CT Evaluation of Calcaneal Width and the Calcaneocuboid Joint:
Implications for Pes Planovalgus Surgery

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My disclosure is in the Final AOFAS Program Book. I have no potential conflicts with this presentation.
What is maximum medial displacement possible with MDCO and still achieve stable fixation?

Space available for osteotomy (SAFO): Amount of bone remaining after 1 cm correction and 7.3 mm screw fixation

SAFO: Yellow line minus 7.3 mm for screw width
What are the best graft dimensions for LCLF?

i.e.; What are the dimensions of the C-C joint?
Methods

43 patients undergoing ankle/hindfoot procedures (22 females, 21 males)
Average age: 49.8 years (range 20-75)

Pre-op sectional computed tomography imaging performed as per protocol
-axial images with coronal and sagittal reconstructions
Calcaneal Width (CW), as well as dimensions of CC joint in 2 planes were recorded

Calcaneal Width (CW)  CuDP (height)  CuML (width)
## Results

<table>
<thead>
<tr>
<th></th>
<th>Average</th>
<th>Male</th>
<th>Female</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CW</strong></td>
<td>22.8 mm</td>
<td>24.2 mm (22-26)</td>
<td>21.5 mm (19-25)</td>
<td>2.7 mm*</td>
</tr>
<tr>
<td><strong>CuML</strong></td>
<td>20.9 mm</td>
<td>21.2 mm (19-25)</td>
<td>20.5 mm (17-23)</td>
<td>0.7 mm</td>
</tr>
<tr>
<td><strong>CuDP</strong></td>
<td>21.9 mm</td>
<td>22.9 mm (20-24)</td>
<td>20.9 mm (19-26)</td>
<td>1.1 mm</td>
</tr>
</tbody>
</table>

*statistically significant p < 0.05
MDCO

- Average CW = 22.8 mm
- Standard 10 mm displacement
- 12.8 mm remaining bone for fixation
  - Using 7.3 mm screw
  - Only 5.5 mm SAFO
  - 2.75 mm either side “safe zone”
- Females (CW 21.5mm) have smaller SAFO
LCLF

CuML(width): 20.9mm

CuDP(height): 21.9mm

Length determined Intra-operatively
LCLF

- CuML: 20.9 mm  CuDP: 21.9 mm
- Standard grafts can be prepared in 2 dimensions
  - 18 mm (height) x 18 mm (width)
    - Allows maximum surface area for fusion
    - Takes into account small, outlier dimensions
      - Less risk medial / lateral impingement
- Only variable = length
  - To correct abduction
Conclusion

• CT evaluation of hindfoot morphology allowed average values to be determined. This is helpful to:
  – Achieve maximum and stable correction with MDCO
  – Prepare standard allograft in two dimensions for LCLF