Anatomic Reconstruction of Complete Peroneus Longus Tendon Rupture Using Tendon Allograft and an Intraosseous Midfoot Tunnel: A Case Study

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The complete rupture of a tendon can cause long lasting deleterious effects to the function of the foot and ankle.1 While primary end-to-end repair remains the goal, large defects that include avulsion from the tendon’s insertion makes this approach not feasible. The use of tendon allograft can be used to augment the tendon and bridge the gap; however, the course of the tendon may make anatomic realignment difficult through the soft tissues without causing iatrogenic trauma. Alternate solutions, such as creating an intraosseous tunnel, may warrant consideration. The use of tendon allograft, such as the semitendinosus tendon, is well reported in the literature for the repair of large tendon defects.2 Many different approaches have been recorded regarding securing the graft to both ends of the intact tendon and to bone.2 Little has been reported, however, about the technique utilized to reestablish an anatomic tendon course and attachment with large proximal retraction of the tendon.

We present an otherwise healthy 54-year old female who was treated through conservative measures at an outside facility over the course of several months metatarsal-cuneiform and fourth metatarsal-cuboid articulations and received which provided significant pain relief allowing her to begin training for a triathlon. She suffered a significant inversion ankle injury and felt an immediate painful “popping” sensation to the lateral ankle. Initial magnetic resonance imaging (MRI) findings were positive for a complete tear of her peroneus longus retraction of the proximal portion to the retromalleolar space. She then underwent surgical exploration of the tendon tract which revealed findings that correlated to the MRI as well as an intact peroneus brevis tendon. The tendon defect was too large for primary repair, therefore semitendinosus allograft was used. In order to reestablish the tendon’s anatomic insertion site and avoid iatrogenic trauma to vital neurovascular structures in the plantar vault of the foot, an intraosseous tunnel was created through the midfoot avoiding the articular surfaces of the involved tarsal bones. The tendon allograft was passed through this tunnel from medial to lateral and the distal aspect was secured to the medial cuneiform with a corkscrew bone anchor. The distal stump of the peroneus longus tendon was secured to the tendon allograft by the Pulvertaft weave technique.4

CASE STUDY

PURPOSE

The patient was placed in an initial post-operative splint and had minimal pain with oral narcotic analgesics and muscle relaxants. She remained non-weight bearing but was allowed to undergo passive range of motion exercises in a removable boot at three weeks post-operative. At six weeks post-operative she was able to wean back to supportive shoe gear and full weight bearing. At over 18-months follow-up the patient retains adequate pain free muscle strength with proper antagonistic function between the tibialis anterior and peroneus longus muscles as well as a stable first ray.

RESULTS

As demonstrated through this case presentation, the use of an intraosseous tunnel allows for the recreation of anatomic course and insertion of a complete peroneus longus tendon rupture. This technique allows for the avoidance of vital neurovascular structures located in the plantar vault of the foot while maintaining physiologic tension and function.

ANALYSIS and DISCUSSION

References