



A Rare Case of an Isolated Complete Rupture of the Anterior Tibial Tendon

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Statement of Purpose

Isolated tibialis anterior ruptures are a rare injury. Both operative and nonoperative treatment have been described for this pathology. It is important to stratify patients based on age, activity level, and comorbidities when deciding upon a treatment modality. In this case study, we describe an isolated complete rupture of the Tibialis Anterior Tendon that was managed with surgical repair.

Literature Review

Complete Tibialis Anterior ruptures is a rare injury, with a limited amount of case series and case reports described in the literature. Acute, traumatic ruptures often occur during sports events, (Anagnostakis). Chronic ruptures occur commonly in male patients from the age of 50-70 (Gynne-Jones) Ouzounian describes a "triad of physical findings" including pseudotumor of the ankle, loss of TA contour over the ankle, and EHL and EDL compensation for ankle DF. Many published studies have advocated for operative repair, with techniques depending on the deficit present. At this time, operative repair is chosen based on surgeon preference. Continued research needs to be done in order to form a standard of care for tibialis anterior operative repair.

Case Study

A 66 year old male initially presented to clinic with new onset of right foot pain. 1 week prior, he was stretching in bed, and felt a "pop" over his right ankle. He denies any numbness or tingling.

He has a past medical history of diabetes mellitus type II and hypertension. He had previously undergone a right foot first metatarsophalangeal joint arthrodesis(2005)

His physical exam revealed an inability to dorsiflex his foot at the ankle and a decrease in inversion strength (3/5). There was mild non-pitting edema noted in the area of the anterior ankle joint. Pedal pulses were palpable and his sensation was intact to examination with the monofilament. His skin exam did not reveal any open ulcerations.

Case Study

Plain film radiographs did not show any osseous abnormalities. A non-contrast MRI of the ankle was obtained and revealed severe tendinosis of the tibialis anterior tendon with complete rupture from its insertion and retraction to the level of the ankle joint.

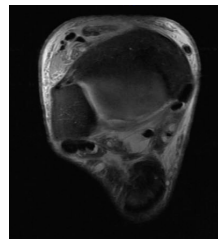
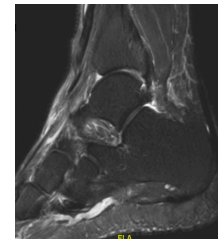
Operative Procedure

The patient was placed in a supine position under general anesthesia with a sciatic block. A thigh tourniquet was applied. A thigh tourniquet was applied. An incision was made at the medial posterior-calf distal to the myotendinous junction of the Achilles tendon. The sheath was opened longitudinally, and the gastroc slip was identified. The slip was transected, with noted improvement in ankle dorsiflexion. The wound was irrigated and layered closure was performed.

Thereafter, an incision was made over the course of the tibialis anterior tendon at the navicular -cuneiform joint to the level of the ankle. The tendon was noted to be detached from the insertion. A second incision was made over the anterolateral leg above the retinaculum to allow for full release of the tendon. The distal tendon was rolled up into a ball like structure; this was transected about 0.5cm proximal and sent for pathology. At this point a need for tendon allograft was identified. A Pulver-Taft weave with was performed using Gracilis tendon allograft to the tibialis anterior tendon and the Bednar modification was applied where the remaining tendon was sewn back on itself. This was performed in a locking stitch fashion with #2 Ethibond. The tendon was pulled through the extensor retinaculum and tension was applied with the ankle just above 90 degrees. The tendon was then anchored into the first cuneiform using an interference screw. The fixation was tested and solid strength was confirmed. The wounds were irrigated, the extensor retinaculum was repaired, and the remaining tissues closed in a layered fashion. He was placed in a posterior splint with a sugar tongue.

Follow-Up

The patient remained NWB in a short leg cast for 4 weeks total, then was WB in a CAM boot. His physical exam 7 weeks s/p repair revealed active ankle DF with a strength of 4/5. He continued to perform at home stretching and strengthening exercise. At a 3 month follow up, there was full strength of the TA tendon, with no residual pain, or need for a gait assisted device. His 1+ year follow showed no residual deformity of the TA tendon.



Analysis/Discussion

Spontaneous tibialis anterior ruptures have been associations noted with local steroid injections, Diabetes mellitus, inflammatory arthropathies, and gout (Sammarco).

Treatment options range from casting, AFO bracing, and physical therapy to operative management. In our described case study, due to the large deficit from the rupture, we opted to utilize a gracilis allograft for repair, with an excellent long term functional result.

In a published case series by Gynne-Jones et al, 5 patients underwent tibialis anterior repairs with the ability to direct repair the tendon and anchor with a transosseous or pullout suture. 2 patients proceeded with nonoperative treatment. The mean FAOS score was 85 in the operative and 51.5 in the nonop treatment group. Unlike the previous case study, this patient had a large deficit where direct repair was not able to be accomplished. Schiff et.al stated that a tendon deficit > 4cm with chronic retraction should be a case to consider an allograft reconstruction in order to avoid sacrificing other vital lower extremity tendons for transfer. If the deficit is <4cm, surgeons can consider autogenous tendon graft sources.

Of note, the most common surgical complications are reduced dorsiflexion, superficial peroneal nerve palsy, neuroma formation, loss of fixation, wound infection (Schiff).

While there is no current standard of operative repair for these ruptures, we can continue to use our past studies to guide future care.

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