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Rupture of posterior tibial tendon in a bimalleolar ankle fracture: A case report

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Abstract

A Posterior Tibial Tendon injury associated with Bimalleolar ankle fracture was identified in a 57 year old male intraoperatively and was subsequently fixed with non-absorbable sutures. The patient was followed up for 4 months post operatively to denote posterior tibial tendon healing and outcome compared to contralateral side. High resolution usg monitoring was done and findings are disclosed.

Keywords: Tibial tendon, bimalleolar ankle fracture, non-absorbable sutures

Introduction

A case report is presented on a posterior tibial tendon rupture in a bimalleolar ankle fracture. The fracture was treated with open reduction and internal fixation with appropriate soft tissue repair, this case report illustrates the importance of identification of important soft tissue injury and their repair.

Case Report

A 57 year old male was involved in a road traffic accident and presented to the emergency department. On initial evaluation of the affected limb a 1 cm superficial wound over the medial side (Fig 1) and a bimalleolar ankle fracture was revealed (Fig 2). No initial sensory, motor or vascular deficit was present. After thorough washing with normal saline a below knee POP slab was given, and reduction of a subluxated ankle fracture was attempted which was not successful (Fig 3). Patient was admitted for further management and limb was elevated over pillows. No initial wound exploration was done in the emergency department. 2 days after the trauma with proper pre operative workup and a negative COVID test patient was posted for open reduction and internal fixation of bimalleolar ankle fracture. He was placed supine on the operating table, a tourniquet was applied over mid thigh and he underwent surgery under spinal anesthesia. While operating on the medial malleolus fracture a torn end of a soft tissue was seen and with further exploration it was identified as the posterior tibial tendon (Fig 4, Fig 5). Direct repair of posterior tibial tendon was done with modified kessler technique with 2-0 prolene (Fig 6). After ORIF pt was immobilised in a below knee POP slab.

As per our institution's protocol patient was discharged on the 4th post operative day and was asked to review on the 14th post operative day for suture removal while remaining non weight bearing in a below knee POP slab.

On the 14th post operative day operative sutures were removed in orthopedic OPD.

Pt was reviewed in Orthopedic OPD on 35th post operative day and a roentgenogram of left ankle was taken in AP and Lateral view, implant was seen in place with adequate fixation and union in progress.

POP slab was removed on 42nd post operative day and patient was allowed to bear partial weight and full weight over left ankle since 56th post operative day. As the patient was a working employee in SAIL Bhilai steel plant he was made fit to join his regular duties from 60th post operative day.



Fig 1: Initial image of the patient on presentation in ED. A 1 cm wound can be seen over the medial side of ankle



Fig 2: Initial radiograph shows a displaced medial and lateral malleolus fracture of left ankle. Reduction was attempted in the ED



Fig 3: Radiograph taken after attempted reduction in ED and below knee POP slab application. Reduction attempt was unsuccessful

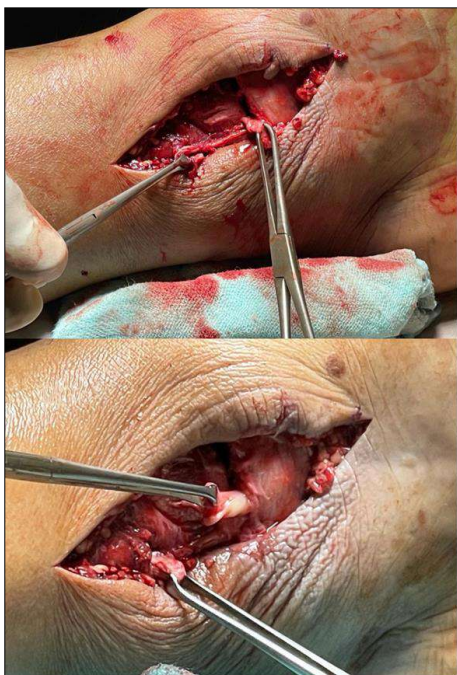


Fig 4, Fig 5: Intraoperative photographs were taken after identification of posterior tibial tendon injury while attempted fixation of medial malleolus fracture. Both ends of the tendon were identified for direct primary repair



Fig 6: PTT was repaired using modified kessler technique with 2-0 Prolene after proper approximation



Fig 7: Radiograph taken on 42nd post operative day which shows a well reduced ankle with implant in situ and union in progress

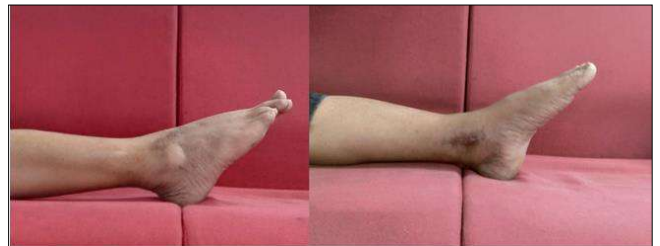


Fig 8: On his 4th month followup the patient presented in the orthopedic surgery opd with painless ROM of ankle and similar plantar flexion as contralateral side

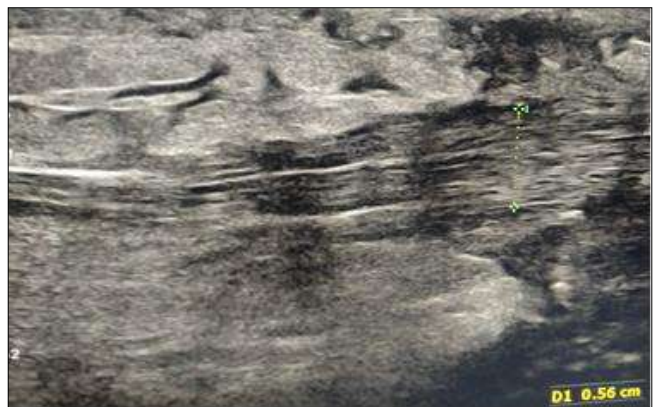


Fig 9: HR US of involved side showing mild increase in diameter of posterior tibial tendon with continuity of fibres



Fig 10: HR US of uninjured side showing normal posterior tibial tendon

Discussion

The tibialis posterior tendon has a significant role in the plantar flexion of the ankle and inversion of the foot. It is also an essential stabilizer of the medial longitudinal arch. The tendon dysfunction can lead to acquired flatfoot deformity in adults. It lies immediately posterior to the medial malleolus passing through a fibro-osseous tunnel where it changes direction acutely, like a bowstring^[1]. The complete rupture of the posterior tibial tendon (PTT) associated with ankle fractures is a rare frequently overlooked condition that can cause long-term patient disability if not properly treated^[2]. The pain associated with the injury limits the clinical examination, making it difficult to diagnose the injury^[3]. Lauge-Hansen pronation and external rotation ankle fractures with a forced dorsiflexion moment are the most commonly reported mechanisms of injury because this position places maximal stress on the tibialis posterior tendon^[6]. Posterior tibialis tendon rupture without repair can ultimately lead to severe pes planovalgus deformity followed by possible degenerative changes to surrounding joints and pain^[7]. The loss of its function causes pronation of the hindfoot during the last phase of the gait, instead of supination, leading to progressive flatfoot deformity, which may be painful and cause disability^[8].

Conclusion

The tibialis posterior tendon injury in association with ankle fracture is quite uncommon and careful examination of the surgical field is needed to rule out any devastating concomitant injury. Appropriate soft tissue repair is necessary to avoid long term debilitating consequences.

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Informed consent: Informed consent obtained.

Human rights: The patient knows about reporting his injury in a foreign medical journal.

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