Achilles Tendon Rupture – Evidence Based Medicine

John T. Campbell, MD

Few topics in foot and ankle surgery have attracted as much attention as the treatment of acute Achilles tendon ruptures. The literature on this topic -- both historical reports and contemporary studies -- is imposing. There are numerous retrospective case series (Level IV) detailing various treatment methods, fixation techniques, and rehabilitation regimens for the treatment of acute Achilles tendon rupture. Higher quality studies do exist, however, including randomized, prospective studies and large meta-analyses (Level I). Interpreting the results of these higher level studies offers a sound evidence-based approach in recommending treatment options to patients.

Several prospective Level I series have compared operative repair versus closed treatment. Rerupture rates were 15%-20% for nonsurgical treatment versus 1.7%-5% for operative repair. Wound problems with surgical repair occurred in 1.8% of patients, while 3.6% had an infection. Patients treated surgically had a faster return to work, better return to unrestricted sports activities, and lower rate of subjective complaints such as pain or shoe-fitting problems.

A Level I randomized, prospective study of open repair compared to percutaneous repair demonstrated a significantly higher rate of wound complications in the open repair group. Rerupture rates were 6% for open repair and 3% for percutaneous repair; this was in contrast to most retrospective reviews which demonstrated higher rates with percutaneous repair. Nerve injury was 3% in the percutaneous repair group. The authors did not find a difference in return to functional activities or the duration of immobilization; they concluded that percutaneous repair offers acceptable functional recovery with low complications compared to standard open repair. Prospective Level I series investigating early functional rehabilitation have demonstrated faster return to walking, return to work and sports, and higher patient satisfaction rates compared to lengthy postoperative immobilization.

Two Level I meta-analyses pooled randomized, controlled studies encompassing 1200 patients. Surgical treatment had a rerupture rate of 3.1-3.5% versus 12.6-13% for nonoperative management (statistically significant). In one meta-analysis of 12 trials and 800 patients, infection rates were significantly higher for surgical patients (4.0-4.7% versus 0% for nonsurgical group, relative risk, 4.89). Open repair had a higher complication rate than percutaneous repair (26% vs. 8%, relative risk, 2.84). Postoperative cast immobilization had a higher complication rate than functional rehabilitation (35% vs. 19%, relative risk 1.88).

Several retrospective Level IV studies have analyzed specific risk factors for complications following operative repair. One study with a 17% rerupture rate identified patient age less than 30 years as a significant risk factor. Two other studies found rerupture rates of 5.6% and 10.4% and deep infection rates of 2.2% and 3%. Infection was clearly associated with tobacco use, corticosteroid use, and female gender, while contradictory findings were noted regarding patient age and longer delay from injury to surgery.

In summary, strong evidence exists to support the use of open repair over closed treatment in active patients and the superiority of early functional rehabilitation over postoperative cast immobilization. Weaker evidence exists regarding the benefit of percutaneous repair compared to open repair, indicating a need for further study in this area. Evidence-based analysis can assist surgeons to better educate and advise patients on treatment options and risk factors for complications, leading to more rational decision-making in treating this common problem.
Additional Resources:


