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Lateral Ankle Stabilization: Anatomical Reconstruction for Chronic Lateral Ankle Instability Utilizing Absorbable Synthetic Graft- A Case Series

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INTRODUCTION

In an active population, ankle sprains are the most common lower limb musculoskeletal injury. Ankle sprains occur at a rate of up to 30,000 times per day just in the United States [1]. Among all ankle sprains, 85% involve the lateral collateral ligaments[2]. There is a significant increased risk of recurrent lateral ankle sprains following a lateral ankle sprain. There is a 2-fold increased risk of recurrent sprain within 1 year of an initial sprain[3]. In general, the traditional modified Brostrom-Gould procedure for chronic lateral ankle instability have had favorable outcomes. So et al. performed a systematic review finding an overall revision rate of 1.2% at 8.4 years[4].

The primary indication for an anatomical reconstruction utilizing allograft is when the remaining tissue is inadequate for primary repair of the ligaments. Often times when there has been chronic instability there is poor tissue upon intraoperative evaluation. The ability to reliably construct a lateral ankle stabilization construct in the presence of poor soft tissue quality is incredibly valuable for a foot and ankle surgeon. The primary aim of this poster is to present a novel technique to lateral ankle stabilization utilizing a absorbable synthetic graft, Artelon (Artelon, Marietta Georgia). This is a short case study to demonstrate the procedure and some of our outcomes with this particular procedure.

AIM

This is a case study to evaluate the outcomes and complications associated with anatomic reconstruction of the lateral collateral ligaments in chronic ankle instability utilizing a novel synthetic absorbable graft.

METHODS

This is a retrospective review of 20 cases of lateral ankle stabilization utilizing Artelon allograft for reconstruction of the lateral ankle ligaments.

Inclusion criteria:

- Lateral ankle stabilization procedure utilizing Artelon allograft
- Minimum of 1 year follow up
- >18 years old

20 patients that underwent a lateral ankle stabilization procedure utilizing a synthetic absorbable graft for an anatomic reconstruction. Pre operative images including MRI were reviewed for all included patients as well as all documentation for inclusion and exclusion criteria. Only patients undergoing an isolated lateral ankle reconstruction were included. All complications were recorded for the study.

Technique

- Curvilinear incision over the distal fibula
- Inferior retinaculum is tagged
- Arthrotomy through the lateral collateral ligaments performed
- Artelon Graft folded in Y-configuration and whip stitched

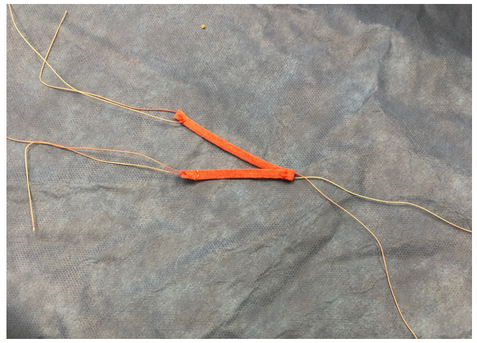

Image 1. Artelon Graft in Y-configuraiton

- Guide wire for the interference anchors are placed in the fibula, talus and calcaneus
- Bifurcation of the graft is passed in to the fibula and fixated with an interference anchor
- The foot is held in a slightly everted position

Image 2. synthetic graft fixated in the distal fibula with the guide wires in the talus and calcaneus

- The 2 arms of the graft are fixated in the talus and calcaneus under appropriate tension with interference anchors
- Lateral collateral ligaments and inferior retinaculum are imbricated above the graft
- Layered closure is performed

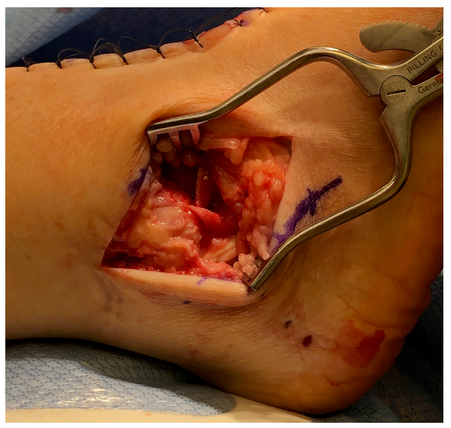

Image 3. final repair of the synthetic graft after fixation

RESULTS

A retrospective review of 20 patients with at least 1 year follow up was performed. The average follow up was 18 months. The overall complication rate was 2% with would healing complication being the only reported complication that was evaluated. None of the patients required a revision.

When performing a revision of the lateral collateral ligaments, occasionally the remaining tissue is not adequate to obtain an appropriate repair with the native tissue. Care must be taken not to over tighten the ankle and constrain the joint.

CONCLUSIONS

The overall results from our study show a low complication rate associated with this procedure. The reconstruction retained the correction with none of the patients requiring a revision. There are clear limitations to this study including the short term follow up and the small sample size.

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