

Operative versus nonoperative treatment for acute Achilles tendon rupture: a meta-analysis of randomized controlled trials

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Introduction: Acute Achilles tendon rupture is a frequent and disabling injury. When early functional rehabilitation protocols are standardized, the independent effect of surgical versus nonoperative management on rerupture and complications remains unclear, as does the influence of surgical technique.

Methods: A systematic review and meta-analysis of parallel-group randomized controlled trials was performed, including adults with acute (≤ 14 days), unilateral, closed Achilles tendon rupture. Nonoperative management with functional bracing and early rehabilitation was compared with open or minimally invasive surgical repair, with both groups following equivalent rehabilitation protocols. Searches of PubMed, Embase, and Cochrane were conducted following PRISMA guidelines. Primary outcomes at 12 months were rerupture and complications, including deep infection, superficial infection, and sural nerve injury. Risk ratios were pooled using a random-effects model, with prespecified subgroup analyses by surgical technique.

Results: Seven randomized controlled trials, including 1,003 patients, were analyzed; 410 underwent nonoperative treatment and 593 surgical repair (410 open, 183 MIS). Nonoperative management was associated with a significantly higher 12-month rerupture rate than surgery (RR 3.35; 95% CI 1.35–8.30). No significant differences were observed in deep or superficial infection rates. Sural nerve injury was significantly less frequent in the nonoperative group (RR 0.20; 95% CI 0.05–0.85). Subgroup analysis showed persistently higher rerupture rates with nonoperative treatment than with open surgery, while superficial infection rates were lower in the nonoperative group.

Conclusion: When early functional rehabilitation is standardized, surgical repair reduces the risk of rerupture at 12 months, whereas nonoperative management is associated with fewer sural nerve injuries. Treatment selection should be individualized based on patient-specific risks and priorities.

Keywords: Achilles Tendon; Conservative treatment; Surgery.

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