Comparison of proximal chevron and double metatarsal osteotomies for the correction of hallux valgus with an increased DMAA

Department of Orthopaedic Surgery, Yeungnam University Hospital
Seoul Foot & Ankle Center, Seoul Paik Hospital, Inje University*
Department of Orthopaedic Surgery, Soonchunhyang University Hospital**

Chul Hyun Park, MD, Woo Chun Lee, MD*, Dong-il Chun, MD**, Jaeho Cho, MD*
NO CONFLICT TO DISCLOSE

Comparison of proximal chevron and double metatarsal osteotomies for the correction of hallux valgus with an increased DMAA

Chul Hyun Park, MD

My disclosure is in the Final AOFAS Mobile App.
I have no potential conflicts with this presentation.
Introduction

- Proximal chevron osteotomy (PCO)
  - Greater correction ability of HVA
  - Based on rotational correction of distal fragment
    → DMAA could be increased after PCO

- Double metatarsal osteotomy (DMO)
  - Greater correction ability of DMAA as well as HVA
  - Risk of AVN of MT head & transfer metatarsalgia

The purpose of this study is to compare the clinical and radiographic results, and complications after PCO and DMO in hallux valgus deformity with increased DMAA.
Materials and Methods

- October 2008 to December 2011
- 55 pts (60 feet) with moderate to severe HV
- Large DMAA (≥ 15° after PCO on C-arm)
- Divide into two groups
  - Group P: PCO with lateral soft tissue release (DSTR)
  - Group D: PCO & uniplanar DCO without DSTR
- Demographic data

<table>
<thead>
<tr>
<th></th>
<th>Group P</th>
<th>Group D</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>37 (40 feet)</td>
<td>18 (20 feet)</td>
<td></td>
</tr>
<tr>
<td>Sex (M:F)</td>
<td>1:39</td>
<td>1:19</td>
<td>0.611</td>
</tr>
<tr>
<td>Mean age (years)</td>
<td>52.6 (25-71)</td>
<td>53.9 (27-68)</td>
<td>0.631</td>
</tr>
<tr>
<td>Mean FU (months)</td>
<td>18.9 (14-55)</td>
<td>15.8 (13-30)</td>
<td>0.078</td>
</tr>
</tbody>
</table>
Materials and Methods

◈ Clinical assessment
  ◆ VAS & AOFAS score
  ◆ Range of motion of 1st MTP joint

◈ Radiographic assessment
  ◆ Reliabilities of pre- & postoperative DMAA
  ◆ Preoperative metatarsus adductus angle & DMAA
  ◆ HVA, IMA, and sesamoid position
  ◆ Changes of 1st MT length between preop & last FU

◈ Statistical evaluation
  ◆ Student’s t test, Chi-square test
  ◆ Intraclass correlation coefficients (ICCs)
Results

AOFAS score

VA S

P>0.05

Dorsiflexion

Plantar flexion

P>0.05
## Results

**Intra- & interobserver reliabilities**

<table>
<thead>
<tr>
<th></th>
<th>Preop DMAA</th>
<th>Postop DMAA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intraobserver reliability</strong></td>
<td>0.575 (0.351-0.738)</td>
<td>0.864 (0.770-0.922)</td>
</tr>
<tr>
<td><strong>Interobserver reliability</strong></td>
<td>0.696 (0.563-0.803)</td>
<td>0.865 (0.793-0.917)</td>
</tr>
</tbody>
</table>

**Radiographic results**

<table>
<thead>
<tr>
<th></th>
<th>Preop MAA (°)</th>
<th>Preop DMAA (°)</th>
<th>Postop shortening (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Group P</strong></td>
<td>18.7 ± 5.9</td>
<td>20.5 ± 2.7</td>
<td>1.1 ± 1.7</td>
</tr>
<tr>
<td><strong>Group D</strong></td>
<td>19.4 ± 6.8</td>
<td>21.9 ± 4.0</td>
<td>5.5 ± 1.0</td>
</tr>
<tr>
<td><strong>P-value</strong></td>
<td>0.709</td>
<td>0.177</td>
<td>&lt; 0.001</td>
</tr>
</tbody>
</table>
Results

Changes of Hallux valgus angle

(*P<0.05 : Group P, **P<0.05 : Group D, †P<0.05 : Btw Group P & D)
Results

Changes of Intermetatarsal angle
(*P<0.05 : Group P, **P<0.05 : Group D, †P<0.05 : Btw Group P & D)
Results

Changes of Sesamoid position

(*P<0.05 : Group P, **P<0.05 : Group D, †P<0.05 : Btw Group P & D)
Results

Postoperative complications

Transfer metatarsalgia

- One (2.5%) of 40 feet in Group P
- Two (10%) of 20 feet in Group D

→ No significant difference between two groups

Avascular necrosis

- One foot in Group D → partial AVN
Conclusion

PCO and DMO were found to be similar in terms of the clinical and radiographic results obtained in hallux valgus deformity with increased DMAA.

Based on consideration of long-term results, we suggest that double metatarsal osteotomy with sufficient bone resection and meticulous soft tissue release is the better surgical option for hallux valgus with an increased DMAA.
References


