

Statement of Purpose

Current operative treatment options for chronic lateral ankle pain and instability include anatomic repairs utilizing existing local tissue and nonanatomic reconstructions to mechanically stabilize the ankle. This has been successful for most patients with chronic lateral ankle instability; however, a subset of patients has had unsatisfactory outcomes after initial interventions. For those at risk of failure or have failed initial treatment, anatomic reconstruction of the peroneal tendons using a semitendinosus allograft has led to good long-term stability and patient satisfaction.

Literature Review

Ramdash et al. showed the advantages of the allograft which included no donor site morbidity and the ability to recreate the natural course of the peroneal tendons. The disadvantages include increased cost and potential disease transmission. However, as graft processing techniques have improved, this has become less of a factor and the allograft tendon maintains more of the normal biomechanical properties of natural tendon.

In 1998, Krause and Brodsky were the first authors to propose a classification system to guide the treatment of irreparable tears of the peroneal tendons. If less than 50% of the cross-sectional area of the tendon was viable, segmental resection and tenodesis were performed. However, with this almost two-thirds of the patients reported pain on activities and almost 50% of the patients could not resume full activities.

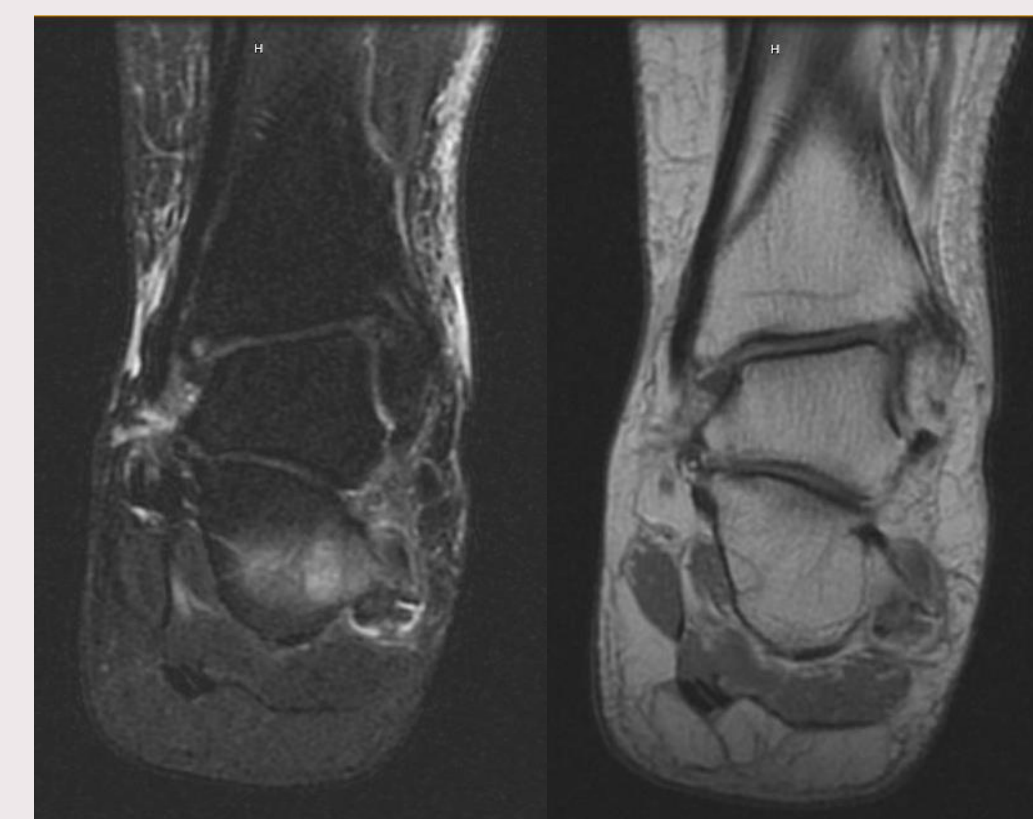
In terms of autografts Ellis and Rosenbaum were the first authors to describe a surgical technique for the reconstruction of the diseased peroneal brevis tendon with hamstring autograft but did not include any clinical results.

Pellegrini et al. in 2016 showed that reconstruction of the peroneal brevis tendon with allograft substantially restored distal tension when the peroneal tendons were loaded to 50% and 100% of physiologic load. Tenodesis substantially decreased peroneal brevis tension under both loads.

In a retrospective series of 14 patients who underwent a peroneal tendon reconstruction with a peroneal or a semitendinosus allograft, Mook et al. showed that all patients returned to their preinjury activity level without pain and yielded satisfactory patient-reported outcomes.

Case Study

60 y/o obese female with a history of gout complained of ankle pain and related no trauma. Sought treatment after gout medication did not relieve pain. Initial visit showed pain on ROM with eversion and muscle strength was 4/5 with eversion. A subsequent MRI was ordered.

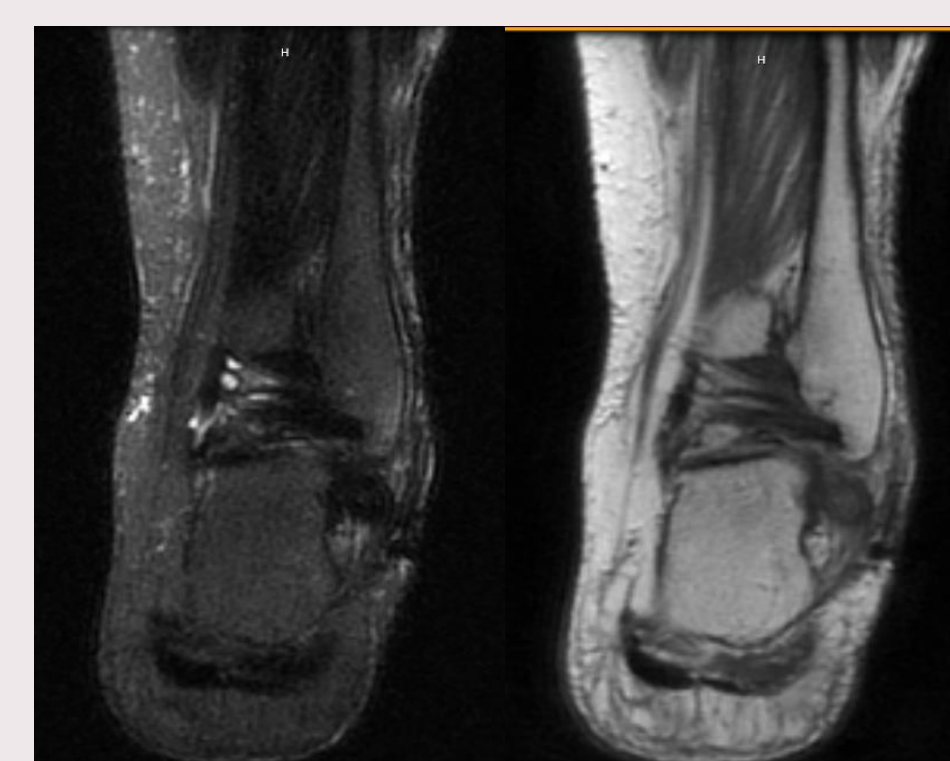


Coronal T2 FS Coronal PD

MRI 1/26/2018:

1. Tenosynovitis peroneus longus and brevis tendons.
2. Partial thickness intrasubstance tear in the peroneus brevis tendon extending from the level of lateral malleolus to the lateral aspect of the body of the calcaneus.
3. Reactive marrow edema in the body of the calcaneus deep to the peroneal tendons.

Patient was initially placed in a CAM walker. This did not alleviate symptoms and discussed repairing the peroneal tear surgically. Symptoms persisted and 3 months after initial visit, the patient underwent surgery. Patient had an excision of os peroneum and peroneus brevis repair with peroneus longus transfer. Patient post operatively was initially doing well but 6 months post surgery still was complaining of pain, stiffness, limited ROM and interruption of activities of daily living. MRI was ordered for re-evaluation.

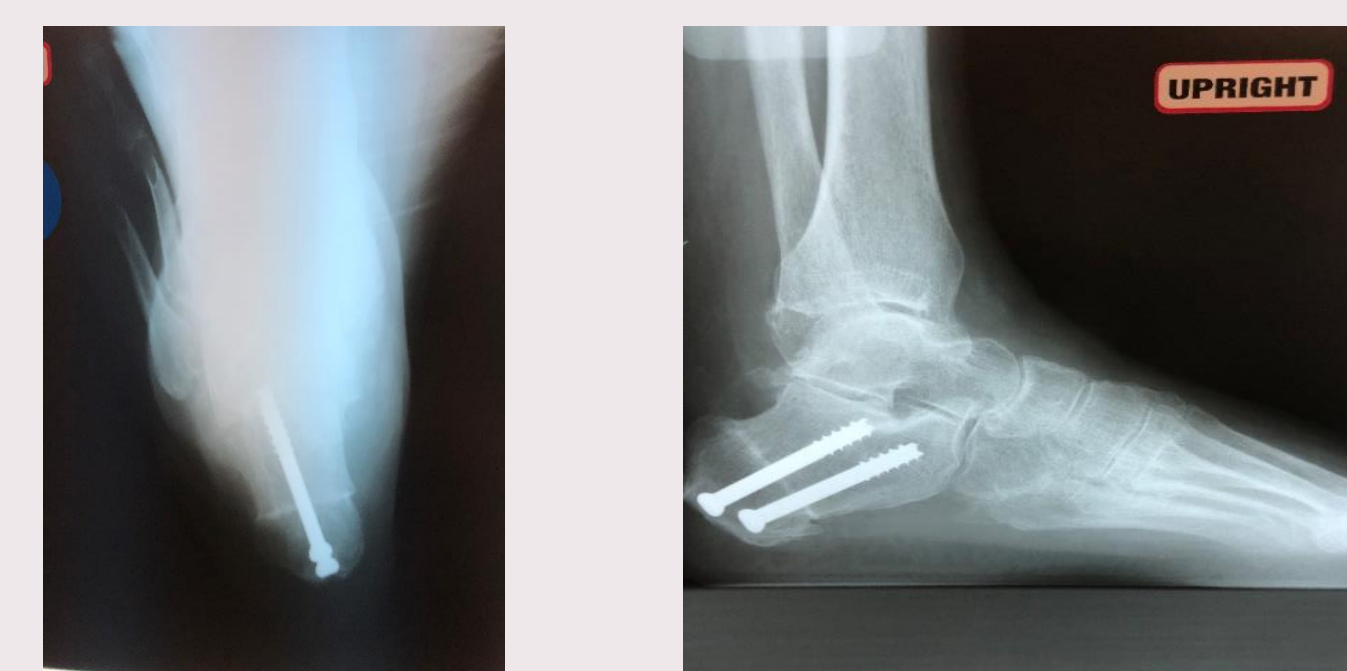


Coronal T2 FS Coronal PD

MRI 11/29/2018:

1. Findings suggestive of full-thickness tear of the peroneus longus tendon along the lateral border of the calcaneus.
2. Findings suggestive of partial thickness intrasubstance tear in the peroneus brevis tendon below the level of lateral malleolus.

8 months after initial surgery and subsequent MRI findings, patient underwent second surgery. Patient had a lateralizing calcaneal osteotomy with intercalary allograft reconstruction utilizing semitendinosus cadaveric graft.



Postoperatively patient underwent formal aquatic therapy and received an Arizona brace. Patient had initial pain and stiffness that subsided around 7 months post second surgery.

Case Study Continued

At 7 months, postoperatively the VAS score had decreased. Postoperative eversion strength had improved. There was no numbness along the sural nerve distribution. There were no postoperative wound healing complications, infections, or tendon re-ruptures. No allograft associated complications were encountered. The patient returned to their preinjury activity levels.

Subsequently 10 months after second surgery or 1 year and 10 months since initial encounter patient is clinically complaining of pain while the ankle itself is functionally better in terms of ROM and Muscle strength.

Analysis & Discussion

Anatomic lateral ankle reconstruction with a semitendinosus allograft for the treatment of chronic ankle instability and peroneal tears leads to high patient satisfaction, decreased pain, a stable ankle, and significantly improved function. Near-anatomic placement of the allograft provided good ankle stability without sacrificing subtalar motion or predisposition to subtalar arthritis in short-term follow-up.

In this case after abstract had been submitted, the patient subsequently started to complain of pain. Functionally she is doing better but clinically is still painful.

The semitendinosus allograft was an appropriate and indicated surgery after the subsequent peroneal rupture. However, there is always more than one solution. Seybold et al argue that an FHL or FDL autograft tendon transfer is appropriate. They were successful in both FHL and FDL autograft transfers in cases of concomitant peroneus longus and brevis tears. This procedure did not appear to alter or inhibit patient activity levels and had high satisfaction rates with the procedure. With that Qianru et al. in an MRI study of autograft vs allograft in lateral ankle repairs showed that autograft had some superiorities in respect of revascularization process, collagen structure, water content, and tendon properties.

In conclusion, the semitendinosus autograft is a powerful salvage procedure especially when faced with irreparable tendons. In this case, biomechanically the patient is doing well but because of the continued pain, the use of an autograft such as the FDL might have made a difference due to the increased revascularization and collagen structure of an autograft.

References

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