THE TREATMENT OF RECURRENT DISLOCATION OF THE PERONEAL TENDONS

R. G. PÖLL, F. DUIJFJES

From University Hospital Leiden, The Netherlands

Ten cases of post-traumatic recurrent dislocation of the peroneal tendons were operated on between 1974 and 1982. In all cases the disturbed superior peroneal retinaculum was reconstructed by transposition of the calcaneofibular ligament to the lateral side of the peroneal tendons. The calcaneal insertion of the calcaneofibular ligament was mobilised with a small bone block and reinserted in its bed after the transposition. After an average follow-up of four years all the results were satisfactory.

Recurrent dislocation of the peroneal tendons over the lateral malleolus is an uncommon injury. It causes much inconvenience and pain and it usually prevents a patient from participating in sports. The first dislocation is usually simultaneous with rupture of the superior peroneal retinaculum. Murr (1961), however, described three cases associated with marginal fractures of the lateral malleolus.

The mechanism responsible for the rupture of the retinaculum is probably a sudden supination of the foot while the knee is flexed and the foot is in dorsiflexion. Von Muralt (1956) demonstrated that trauma alone did not cause the initial dislocation but that a special configuration of the dorsolateral side of the distal fibula must also have been present. He demonstrated that, after experimental excision of the superior retinaculum, dislocation of the peroneal tendons was possible only when the dorsolateral surface of the distal fibula was flat or convex. In an investigation by one of the authors (RGP) on 25 anatomical specimens, seven instances were found of a flat or convex surface of the dorsolateral aspect of the distal fibula; in two patients this was bilateral.

If a patient is seen early enough, repair may be effected by primary suture of the retinaculum or, in the case of an avulsion fracture from the lateral malleolus, reinsertion of the retinaculum may be considered. In chronic cases conservative measures (Bragard 1934) are unsatisfactory and surgical treatment is better.

Numerous operations have been designed, which may indicate an unsolved problem. There are two main types of operations: simple deepening of the dorsolateral groove of the fibula or its reconstruction with a lateral bone graft (Kelly 1920; Wilson 1976; Inman and Mann 1978); and construction of a new retinaculum with local or autograft material (Lexer 1911; Jones 1932; Lange 1951; Platzgummer 1967; Leitz 1968; Vierstein and Rosemeyer 1972; Sarmiento and Wolf 1975). The disadvantages of these operations are the possible adhesion of the tendons on to the rough bony surface, irritating protrusion of the reconstructed retinaculum or the necessity for an additional operation in order to obtain the tissues for grafting.

Platzgummer (1967), Leitz (1968) and Sarmiento and Wolf (1975) used the calcaneofibular ligament to reconstruct the superior peroneal retinaculum. We have also used this ligament; in our procedure the normal anatomy and function are restored, the refixing is uncomplicated and the chances of the tendon adhering to the bone are minimal. The present report concerns a series of 10 feet (in nine patients) on which this operative procedure was used.

MATERIAL AND METHOD

Between 1974 and 1982 nine patients underwent operations for dislocation of the peroneal tendons (Fig. 1); in one patient both sides were affected, giving a total of 10 operations. The age at operation varied from 15 to 45 years with an average of 25 years. Four women and five men were affected, all healthy and athletic people; one patient was the Dutch national fly-weight wrestling
champion. The right side was affected in six, the left in four.

In all cases a sports injury, mostly a sudden supination of the foot, had been responsible for the first dislocation: four when skiing, two while playing football, the remainder during horse riding, military service or wrestling. Eight patients had had no previous sprain of the affected ankle; one patient had had a Pott’s fracture in the same ankle 20 years before. Recurrent dislocation of the peroneal tendons occurred daily in eight ankles, in seven of which the dislocation occurred when walking normally; in six the redislocations remained painful. Seven patients had had to give up all sporting activities. The average delay before operative treatment was 12 months.

On examination, dislocation of the peroneal tendons was seen in nine ankles, in the remaining one the history of recurrent dislocation was clear. Two patients exhibited signs of joint laxity. Two other patients showed slight pes cavus with claw toes. Radiography showed a normal ankle in eight cases; there was one case of an avulsion fracture of the lateral malleolus and one case of osteoarthrosis of the ankle after an old Pott’s fracture. Surgical procedure. The incision is made at the posterior edge of the fibula and curved around the malleolus in an anterior direction. The subcutaneous tissues are divided until the peroneal tendon sheath is exposed. This sheath, with the superior peroneal retinaculum if intact, will usually be overstretched. The sheath is opened and the peroneal tendons retracted anteriorly over the lateral malleolus. The calcaneofibular ligament is then defined from the lateral malleolus to the calcaneus (Fig. 2). A rectangle is cut in the periosteum around the insertion of the ligament into the calcaneus. A cancellous bone block with the insertion of the calcaneofibular ligament is then mobilised and lifted from the calcaneus (Fig. 3). The peroneal tendons are brought under the ligament and the bone block is replaced and fixed if necessary with a small spongiosa screw or vitallium nail (Fig. 4). In this way the calcaneofibular ligament is transposed to the lateral side of the peroneal tendons. If necessary the malleolar groove may be deepened subperiosteally. After the operation the ankle joint is immobilised for six weeks in a short-leg plaster cast. Weight-bearing is allowed after two weeks.

Operative findings. Ten ankles were operated on: in nine dislocation was proved, while in one a subluxation on the tip of the lateral malleolus was found. The peroneal sheath was usually overstretched and the retinaculum ruptured; in one ankle the retinaculum was overstretched. In the ankle with an avulsion fracture of the lateral malleolus, the peroneal tendons were thickened and frayed where they rubbed on the lateral malleolus. Four shallow malleolar grooves were found, two of them in the same patient.

RESULTS

Our nine patients with 10 operated ankles were all re-examined by one of us (RGP), and all were subjected to radiography. The results are given in Table I. The follow-up ranged from 6 months to 8½ years with an average of 4 years.

In the immediate postoperative period no complications were seen. The average time in hospital was eight days. There were no redislocations and at review all patients thought themselves very much improved, and all but one had returned to active sports at their original level. Two had slight pain, four complained of abnormal sensibility around the scar and three had slight post-operative swelling. The scar itself or the contour of the lateral ankle was no problem in any patient. The function of the ankle was subjectively decreased in two cases. No patient complained of instability after operation.

On examination no active or passive redislocation of the peroneal tendons was possible. The function of the ankle was normal except in one patient who had slight decrease of inversion. Two patients had altered sensibility around the scar. No swelling was seen around the lateral malleolus, no wasting of the calf was found and the strength of the peroneal muscles was normal. No instability was found, and the ligaments of one ankle seemed to be a little tighter on the lateral side. Normal and symmetrical reflexes were evoked in all patients. Radiographs showed no abnormalities at the site of the bone block and no tibiotalar or talocalcaneal degenerative arthritis. In the one patient with pre-operative degener-
Table 1. Results

<table>
<thead>
<tr>
<th>Case</th>
<th>Sex</th>
<th>Age (years)</th>
<th>Year of operation</th>
<th>Redislocation</th>
<th>Active sports</th>
<th>Instability</th>
<th>Pain</th>
<th>Ankle function</th>
<th>Swelling</th>
<th>Follow-up (years) (months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>F</td>
<td>16</td>
<td>1974</td>
<td>–</td>
<td>+</td>
<td>–</td>
<td>–</td>
<td>Normal</td>
<td>Mild</td>
<td>8</td>
</tr>
<tr>
<td>2</td>
<td>M</td>
<td>45</td>
<td>1976</td>
<td>–</td>
<td>+</td>
<td>–</td>
<td>–</td>
<td>Normal</td>
<td>–</td>
<td>6</td>
</tr>
<tr>
<td>3 left</td>
<td>M</td>
<td>23</td>
<td>1976</td>
<td>–</td>
<td>+</td>
<td>–</td>
<td>–</td>
<td>Normal</td>
<td>–</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>M</td>
<td>19</td>
<td>1976</td>
<td>–</td>
<td>+</td>
<td>–</td>
<td>–</td>
<td>Normal</td>
<td>–</td>
<td>5</td>
</tr>
<tr>
<td>5 right</td>
<td>M</td>
<td>24</td>
<td>1977</td>
<td>–</td>
<td>+</td>
<td>–</td>
<td>–</td>
<td>Normal</td>
<td>–</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>F</td>
<td>23</td>
<td>1979</td>
<td>–</td>
<td>+</td>
<td>–</td>
<td>Mild</td>
<td>Normal</td>
<td>Mild</td>
<td>3</td>
</tr>
<tr>
<td>7</td>
<td>M</td>
<td>36</td>
<td>1979</td>
<td>–</td>
<td>+</td>
<td>–</td>
<td>–</td>
<td>Normal</td>
<td>–</td>
<td>2</td>
</tr>
<tr>
<td>8</td>
<td>M</td>
<td>24</td>
<td>1980</td>
<td>–</td>
<td>+</td>
<td>–</td>
<td>–</td>
<td>Normal</td>
<td>–</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>F</td>
<td>15</td>
<td>1981</td>
<td>–</td>
<td>+</td>
<td>–</td>
<td>–</td>
<td>Slight decrease of inversion</td>
<td>–</td>
<td>1</td>
</tr>
<tr>
<td>10</td>
<td>F</td>
<td>21</td>
<td>1981</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>Mild</td>
<td>Normal</td>
<td>Mild</td>
<td>6</td>
</tr>
</tbody>
</table>

Cases 3 and 5 are the same patient

Review of changes after a Pott’s fracture the changes had not increased.

DISCUSSION

Post-traumatic recurrent dislocation of the peroneal tendons causes serious disability. Most authors recommend operative treatment, but only a few have published long-term results of a well-documented series.

In our surgical procedure a new retinaculum is constructed by transposition of the calcaneofibular ligament to the lateral side of the peroneal tendons. As the calcaneofibular ligament is mobilised together with a cancellous bone block which is refixed in its original site after transposition, no scarring or adhesions to the peroneal tendons develop. This distinguishes our procedure from the many other methods.

Three other authors have used the calcaneofibular ligament to reconstruct the superior peroneal retinaculum. Sarmiento and Wolf (1975) published a case report in which the calcaneofibular ligament was used as a new retinaculum by dividing the peroneal tendons, rerouting them underneath the calcaneofibular ligament and repairing them. Division of the peroneal tendons is in our opinion a disadvantage of this method. Platzgummer (1967) published a technique in which the calcaneofibular ligament itself was divided near the fibula and was sutured after rerouting the peroneal tendons. In this method the integrity of the ligament was disturbed. Leitz (1968) tried to avoid this disadvantage by osteotomising the tip of the lateral malleolus and refixing it with Kirschner wires after transposition of the calcaneofibular ligament to the lateral side of the peroneal tendons. A disadvantage of this method is that the osteotomy is near the articular surface of the fibula and that the tip of the malleolus had to be refixed. A further disadvantage of these methods is the possibility of adhesions forming between the tendons and the ligament or bone. After our procedure the cancellous bone block with the insertion of the calcaneofibular ligament will re-incorporate in the calcaneus without any problem and the integrity of this strong and important ligament is maintained.

REFERENCES