The Journal of Foot & Ankle Surgery xxx (2017) 1–5

Contents lists available at ScienceDirect

The Journal of Foot & Ankle Surgery

journal homepage: www.jfas.org

Original Research

Severe Functional Debilitations After Complications Associated With Acute Achilles Tendon Rupture With 9 Years of Follow-Up

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ARTICLE INFO

Level of Clinical Evidence: 3

Keywords:
Achilles tendon rupture
complication
infection
repeat rupture
sural nerve lesion

ABSTRACT

The purpose of the present study was to investigate the long-term effect of deep infection, sural nerve injury, and repeat rupture in the treatment of acute Achilles tendon rupture. A total of 324 patients had made a claim to the Danish Patient Insurance Association from 1992 to 2010 for a complication after acute Achilles tendon rupture. Of the 324 patients, 119 (77 males and 42 females) returned the Achilles tendon total rupture score and the 36-item short-form survey questionnaires. Patients with deep infection (n = 10), sural nerve injury (n = 10), and repeat rupture (n = 16) participated in a follow-up investigation. The mean follow-up period was 8.9 years (range 3 to 21). The mean Achilles tendon total rupture score was 49 ± 27. The summary scores of the physical component and mental components scales of the 36-item Short Form Survey were 43 ± 11 and 52 ± 11, respectively. No significant differences were found among the subpopulations with deep infection, injury to the sural nerve, or repeat rupture. The physical evaluation investigating tendon length and heel rise work revealed a statistically significant difference between the affected and unaffected limb after repeat rupture ($p < .01$) but not after injury to the sural nerve (p = NS) or deep infection (p = NS). In conclusion, patients with from a complication after acute Achilles tendon rupture had a remarkable reduction of the Achilles tendon total rupture score and physical component scale score at mean follow-up point of 9 years. Patients with repeat rupture had a significant elongation of the tendon and reduction of strength in the affected limb.

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Acute Achilles tendon rupture (ATR) is a common and potentially disabling injury (1–3). Treatment has been highly debated throughout the past 30 years (4,5). No significant or clinically relevant differences have been found in functional or patient-reported outcomes in large meta-analyses (5–7). Therefore, the rate of complications such as repeat rupture, infection, and nerve damage has been used to determine the choice of treatment (5,8). The complication rates have been well described for both operative and nonoperative treatment (5); however, little is known concerning the long-term severity of the different types of complications (2).

Treatment of ATR can be operative or nonoperative, and rehabilitation can be dynamic or immobilizing (8). The risk of experiencing a repeat rupture is 3% to 5% after operative treatment and 9% to 13% after nonoperative treatment (5,8). The risk of complications other than repeat rupture such as infection, nerve damage, or adhesions is 27% to 33% after operative treatment and 3% to 8% after nonoperative treatment (5,8).

To determine the risk profiles of operative and nonoperative treatment, it is necessary to understand the severity of the associated complications, a field lacking substantial peer-reviewed evidence. In 2002, Pajala et al (2) investigated the outcomes of 12 repeat ruptures and 7 deep infections at mean follow-up period of 4.1 years and concluded that the "outcome after a simple repeat rupture without infection was satisfactory, but the results after a deep infection often were devastating." In 2014, a study of claims to the Danish Patient Insurance Association (DPIA) found 3.8 times greater economic compensation to patients after surgical treatment than after nonsurgical treatment (3). After surgical treatment, deep infection was the most common cause of complaints, followed closely by nerve injury. Repeat rupture, however, was the most frequent cause of complaints after nonoperative treatment (3). It has been hypothesized that tendon elongation leads to inferior outcomes (9) and that dynamic

Financial Disclosure: None reported.
Conflict of Interest: None reported.
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http://dx.doi.org/10.1053/j.jfas.2017.01.004

rehabilitation prevents elongation (10). However, it is unknown whether different complications lead to an increased risk of elongation.

The purpose of the present study was to investigate the long-term effect of deep infection, sural nerve injury, and repeat rupture in the treatment of ATR.

Patients and Methods

We performed a retrospective cohort study with clinical follow-up of the patients. Patients were eligible for inclusion if they had made a claim to the DPIA because of a complication after ATR from January 1, 1992 to December 31, 2010. All patient records were manually reviewed, and the data were assessed to confirm correct registration of the diagnosis and complications. A supplementary database using Microsoft Office

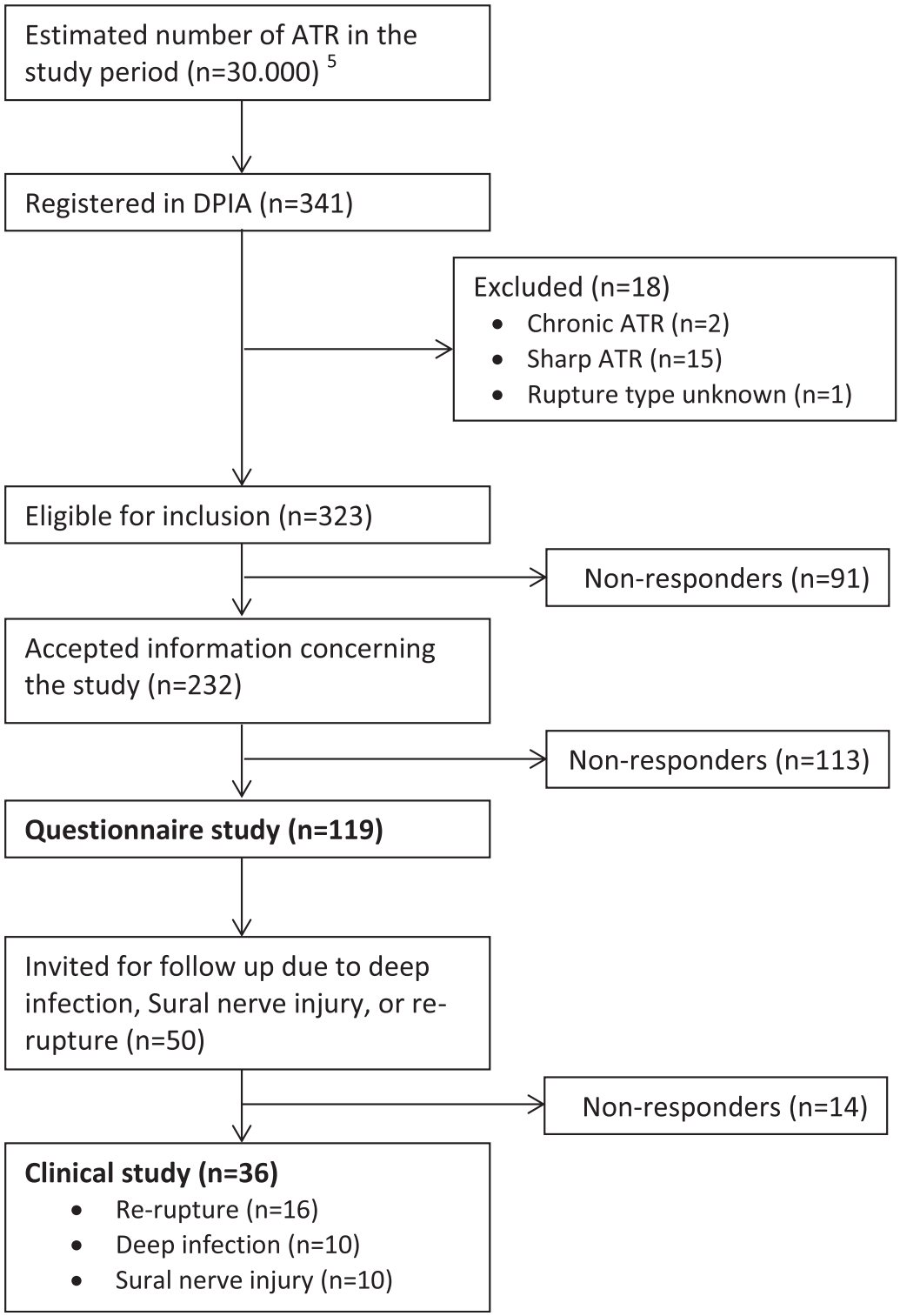

Fig. 1. Diagram showing the selection of the participants for the study. ATR, acute tendon rupture; DPIA, Danish Patient Insurance Association.

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