Avulsion Fracture of the Proximal Phalanx

Following the Hallux Valgus Surgery

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Following the Hallux Valgus Surgery

Hyuk Jegal, M.D.

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

Complication of Hallux valgus surgery
(Proximal Chevron osteotomy + Distal soft tissue release)

- Soft tissue problems
  - Metatarsal: Common
    - shortening, malunion, nonunion, AVN
  - Proximal phalanx: Rare
    - adhesion of the FHL, MTP joint violation

- Bone problems

- Alignment problems

“Avulsion fracture of the Proximal phalanx base”
is not reported in the literature
The Purpose of this study

1. To Evaluate the *incidence* of Proximal phalanx base fx.

2. To Evaluate the *clinical & radiological outcome* without surgery for Proximal phalanx base fx.

3. Compare the results with the previous studies without Proximal phalanx base fx. as a complication
Material & Methods

- From Jan. 2006 to Dec. 2008
- 475 hallux valgus surgery by a single surgeon
- All women
- Mean age 60.7 years
- The mean follow-up 33 months
**Radiographic Evaluation**

- HVA, IMA
- Uninon / non union
- **MTP joint arthritis**
  - Grade I - Periarticular mild sclerosis
  - Grade II - Joint space narrowing
  - Grade III - Osteophyte, cyst formation
  - Grade IV - Complete loss of joint space

**Clinical Evaluation**

- AOFAS Hallux score
- ROM of 1st MTP joint
- Satisfaction
- Tenderness on Proximal phalanx base

*JBJS Am 1992 Jan ; 74(1) : 124-9 RA Mann et al*
Case

F/67

F/59

Pre-op. 2006-4-24 Immediate postop. 2010-7-27 POD 39M

Pre-op. 2006-4-24 Immediate postop. 2011-9-16 POD 65M
Results (I)

Incidence Rate

475 hallux valgus surgery

47 feet Avulsion fracture of the proximal phalanx base

“9.8%”

Clinical Outcome

- **AOFAS Hallux score**
  - Pre-op: 49.0
  - Last f/u: 91.9
  - P = 0.002

- **ROM of 1\textsuperscript{st} MTP Joint**
  - 41°/32° → 37°/29° (DF/ PF)
  - (9.7% / 9.3%)

- **Satisfaction**
  - 43 patients were satisfied
  - 4 dissatisfied
Results (II)

Radiographic Outcome

- The overall ratings for 47 feet improved
  - HVA: 37°, 11.0°, 16.7°, 6.0°
  - IMA: P<0.0001

- Union Rate: 95.7% (45 of 47 feet)

- Postoperatively osteoarthritis

<table>
<thead>
<tr>
<th>Grade</th>
<th>1st MTPJ arthritis</th>
<th>Sclerosis</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade I</td>
<td>Sclerosis</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Grade II</td>
<td>Narrowing</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Grade III</td>
<td>Osteophyte</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Grade IV</td>
<td>Complete loss</td>
<td>None</td>
<td></td>
</tr>
</tbody>
</table>

91.5% of patients were satisfied at final follow up without surgical treatment whether or not the PP base avulsion fx. were united

JBJS Am 1992 Jan; 74(1): 124-9 RA Mann et al
Discussion (I)

✓ Complication following the Hallux valgus Surgery

<table>
<thead>
<tr>
<th>Condition</th>
<th>Incidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recurrence</td>
<td>15%</td>
</tr>
<tr>
<td>Paresthesia</td>
<td>9.1%</td>
</tr>
<tr>
<td>Stiffness</td>
<td></td>
</tr>
</tbody>
</table>

- Recurrence: 15% (Richardson EG, ICL 1999)
- Paresthesia: 9.1% (Dreeben et al, Foot Ankle Int 17(3): 142-145, 1996)

* There is no other study about the avulsion fracture in the literature

✓ The incidence rate of Avulsion Fracture of Proximal Phalanx

“The 9.8%” (47 of 475 feet)
Discussion (II)

- Possible Cause of the avulsion fracture -

- Suggestion in the Operating Room

- Gentle Varus Reduction

- Be cautious in these situation

- Severe hallux valgus

- increased DMAA

Adductor tendon detachment from the base of proximal phalanx & fibular sesamoid

“Insufficient lateral contracture release”

Varus reduction

“Excessive force”
Conclusion

• Incidence of PP avulsion fracture as a complication of the Hallux valgus surgery: 9.8 %

• 91.4 % of patients were Satisfied clinically without any surgery regarding to the avulsion fx.

• Meticulous soft tissue release & Gentle reduction esp. in the severe HV & increased DMAA


5. Panchbhavi VK; Rapley J; Trevino SG: First web space soft tissue release in bunion surgery: functional outcomes of a new technique. Foot Ankle Int. 32:257-61. 2011


