Anatomic allograft reconstruction of the anterior talo-fibular ligament and calcaneal-fibular ligament: a retrospective evaluation of patient outcomes

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My disclosure is in the final AOFAS mobile app.
I have no potential conflicts with this presentation.
INTRODUCTION

Anatomic reconstruction of the anterior talo-fibular ligament (ATFL) and calcaneal-fibular ligament (CFL)

- Indicated for patients with inadequate ligament length, girth or strength for direct repair\(^1\)
- Little to no effect on subtalar joint motion\(^2\)
- Promotes earlier return to activity than non-anatomic reconstruction\(^3\)
- Low complications rates
- Decreased risk of long-term degenerative joint disease

Image source: www.niams.nih.gov
INTRODUCTION

Biologic scaffolds

- Inherent tensile strength\textsuperscript{4-9}
- Supports suture retention\textsuperscript{4-9}
- Mechanical reinforcement\textsuperscript{4-9}
- 3D scaffold for cellular repopulation\textsuperscript{4-9}
- Can be utilized to reinforce attenuated ligaments along their normal anatomical course\textsuperscript{4-9}

Image source: wmt.com
PURPOSE
To present our preliminary findings following anatomic lateral ankle ligament reconstruction using a human acellular dermal matrix allograft.

HYPOTHESIS
Anatomic allograft reconstruction of the lateral ankle ligament complex will provide stability to the ankle joint, limiting ankle inversion and reducing pain.
**Materials & Methods**

*Retrospective chart review (10/2011 through 10/2014)*

**Inclusion Criteria**
- ≥18 years of age
- Underwent anatomic reconstruction of the ATFL and CFL using human acellular dermal matrix allograft
- Outcome variables recorded preoperatively and postoperatively at the most recent follow-up appointment

**Exclusion Criteria**
- Patients with systemic ligamentous laxity disorders (e.g. Ehlers Danlos, Marfan’s syndrome)
- Patients with concomitant closing wedge calcaneal osteotomy for correction of varus ankle
- Ankle surgery in the 3 months preceding allograft reconstruction of the ATFL and CFL
**Materials & Methods**

*Outcome Data*

- Pain (visual analog scale [VAS])
- Range of motion
  - Inversion
  - Eversion
  - Dorsiflexion
  - Plantar flexion
# Results

## Patient Demographics

<table>
<thead>
<tr>
<th>Demographic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients</td>
<td>9 (100.0)</td>
</tr>
<tr>
<td>Age (years)</td>
<td>40.7 ± 16.2</td>
</tr>
<tr>
<td>Body Mass Index (kg/m$^2$)</td>
<td>29.9 ± 8.4</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>2 (22.2)</td>
</tr>
<tr>
<td>Women</td>
<td>7 (77.8)</td>
</tr>
<tr>
<td>Injury Side</td>
<td></td>
</tr>
<tr>
<td>Left</td>
<td>2 (22.2)</td>
</tr>
<tr>
<td>Right</td>
<td>7 (77.8)</td>
</tr>
<tr>
<td>Follow-up (months)</td>
<td>6.8 ± 5.6</td>
</tr>
</tbody>
</table>

Data presented as mean ± standard deviation.
Results

Pain

Data presented as mean ± standard error.

*Statistically significant at the 5% level (p ≤ 0.05), comparing preoperative and postoperative values.
## Results

### Range of Motion

<table>
<thead>
<tr>
<th></th>
<th>Preoperative</th>
<th>Postoperative</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plantar flexion (º)</td>
<td>51.1 ± 11.4</td>
<td>45.9 ± 15.1</td>
<td>0.393</td>
</tr>
<tr>
<td>Dorsiflexion (º)</td>
<td>8.4 ± 5.4</td>
<td>8.7 ± 3.3</td>
<td>0.867</td>
</tr>
<tr>
<td>Inversion (º)</td>
<td>38.9 ± 14.0</td>
<td>22.8 ± 7.7*</td>
<td>0.005</td>
</tr>
<tr>
<td>Eversion (º)</td>
<td>16.4 ± 8.1</td>
<td>12.7 ± 4.4</td>
<td>0.419</td>
</tr>
</tbody>
</table>

Data presented as mean ± standard deviation.

*Statistically significant at the 5% level (p ≤ 0.05), comparing preoperative and postoperative values.
Discussion

- Statistically significant decrease in pain across time ($p = 0.019$).
- Statistically significant decrease in ankle inversion across time ($p = 0.005$).
- This technique avoids autograft harvest and donor site morbidity and eliminates the risk of disease transmission that is associated with allograft tendon.
- Our results confirm the effectiveness of employing a dermal matrix allograft for the reconstruction of an inadequate ATFL and CFL.
REFERENCES