Surgical procedures and outcomes in the treatment of hallux valgus with metatarsus adductus

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My disclosure is in the Final AOFAS Mobile App.
I have no potential conflicts with this presentation.
Only few reports have been published on surgical procedures and outcomes for the treatment of hallux valgus with metatarsus adductus.

We have performed abduction osteotomy of the proximal third of the second and third metatarsals for the treatment of hallux valgus with metatarsus adductus.

Adult hallux valgus with metatarsus adductus: a case report.
Okuda R et al. CORR, 2002.
We aimed to describe a novel surgical technique that we developed for the treatment of hallux valgus with metatarsus adductus and assessed the associated outcomes.
Patients

Symptomatic moderate-to-severe hallux valgus with metatarsus adductus were surgically treated.

- 11 patients (15 feet)
- Age 60 years (44-72 yrs)
- Follow-up 59 months (24-154 mos)

<Metatarsus adductus>

Metatarsus adductus was defined as a metatarsus adductus angle ≥20° (normal mean, 13°) on a dorsoplantlar weight-bearing radiograph.

Engel E et al. JAPA, 1983.
Surgical Procedures

<Metatarsus adductus>
Abduction osteotomy of the proximal third of the second and third metatarsals (A)
Proximal oblique osteotomies of the second and third metatarsals were done and the distal fragments of the second and third metatarsals were rotated laterally.

<Hallux valgus>
A distal soft tissue procedure combined with a proximal crescentic osteotomy of the first metatarsal (B)
Assessments

<Clinical assessment>

• Level of metatarsalgia
• AOFAS scale

<Radiological assessment>

• Hallux valgus angle (HVA)
• Intermetatarsal angle (IMA)
• Metatarsus adductus angles (MAA)
<table>
<thead>
<tr>
<th>Level of Metatarsalgia</th>
<th>Preoperative</th>
<th>Postoperative</th>
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</thead>
<tbody>
<tr>
<td>Severe</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Moderate</td>
<td>11</td>
<td>1</td>
</tr>
<tr>
<td>Mild</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>None</td>
<td>0</td>
<td>9</td>
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<table>
<thead>
<tr>
<th>AOFAS score</th>
<th>Preoperative</th>
<th>Postoperative</th>
<th>p-value</th>
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<tbody>
<tr>
<td>Pain (40)</td>
<td>18.7</td>
<td>35.3</td>
<td>p&lt;0.001</td>
</tr>
<tr>
<td>Function (45)</td>
<td>31.1</td>
<td>39.9</td>
<td>p&lt;0.001</td>
</tr>
<tr>
<td>Alignment (15)</td>
<td>0.5</td>
<td>13.1</td>
<td>p&lt;0.001</td>
</tr>
<tr>
<td>Total (100)</td>
<td>50.3</td>
<td>88.3</td>
<td>p&lt;0.001</td>
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</tbody>
</table>
### HVA, IMA, MAA

<table>
<thead>
<tr>
<th></th>
<th>Preoperative</th>
<th>Postoperative</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>HVA (°)</td>
<td>47</td>
<td>17</td>
<td>p&lt;0.001</td>
</tr>
<tr>
<td>IMA (°)</td>
<td>14</td>
<td>6</td>
<td>p&lt;0.001</td>
</tr>
<tr>
<td>MAA (°)</td>
<td>24</td>
<td>15</td>
<td>p&lt;0.001</td>
</tr>
</tbody>
</table>

Postoperative complications included recurrence of the hallux valgus (HVA ≥ 25°) in 4 feet.

One foot required revision surgery for severe recurrence of hallux valgus with metatarsalgia.
Hallux valgus associated with significant metatarsus adductus is difficult to surgically treat because the space between the first and second metatarsals is too narrow to correct the metatarsus primus varus with osteotomy of the first metatarsal.

Therefore, osteotomy of the first metatarsal alone may lead to incomplete correction of the metatarsus primus varus in hallux valgus with metatarsus adductus.
Our procedure

<Hallux valgus>
A distal soft tissue procedure combined with a proximal crescentic osteotomy of the first metatarsal.

<Metatarsus adductus>
Abduction osteotomy of the proximal third of the second and third metatarsals.

This procedure was effective for hallux valgus with metatarsus adductus.
Conclusion

Our combined procedure for hallux valgus with metatarsus adductus achieved significant correction of hallux valgus and metatarsus adductus and significant improvement of pain and function.

References

1) Adult hallux valgus with metatarsus adductus: a case report.
   Okuda R et al. CORR, 2002.

2) A simplified metatarsus adductus angle.
   Engel E et al. JAPA, 1983.

3) Distal soft tissue procedure and proximal metatarsal osteotomy in hallux valgus.