injury. Our case demonstrated the Hawkins sign at six weeks post-injury, which is a sign of remodeling and is highly predictive of the revitalisation of the talar body: radiolucent zone in the subcortical bone of the talar dome.^[8] Avascular necrosis is an issue that would be expected following such an injury pattern, but injuries associated with a medial malleolar fracture are low likely to develop avascular necrosis. This is due to preserving the deltoid ligament and the associated deltoid branch of the posterior tibial artery supplying the talar body. Union of the fracture in such case is extremely slow as it depends on a new blood supply growing into the avascular bone. Therefore the fracture needs protection for a long time, and non-weight bearing is recommended for three months or until the union has occurred. Post-traumatic arthrosis varies from 16% to 100% after talar body fractures. Malunion can produce substantial alteration in load across the ankle and subtalar joints and result in arthrosis. Anatomic and stable reduction of talar body fractures is of paramount importance for obtaining a reasonable functional outcome. The reported case should have a good prognosis as it was closed and underwent immediate operative reduction with early signs of revascularization.

CONCLUSION:-

Talar body fracture associated with ankle fracture is a rare, usually high-energy injury characterized by a high incidence of complications and poor prognosis. But the malleolar fracture that allows adequate visualisation, anatomical reduction, and appropriate fixation of the fracture can give us hope to reduce complications and improve the outcome. [Fig-3 a,b]

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