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Ligamentoplasty using the peroneus brevis in the treatment of chronic instabilities of the ankle. Long-term review

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ABSTRACT

Sixteen cases in which a ligamentoplasty using the peroneus brevis were followed up for more than 8 years. In half of the cases, dorsiflexion of the ankle was diminished and the subtalar joint was stiff. There was no anterior drawer sign of the talus. No case of progressive degenerative arthritis of the ankle joint was seen.

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1. Introduction

In this journal in 1961, one of the present authors described a lateral ankle ligamentoplasty technique using peroneus brevis tendon [1] in a modification of the Watson–Jones technique [12].

In 1968, a follow-up study reported 14 very good and 1 poor result in 15 cases of chronic ankle instability managed using this technique [2]. Follow-up, however, was short, and 2 slight deteriorations emerged on subsequent review.

In 1975, a review of 22 cases at a mean 8 years’ follow-up [4] found 19 good and 3 fair results. Slight deterioration was found in 3 of the cases with more than 8 years’ follow-up.

The present study sought to determine whether functional quality was maintained over a longer follow-up and whether tibiotalar stabilization had protected the joint against the osteoarthritis that threatens unstable joints [6].

2. Patients and methods

Sixteen ankles (9 right, 7 left) operated on for chronic instability in 16 patients (5 male, 11 female) were examined.

Age at surgery and length of follow-up are shown in Figs. 1 and 2.

At follow-up, a clinical form was filled out for each patient, detailing any pain, walking quality, and running quality when the patient’s age allowed. Each of these parameters was scored between 1 and 3 (Table 1).

Functional results were considered very good when all scores were 1, good when not more than one score was 2 and poor when one score was greater than 2 or several were greater than 1.

Examination determined tibiotalar range of motion (ROM) and whether subtalar ROM was impaired.

Radiologic assessment comprised AP and lateral views in 14 ankles, to determine and compare tibiotalar joint status to preoperative findings; AP forced varus view, on a Telos device, in 14 ankles; and anterior talar drawer, also on a Telos device, in 12 ankles. Talar tilt (°) was measured from the forced varus view, and talar drawer (mm) was assessed as described elsewhere [3].

3. Results

One operation was complicated by deep suppuration requiring subtalar fusion.

In 1 patient, evolutive rheumatoid polyarthritis caused disability precluding functional assessment.

In the other 14 patients, there were 6 very good, 4 good and 4 poor results.

Subtalar and tibiotalar ROM is shown in Table 2 and Fig. 3. Talar tilt and anterior talar drawer are shown in Tables 3 and 4.

Preoperative radiologic assessment of 11 ankles found no tibiotalar abnormalities, with no change at follow-up. In 3 ankles, there was preoperative anterior tibial osteophytosis, without impact on the tibiotalar joint line; at follow-up there was no change.

4. Discussion

The quality of the functional results with a simple technique and prolonged follow-up was comparable to those of other reports [7–11].

Interview disclosed no clear deterioration over time other than a reduction in sports activity that could be attributed to aging: 9


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Fig. 1. Age at surgery.

Table 1
Functional scores at follow-up.

<table>
<thead>
<tr>
<th></th>
<th>Pain</th>
<th>Walking</th>
<th>Running</th>
</tr>
</thead>
<tbody>
<tr>
<td>1: never</td>
<td>1: normal</td>
<td>1: normal</td>
<td>1: normal</td>
</tr>
<tr>
<td>2: rarely</td>
<td>2: difficult on uneven ground</td>
<td>2: difficult</td>
<td>2: difficult</td>
</tr>
<tr>
<td>3: often</td>
<td>3: difficult</td>
<td>3: impossible</td>
<td>3: impossible</td>
</tr>
</tbody>
</table>

Fig. 2. Follow-up.

Table 2
Subtalar ROM and quality of result.

<table>
<thead>
<tr>
<th>Subtalar ROM</th>
<th>Very good</th>
<th>Good</th>
<th>Poor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conserved</td>
<td>2</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Impaired</td>
<td>4</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

Fig. 3. Tibiotarsal ROM and quality of functional result.

Table 3
Talar drawer and quality of result.

<table>
<thead>
<tr>
<th>Radiologic anterior talar drawer</th>
<th>Very good</th>
<th>Good</th>
<th>Poor</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;5 mm</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>&gt;5 mm</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

Functional results quality showed no correlation with subtalar ROM (Table 2), residual anterior talar drawer, always slight (Table 3), or residual talar tilt (Table 4).

Reduced tibiotalar dorsiflexion, however, significantly reduced the number of good and very good results (1-tailed non-parametric Mann–Whitney test: P < 0.05 (Fig. 3)) was the only apparent cause of poor results.

Attention should therefore be paid to adjusting implant tension: as the foot is at a right–angle under the leg, without varus or valgus, it should be moderately tensed so as to avoid varus but without holding the hindfoot in valgus; under these conditions, there is little or no limitation of tibiotalar dorsiflexion.

One study limitation is that the 16 patients did not constitute a continuous series: not all patients treated during the study period could be seen at follow-up and some patients’ files proved non-analyzable.

Too few patients were competitive sports players for the technique to be recommended without reservation for such subjects: the loss of the dynamic role of the peroneus brevis, the frequency of subtalar stiffening (Table 2) and the risk of subtalar dorsiflexion loss (Fig. 3) impose caution. The same reservations apply to other ligamentoplasty techniques: when possible, we prefer to restore lateral capsuloligamentary tension in these patients, using Duquennoy’s technique [5], with ligamentoplasty remaining an option in case of failure.

Since 1968, we have gained experience in proprioceptive rehabilitation in chronic ankle instability, and systematically propose it before considering surgery, especially when laxity is slight and the patient not especially athletic; this has considerably reduced surgical indications.

Even so, the efficacy of surgical stabilization in preventing degenerative tibiotalar joint lesion justifies surgery when the result of rehabilitation is imperfect.

Disclosure of interest

Authors’ disclosure of conflict of interest was not requested when the article was originally published.

References


