Recurrent Hallux Valgus: 15 Year Single Surgeon Series

David M Beck, MD
Andrew G Park, MBS, MD
Steven M Raikin, MD

Department of Orthopaedic Surgery
Thomas Jefferson University
Foot and Ankle Division
The Rothman Institute
Disclosure

• None of the authors have any disclosures or pertinent conflicts of interest related to this talk
Background

- Recurrence of hallux valgus deformity can be a common complication after corrective surgery.
- Recurrence rates reported vary widely.
- Cause is multifactorial:
  - Host
  - Surgeon/Surgery
Objective

• Report
  • Basic patient characteristics
  • Average time to recurrence

• Identify potential associations or risk factors with respect to
  • Time to recurrence
  • Revision surgery type
Methods

• Single surgeon, 15 years time span
  • 334 patients > 34 excluded
  • 300 patients analyzed
  • Complete data 254 patients

• Host factors
  • Number of prior surgeries
  • Index surgery type
  • Radiographic parameters
  • Revision surgery type
Methods – Data Analysis

• Full linear regression models using Akaike Information Criterion
• First model predicts the time to occurrence in months
  • Root transform method
  • Prior surgery type trichotomous variable
    • Proximal 1st metatarsal osteotomy
    • Bony procedures around the 1st MTP joint (Keller arthroplasty, silver, chevron)
    • All others
• Second produced models that reported odds ratios of revision surgery type
  • Grouped as either
    • Forefoot procedures
    • Osteotomies of the 1st metatarsal
    • Fusions
• Results are reported with coefficients, standard error, odds ratios with confidence intervals, and p-values.
Results

- The average age at index surgery 43 years old
- 90% female
- average BMI of 27
- The average time to recurrence after index surgery was 14 years (10 months – 46 years).
- Average radiographic data at the time of presentation for revision surgery were as follows:
  - **HVA** = 28.6 (SD 11.6)
  - **IMA** = 12.2 (SD 4.0)
  - Average sesamoid = 5.6 (1.6)
  - Incongruent 1st MTP joint.
## Results – Index & Revision Surgery

### Features

<table>
<thead>
<tr>
<th>Index Surgery</th>
<th>Revision Surgery</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 41% of patients distal osteotomy</td>
<td>• 35% proximal osteotomy</td>
</tr>
<tr>
<td>• 32% simple bunionectomy or Silver osteotomy</td>
<td>• 44% receiving a 1st MTP or midfoot fusion</td>
</tr>
<tr>
<td>• 17% proximal osteotomy</td>
<td>• 60% needing forefoot procedures</td>
</tr>
<tr>
<td>• 11% concomitant forefoot procedures</td>
<td>A total of 96 patients (32% of entire cohort) required 1st MTP fusion with 40/96 patients (42%) having had index distal osteotomy or 66/96 patients (69%) with prior distal osteotomy or simple bunionectomy.</td>
</tr>
</tbody>
</table>
Results - Time to Recurrence

- The presence of diabetes ($p=0.02$) and higher HVA ($p=0.003$) were statistically significant and directly associated with longer time to recurrence.

- A higher number of prior surgeries ($p=0.03$), older age ($p=0.02$), and index proximal osteotomy (PROX) were associated with a quicker time to recurrence and statistically significant.
Results – Revision Surgery Type

• When modeling for corrective surgery type between fusion and osteotomy higher BMI (OR = 1.07, CI=1.003-1.15) and older age (OR = 1.04; CI=1.02-1.06) were associated with fusion.

• When modeling for severity of revision surgery type comparing relatively minor forefoot procedures to relatively more severe osteotomies and fusions a higher IMA (OR=1.29, CI=1.15-1.45) was associated with the more severe procedures.

• Index surgery type did not have a significant association with revision surgery type in this model.
Discussion

• To our knowledge this is the largest single surgeon series examining recurrent hallux valgus deformity. Most patients presenting with symptomatic hallux valgus recurrence were women in their mid 50s with relatively normal BMI.

• Time to recurrence was about 14 years

• 44% required either a 1st MTP or midfoot fusion for corrective surgery for recurrent hallux valgus deformity. Over two thirds of patients undergoing revision 1st MTP fusion had a prior distal osteotomy or simple bunionectomy

• Created two models that may lead to predictive “clinical calculators” for patients
Further Work

Early = failure of surgery?

Late = true recurrence?