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ABSTRACT

Clinical Scenario: Achilles tendon rupture most commonly occurs in sports that involve running, jumping with sudden starts and stops. Comparison between surgical and nonsurgical repair of achilles tendon ruptures has not shown one treatment being significantly superior than the other. **Focused Clinical Question:** In patients with achilles tendon ruptures what effects does surgical versus non-surgical repair have on re-rupture? **Search Strategy:** PubMed and CINAHL Complete were used to gather studies. Search terms included Achilles Tendon rupture, surgical repair, nonsurgical repair. Studies were included if the observed patients sustained full achilles tendon rupture, compared surgical versus nonsurgical repair, utilized functional bracing, and included early weightbearing. Studies were excluded if they had bilateral achilles tendon rupture, utilized Platelet-rich plasma (PRP) injections, or compared open surgery versus minimally invasive surgery. The original number of studies found using “achilles tendon rupture” on PubMed was 2628. Studies were narrowed down to 46 using the inclusion criteria on PubMed. Only 9 studies were used. **Evidence Quality Assessment:** The studies included range in scores from 4/10 to 7/10 on the PEDro scale. Oxford 2011 Levels of Evidence (OCEBM) scores for the studies included range from 2 to 3. **Results and Summary of Search:** Overall studies showed similar outcomes regarding re-rupture rates. Studies ranged from 42 to 363 patients. Studies ranged from 0.04% to 10.37% re-rupture rate among both surgical and nonsurgical treatments. Weakness of the studies was the majority focused on less active populations placing less stress on the repair. **Clinical Bottom Line:** In surgical versus nonsurgical repairs of achilles tendon ruptures in the studies selected there was no statistically significant difference between both interventions. Both treatments were shown effective overall in achilles tendon repair. There was a slightly higher rate of re-rupture among nonoperative patients, but not statistically significant. The Strength of Recommendation (SORT) score for the studies was “B”. **Implications:** Surgical versus nonoperative treatment of achilles tendon ruptures can be based on the patient’s activity level. Patients with a higher activity level are encouraged to undergo surgical repair due to the slightly higher risk of re-rupture with nonoperative treatment. Patients who are less active could undergo nonoperative treatment due to the decreased amount of stress he/she will be placing on the repaired tendon.

CLINICAL SCENARIO

- Achilles tendon rupture: complete tear of the achilles tendon
- Surgical versus non-surgical treatment to evaluate their effectiveness on re-rupture rates
- The most common mechanism of injury for achilles tendon rupture is forceful plantarflexion of the foot with the knee extended – patients often describe the sensation of rupture as “being kicked”
- Relevant to AT’s because of an incidents of achilles tendon rupture in sports



Figure 1. Depicting rupture of the achilles tendon

FOCUSED CLINICAL QUESTION

In patients with achilles tendon rupture what is the effect of surgical versus nonsurgical treatment on re-ruptures?

SEARCH STRATEGY

- Databases: PubMed, CINAHL Complete, ProQuest Nursing Collection, and Cochrane Library – total number of studies available are 2628
- Search terms: Acute achilles tendon rupture, complete rupture, surgical versus nonsurgical, functional bracing protocol
- Inclusion criteria: patients with complete achilles tendon rupture, surgical intervention, nonsurgical intervention, utilized functional bracing protocol
- Exclusion criteria: Surgical repair without comparison to nonsurgical, partial achilles tendon rupture, platelet rich plasma (PRP) injection, advanced rehab protocol, bilateral rupture, combination fracture, tendinosis, diabetes mellitus

EVIDENCE QUALITY ASSESSMENT

- PEDro scores ranged from 4/10 to 7/10
- Oxford 2011 Levels of Evidence score ranged from 2 to 3

RESULTS AND SUMMARY OF SEARCH

- Studies showed similar outcomes regarding re-rupture rate
- Re-rupture ranged from 1.4% to 7.1% in the surgical intervention across all 9 studies
- Re-rupture ranged from 4.2% to 20.8% in the nonsurgical intervention across all 9 studies
- Each of these studies had a broad range of ages included, and did not focus on an age group. This could be considered a strength or weakness. A strength due to it encompassing a large spectrum of ages. A weakness because of the older population repaired tendons are not placed under as significant stress as with a more active population

Table 1. Comparison of Achilles tendon rupture studies

Author	Subjects	Surgical	Nonsurgical	P-value
Metz et al ¹	83	Surgical re-ruptures: 5/41	Nonsurgical re-rupture: 3/42	0.44
Moller et al ²	112	Surgical re-ruptures: 1/59	Nonsurgical re-rupture: 11/53	0.0013
Lim et al ³	200	Surgical re-ruptures: 2/99	Nonsurgical re-rupture: 6/101	0.157
Gwynne-Jones et al ⁴	363	Surgical re-ruptures: 2/143	Nonsurgical re-rupture: 19/220	0.004
Renninger et al ⁵	57	Surgical re-ruptures: 1/27	Nonsurgical re-rupture: 2/30	0.54
Twaddle et al ⁶	42	Surgical re-ruptures: 2/20	Nonsurgical re-rupture: 1/22	No data
Keating et al ⁷	80	Surgical re-ruptures: 2/37	Nonsurgical re-rupture: 4/39	0.68
Nilsson-Helander et al ⁸	97	Surgical re-ruptures: 2/49	Nonsurgical re-rupture: 6/48	0.377
Willits et al ⁹	144	Surgical re-ruptures: 2/72	Nonsurgical re-rupture: 3/72	No data

Table 1. The results of all 9 studies, shown by the P-value of the effectiveness of preventing re-rupture of the achilles tendon.

RESULTS AND SUMMARY OF SEARCH, CONT.

- Strengths: these studies included large number of patients, allowing for a greater range of outcomes
- Weaknesses: two studies did not list a p-value for the incidents of re-rupture

CLINICAL BOTTOM LINE

- Surgical repair of achilles tendon rupture did not show a greater decrease in re-rupture rates
- Overall both interventions showed an effective method of repair to the tendon
- B recommendation on the SORT scale

IMPLICATIONS

- It is important to educate a patient on the options involving treatment
- Patients with lower activity levels could undergo nonoperative repair, due to decreased stress placed on the repaired tendon
- Patients with higher levels of activity could undergo surgical repair, due to increased stress placed on from moderate to vigorous activity

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