How should the fibula be treated in low tibial osteotomy?

-A radiographic assessment for 25 ankles of varus type osteoarthritis-

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< Hiroaki Kurokawa >

My disclosure is in the Final AOFAS Mobile App.

I have no potential conflicts with this presentation.
Introduction

Low tibial osteotomy (LTO) is usually indicated for the patients with varus type osteoarthritis of the ankle\(^1\).

In the standard technique of LTO, the fibula is cut simultaneously. We should correct the fibula in conformity to the tibia. However in the current concept of surgery, we should fix the fibula with minimal invasion.

The purpose of this study is to compare postoperative radiographic status of LTO according to treatment of the fibula.
Low tibial osteotomy (LTO)

**Indication**

Stage 3a

Talar tilt angle of weight-bearing $< 10^\circ$

Move weight-bearing-line to the lateral side at the tibial plafond
Materials & Methods

Twenty four patients (25 ankles) treated by LTO since 1999 to 2013

The mean duration of follow-up was 30 months (range; 6 to 87 months)

All ankles were classified into stage 3a using Takakura-Tanaka classification.

They were divided into 4 groups
Group A: the fibula was not cut (6 ankles)

Group B: the fibula was remained in separating off (3 ankles)

Group C: the fibula was fixed with a Kirschner wire inserted bicortically (5 ankles)

Group D: the fibula was fixed with a K-wire inserted intramedullary (11 ankles)

D-1: remove a K-wire before bone union of the fibula (4 ankles)

D-2: not remove a K-wire (7 ankles)
## Results

<table>
<thead>
<tr>
<th>Group</th>
<th>ankles</th>
<th>Stage was improved</th>
<th>Stage was not improved</th>
<th>Bone union of the fibula</th>
<th>Delayed or non union of the fibula</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group A</td>
<td>6</td>
<td>0</td>
<td>6</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Group B</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Group C</td>
<td>5</td>
<td>5</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Group D-1</td>
<td>4</td>
<td>4</td>
<td>0</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Group D-2</td>
<td>7</td>
<td>2</td>
<td>5</td>
<td>7</td>
<td>0</td>
</tr>
</tbody>
</table>
【Case 1】66-year-female

Group D-1 2 weeks after op.

Remove short leg cast & K-wire

Bone union was completed 1 year after op.
Discussion

Fibula osteotomy(-) Group A  6 ankles
  The stage of all ankles was not improved

Fibula osteotomy(+) Group B-D  19 ankles
  The stage was improved in 13 ankles
  The stage was not improved in 6 ankles

It is recommended to cut the fibula for improvement of the stage
Discussion

Fibula osteotomy(+) Group B-D  19 ankles

Group B& C: 8 ankles
Delayed or non union in 4 ankles

Group D: 11 ankles
Bone union was completed in all ankles

However, in Group D-2, it was difficult to achieve improvement of the stage

It is ideal to fix the fibula with a K-wire intramedullary. However, a K-wire may be removed before bone union of the fibula.
Conclusion

Good results could not be provided if we did not care treatment of the fibula in time with LTO.

It is recommended to cut the fibula, and it is ideal to fix the fibula with a K-wire intramedullary.

However, a K-wire may be removed before bone union of the fibula to avoid correction loss of the tibia.
Reference
