Mid- to Long-Term Results of Supramalleolar Osteotomy

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Discloser

NO CONFLICTS TO DISCLOSE

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Our disclosures are in the Final AOFAS Mobile App. We have no potential conflict with this presentation.
Source of Founding

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The Issue

- Ankle osteoarthritis (OA) 12-15 years earlier symptomatic than hip or knee OA
- Total ankle replacement (TAR) has a failure rate of 12% (metal component) and 18% for polyethylene failure
- Disadvantage of ankle fusion is degenerative changes of adjacent joints over time
The Idea

- Realignment of the ankle joint reduces intra-articular pressure
- Supramalleolar osteotomy (SMOT) do not sacrifice the ankle joint (advantage to other treatment concepts)
- Good short-time results have been reported in patients treated with SMOT for ankle OA
The Aim

I. Assessment of the survival rate of a consecutive cohort of 294 patients (298 ankles)

II. Determination of risk factors for failure (endpoint TAR or ankle fusion)
Methods I

- Prospective observational study of 294 consecutive patients from 1999-2013
- Evaluation of plane weightbearing radiographs pre- and postoperatively
- Assessment of pain (visual analogue scale), range of motion (ROM) and AOFAS Hindfoot score
Methods II

- Kaplan-Meier curve to estimate the survival rate
- Cox proportional hazards model
  - Gender
  - Body Mass Index (BMI)
  - Age at surgery
  - Smoking status
  - Tilt of talus in the ankle joint mortise
  - Stage of ankle OA (Takakura and Knupp)
  - Ankle deformity (varus vs. valgus)
Results I

- Mean follow-up duration 5.0 ± 3.7 years, 5-year survival rate 88%
## Results II

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Hazard Ratio</th>
<th>95% Confidence Interval</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female vs male</td>
<td>0.63</td>
<td>0.20 to 2.00</td>
<td>.45</td>
</tr>
<tr>
<td>Body mass index</td>
<td>1.05</td>
<td>0.95 to 1.17</td>
<td>.35</td>
</tr>
<tr>
<td>Age at surgery</td>
<td><strong>1.12</strong></td>
<td><strong>1.04 to 1.23</strong></td>
<td><strong>.01</strong></td>
</tr>
<tr>
<td>Nonsmoker vs smoker</td>
<td>24.86</td>
<td>0.19 to 3186.16</td>
<td>.19</td>
</tr>
<tr>
<td>Nonsmoker vs smoker: age, y</td>
<td>0.92</td>
<td>0.84 to 1.01</td>
<td>.06</td>
</tr>
<tr>
<td>Varus vs valgus</td>
<td>0.28</td>
<td>0.46 to 3.81</td>
<td>.61</td>
</tr>
<tr>
<td>Talus tilt before surgery</td>
<td>0.91</td>
<td>0.77 to 1.09</td>
<td>.33</td>
</tr>
<tr>
<td>Talus tilt after surgery</td>
<td>1.07</td>
<td>0.90 to 1.28</td>
<td>.42</td>
</tr>
<tr>
<td>OA stage 2 vs 1 (Takakura)</td>
<td>3.88</td>
<td>0.46 to 32.34</td>
<td>.21</td>
</tr>
<tr>
<td>OA stage 3a vs 1 (Takakura)</td>
<td>1.86</td>
<td>0.26 to 57.64</td>
<td>.33</td>
</tr>
<tr>
<td>OA stage 3b vs 1 (Takakura)</td>
<td><strong>3.57</strong></td>
<td><strong>3.06 to 411.92</strong></td>
<td><strong>.00</strong></td>
</tr>
<tr>
<td>OA stage 4 vs 1 (Takakura)</td>
<td>2.14</td>
<td>0.49 to 146.51</td>
<td>.14</td>
</tr>
<tr>
<td>OA type IIA vs I (Knupp)</td>
<td>0.54</td>
<td>0.04 to 7.46</td>
<td>.65</td>
</tr>
<tr>
<td>OA type IIB vs I (Knupp)</td>
<td>1.84</td>
<td>0.19 to 17.73</td>
<td>.60</td>
</tr>
<tr>
<td>OA type IIC vs I (Knupp)</td>
<td>0.29</td>
<td>0.02 to 4.06</td>
<td>.36</td>
</tr>
<tr>
<td>OA type III vs I (Knupp)</td>
<td>0.91</td>
<td>0.05 to 16.93</td>
<td>.95</td>
</tr>
</tbody>
</table>

Abbreviation: OA, osteoarthrosis.

*Boldface indicates statistical significance (P < .05).*
Conclusion

- Good clinical short-time results are constant over time (5-years survival rate 88%)

- Risk factors for failure
  - Takakura stage 3b
  - Age

Supramalleolar osteotomy is particularly important in younger patients, as ankle replacement or ankle arthrodesis at this age cannot be considered as lifetime solution.
References


