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Traumatic foot drop due to tibialis anterior and extensor hallucis longus tendon rupture: A rare case report

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Abstract

The authors present a rare case report from the time when India was struggling with a huge surge in corona cases and the mortality due to it was touching new peaks day by day. Not only the oxygen, ventilators and ICU beds but also cremation sites were overwhelmed by masses of COVID deaths. We report a rare case of a 30 year old male woodcutter in cremation ground, whose axe accidentally slipped while cutting woods and injured his leg. Wound exploration and clinical examination confirmed our diagnosis foot drop due to traumatic rupture of anterior compartment muscle & tendons and radiograph confirming unicortical fracture of the tibia. Patient was taken to emergency OT and operated under spinal anesthesia and tendons repaired using modified Kessler technique. Traumatic rupture of the tibialis anterior (TA) tendon represents a very rare foot injury. A combined injury of the tibialis anterior (TA) and the extensor hallucis longus (EHL) tendons has hardly been reported. The rarity of this case prompted us to report it.

Keywords: Tibialis anterior, Traumatic foot, mortality due

Introduction

The lower leg subdivides into four compartments which are the anterior, lateral, superficial posterior and deep posterior compartments. The anterior compartment contains the tibialis anterior, extensor hallucis longus, extensor digitorum longus, and peroneus tertius muscles, innervated by the deep peroneal nerve and supplied by the anterior tibial artery. The key function of the muscles of the anterior compartment of the lower limb is dorsiflexion of the ankle and extension of the toes. The exact contribution of the Tibialis Anterior, Extensor Hallucis Longus, and Extensor digitorum longus to pedal extension can be derived from the individual muscle's torque. The musculus TA contributes 55%, the EHL 15%, and the extensor digitorum longus 30% [1].

Although disruption of TA tendon is a rare condition, it is the third most common ruptured tendon in the lower limb, after the Achilles tendon and Patellar tendon [2]. While the true incidence of EHL tendon lacerations is unknown, the largest reported series of extremity muscle and tendon disruptions found that 11% of lower extremity cases involved toe extensors [3].

Different treatment strategies were described from conservative treatment to a myriad of surgical reconstruction techniques. Although several articles tried to present guidelines for treatment of TAT rupture, no consensus has been reached [4].

Case report

A 30 year old male, woodcutter by profession from Haryana presented to orthopaedics accident and emergency with alleged history of trauma with metallic sharp object over leg with pain and wound over leg. On examination, there was a lacerated wound of 5cm x 2cm x 2cm on anterior aspect of distal 1/3rd leg with foot drop. Patient was calm, conscious, and haemodynamically stable.

There was no sensory deficit distally and dorsalis pedis and posterior tibial artery pulses were palpable. Wound was washed thoroughly with normal saline and examination of wound revealed rupture of tibialis anterior and extensor hallucis longus tendon along with muscle tears and fracture of distal 1/3rd tibia with no abnormal movements at fracture site. IV antibiotic, IV fluids and IM injection tetanus toxoid were given. We confirmed our examination findings by radiological investigation. USG colour Doppler showed triphasic flows in dorsalis pedis and posterior tibial arteries and radiograph showed unicortical fracture of distal tibia. Preanesthetic check-up investigations were then done. COVID RTPCR nasal and throat swabs were sent. He was then shifted to emergency OT and operated under spinal anesthesia. Operative parts scrubbed and clean draped. Incision extended over anterior aspect of distal leg to extend the lacerated wound to expose the cut tendons and muscles. Ruptured TA and EHL tendons were then identified and repaired using modified Kessler technique using proline. Wound margins were then debrided and closure was done after thorough washing of the wound and dressing was done under aseptic conditions. He was then admitted in orthopaedic trauma ward for wound management and IV antibiotics. He was discharged on 3rd post-operative day on above knee POP back slab and advised follow up after 2 weeks of regular dressings. On 14th postop day sutures were removed. Wound was found to be healthy. Aseptic dressing was done and then POP cast was given for another 4 weeks. Cast was removed after 4 weeks and physiotherapy was then commenced. Partial weight bearing in walking boot was allowed. He returned to normal activity after 3 months from the date of injury.



Fig 1: Lacerated wound at presentation



Fig 2: Radiograph of affected limb showing unicortical fracture of the tibia.



Fig 3: Clinical images of ruptured tendons on wound exploration



Fig 4: Clinical image of repaired tendon



Fig 5: Operative wound post closure

Discussion

Combined tear of EHL and TA tendon is extremely rare and literature is limited in respect of this topic. Under conservative management use of orthoses, activity modification, and physiotherapy were reported for treatment of TAT ruptures [5]. Several surgical techniques including direct end to end repair, fixation to medial cuneiform or navicular, lengthening and rotation-plasty procedures, tendon transfer, free allograft or auto graft interposition have been reported [6]. Based on our literature review, surgical treatment of TAT rupture was reported to have good functional results [2]. Most recent studies detailing operative management have described either primary repair or secondary reconstruction as viable options [7].

Markarian *et al.* (1998) [8] compared operative versus non-operative treatment and concluded that because of deficits present in the non-operative group, nonsurgical management can only be seen as an appropriate alternative in low demand, typically elderly patients.

Wolfgang M *et al.* (2005) [9] treated a combined rupture of tibialis anterior and extensor hallucis longus tendons by suturing the EHL tendon to the distal TA tendon stump. The TA insertion was secured and the distal portion of the EHL tendon attached to an extensor digitorum slip. The TA muscle was proximally attached to the tendinous EHL segment. A 1 year follow-up verified very good results, showing the patient without complaints in regard to the trauma.

In this case we have opted for primary surgical repair of the torn tendons using modified Kessler technique in anticipation for better functional outcome.

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