CHAPTER **51**

LATERAL ANKLE STABILIZATION USING ALLOGENEIC TENDON GRAFT

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INTRODUCTION

Lateral ankle instability is a common disorder that is seen following 15-48% of acute ligamentous injuries.[1] Most of these patients complain of frequent inversion ankle injuries and the accompanying symptoms of pain and swelling. Conservative treatments such as bracing, peroneal muscle strengthening, proprioception training, and other physical therapy modalities are often successful in alleviating these symptoms. For those patients who fail conservative treatment, some form of lateral ligamentous ankle reconstruction is often warranted. There is extensive literature detailing the many different methods of restoring stability to the lateral ankle complex. The majority of them describe a direct reconstruction of the lateral ankle ligaments such as a modified Brostrom procedure. Others detail some form of peroneal tendon autograft placed in an anatomic position to stabilize these weakened ligaments. These peroneal tendon surgeries have been shown to be very stable, but at the same time it sacrifices the original anatomic function of the harvested tendon.[2] New techniques using cadaveric tendons for lateral ankle stabilization procedures are being described in the literature with very good results.[3,4] The authors of this paper have been successfully using this allogeneic free graft method and will describe their technique in the following case study.

CASE STUDY

A 44-year-old male was seen for a chief complaint of right chronic ankle instability. He worked as a local firefighter and had a high daily physical demand causing multiple inversion ankle sprains on a weekly basis. He had undergone a previous Brostrom type of procedure in September of 2000. This surgery had worked initially, but after 2 years his ankle sprains with accompanying symptoms had returned. The patient displayed pain along the anterior talofibular and calcaneofibular ligaments. He also exhibited a positive talar tilt and anterior drawer test radiographically. Conservative treatment including braces, orthotics, and physical therapy modalities had all failed.

Secondary to his previous failed surgery and high daily physical demands, it was deemed appropriate to do a lateral ligament reconstruction using allogeneic free tendon graft. The procedure was performed in September of 2004. The incision line followed the vertical scar along the lateral fibula from the previous ankle stabilization surgery. Dissection was carried to the level of the distal fibula where periosteum and capsule was elevated, exposing the previous insertion of the anterior talofibular and calcaneofibular ligaments. It was necessary to elevate the peroneal tendons to gain exposure to the calcaneofibular ligament region. Two converging tunnels where then created in the fibula using a 5mm drill bit. This was oriented from anterior to posterior making a 90 degree bend inferiorly at the midpoint of the fibula. The bend at the converging drill holes was rounded using a bone curette. Cadaveric semitendinosis tendon graft was passed through the tunnel in the fibula and under the peroneal tendons. It was then inserted into the calcaneus using an absorbable Arthrex Biotenodesis Screw, simulating the calcaneofibular ligament. The tendon graft was then placed under proper anatomic tension and inserted into the lateral talus using a non-absorbable Arthrex Biotenodesis Screw. This simulated the anterior talofibular ligament. Fluoroscopic evaluation was then used to confirm the proper placement of interference screws and to evaluate the structural stability of the lateral ankle joint using the talar tilt and anterior drawer maneuvers.

The patient had a postoperative course free of any complications and was back to full activity within 2 months. Six months following the surgery, the patient was still asymptomatic and had no complaints of pain or instability during daily activities (Figure 1)

CONCLUSION

Allogeneic tendon graft is a new option for use in lateral ankle reconstructive procedures. It is ideal for those patients that have undergone an unsuccessful Brostrom repair or in those who tend to place a high physical demand on their ankle joint. The surgical method described allows for anatomic reconstruction of the lateral ankle ligaments without the morbidity that can accompany peroneal tendon harvesting.

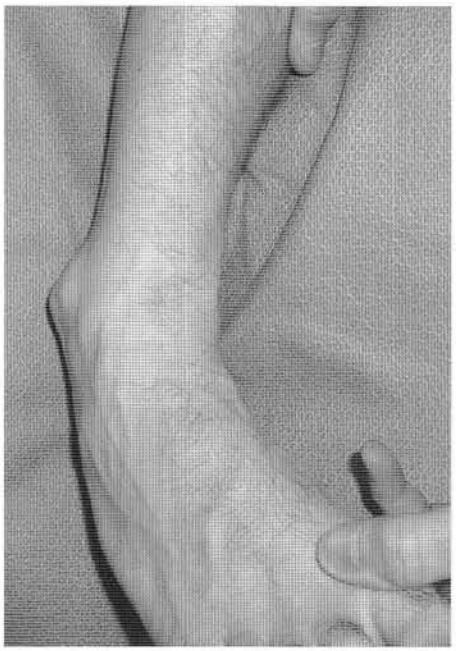

Figure 1A. Preoperative positive talar tilt maneuver.

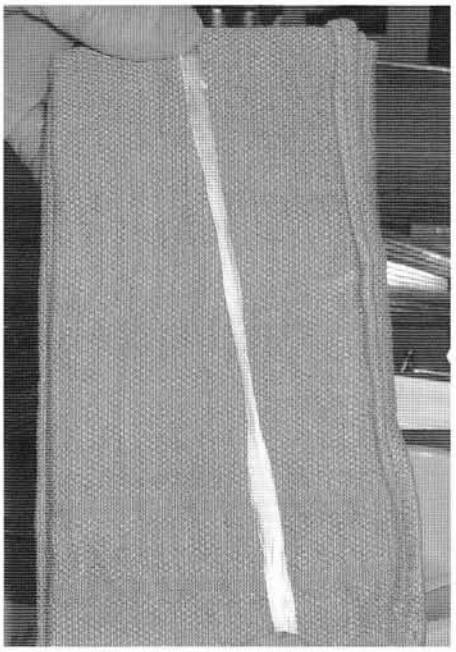

Figure 1C. Cadaveric semitendinosis free tendon graft.

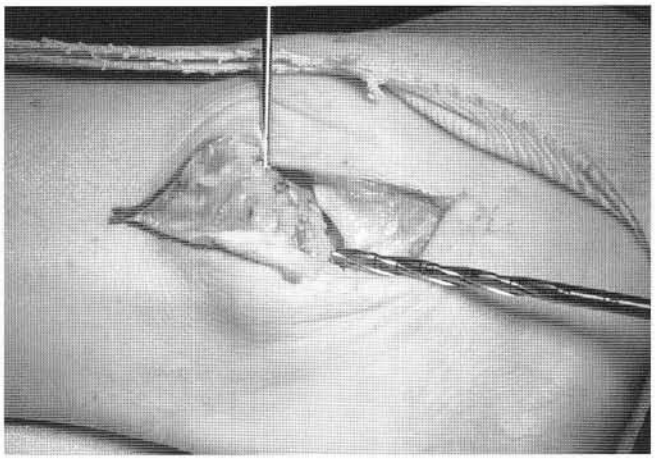

Figure 1B.Drill holes through fibula to route tendon fraft.

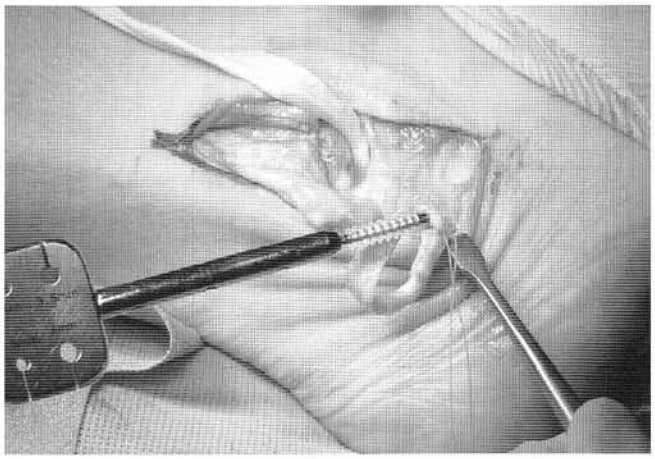

Figure 1D. Arthrex absorbable bio-tenodesis screw used to attach tendon graft into calcaneus.

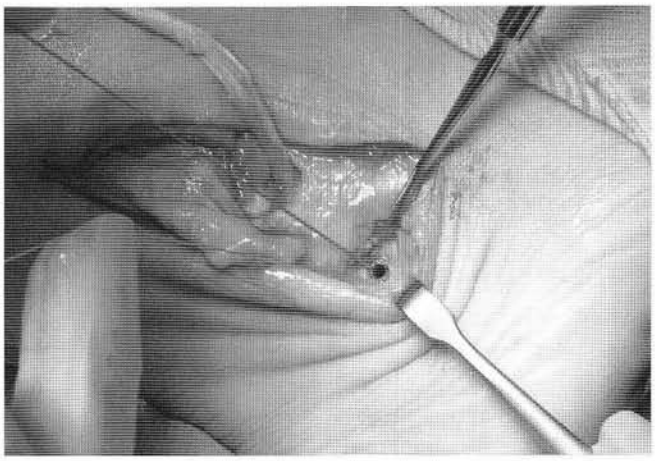

Figure 1E. Interference screw flush with calcaneal cortex.

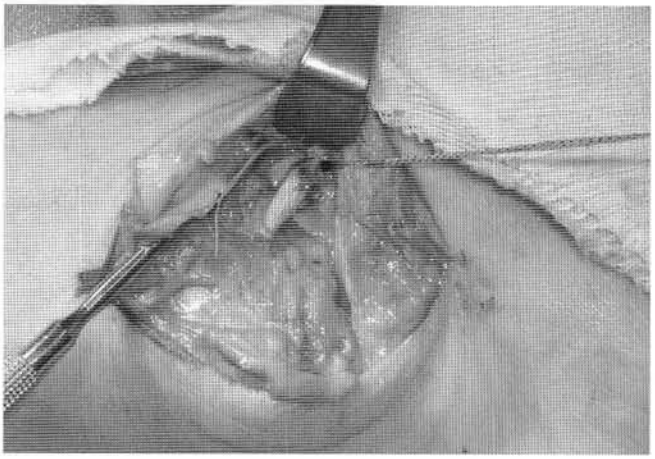

Figure 1F. Tendon graft routed up through fibular tunnel and attached to talus using a second interference screw (non absorbable).

Figure 1H. Lateral ankle postoperative radiograph.

Figure 1G. AP ankle postoperative radiograph.

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