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Acute Achilles tendon rupture: Skip the surgery?

Nonoperative management for acute Achilles tendon rupture results in patient-reported outcomes similar to surgery at 1 year—but higher rates of rerupture.

PRACTICE CHANGER

For healthy patients ages 18 to 60 years with acute Achilles tendon rupture, consider nonoperative immobilization, which offered a benefit in function comparable to open-repair or minimally invasive surgery in this randomized controlled trial (RCT).

STRENGTH OF RECOMMENDATION

B: Based on a single RCT.¹

Myhrvold SB, Brouwer EF, Andresen TKM, et al. Nonoperative or surgical treatment of acute Achilles' tendon rupture. *N Engl J Med.* 2022;386:1409-1420. doi: 10.1056/NEJMoa2108447

ILLUSTRATIVE CASE

An otherwise healthy 45-year-old man sustained an acute right-side Achilles tendon rupture while playing tennis. He has not taken quinolones recently, has no history of previous Achilles tendon rupture, and prior to this injury had no difficulty walking. He presents initially to his primary care physician and wants advice: Does he need surgery?

Acute Achilles tendon rupture manifests as acute-onset pain and impaired plantar flexion.² Older, active, male patients are at increased risk. There is disagreement among treating physicians regarding best practices for managing this common and debilitating injury. Prior clinical trials comparing operative to nonoperative management, as well as those comparing different surgical techniques, were limited by small sample sizes.³⁻⁵

A 2019 systematic review and meta-analysis that relied heavily on observational data suggested that nonoperative management carries greater risk for rerupture but lower risk for complications than surgical treatment, without differences in patient-reported functional outcomes.⁵ This 2022 RCT adds certainty to comparisons of surgical and nonoperative treatment.

STUDY SUMMARY

Equivalent outcomes but higher rates of rerupture for nonoperative patients

Norwegian investigators conducted a prospective, single-blind RCT at 4 treating facilities among patients ages 18 to 60 years with unilateral acute Achilles tendon rupture. A total of 554 patients were randomized in a 1:1:1 ratio to 1 of 3 groups: nonoperative treatment, open-repair surgery, or minimally invasive surgery. Ultimately, 526 patients who completed the intervention and at least 1 follow-up survey were included in the final analysis, which exceeded the number needed according to the pre-study 80% power calculation. Seventy-four percent of the patients were male, and the average age at time of injury was 40 years. Nearly all patients were classified as healthy or having only mild or well-controlled chronic illnesses.

Before randomization, patients completed the 10-item Achilles tendon Total Rupture Score (ATRS) questionnaire to gauge their pre-injury baseline function. ATRS is scored

0 to 100, with lower scores indicating more limitation in function; a clinically important difference is 8 to 10 points. There were no statistically significant differences in pre-injury baseline ATRS (92.7, 93.9, and 94.2 for the nonoperative, open-repair, and minimally invasive groups, respectively) or other patient characteristics among the 3 groups.

For all participants, application of a below-the-knee equinus cast with plantar flexion was performed within 72 hours after the injury. Patients in the surgical arms had surgery within 8 days, followed by application of a new cast. For all study groups, the cast was maintained for a total of 2 weeks, followed by 6 weeks of weight-bearing in an ankle-foot orthosis with heel wedges that were gradually reduced in number. All patients were treated with identical serial immobilization and physical therapy programs for 36 weeks.

The primary study outcome was change from baseline ATRS at 12 months after injury. Secondary outcomes included ATRS at 3 and 6 months and domain-specific quality-of-life scores (from the 36-Item Short Form Health Survey; SF-36) at 6 and 12 months. Patients also underwent physical testing of their Achilles tendon function at 6 and 12 months, during which they wore knee-high socks in order to blind the evaluators. Reruptures were recorded as secondary outcomes as well.

There were no significant differences between groups in the primary outcome. The mean changes in ATRS were -2.6 points (95% CI, -6.5 to 2.0) for nonoperative treatment compared with minimally invasive surgery, and 1.0 point (95% CI, -5.2 to 3.1) for nonoperative treatment compared with open repair.

All groups had similar secondary self-reported ATRS at 3 and 6 months and SF-36 scores at 6 and 12 months. Blinded physical test results also were similar between groups at 6 and 12 months.

Tendon rerupture within 12 months was more common in the nonoperative arm than in the 2 surgical arms (6.2% vs 0.6% in both operative groups; 5.6% difference; 95% CI for difference, 1.9-10.2 for open repair and 1.8-10.2 for minimally invasive surgery). Risk

for nerve injury was higher in both the minimally invasive surgery group (5.2%) and the open-repair surgery group (2.8%) compared with the nonoperative group (0.6%; no *P* value given for comparison).

WHAT'S NEW

Largest RCT to date showed effectiveness of nonoperative Tx

This study is the largest well-powered and rigorously conducted RCT to show that nonoperative management of acute Achilles tendon rupture offers equivalent patient-reported outcomes at 12 months after injury. Nonoperative management was associated with a lower risk for nerve injury but higher risk for tendon rerupture.


These findings support previous studies on the topic. As previously mentioned, a 2019 systematic review and meta-analysis of 10 RCTs (N = 944) and 19 observational studies (N = 14,918) examined operative compared with nonoperative treatment of acute Achilles tendon rupture and found a lower rerupture rate in the operative group but a higher complication rate.⁵ An underpowered 2010 RCT (N = 97) of operative vs nonoperative treatment of acute Achilles tendon rupture found no statistical difference in ATRS.³ Another underpowered RCT conducted in 2013 (N = 100) compared surgical treatment, accelerated rehabilitation, and nonsurgical treatment in acute Achilles tendon rupture and found no statistical difference in ATRS.⁴

CAVEATS

Study results may not apply to some patient groups

These findings may not apply to patients older than 60 years, who were excluded from this RCT, or patients with debilitation or significant chronic disease. Patients with prior Achilles rupture also were excluded.

The study population in Norway, which is more physically active than nearby countries, may not be generalizable worldwide.⁶ Patients wishing to minimize the risk for rerupture may still prefer to have surgery after acute Achilles tendon rupture.

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sity statin plus ezetimibe is superior to that high-intensity statin alone, regardless of LDL concentration. **JFP**

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CHALLENGES TO IMPLEMENTATION

Potentially limited options for patients

Most patients with acute Achilles tendon rupture are evaluated by orthopedic surgeons, who may or may not offer nonoperative management. Availability of practitioners to provide

serial casting, appropriate heel wedges, and rehabilitation may vary regionally. All patients in this study were evaluated within 72 hours of injury; these findings may not be applicable for patients at a longer time since injury. **JFP**

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