Comparison of treatment between distal tibial osteotomy without fibular osteotomy and tibiotalar arthrodesis for medial ankle arthritis in older individuals

Nozaka Koji, Naohisa Miyakoshi, Yoshiaki Kimura, Shin Yamada, Michio Hongo, Takeshi Kashiwagura, Yuji Kasukawa, Hidetomo Saito, Hiroaki Kijima, Shuichi Chida, Hiroshi Aonuma, Hiroyuki Tsuchie, Nobusuke Shibata, Norimitsu Masutani, Hideji Kura and Yoichi Shimada

Department of Orthopedic Surgery, Akita University Graduate School of Medicine, Akita, Japan
Introduction

Advanced to end-stage ankle osteoarthritis in highly active older individuals has traditionally been treated using tibiotalar arthrodesis.

Distal tibial osteotomy without fibular osteotomy, a type of joint preservation surgery, has garnered attention in recent years, but patient satisfaction has yet to be compared between the two treatments.
Objective

To compare distal tibial osteotomy and tibiotalar arthrodesis for ankle osteoarthritis (stage IIIb and above under the Takakura classification) in older individuals.
**Subjects and Methods**

A total of 35 patients aged >60 years old who showed medial ankle arthritis were examined.

Patients were either treated with tibiotalar arthrodesis (n=18) or distal tibial osteotomy (n=17).

The patients’ mean age was 72.1 years (range, 60–81 years) in the tibiotalar arthrodesis group and 67.2 years (range, 60–80 years) in the distal tibial osteotomy group.

<table>
<thead>
<tr>
<th></th>
<th>Arthrodesis (n=18)</th>
<th>Osteotomy (n=17)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean age</td>
<td>72.1 (60-81 years)</td>
<td>67.2 (60-80 years)</td>
</tr>
</tbody>
</table>
Subjects and Methods

For distal tibial osteotomy, a circular external fixator was used in all cases. Osteotomy was performed after performing synovectomy and microfracture surgery using ankle arthroscopy.

At the time of fixation with a circular external fixator, foot ring (calcaneal) fixation was also performed.

In addition, joint distraction was performed, and distraction arthroplasty was also simultaneously performed.
Joint distraction with foot ring

Before joint distraction

After joint distraction
## Result

Comparison of tibiotalar arthrodesis and distal tibial osteotomy

<table>
<thead>
<tr>
<th></th>
<th>Arthrodesis (n=18)</th>
<th>Osteotomy (n=17)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preoperative VAS</td>
<td>8.2 (5-10)</td>
<td>8.0 (5-10)</td>
</tr>
<tr>
<td>Postoperative VAS</td>
<td>1.9 (0-6)</td>
<td>1.7 (0-6)</td>
</tr>
<tr>
<td>Preoperative AOFAS score</td>
<td>40.1 (20-52)</td>
<td>43.1 (17-52)</td>
</tr>
<tr>
<td>Postoperative AOFAS score</td>
<td>86.2 (52-100)</td>
<td>90.0 (52-100)</td>
</tr>
<tr>
<td>Postoperative SF-36 PC</td>
<td>42.5 (28-64)</td>
<td>56.4 (31-64)*</td>
</tr>
<tr>
<td>Postoperative SF-36 MC</td>
<td>44.0 (28-67)</td>
<td>59.7 (31-70)*</td>
</tr>
</tbody>
</table>

*p<0.05
Case 1  Arthrodesis  A 79-year-old man

Preoperative
AOFAS  46

Postoperative
AOFAS  92
Case 2  Osteotomy  A 64-year-old man

Preoperative  AOFAS  38

Postoperative  AOFAS  92
Case 3  Osteotomy  A 68-year-old man

Preoperative AOFAS 68

Postoperative AOFAS 100
**Discussion**

Superior SF-36 scores were obtained for osteotomy compared to arthrodesis. The fact that the Japanese lifestyle involves tatami mats was thought to have contributed to the superiority of osteotomy in patient satisfaction.

**Conclusions**

We compared distal tibial osteotomy and tibiotalar arthrodesis for ankle osteoarthritis in older individuals. Superior SF-36 scores were obtained for osteotomy compared to arthrodesis.
Comparison of treatment between distal tibial osteotomy without fibular osteotomy and tibiotalar arthrodesis for medial ankle arthritis in older individuals

I have no potential conflicts with this presentation.