

Achilles tendon rupture: keys to clinical diagnosis

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An estimated 25% of Achilles tendon ruptures in Australia are missed by the first doctor to examine the patient. Regrettably, the proliferation of musculoskeletal ultrasound has not helped the situation. It is timely to review the condition and the value of early diagnosis.

Rupture of the Achilles tendon is a common injury, occurring most frequently in those aged between 30 and 50 years. The injury is traditionally thought to be an affliction of the 'weekend warrior' and is rare in the seasoned athlete – indeed, there was only one incident (that of a male Finnish javelin thrower) during the Sydney Olympics in 2000.

Mechanism of injury

Although the tendon can rupture from a direct blow, most patients sustain an eccentric force to a dorsiflexed foot (a lengthening contracture). The sports most often involved are tennis, squash, netball and soccer, but it can occur during any ball activity.

Special mention must be made of corticosteroid injections into the tendon, which are well known to precipitate rupture. There is also an association with the use of fluoroquinolone antibiotics (e.g. ciprofloxacin).

History

As Sir William Osler once said, 'Listen to your patient, he is telling you the diagnosis'. Characteristically, patients report a sudden snap and severe pain at the back of the heel. They often feel as though they have been hit by a tennis ball or by their opponent on the squash court, and they cannot continue to play after the rupture has occurred. There is usually no prodrome of pain.

Physical examination

The first thing to note is the calf swelling and the ecchymosis. Comparison of the ankles will often reveal a tendon defect on the affected side (Figure 1). With the patient prone and both knees flexed to 90°, the injured side will be less plantar flexed – this is due to loss of the Achilles tone. Be aware that the foot will still be able to plantarflex to some degree, which is possible using the other flexors (tibialis posterior, flexor digitorum longus and flexor hallucis longus as well as the peronei).

Next, palpate the tendon, which is subcutaneous throughout its length.

Most ruptures occur slightly distal to the musculotendinous junction, and a hollow is usually palpable (Figure 2). Then, Thompson's test should be performed. With the patient lying prone and the affected leg extended, squeeze the calf (Figure 3). Normally, the foot should plantarflex; failure to do so is a positive finding and confirms the diagnosis of rupture.

Differential diagnosis

Other diagnoses that should be considered, after consideration of the patient's demographic group, include muscle tears of the calf (usually the medial head of the gastrocnemius) and the plantaris ('tennis leg'). These injuries often occur on weekends; patients are taken to hospital emergency departments for investigation, and the x-rays taken are most often reported as normal. On rare occasions the tendon will avulse from the calcaneus and a fragment of bone will be seen to indicate the injury.

The role of ultrasound

I do not believe that ultrasonography should be performed in the acute setting. The diagnosis is readily made clinically, and ultrasound reports of 'a partial tear' lead to unnecessary delays in treatment. This is illustrated by the case of a 46-year-old woman who presented after playing netball with the complete Achilles tendon rupture shown in Figure 4. Her ultrasound report read:

'At the insertion, the tendon is of normal appearance and calibre but there is a small amount of fluid in the retrocalcaneal bursa. At about 2 cm above the calcaneum there is a fluid gap within the tendon measuring 19 x 8 x 9 mm in size, and the tendon around this and proximally is enlarged and heterogeneous, and appearances are in keeping with a partial tear.'

Quite often the ultrasound reports describe a tear as 'partial' when in fact it is functionally complete (if 90% of the

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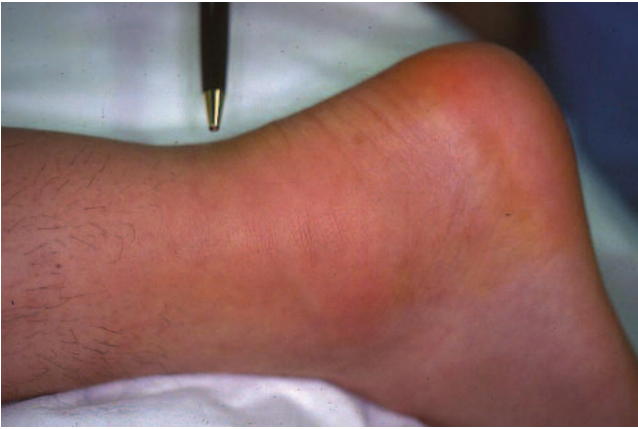


Figure 1. The defect in the tendon viewed from the lateral side.



Figure 2. A palpable gap in the Achilles tendon.



Figure 3. The Thompson test. If the tendon is intact the foot should plantarflex when the calf is squeezed.



Figure 4. A complete rupture of the Achilles tendon, as seen at surgery. It had been reported as a partial tear on acute ultrasound.

fibres are torn then the tear is functionally complete).

Management

Early diagnosis of an Achilles tendon rupture is accompanied by a greater chance of successful treatment. If diagnosed acutely (within the first 14 days), it can be managed surgically or nonsurgically. If the patient is medically fit then surgical treatment is recommended because the re-rupture rate (less than 5%) is significantly lower than for nonsurgical treatment (up to 20%). If the patient is not medically fit or does not wish to undergo an operation then the rupture can be managed nonsurgically by immobilising

the foot in a cast in a plantarflexed position for six weeks, with no return to ball sports for 12 months.

If the patient presents late (after four weeks) the tendon ends are often widely separated and nonsurgical treatment is not possible. The majority of patients will not function well without an Achilles tendon because their propulsive power is seriously reduced. In these cases, surgical reconstruction consists of mobilising and lengthening the tendon with either a turn-down flap or a V-Y plasty. If the tendon is of very poor quality, a transfer of flexor hallucis longus tendon to the calcaneus will restore about 80% of strength to the leg and is very worthwhile – even

many years after a neglected rupture. Late reconstruction is, however, accompanied by a higher rate of wound problems, and the options for wound closure in the Achilles region are not always satisfactory. Salvage may consist of free tissue transfer. The decision to reconstruct the tendon must be made with extreme caution in patients with vascular disease, severe diabetes, or those who smoke heavily.

Conclusion

An Achilles tendon rupture has a very characteristic presentation in the vast majority of patients. It is a clinical diagnosis, and early intervention will usually result in the optimal outcome. **MT**