Radiographic Changes Over Time after Medial Displacement Calcaneal Osteotomy for Adult-acquired Flatfoot

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Hisateru Niki, MD

My disclosure is in the Final AOFAS Program Book.
I have no potential conflicts with this presentation.
Studies describing the outcome of medial displacement calcaneal osteotomy (MDCO) for adult-acquired flatfoot deformity

8. Bolt PM, *Foot Ankle Int*, 2007…

MDCO is indicated for stage 2 PTTD

However, no quantitative X-ray parameters have been established from clinical data as operative indications for MDCO.

**Purpose**

To review MDCO postoperative radiographic changes to determine the maximum degree of deformity for which MDCO is indicated.
Materials and methods

- Subjects: 30 patients (31 feet)
  Two men and 28 women who underwent MDCO for painful flexible flatfeet, classified as stage 2 PTTD

- Average age at surgery:
  55.3 years old (range, 42 - 71)

- Total average follow-up period:
  5.5 years (range, 2.6 - 10.2)

- Average preoperative body mass index (BMI)
  24.6 (range, 20.9 - 27.1)
## Results: Radiographic assessment

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Initial correction</th>
<th>Changes over time</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Before surgery</td>
<td>3 months after surgery</td>
</tr>
<tr>
<td>APTC</td>
<td>18.0 ± 6.5</td>
<td>19.0 ± 6.3</td>
</tr>
<tr>
<td>APTMT</td>
<td>15.9 ± 7.1</td>
<td>13.5 ± 5.0</td>
</tr>
<tr>
<td>TNC</td>
<td>35.8 ±12.6</td>
<td>23.7 ± 9.8</td>
</tr>
<tr>
<td>LTC</td>
<td>50.5 ± 6.0</td>
<td>50.9 ± 6.3</td>
</tr>
<tr>
<td>LTMT</td>
<td>23.9 ± 8.7</td>
<td>13.8 ± 6.9</td>
</tr>
<tr>
<td>CP</td>
<td>13.4 ± 4.0</td>
<td>17.0 ± 4.3</td>
</tr>
<tr>
<td>DMC5MT(mm)</td>
<td>8.9 ± 4.9</td>
<td>12.6 ± 4.1</td>
</tr>
<tr>
<td>TB-C</td>
<td>16.1 ± 4.3</td>
<td>4.0 ± 3.4</td>
</tr>
</tbody>
</table>
Changes in TB-C angle over time

Pre-op

MDCO
MDCO + LCL w/o fusion

Post-op

Angle (°)

3M 6M 12M 2Y 3Y 4Y 5Y 6Y 7Y 8Y 9Y 10Y
Changes in LTMT angle over time

- Pre-op
- Post-op

- MDCO
- MDCO + LCL w/o fusion

Angle (°)

Time:
- 3M
- 6M
- 12M
- 2Y
- 3Y
- 4Y
- 5Y
- 6Y
- 7Y
- 8Y
- 9Y
- 10Y
Case 1  A 72-year-old female with stage 2 PTTD

Pre-op  Post-op 3M  6M  12M  2Y  4Y

TB-C  13  3  5  5  5  5  5

JSSF score  59  100

LTMT  21  7  9  9  9  9  8
Case 2  A 59-year-old female with stage 2 PTTD

TB-C

<table>
<thead>
<tr>
<th>Pre-op</th>
<th>Post-op 3M</th>
<th>6M</th>
<th>2Y</th>
<th>3Y</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>13</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>JSSF score</td>
<td>51</td>
<td>12</td>
<td>13</td>
<td>14</td>
</tr>
</tbody>
</table>

LTMT

<table>
<thead>
<tr>
<th></th>
<th>Pre-op</th>
<th>Post-op 3M</th>
<th>6M</th>
<th>2Y</th>
<th>3Y</th>
</tr>
</thead>
<tbody>
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<td></td>
<td>38</td>
<td>32</td>
<td>32</td>
<td>31</td>
<td>32</td>
</tr>
</tbody>
</table>
Conclusions

1. Only 3 of the 8 X-ray parameters improved after surgery, suggesting that MDCO has only limited effects on deformity correction.
2. This study suggests a preoperative TB-C of $<15^\circ$ and LTMT of $<25^\circ$ as the maximum degree of deformity for which MDCO is indicated.
3. Results of this study can improve the physician’s awareness and discrimination on the spectrum of mild deformity, and help in planning proper treatment.

References