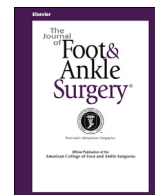




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Review Article

Effect of Early Versus Late Weightbearing in Conservatively Treated Acute Achilles Tendon Rupture: A Meta-Analysis

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ABSTRACT

Achilles tendon ruptures can be either surgically or conservatively treated with either early functional mobilization or cast immobilization. The purpose of the present study was to conduct a meta-analysis comparing the effect of early versus late weightbearing in conservatively treated adult patients, including only randomized controlled trials (RCTs). The primary endpoint was rerupture, and the secondary endpoints were strength, quality of life during treatment, range of motion, deep venous thrombosis, return to sports, and return to work. The search for studies was conducted using PubMed, EMBASE, and the Cochrane Central Register of Controlled trials. A search was performed, and 2 reviewers independently screened the studies by title, abstract, and, finally, by reading the full text. Four studies met the inclusion criteria. The reference lists of the included studies were scanned and 1 additional RCT study was included. The critical appraisal skills program checklist was applied for study appraisal. A statistician performed the data management and analysis. No statistically significant differences were found between the 2 treatment groups concerning rerupture ($p = .796$), return to sports ($p = .455$), or return to work ($p = .888$). One RCT found 1 case of deep venous thrombosis in the late weightbearing group. One RCT reported significant improvement in quality of life and one reported a significantly improved range of dorsiflexion in the early weightbearing group. No statistically significant difference was found between early and late weightbearing with conservative treatment regarding the rerupture rate. The results of the other outcomes were limited by the low number of studies included in the present meta-analysis. Larger randomized studies are needed to investigate these outcomes. From the results in the present study, we would recommend early weightbearing when an Achilles tendon rupture is treated conservatively.

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Achilles tendon ruptures are common among adults and can result in prolonged disability (1). The incidence of Achilles tendon rupture has been increasing, with a male/female ratio of 3:1 (2). Concurrently, the rate of surgical treatment has been decreasing (2).

Achilles tendon ruptures can be either surgically or conservatively treated, with either early functional mobilization or cast immobilization (3). Some countries have seen a shift toward conservative

treatment (4). In Denmark, the rate of surgical treatment of Achilles tendon ruptures has decreased by 50% (2). Given this change, the best method for mobilizing patients with acute Achilles tendon ruptures has been questioned, especially with conservative treatment. Recent studies have shown that early mobilization is not inferior to immobilization when comparing the rerupture incidence in the conservative management of Achilles tendon ruptures (5–7).

In addition, recent studies have shown no significant differences in the rerupture rate between operative and conservative treatment, when the patients receive early mobilization (8,9). However, studies regarding muscle regeneration and tendon collagen fibers have shown improved healing of the Achilles tendon when patients were mobilized early after surgical treatment (10,11). The results of a meta-analysis

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avored early mobilized conservative treatment rather than surgical treatment owing to the reduced risk of other complications (ie, superficial infection and necrosis of the skin or tendon) (12). However, this conclusion is at a great risk of bias because none of the analyzed trials were designed to investigate early versus late mobilization.

To the best of our knowledge, no meta-analysis has been performed of early versus late mobilization with conservatively treated Achilles tendon rupture. The purpose of the present study was to compare the effect of early versus late weightbearing in conservatively treated adults with an acute Achilles tendon rupture, including only randomized controlled trials (RCTs).

Materials and Methods

The data search was conducted on February 1, 2017. The present study was performed as a meta-analysis and reported in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines (13).

Eligibility Criteria

For the present study, only RCTs were included. Studies were excluded if they had not provided information regarding the procedure of randomization, type of intervention, and/or the time of full weightbearing. Only studies examining the general adult population (age ≥ 18 years) with a unilateral acute Achilles tendon rupture were included. An acute rupture was defined as a complete rupture of the Achilles tendon that was < 14 days old. Of interest were studies with conservative treatment in which early weightbearing was compared with late weightbearing. We defined early weightbearing as weightbearing within the first 4 weeks of treatment.

Information Sources

The search was conducted using the following databases: PubMed, EMBASE (Ovid interface), and the Cochrane Central Register of Controlled trials (Wiley interface, current issue). To ensure literature saturation, the reference lists of the included studies or relevant reviews identified through the search were also scanned.

Search Criteria

No study design, date, or language limits were imposed on the search. It was our intention to translate studies other than those in English or Danish; however, this was not necessary. A scientific librarian with expertise in systematic review searches aided with the search strategy. The keywords "Achilles tendon" and "rupture" were chosen, and the following terms were applied to the search in the 3 chosen databases: (Achilles AND (healing OR rupture OR ruptures OR tearing OR tears OR tear OR damage OR damages OR injury OR injuries)) OR (gilles AND (healing OR rupture OR ruptures OR tearing OR tears OR tear OR damage OR damages OR injury OR injuries)) OR (akilli AND (healing OR rupture OR ruptures OR tearing OR tears OR tear OR damage OR damages OR injury OR injuries)).

Study Records

Data Management

The results of the literature search was uploaded to EndNote (Clarivate Analytics, New York, NY).

Selection Process

Our search found 8563 reports from PubMed, EMBASE, and the Cochrane Library (Fig. 1). The 2 reviewers (A.I.E.-A., R.J.) screened the titles and abstracts from the studies, and 7888 were excluded because they did not meet the inclusion criteria. The

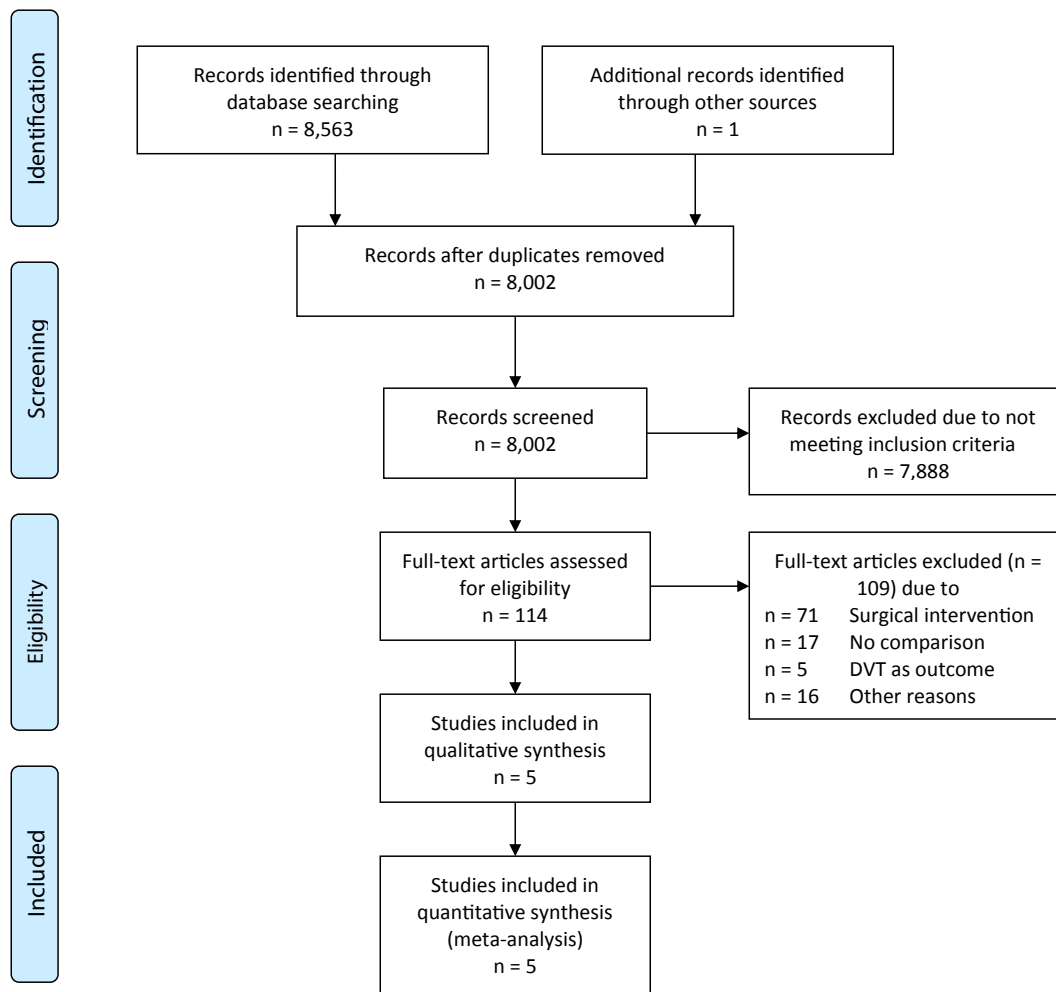


Fig. 1. Flow diagram of study assessment for inclusion. DVT, deep venous thrombosis.

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