

Evidence-based treatment of Achilles tendon rupture

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SUMMARY

The treatment of Achilles tendon rupture has recently seen a shift toward non-operative management, as supported by the literature, yet many surgeons continue to treat these injuries operatively. The evidence clearly supports non-operative management of these injuries except for Achilles insertional tears and for certain patient groups, such as athletic patients, for whom further research is warranted. This nonadherence to evidence-based treatment may be explained by patient preference, surgeon subspecialty, surgeon era of practice or other variables. Further research to understand the reasons behind this nonadherence would help to promote conformity in the surgical community across all specialties and adherence to evidence-based approaches.

Achilles tendon rupture is a common injury (11–37 cases per 100 000 population), with an increased incidence in recent years. The decision to choose operative or nonoperative management for these injuries has become increasingly debatable. Patients treated nonoperatively show an increased rate of re-rupture only if functional rehabilitation employing early range-of-motion protocols are not used; those treated operatively may have a higher complication rate, namely problems with wound healing and infection.^{1,2} Therefore, at surgical centres that do not employ early range-of-motion protocols, surgical management may be preferable.¹ Several randomized controlled trials and meta-analyses have been done over the years, highlighting this particular trade-off.³ However, it is important to note that minimal evidence has shown successful outcomes with nonoperative management of Achilles insertional or avulsion tears.

There is further debate when considering treatment of the athletic community. As per Ochen and colleagues,³ “athletic people may prefer operative treatment to enhance and expedite their outcomes, whereas a sedentary person with limited functional outcome expectations, may prefer nonoperative treatment.” An often-referenced randomized controlled trial found a significant difference in plantar flexion strength at 240°/s test velocity that favoured the operative management group.⁴ High-speed isokinetic strength may be of substantial importance to jumping and sprinting athletes and, therefore, this difference may be enough to swing the pendulum toward operative management in this patient group, especially given the importance of being able to perform at a high level. Many studies have looked at return to play after Achilles tendon rupture among professional athletes; one such study by Yang and colleagues⁵ suggests that only 61% of athletes from the National Football League return to play and, among those who did, it took an average of 11 months, with a 15% rate of re-rupture in the study cohort. Given that around 40% of professional players may not return to sport even with operative intervention, it may be wise to try offering nonoperative management for these patients and observe their outcomes.

When treating patients nonoperatively, it is critically important to follow a rigorous functional rehabilitation protocol.^{2,4} Specifically, the initial diagnosis and initiation of functional rehabilitation must occur within 48 hours of injury with the affected foot immobilized in plantar flexion and not bearing weight. Patient education and supervision with a physical therapist experienced in

functional rehabilitation is essential for success, particularly to mitigate and prevent the risk of weakness secondary to overstretching of the Achilles tendon during rehabilitation.^{2,5} Given the importance of functional rehabilitation in achieving optimal outcomes, further studies comparing operative and nonoperative management of these injuries are warranted, specifically evaluating the use of functional rehabilitation by a well-trained physiotherapist who sees a large number of Achilles tendon ruptures, as this is a knowledge gap in the literature.

A recent meta-analysis and systematic review showed a statistically significant absolute decrease of 1.6% in re-rupture rates following operative management compared with nonoperative management. However, the observed complication rate was 4.9% after operative management compared with 1.6% after nonoperative management, for an absolute risk difference of 3.3% that was mostly attributed to infection.³ Therefore, for every 30 patients managed operatively, 1 complication occurs. This may not be a fair trade-off, as infections after operative Achilles tendon fixation is a potentially devastating complication that is very difficult to treat and heal. Conversely, operating on patients with re-ruptured Achilles tendons after nonoperative management, although not without complication, is not more technically demanding than fixing an Achilles tear acutely.

Based on these trials and the minimal risk difference between treatment options, there has been a movement in Canada to treat these injuries nonoperatively. Nevertheless, many surgeons continue to treat these ruptures surgically.³ Evidence-based medicine has been defined as the incorporation of clinical expertise, best available evidence and patient values and preferences to help guide treatment decisions.⁶ Patients and practitioners rely on the principles of evidence-based medicine to make informed decisions with regard to proper diagnostic and treatment guidelines. The difficulty arises when there is continued practice variability despite the availability of evidence to help guide treatment decisions. Despite the evidence supporting nonoperative management in most cases, surgeons likely continue to operate on this injury because of patient preference or hope in a slight decrease in re-rupture rates.³

Patient preference is consistently influential in operative decision-making, and surgeons likely prefer to turn to their patients in an effort to create a shared decision-making approach, which has been shown to improve patient satisfaction and adherence to therapy, and to minimize undesired care, particularly in surgical decision-making.⁷ However, this means that, despite the latest evidence pointing toward nonoperative management, surgeons are still comfortable turning to their patients to guide decision-making toward operative management. This is concerning, given that patients are even less likely than surgeons to follow evidence-based principles.

Surgical experience is another variable that may lead surgeons to choose to operate on these injuries. This is because

more experienced surgeons were trained in a different era and the shift to nonoperative management of these injuries has been relatively recent. Therefore, surgeons in practice longer may be less likely to follow evidence-based approaches and operate unnecessarily.

Future research is warranted to examine the outcomes of operative versus nonoperative management of Achilles tendon rupture, particularly among athletic patients. However, these injuries should generally be treated nonoperatively. Given that many surgeons continue to operate on these injuries, future research should seek to understand the underlying reasons surgeons do not conform to evidence-based medicine. This would then help to address these underlying reasons and advocate for conformity in the surgical community across all specialties to adhere to evidence-based medicine.

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