

Achilles tendon ruptures

An overview of best practice

August 2008

ACC Review 41

- The diagnosis of the vast majority of acute ruptures is a simple, clinical diagnosis
- Simple, acute ruptures do not require radiological investigation as this delays the initiation of treatment
- Most acute ruptures can be treated non-operatively, provided treatment is initiated within 24 hours
- The majority of chronic ruptures should be treated operatively
- Following operative treatment, functional bracing, rather than cast immobilisation, provides the best results.

Background

Achilles tendon ruptures typically occur in “young” healthy adults, most commonly involved in recreational sports, eg. indoor netball or touch rugby. The pathogenesis is debated but it is commonly thought that ruptures are due to sudden overloading of the musculotendinous unit in a poorly conditioned individual.

The injury typically occurs 3–4cm proximal to the tendon insertion, the area of poorest vascularity. The assessment and treatment of the condition are divided into acute and chronic (or neglected) ruptures. The commonly used timeframe for division between acute and chronic ruptures is four weeks following injury.

Assessment

Acute ruptures

The diagnosis of an acute rupture is usually simple. Classically, patients report a bang or snap in the back of the leg that may or may not be painful. They can usually walk, with a limp, and have weakness of “push-off”.

Examination reveals a palpable gap in the tendon, relative weakness of plantar flexion (although still present due to tibialis posterior and long toe flexor function) and positive calf squeeze or Thompson’s test⁽¹⁾. This test is performed with the patient prone, with their feet off the end of the table or kneeling on a chair. The calf is squeezed and the test is positive when there is no plantar flexion of the foot. Radiographic assessment is rarely required in the acute setting and often simply delays treatment. X-rays are, however, indicated if avulsion from the calcaneus is suspected.

Chronic ruptures

Treatment delay may be secondary to late patient presentation or initial misdiagnosis – historical rates being up to 27%⁽²⁾. The history of trauma may be insignificant and the patient can still walk and plantar flex their ankle. The patient may present with a limp, ankle swelling or an inability to run or climb the stairs. Examination may not reveal a palpable gap and the calf squeeze test may be unreliable, although careful comparison with the unaffected leg will help. The vascularity of the limb, functional limitation of the patient and surgical and anaesthetic risk factors should be assessed. Ultrasonography or MRI can help to confirm the diagnosis in equivocal cases and document the gap size, which will help to guide treatment options.

Treatment

Acute ruptures

What constitutes optimum treatment remains controversial. The advantage of non-operative treatments (traditionally, equinus below-knee plaster for about two months) is the avoidance of anaesthetic risks and particularly wound complications – due to the poor blood supply of the skin around the Achilles tendon. The advantages of operative treatment are a lower re-rupture rate and debatable improvement in rehabilitation rate and functional recovery.

A recent meta-analysis of prospective, randomised, controlled trials comparing operative and non-operative treatment of acute ruptures⁽³⁾ found a pooled re-rupture rate of 3.5% for operatively treated and 12.6% for non-operatively treated groups. The pooled rate of complications (including wound healing problems) for the operatively treated group was, however, 34.1%. The same study found that with post-operative splinting, the rate of complications (other than re-rupture) was 35.7% in the cast immobilisation group and 19.5% in the functional bracing group. Because of the small numbers of patients involved, no definite conclusion could be made about the different non-operative treatment regimes.

Recent papers reporting functional bracing of non-operatively treated ruptures have, however, shown improved re-rupture rates. A recent study⁽⁴⁾ followed 140 consecutive patients treated with four weeks' equinus cast then four weeks' functional, removable bracing. It found a complete re-rupture rate of 2% and partial re-rupture rate of 3.5% – the majority of which occurred in non-compliant patients. This low re-rupture rate with functional bracing of conservatively treated ruptures is in agreement with the results of the New Zealand study⁽⁵⁾. These excellent results are probably in part due to the treatment protocol, but may also be due to treatment being initiated within 24 hours of injury, whereas in historical papers treatment was often started days or weeks post injury.

In New Zealand there is still debate as to how best to treat acute ruptures. For those seen within 24 hours of injury, however, the majority (except, perhaps, high-level athletes) are treated non-operatively with increasing interest in functional

bracing. If seen beyond approximately 48 hours, however, the majority are treated surgically. The rationale for this is the longer from the time of injury the treatment is initiated, the more the likelihood of retraction of the tendon ends and hence the higher the re-rupture rate.

Chronic ruptures

Patients who have a neglected rupture and a functional deficit are managed optimally with surgery, with direct tendon apposition. Following debridement of tendon ends and with retraction of the proximal tendon fragment, however, a large gap may be present. This, in part, explains the large variety of operative techniques described for this condition. Techniques include tendoachilles advancement or flap reconstruction, local tendon transfer (eg. flexor hallucis longus tendon) or reconstruction with autograft, allograft or synthetic implant. Whatever the technique chosen, however, it should be robust enough to allow functional rehabilitation with early motion.

There is no universally accepted post-operative rehabilitation protocol. In general, however, for a compliant patient, they should remain in a resting equinus cast for about two weeks until the wounds have healed. They can then be mobilised weight bearing in a removable boot, often with stepwise removal of heel wedges, up to about the two-month mark, then work on a strengthening programme.

References/Websites

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