

Nonoperative or Surgical Treatment of Acute Achilles' Tendon Rupture, Myhrvold, S. B. et. al. *New England Journal of Medicine*, 386(15), 1409–1420, Apr. 14, 2022

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Level of Evidence: 1

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Acute Achilles tendon rupture is one of the most common musculoskeletal injuries with an incidence of 5-50 events per 100,000 persons. Risk factors include older age, active lifestyle and male sex. This study is a multicenter, randomized trial designed to compare non-operative treatment vs open repair vs minimally invasive surgery (MIS). Inclusion criteria included patient age of 18-60 years old and the surgeons must have had previous experience with all techniques. Exclusion criteria included previous Achilles tendon rupture, ASA higher than II, taking quinolone usage, local glucocorticoid injections in the past 6 months, dependence on walking aids, or other walking disabilities.

Patients were randomly assigned in 1:1:1 ratio to receive the treatments mentioned above and followed for 12 months. Patients did not receive antibiotic prophylaxis. They were placed in a below-the-knee cast with plantarflexion within 72 hours after the injury. The cast was maintained for 2 weeks in a conservative treatment group. In a surgical group, a new cast was applied after the surgery and maintained for 2 weeks. A three suture method was used in the MIS. Modified Krackow method was used in the open surgery. In all groups, after the cast was removed, patients were allowed to bear weight as tolerated using ankle-foot orthosis (AFO) with heel wedges for 6 weeks. All patients wore knee-high socks to mask surgical scars at 6 and 12-months follow-ups.

Patients were screened at 12-month follow up using the Achilles tendon Total Rupture Score questionnaire to assess symptoms and level of physical activity (0-100 scale). Change from baseline in the Achilles tendon Total Rupture score at the 3- and 6-month follow-ups was assessed, as well as the change from baseline in the subscore for physical functioning, the physical component summary, and the mental component summary on the 36-Item Short Form Health Survey (SF-36) at the 6- and 12-month follow-ups; physical performance at the 6- and 12-month follow-ups; and the incidence of tendon rerupture at the 12-month follow-up.

The study showed no evidence of differences between the groups. A total of 526/554 patients were included in the final analysis. The mean changes in the Achilles' tendon Total Rupture Score were -17.0 points in the nonoperative group, -16.0 points in the open-repair group, and -14.7 points in the MIS group (P = 0.57). The changes from baseline in physical performance and patient reported physical function, as well as mental component, were similar in the three groups. The number of tendon reruptures was higher in the nonoperative group (6.2%) than in the open repair or MIS group (0.6% in each). There were 9 nerve injuries in the MIS group (in 5.2% of the patients) as compared with 5 in the open-repair group (in 2.8%) and 1 in the nonoperative group (in 0.6%).

In patients with Achilles' tendon rupture, surgery (open repair or MIS) was not associated with better outcomes than nonoperative treatment at 12 months; however, the risk of rerupture was higher with nonoperative treatment than with either of the operative treatments.



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