Which soft tissues should be released in severe hallux valgus correction? A comparative study

Pablo Wagner, MD; Francisco Figueroa, MD; John Gould, MD; Pablo Mococain, MD; Karen Torres, MD; Andres Keller, MD; Cristian Ortiz, MD; Emilio Wagner, MD.

Clínica Alemana de Santiago – Universidad del Desarrollo

Santiago, CHILE
Title: Which soft tissues should be released in severe hallux valgus correction? A comparative study

My disclosure is in the Final AOFAS Mobile App.

I have no potential conflicts with this presentation
Introduction

- Why to perform Soft tissue releases in Hallux Valgus surgery:
  - They could put an obstacle to reduce the metatarsophalangeal joint
  - Could contract over time
    - There is no literature to support this
- In the literature it is suggested that we should include:
  - Capsule
  - Adductor tendon
  - Intermetatarsal ligament (IMTT lig)
  - Combinations of the above
Objective

• Compare the results obtained in surgically treated patients with severe hallux valgus deformities, using the same osteotomy technique, but with different soft tissue releases:
  • Limited capsular release
  • Complete lateral release (capsule, IMTT lig, adductor tendon)
Methods

- Two groups of patients surgically treated for severe hallux valgus deformity with the POSCOW osteotomy (lateral displacement and closing wedge technique), differing in the type of lateral release:
  - Group 1: limited transarticular capsular release (63 patients)
  - Group 2: complete lateral release (capsule, IMTT lig, adductor tendon): 57 patients.
Type of Lateral Release

Letter A represents the capsule and metatarsosesamoid ligament.
Letter B represents the IMTT ligament
Letter C represents the adductor tendon

Group 1: only A was released
Group 2: A, B and C were released
Methods

• Minimum follow up: 2 years
• We recorded:
  • AOFAS score
  • Angular changes (metatarsophalangeal (MTTP) and intermetatarsal (IMTT))
  • Complications
  • Use of Weil or Akin osteotomy
• Statistical test: Student t and multivariate analysis
**Table 1.** Preoperative characteristics of Groups 1 and 2. Age reported in years, angles in degrees, AOFAS in points

<table>
<thead>
<tr>
<th>Group</th>
<th>1 (limited release)</th>
<th>2 (complete release)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nº</td>
<td>63</td>
<td>57</td>
<td></td>
</tr>
<tr>
<td>Age (mean±sd)</td>
<td>55.3±16.3</td>
<td>53.8±16.6</td>
<td>0.610</td>
</tr>
<tr>
<td>HV angle (mean±sd)</td>
<td>35.9±7.7</td>
<td>37.1±8.3</td>
<td>0.410</td>
</tr>
<tr>
<td>IM angle (mean±sd)</td>
<td>15.5±2.7</td>
<td>14.3±3.8</td>
<td>0.030</td>
</tr>
<tr>
<td>AOFAS preop (mean±sd)</td>
<td>47.6±9.7</td>
<td>58.2±8.4</td>
<td>0.0004</td>
</tr>
</tbody>
</table>

HV: Hallux Valgus; IM: Intermetatarsal
Results

- AOFAS improved in both groups, without statistical difference in final score.
  - AOFAS Score improved more in Group 1, p<0.05
- Improvement in IM angle and MTTP angle was similar in both groups.
- Complications were similar between both groups, without statistical difference (hallux varus, non union, mal union, recurrence)
- Shortening was slightly bigger in Group 1, 3 mm versus 1 mm in Group 2, p<0.05
**Tabla 2.** Postoperative characteristics of Group 1 and 2. HV and IM angle in degrees, AOFAS score in points.

<table>
<thead>
<tr>
<th>Group</th>
<th>1 (limited release)</th>
<th>2 (complete release)</th>
<th>Valor P</th>
</tr>
</thead>
<tbody>
<tr>
<td>HV angle (mean±sd)</td>
<td>12±8.3</td>
<td>10.9±10</td>
<td></td>
</tr>
<tr>
<td>HV difference post-pre (mean±sd)</td>
<td>-25±8.1</td>
<td>-26±14</td>
<td>0.6</td>
</tr>
<tr>
<td>IM angle (mean±sd)</td>
<td>6.1±3.6</td>
<td>3.1±3.7</td>
<td></td>
</tr>
<tr>
<td>IM angle difference post-pre (mean±sd)</td>
<td>-9.8±4</td>
<td>-11±5</td>
<td>0.2</td>
</tr>
<tr>
<td>AOFAS (mean±sd)</td>
<td>84±7.7</td>
<td>86.7±14.4</td>
<td></td>
</tr>
<tr>
<td>AOFAS difference post-pre (mean±sd)</td>
<td>36±11</td>
<td>28.5±15.7</td>
<td><strong>0.004</strong></td>
</tr>
</tbody>
</table>

HV: Hallux Valgus, IM: Intermetatarsal
Current literature suggests that there is a correlation between surgical exposure and soft tissue complications. Therefore it would be advisable to perform limited releases in hallux valgus surgery.

There is no data that supports the release of the adductor tendon and intermetatarsal ligament in hallux valgus surgery.

Our results suggest that a limited transarticular release is comparable in clinical and radiological terms to a complete lateral release in severe hallux valgus correction.


• Park YB1, Lee KB, Kim SK, Seon JK, Lee JY. Comparison of distal soft-tissue procedures combined with a distal chevron osteotomy for moderate to severe hallux valgus: first web-space versus transarticular approach. J Bone Joint Surg Am. 2013 6;95(21)

• Saragas NP, Becker PJ. Comparative radiographic analysis of parameters in feet with and without hallux valgus. Foot Ankle Int. 1995;16(3):139-43.


