The influence of hindfoot osteotomies on early outcome after total ankle replacement

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Disclosure

The influence of hindfoot osteotomies on early outcome after total ankle replacement
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My disclosure is in the Final AOFAS Program Book.

I have a potential conflict with this presentation due to:

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Bauerfeind AG
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Geistlich Inc.
Marquardt Inc.
Adidas AG
An increasing number of patients with hindfoot deformities asks for TAR

- TAR has to be supplemented with several additional procedures to realign the hindfoot
  - Medial malleolar osteotomy
  - Supramalleolar osteotomy
  - Calcaneal osteotomy
  - Subtalar or TN fusion
  - Tendon transfer
  - Tendon lengthening
  - Ligament reconstruction

How do additional procedures affect the early outcome of TAR?
Material and Methods

- 23 consecutive patients with hindfoot varus > 3° (Saltzman hindfoot alignment view)
- Patients with primary or secondary degenerative arthritis were included in the study.
- Control group with matched pairs form the pool of patients with TAR without supplementary procedures
- Matching criteria: age, sex, bodyweight, preoperative ROM
- Analysis of
  - Complications
  - Function pre-OP and after 3, 6, 12, 24 and 36 months
    - AOFAS Hindfoot Score
    - ROM
    - X-rays
- Differences in the post-OP rehabilitation
  - Both groups: Below knee walker for 6 weeks
  - TAR with osteotomy: 6 weeks non weight bearing
  - TAR without osteotomy: Increasing weight bearing after completed wound healing
## Data of the patients

<table>
<thead>
<tr>
<th></th>
<th>Osteotomy</th>
<th>Range</th>
<th>Control group</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>age</td>
<td>59.3</td>
<td>41–82</td>
<td>61.1</td>
<td>26–76</td>
</tr>
<tr>
<td>BMI</td>
<td>26.8</td>
<td>17–36</td>
<td>27.7</td>
<td>16–41</td>
</tr>
<tr>
<td>male</td>
<td>12</td>
<td></td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>female</td>
<td>11</td>
<td></td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>ROM prä</td>
<td>23.3</td>
<td>0–45</td>
<td>23.7</td>
<td>0–50</td>
</tr>
</tbody>
</table>

### Statistics
- Test for normal distribution: Kolmogorow-Smirnow-Test
- Test for significance in differences: T-Test for independent samples
- No change in the results by using a non parametric test (Wilcoxon-Test)
Complications

Operation time was ø 43 min longer in patients with osteotomy

Osteotomy
- 1 early infection. The implant could be saved with revision

Control group
- 1 revision due to impingement
Results

<table>
<thead>
<tr>
<th></th>
<th>Osteotomy</th>
<th>Range</th>
<th>Control</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOFAS pre</td>
<td>35</td>
<td>26-52</td>
<td>41</td>
<td>22-69</td>
</tr>
<tr>
<td>AOFAS 3 mo</td>
<td>76</td>
<td>61-97</td>
<td>78</td>
<td>53-97</td>
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<tr>
<td>AOFAS 12 mo</td>
<td>83</td>
<td>40-97</td>
<td>84</td>
<td>57-100</td>
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<tr>
<td>AOFAS 24 mo</td>
<td>83</td>
<td>63-100</td>
<td>88</td>
<td>57-100</td>
</tr>
<tr>
<td>AOFAS 36 mo</td>
<td>86</td>
<td>63-100</td>
<td>83</td>
<td>57-98</td>
</tr>
</tbody>
</table>

- Test for normal distribution: Kolmogorow-Smirnow-Test
- Test for significance in differences: T-Test for independent samples
- No change in the results by using a non parametric test (Wilcoxon-Test)
History of AOFAS Score

- Pre OP:
  - Osteotomy: P<0.05
  - Control: n.sig.

- 3 months:
  - Osteotomy: n.sig.
  - Control: n.sig.

- 12 months:
  - Osteotomy: n.sig.
  - Control: n.sig.

- 24 months:
  - Osteotomy: n.sig.
  - Control: n.sig.

- 36 months:
  - Osteotomy: n.sig.
  - Control: n.sig.
History of ROM

- pre OP
- 3 months
- 12 months
- 24 months
- 36 months

Osteotomy: n.sig.
Control: n.sig.
Analysis of the x-rays

- Osteolysis tibial component < 2mm  \( n = 1 \) (Osteotomy)
- Osteolysis talar component < 2mm  \( n = 1 \) (Control)
- No osteolysis > 2 mm
- No signs of implant loosening
Summary

- TAR can be combined with a hindfoot osteotomy
- The AOFAS score does not show significant differences after 3 months post OP
- Satisfaction reaches similar level after 24 months, compared to the patients with TAR and no osteotomy
- There was no increased number of radiolucency of implant failure in the group with osteotomy

References