StayFuse™ intramedullary implant stabilization for management of the floppy toe.

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Disclosures

- **Author Disclosures**

  Our disclosures are in the Final AOFAS Mobile App. We have no potential conflicts with this presentation.

- **Institutional Research Support**

  - 3M
  - Aesculap
  - AO Spine
  - Biomet
  - Cempra
  - CeramTec
  - DePuy
  - Integra
  - Myoscience
  - NDRI
  - NIH
  - Novartis
  - OREF
  - Pfizer
  - Rotation Medical
  - Simplify Medical
  - Smith and Nephew
  - Stelkast
  - Stryker Orthopedics
  - Synthes
  - TissueGene
  - Tornier
  - Orthospace
  - Zimmer Biomet
Introduction

- Hammertoe corrective surgery is amongst the most commonly performed procedures on the foot

- Most procedures for fixed deformities involve a resection arthroplasty at the PIP joint

- Resection involves the distal condyles of the proximal phalanx
  - This should be performed just proximal to the metaphyseal flare
  - Maximum of 4mm of bone should be resected

- Excessive bony resection can lead to a “FLOPPY TOE” which is very difficult to successfully manage
Hypothesis

Intramedially screw fixation utilizing a STAYFUSE™ can be utilized in revision situations to stabilize and fuse the proximal interphalangeal joint (PIPJ) despite excessive bony resection resulting in improvement in functional alignment, shoeability and cosmetic appearance of the foot.
Implant Choice

- Stayfuse Implant (Tornier)
- Completely interosseous implant which avoids damage to the DIP or MTP joints
- 2 part interdigitating system
- Locks together to create a stiff monoblock implant
- Available in various sizes
Methods

• IRB approved retrospective study

• 32 patients (41 toes) out of 39 available for follow-up (82%)
  • 2nd toe was involved in 27 toes (65.8%)
  • 3rd toe in 12 cases (29.3%)
  • 4th toe in 2 cases (5%)
  • 9 required implantation in their 2nd and 3rd toes.

• Additional concomitant procedures: 2.9 (range: 1-5)

• Patients were evaluated at an average of 54 months post-surgery
  • VAS Pain Score,
  • Foot and Ankle Ability Measure (FAAM),
  • Veterans Rand 12 Item Health Survey (VR-12),
  • Patient satisfaction survey.

Univariate analysis was then performed.
Results

• Average age at time of revision surgery 59.1 years
  • 94% females
• Average time from index surgery to revision : 3.7 years
• Average number of prior surgical procedures: 2.4 (range 1-5)
• Average time to Follow-up assessment : 54 months
  (range: 24-110)

Pre operative
Floppy 2\textsuperscript{nd} toe with
Excess bone resected
Case Example

47 Female
2 previous surgery
# Chevron 2009
# 2-3 HTs 2011

Present 2013
Floppy 2+3\textsuperscript{rd} Toes
2+3 MTalgia

Treatment
2+3\textsuperscript{rd} STAYFUSE
2+3\textsuperscript{rd} distal MT osteotomies
Results

- At 54 months average follow up

- VAS 2.7/10 in their involved toe (pre op: 7.3/10)

- FAAM ADL score was 63.8/100,
- FAAM Sports score 46.50/100.

- VR-12 Physical score was 40.84
- VR-12 Mental score was 61.50.
### Patient Satisfaction

<table>
<thead>
<tr>
<th>Satisfied Level</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extremely satisfied</td>
<td>12/32</td>
<td>59.4%</td>
</tr>
<tr>
<td>Satisfied</td>
<td>7/32</td>
<td>28%</td>
</tr>
<tr>
<td>Neither satisfied nor dissatisfied</td>
<td>4/32</td>
<td></td>
</tr>
<tr>
<td>Dissatisfied</td>
<td>3/32</td>
<td></td>
</tr>
<tr>
<td>Extremely dissatisfied</td>
<td>6/32</td>
<td></td>
</tr>
</tbody>
</table>

The 9 pts in the “dissatisfied” group had undergone 3.87 previous surgical procedures.

The 19 pts in the “satisfied” group had undergone 2.84 previous surgical procedures.

P<0.05
Conclusion

• The over-resected hammertoe results in a “floppy toe” deformity which is difficult to manage.

• STAYFUSE™ intramedullary fusion screw system offers a stabilization option to correct this deformity.

• 60% of patients undergoing this revision procedure were either satisfied or extremely satisfied with their results.
Conclusion

While 28% of patients reported dissatisfaction with their outcomes, these patients had undergone significantly more prior surgical procedures (average 3.87) than those whose STAYFUSE procedures were successful.

Thank You!