Trends in PROMIS scores in the early post-operative period following various lateral ankle ligament reconstructive techniques

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Disclosures

• Ashlee MacDonald, MD: No conflicts to disclose
• Jeff Houck, PT, PhD: No conflicts to disclose
• John Ketz, MD: No conflicts to disclose
• Judith Baumhauer, MD:
  • American Orthopaedic Foot and Ankle Society: Board or committee member
  • PROMIS Health Organization (PHO): Board or committee member
  • Additional disclosures can be found on the AAOS website.
• Irvin Oh, MD: No conflicts to disclose
• A. Samuel Flemister:
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Introduction

• Lateral ankle ligament injuries:
  • Account for 25% of musculoskeletal injuries
  • Chronic instability may require operative management with generally good outcomes.

• Outcome Measures:
  • Current foot and ankle scoring systems for evaluating outcomes and monitoring progression have deficiencies
  • Patient Reported Outcomes Measurement Information (PROMIS) established as a method of monitoring patient outcomes. reconstruction.
Purpose

To evaluate the trends in post-operative PROMIS physical function (PF), pain interference (PI), and depression scores in patients undergoing lateral ankle ligament reconstruction.
Methods

• PROMIS scores were prospectively between February 2015 and October 2016.

• 111 patients who underwent lateral ankle ligament repair/reconstruction were identified using ICD-9/10 and CPT codes

• 56 patients met exclusion criteria:
  • Less than three-month follow-up
  • Incomplete PROMIS scores
  • Multiple unrelated surgeries

• 55 patients were included.
Methods

• PROMIS PF, PI, and depression were evaluated at 4 follow-up time points:
  • 2 weeks post-op
  • 4-6 weeks post-op
  • 8-12 weeks post-op
  • > 12 weeks post-op

• Changes in scores were calculated as compared to baseline pre-operative scores

• Patients were also stratified by reconstructive type:
  • Allograft
  • Modified Broström-Gould (BG)
  • Modified Broström-Gould augmented with fibertape (BG+FT)

• Statistical Analysis was performed using two-way ANOVA.
## Results – Demographics and Clinical Characteristics

<table>
<thead>
<tr>
<th></th>
<th>Allograft (n=17)</th>
<th>BG (n=21)</th>
<th>BG+FT (n=15)</th>
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<tbody>
<tr>
<td><strong>Age</strong></td>
<td>37.22 ± 10.94</td>
<td>40 ± 14.52</td>
<td>40.9 ± 15.0</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td>5 M 17 F</td>
<td>4 M 24 F</td>
<td>6 M 11 F</td>
</tr>
<tr>
<td><strong>BMI</strong></td>
<td>31.22 ± 8.04</td>
<td>30.46 ± 14.52</td>
<td>33.76 ± 8.66</td>
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<tr>
<td><strong>Pre-op PF</strong></td>
<td>41.98 ± 7.19</td>
<td>38.78 ± 7.43</td>
<td>41.41 ± 4.73</td>
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<tr>
<td><strong>Pre-op PI</strong></td>
<td>57.77 ± 6.65</td>
<td>62.06 ± 6.59</td>
<td>60.97 ± 5.44</td>
</tr>
<tr>
<td><strong>Pre-op D</strong></td>
<td>47.27 ± 9.98</td>
<td>51.39 ± 9.69</td>
<td>50.71 ± 8.58</td>
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<tr>
<td><strong>Follow-up (weeks)</strong></td>
<td>31.86 ± 14.08</td>
<td>28.15 ± 13.90</td>
<td>28.68 ± 16.02</td>
</tr>
<tr>
<td><strong>Time to WB (weeks)</strong></td>
<td>3.44 ± 1.99</td>
<td>4.83 ± 2.22</td>
<td>3.73 ± 2.12</td>
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<tr>
<td><strong>Cavovarus Reconstruction</strong></td>
<td>4 (23.5%)</td>
<td>3 (14.3%)</td>
<td>3 (20.0%)</td>
</tr>
<tr>
<td><strong>OCD procedures</strong></td>
<td>5 (29.4%)</td>
<td>6 (28.6%)</td>
<td>2 (13.3%)</td>
</tr>
</tbody>
</table>

Table 1: Demographic and clinical characteristics. BG = modified Broström-Gould. BG+FT = modified Broström-Gould augmented with suture anchors and fibertape. PF = physical function PROMIS score, PI = pain interference, D = depression. Time to WB = average number of weeks until initiation of weightbearing.
Results – Trends in PROMIS scores

**Figure 1.** A) PF returned to baseline at 8-12wk. PF was significantly worse at 2 and 4-6 week follow-up, and significantly better at >12 weeks follow-up (p<0.01). B) PI significantly improved from baseline beginning at 8-12 week follow-up (p=0.02). C) Depression was unchanged from baseline at 2 weeks and 4-6 week follow-up, then significantly improved thereafter (p<0.01).
Figure 2. When comparing reconstruction types, there was a trend towards slower improvement in PF in those with BG+FT (n=15), compared to allograft (n=17, p=0.07) and BG (n=21, p=0.051) at 8-12 weeks. Two patients had other types of reconstruction and were not included in this analysis.

BG = modified Broström-Gould; BG + FT = modified Broström-Gould augmented with fibertape
Conclusion

• Patients undergoing lateral ankle ligament reconstruction demonstrate significant improvements in all PROMIS scores compared to baseline.

• BG+FT showed a trend of slower improvement in PF, though not significant.

• Though longer follow-up is needed, the significant improvements in PF, PI, and depression following lateral ankle ligament reconstruction in our study provides data that can be used for pre-operative counseling and monitoring progression post-operatively.
References