

Case Report

Primary tendon repair in a case of acute traumatic tibialis anterior with extensor hallucis longus tendon rupture in a young male-a case report

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Received: 07 September 2021

Revised: 12 October 2021

Accepted: 13 October 2021

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ABSTRACT

Tibialis anterior tendon rupture is a rare entity which can be either traumatic and non-traumatic. It often presents late due to mild clinical symptoms and signs. Acute ruptures are traumatic occurring in young individuals while chronic ruptures are due to degenerative processes occurring in elderly individuals, commonly after 45 years of age. Tibialis anterior along with extensor hallucis tendon is an even rarer entity, operative management of which becomes mandatory, more so in a young active individual for better outcome. We have a 31-year-old male patient, who presented to us with an acute post traumatic tibialis anterior tendon rupture of 3 days duration which was diagnosed following an initial clinical examination, an unremarkable X-ray picture, and Ultrasonography confirming the diagnosis. The patient was managed with primary repair of the tibialis anterior tendon along with Extensor hallucis tendon (which was found intra-operatively) with 2-0 ethibond sutures using a cross-linked Bunnell technique. The patient regained full ankle range of motion at 8 weeks post operative period with ankle dorsiflexion and great toe extension back to pre-injury state. As we have seen with this case, early primary repair in a case of acute rupture at tibialis anterior and extensor hallucis longus rupture with non-absorbable suture has significant improved post operative outcome in terms of return of the affected range of motion and can be practice safely in new hands with limited resources as material of suture and technique has not significant effect in post operative outcome. Acute tibialis anterior and extensor hallucis tendon rupture, non absorbable suture, ethibond, cross linked Bunnell technique.

Keywords: Acute tibialis anterior, Extensor hallucis tendon rupture, Non absorbable suture, Ethibond, Cross linked Bunnell technique

INTRODUCTION

Tibialis anterior tendon rupture is a rare entity which can be either traumatic and non-traumatic. It often presents late due to mild clinical symptoms and signs. Acute ruptures are traumatic occurring in young individuals while chronic ruptures are due to degenerative processes occurring in elderly individuals, commonly after 45 years of age.¹ Choice of surgical technique depends on surgeon with some postoperative results.² Traumatic rupture of tibialis anterior has favorable outcome when repaired surgically than managed conservatively.³ Surgical repair can be a primary repair, primary repair with augmentation, extensor hallucis longus transfer, extensor digitorum longus

transfer. Diagnosis of tibialis anterior repair is often missed in acute phase when non traumatic, as clinically similar to peroneal nerve injury. Primary repair in chronic cases not shown great result, hence prompt suspicion of tear becomes vital for primary repair. Early repair has early rehabilitation with better postoperative outcome as per study performed at Cincinnati sports medicine and orthopaedic centre, Cincinnati, Ohio.⁴ As per current recommendations surgical repair has improved AOFAS hindfoot score postoperatively. However, the non-operative (non-anatomical) management vs operative management as studied by Markarian et al shows results which guide us to choose surgical technique according to clinical scenario.³

CASE REPORT

A 31-year-old male construction worker came to casualty with complaints of inability to dorsiflexion at left ankle for 3 days following a floor tile weighing around 3-4 kgs was slipped from his hand and struck on his left ankle, following which he sustained a lacerated wound of size 5×2×1 cm (Figure 1). Patient has no other comorbidities. On examination, obvious swelling and tenderness at injured site with 0/5 power on dorsiflexion at ankle and 0/5 at extension at great toe. Patient initially evaluated with x rays and found to have no obvious fracture line at injured site (Figure 2 and 3). ultrasonography at left ankle suggestive of tibialis anterior tendon rupture. Young male with diagnosed tibialis anterior rupture on ultrasonography was planned for surgical repair after necessary investigations. MRI was not done as ultrasonography finding was sufficient for operative plan.



Figure 1: Clinical picture.



Figure 2: X ray ankle lateral.



Figure 3: X ray ankle AP.

Surgical technique

The patient was placed in a supine position over the operating table. Induced under all aseptic precautions and under spinal and epidural anesthesia. Scrubbing, panting and draping was done. A Z-shaped zig zag incision was taken by extending the existing wound proximally and distally nearly 5 cm. Skin, subcutaneous dissection done, flap raised (Figure 4). Proximal and distal end of the tibialis anterior tendon were identified (Figure 5) with further dissection on medial side as suspicion of extensor hallucis tendon tear was suspected clinically though not reported in ultrasonography, was found to be torn intraoperative and the decision was taken to repair the same. The proximal and distal end of extensor hallucis tendon were identified (Figure 6). Tendons were passively stretched and actions confirmed intraoperatively. Sheath at the ends were refreshed and Both tendons were repaired with 2.0 ethibond sutures (Figure 7). Suture technique used was cross linked Bunnell technique. Cross linked Bunnell technique have advantage of less shortening than original Bunnell technique.⁵ Closure in done in layers. Postoperative below knee slab was given in zero-degree dorsiflexion for 3 weeks followed by 3 weeks cast. Suture removal done on 21st day with healthy wound (Figure 8). The patient was started with passive and active assisted ankle ROM exercises at 6 weeks post op. The patient regained full ankle range of motion at 8 weeks post operative period with ankle dorsiflexion and great toe extension back to pre-injury state (Figure 9).



Figure 4: Zig zag incision (extending wound).



Figure 5: Cut ends of tibialis anterior.



Figure 6: Cut ends of EHL.



Figure 9: Post operative 8-weeks range of motion at ankle.

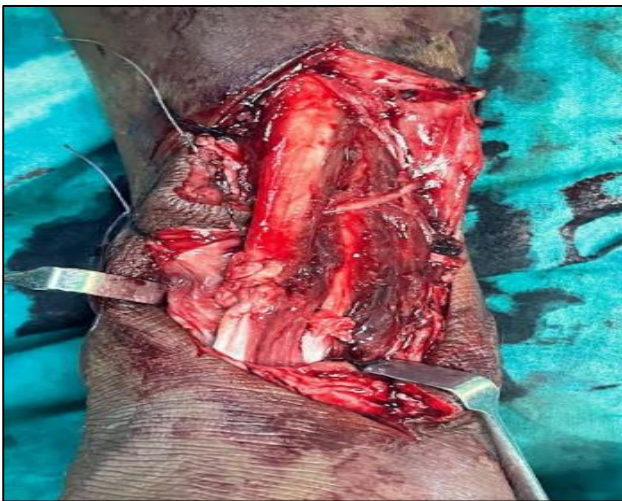


Figure 7: Sutured tibialis anterior and EHL.



Figure 8: Suture out on day 21.

DISCUSSION

Tibialis anterior tendon rupture is a rare entity which can be either traumatic and non-traumatic. It often presents late due to mild clinical symptoms and signs. Acute ruptures are traumatic occurring in young individuals while chronic ruptures are due to degenerative processes occurring in elderly individuals. In chronic rupture repair augmentation or graft transfer require. In such cases augmentation/transfer done by extensor hallucis longus. Our case is acute rupture without true shortening in which lengthening /augmentation not required. Suturing technique developed by Krakow, Kessler and Bunnel have equal postoperative strength as studied in achilles tendon repair.⁷ Absorbable and nonabsorbable material have near equal effect on post operative strength with less suture site postoperative care require for nonabsorbable suture.⁸ In one study data shows not any significant differences in the clinical outcome between acute and delayed suture of the tibialis anterior tendon rupture. And there is no significant difference between different surgical technique used.⁹ Surgical alternatives for tibialis anterior repair are direct interarticular repair, direct extraarticular repair, direct repair through medial cuneiform, non-anatomical repair through navicular bone tunnel, modified Tohen procedure, Kelikian procedure.² Some surgeons use plate and screw fixation of tibialis anterior repair. AOFAS score in our case is improved from 46 to 91 which is comparable to other techniques.¹⁰ All techniques used for surgical repair require good experienced hand mainly in a cases where tear is chronic and require grafting/augmentation, with more skill and experience require in procedures other than direct repair. In county where ankle foot surgeons are limited all cases, we have to search for a technique which can be performed with minimum resources available and gives us near equal outcome.

CONCLUSION

Early primary repair in a case of acute rupture at tibialis anterior and extensor hallucis longus rupture with non-absorbable suture has significant improved post operative AOFAS score and can be practice safely in new hands with limited resources as material of suture and technique has not significant effect in post operative outcome.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: Not required

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Cite this article as: Patel R, Mahajan NP, Chaudhari K, Bagimani P, Gund A. Primary tendon repair in a case of acute traumatic tibialis anterior with extensor hallucis longus tendon rupture in a young male-a case report. *Int J Res Orthop* 2022;8:747-50.