SUBCUTANEOUS RUPTURE OF THE TENDON OF TIBIALIS ANTERIOR

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Subcutaneous rupture of the tendon of tibialis anterior immediately proximal to its insertion affects patients over the age of 45 years and is most common in the seventh decade. The symptoms at the time of rupture are milder than is the case with rupture of the calcaneal tendon and the early disability is slight. Thus, affected patients commonly present several weeks or months after rupture and at a stage when reattachment of the tendon to its normal site of insertion (the most satisfactory surgical management) is impossible. Although the disability is slight if repair is not performed, there should be no disability after surgical repair and this should be offered to those patients who lead an active life and who present in the first three months after rupture. The relevant literature is reviewed and experience with four further patients is recounted.

Subcutaneous rupture of the tendon of tibialis anterior, immediately proximal to its insertion, is an entity which has received scant attention in the literature. Because relatively few patients have been recorded there is a lack of awareness of the condition and late diagnosis is common. If the condition is diagnosed late, then surgical management will be ineffective and there will be a permanent slight disability. There is no firm recommendation in the literature on the indications for surgical repair: some authors report good results from surgical treatment, others report little disability if the condition is neglected.

In 1934 Burman analysed the world literature. Two cases had been reported and he added two more. In 1953 Mensor and Ordway described two cases and had found 10 previously reported. Griffiths (1965) reported one closed rupture in a patient with rheumatoid arthritis. Moskowitz (1971) reported on two patients with the condition and Richter and Schlitt (1975) added three more, two of whom were treated by operation. Four additional patients suffering from this condition are now recorded.

FEATURES AND MANAGEMENT

Clinical features. The patient, who is over the age of 45 years and most commonly in the seventh decade, presents with weakness of the ankle and with swelling about the dorsum of the ankle and foot. He generally comments that he catches his foot on irregularities on the ground as he walks. There is a history that an injury to the ankle occurred up to two years previously. The precise mechanism of injury can seldom be recalled. There is a minor degree of foot drop and an ill-defined swelling about the anterior aspect of the ankle. There is a fixed and firm bulbous lump in the line of the tibialis anterior at the level of the ankle. Active dorsiflexion of the foot produces some eversion; attempted dorsiflexion in inversion is weak and there is no visible or palpable tendon of tibialis anterior distal to the lump—indeed there is a palpable gap instead.

Operative findings. If operation is performed, the lump is found to be deep to the superior extensor retinaculum and to be a bulbous expansion of the distal end of the ruptured tibialis anterior tendon which is adherent to a thickened synovial sheath. This ruptured end of the tendon has the same degenerate appearance as has a ruptured calcaneal tendon, with evidence of an old haemorrhage in and about the tendon. The site of rupture is immediately proximal to the insertion of the tendon, there being only approximately 0.5 centimetre of degenerative tendon distal to the rupture.

Recommended management. Those patients who lead an active life and who present within three months of injury are best subjected to surgical reattachment of the ruptured tendon. Others are best advised to put up with their disability.

CASE REPORTS

Case 1. A woman aged 45 years, who had been knocked over by a bicycle two years previously, presented with the features of rupture of the tendon of tibialis anterior as described above. No treatment was recommended.

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Case 2. A man aged 67 years tripped over a girder, suffering a plantarflexion injury. He presented five months later with the features of rupture of the tendon of tibialis anterior. Reconstruction was performed by a sliding tendon lengthening. The distal end of the tendon was attached through periostem at the normal site of insertion of the tibialis anterior. A plaster cast was applied and retained for six weeks. One year later, he was free of symptoms and had a normal gait.

Case 3. A man aged 64 years tripped and fell to the ground, injuring his left ankle. He presented three weeks later because he caught his toe on the ground when walking. An operation was performed. It was not possible to reposition the tendon at its normal site of insertion. It was therefore sutured to the nearby extensor hallucis longus tendon which was then severed at the level of the metatarsophalangeal joint of the big toe and rerouted to be wound round and sutured to the site of insertion of the tibialis posterior. The distal part of extensor hallucis longus was then sutured to extensor hallucis brevis. A below-knee cast was applied for a period of six weeks. At review, two years after operation, the patient still complained of a tendency to trip. There was a minor degree of foot drop and the ankle lacked 15 degrees of both passive flexion and passive extension. The tibialis anterior appeared to be acting as a tenodesis, limiting plantarflexion, whereas the extensor hallucis longus was again functioning.

Case 4. A man aged 67 years tripped over and noted discomfort on the dorsum of the foot. Three months later he presented to an orthopaedic surgeon because of catching of his foot when he was walking. He had had to give up bushwalking because of this. Operative reattachment of the tendon was performed. A five-centimetre incision was made over the lump in front of the ankle and the tendon was mobilised. A second incision was made overlying the medial cuneiform bone, and the distal end of the ruptured tendon was brought down to this point. There was some similar degenerative change in the distal end of the ruptured tendon immediately proximal to its insertion to the medial cuneiform and base of the first metatarsal. A drill hole was made in the medial cuneiform bone and the tendon of tibialis anterior was passed through it; a chromic catgut suture was taken through the sole of the foot and tied over a button. Reinforcing sutures were made into the surrounding periostem. A below-knee cast was applied and retained for a period of six weeks. At review 18 months later the patient had no complaints, a normal gait and had resumed bushwalking. Examination revealed that the tibialis anterior was acting strongly though it was slightly less powerful than on the unaffected side and there was a loss of approximately five degrees of passive flexion and of passive extension.

DISCUSSION

Review of the literature and of our own patients show that subcutaneous rupture of the tendon of tibialis anterior may occur after minimal injury in patients over the age of 45 years. All the patients recorded in the literature have been over this age with the exception of one patient described by Burman (1934) who suffered a major injury at the age of 25 years. Most commonly the patient presents between the ages of 60 and 70 years and the time of presentation varies from immediate (though frequently without recognition by the attending physician) to two years afterwards.

None of our patients had symptoms predating rupture of the tendon; however, two patients described by Richter and Schlitt (1975) did have such symptoms and were treated by local injections of hydrocortisone before rupture. These authors were uncertain as to the role which these injections played in producing the rupture.

Although the symptoms resulting from this injury are mild, they were sufficient to lead one of our patients (Case 1) to present at two years after injury and another patient to present at five months (Case 2). Burman (1934) mentioned that his untreated patients had developed a flat foot of mild to moderate degree and had complained of aching about the ankle.

Those patients treated by early operation have generally done well—though one of our patients (Case 3) did not return to full activity after transfer of the tendon of tibialis anterior to the extensor hallucis longus and transfer of the insertion of that muscle. If possible, suture of the tendon to its normal insertion is more effective. This was certainly so in the patients in Cases 2 and 4, in two patients reported by Burman and in two reported by Richter and Schlitt.

Although the disability is slight if repair of the ruptured tendon is not performed, there should be no disability after surgical repair. Thus the management of this condition depends upon the likely future demands of the individual patient. An elderly person who is not active is best treated conservatively; only those who are keen walkers warrant surgical treatment. Those between the ages of 45 and 60 who are leading an active life are best treated operatively by reattaching the tendon to its normal insertion or, if this cannot be reached, to a point a little behind its normal insertion. If the condition is diagnosed late (probably more than three months after injury) then an operation is less likely to be effective.

REFERENCES