Achilles Tendon Pathology

Mark M. Casillas, M.D.
Orthopedic Surgery
Lower Leg, Foot & Ankle

1

Disclosures

- None relevant to this topic

2

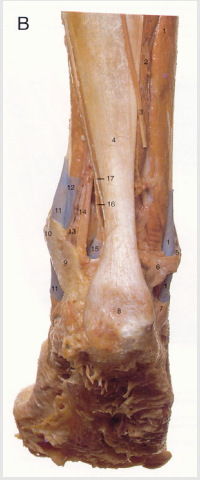
Objectives

- Enhance the participants knowledge of Achilles tendon anatomy and biomechanics
- Enhance the participants knowledge of Achilles tendon pathology
- Outline current treatment strategies for Achilles tendinosis, insertional tendinosis, and ruptures

3

Achilles Tendon Anatomy

- Triceps Surae
- Largest and strongest tendon
- No synovial sheath
- Blood supplied from paratenon
- Watershed between muscle and bone



4

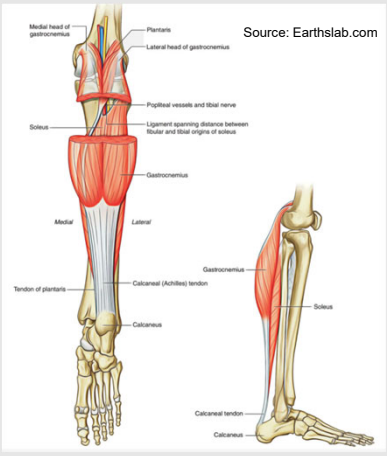
Triceps Surae Anatomy

Origin	Muscle	Tendon	Insertion
Posterior medial femoral condyle	Medial head gastrocnemius	Posterior fibers Achilles tendon	Calcaneal tuberosity
Posterior lateral femoral condyle	Lateral head gastrocnemius	Posterior fibers Achilles tendon	Calcaneal tuberosity
Fibular head and soleal line post. tibia	Soleus	Anterior Fibers Achilles tendon	Calcaneal tuberosity

5

Triceps Surae Anatomy

Origin	Muscle	Tendon	Insertion
Posterior medial femoral condyle	Medial head gastroc.	Posterior fibers Achilles tendon	Calcaneal tuberosity
Posterior lateral femoral condyle	Lateral head gastroc.	Posterior fibers Achilles tendon	Calcaneal tuberosity
Fibular head and soleal line post. tibia	Soleus	Anterior Fibers Achilles tendon	Calcaneal tuberosity



6

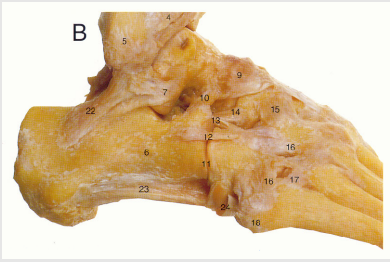
Triceps Surae Anatomy

Origin	Muscle	Tendon	Insertion
Posterior medial femoral condyle	Medial head gastroc.	Posterior fibers Achilles tendon	Calcaneal tuberosity
Posterior lateral femoral condyle	Lateral head gastroc.	Posterior fibers Achilles tendon	Calcaneal tuberosity
Fibular head and soleal line post. tibia	Soleus	Anterior Fibers Achilles tendon	Calcaneal tuberosity

7

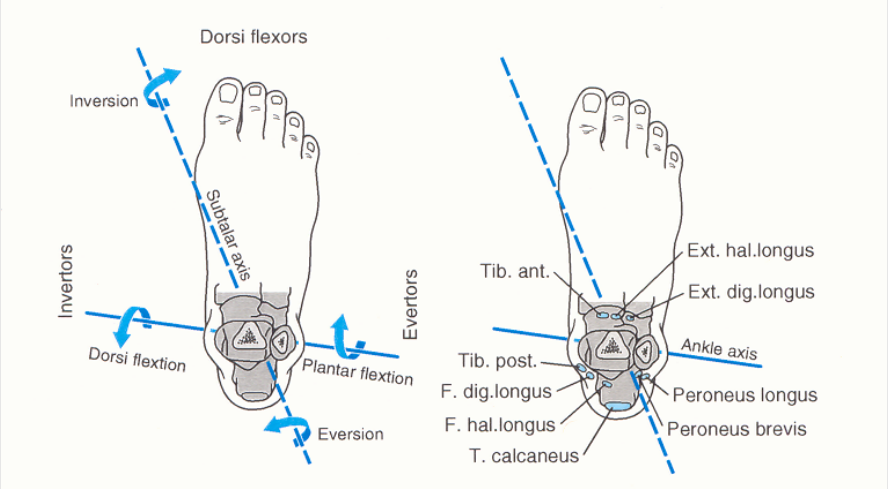
Triceps Surae Anatomy

Origin	Muscle	Tendon	Insertion
Posterior medial femoral condyle	Medial head gastroc.	Posterior fibers Achilles tendon	Calcaneal tuberosity
Posterior lateral femoral condyle	Lateral head gastroc.	Posterior fibers Achilles tendon	Calcaneal tuberosity
Fibular head and soleal line post. tibia	Soleus	Anterior Fibers Achilles tendon	Calcaneal tuberosity



8

Biomechanics



9

Biomechanics

- Standing
  - Postural control
- Walking
  - Eccentric contraction for deceleration
- Running
  - Concentric contraction for acceleration

10

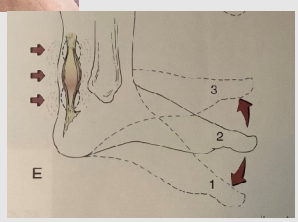
Pathology

- Non-insertional Tendinosis
  - Hypovascular zone
  - Degenerative disease
- Insertional Tendinosis
  - Degenerative tendinosis
  - Calcific tendinosis
  - Enthesophyte
  - Haglund's deformity
  - Bursitis
- Acute Rupture

11

Non-insertional Achilles Tendinosis

- Clinical presentation
  - Chronic course of symptoms
  - Non-insertion pain w activity, first step worse
  - Achilles fusiform or nodular thickening
  - Achilles tenderness
  - Painful-arc sign
    - J Williams. *Sports Med* 3:114-135, 1986
  - Gastrocnemius contracture



12

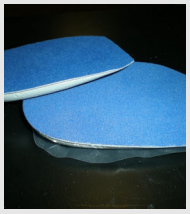
Non-insertional Achilles Tendinosis

- Non-surgical Treatment
  - PT
    - Modalities
    - Eccentric strengthening
    - Stretching

13

Non-insertional Achilles Tendinosis

- Non-surgical Treatment
  - Heel wedges
  - Night splint
  - Boot or AFO
  - Shock therapy, regenerative medicine



14

Non-insertional Achilles Tendinosis

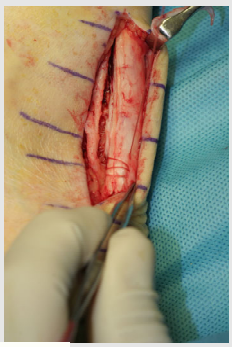
- Never inject the tendon
- Brisement with US guidance is permitted

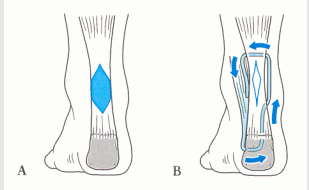
http://www.mskultrasound.com.au/wp-content/uploads/2012/09/msksu-lower-limb-achilles.jpg

15

Non-insertional Achilles Tendinosis

- Surgical Treatment
- Rarely indicated
- Gastrocnemius recession if contracted
- Debridement
- FHL transfer
- US guided debridement





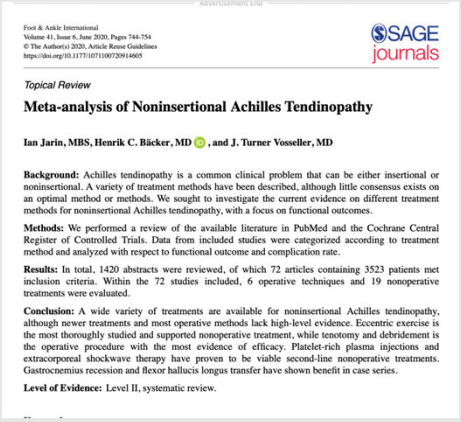
16

Non-insertional Achilles Tendinosis

- Complications of surgical treatment
  - Slow recovery
  - Persistent tendinosis
    - Thickening
    - Pain

17

"Eccentric exercise remains the first-line treatment for noninsertional Achilles tendinopathy with the most literature supporting its use. "



Foot & Ankle International
Volume 41, Issue 6, June 2020, Pages 744-754
© The Author(s) 2020, Article Reuse Guidelines
https://doi.org/10.1177/1071100720914605

SAGE journals

Topical Review

Meta-analysis of Noninsertional Achilles Tendinopathy

Ian Jarin, MBS, Henrik C. Bäcker, MD, and J. Turner Vosseller, MD

Background: Achilles tendinopathy is a common clinical problem that can be either insertional or noninsertional. A variety of treatment methods have been described, although little consensus exists on an optimal method or methods. We sought to investigate the current evidence on different treatment methods for noninsertional Achilles tendinopathy, with a focus on functional outcomes.

Methods: We performed a review of the available literature in PubMed and the Cochrane Central Register of Controlled Trials. Data from included studies were categorized according to treatment method and analyzed with respect to functional outcome and complication rate.

Results: In total, 1420 abstracts were reviewed, of which 72 articles containing 3523 patients met inclusion criteria. Within the 72 studies included, 6 operative techniques and 19 nonoperative treatments were evaluated.

Conclusion: A wide variety of treatments are available for noninsertional Achilles tendinopathy, although newer treatments and most operative methods lack high-level evidence. Eccentric exercise is the most thoroughly studied and supported nonoperative treatment, while tenotomy and debridement is the operative procedure with the most evidence of efficacy. Platelet-rich plasma injections and extracorporeal shockwave therapy have proven to be viable second-line nonoperative treatments. Gastrocnemius recession and flexor hallucis longus transfer have shown benefit in case series.

Level of Evidence: Level II, systematic review.

18

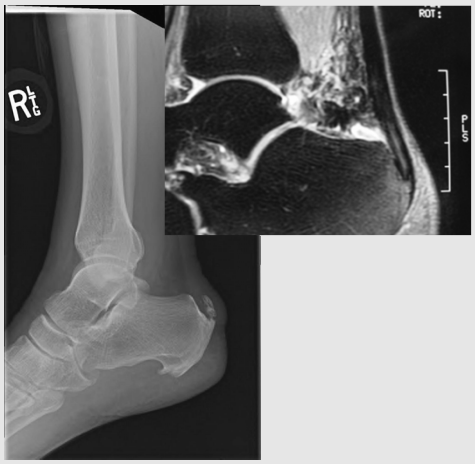
Insertional Achilles Tendinosis

- Clinical presentation
  - Chronic course of symptoms
  - Insertion pain with activity, first step worse
  - Achilles insertion thickening
  - Calcaneal deformity
  - Achilles insertional tenderness
  - Gastrocnemius contracture

19

Insertional Achilles Tendinosis

- Imaging
- X-ray
  - Enthesophyte
  - Haglund's Deformity
- MR
  - No routinely utilized



20

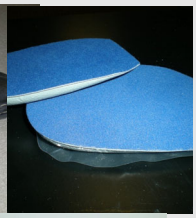
Insertional Achilles Tendinosis

- Non-surgical Treatment
  - PT
    - Modalities
    - Eccentric strengthening
    - Stretching


21

Insertional Achilles Tendinosis

- Non-surgical Treatment
  - Backless shoe
  - Heel wedges
  - Night splint
  - Boot or AFO

22

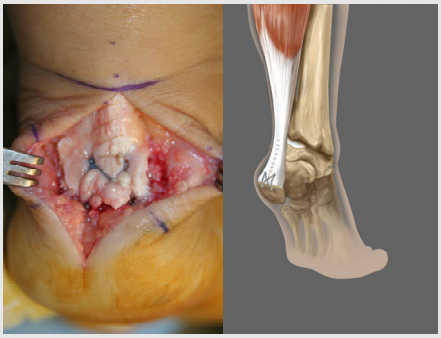
Insertional Achilles Tendinosis

- Never inject the tendon
- Guided injection to the bursa is permitted

23

Insertional Achilles Tendinosis

- Surgical Treatment
  - Frequently indicated after failed management
  - Gastrocnemius recession if contracted
  - Detachment, debridement of Achilles insertion and bursa



24

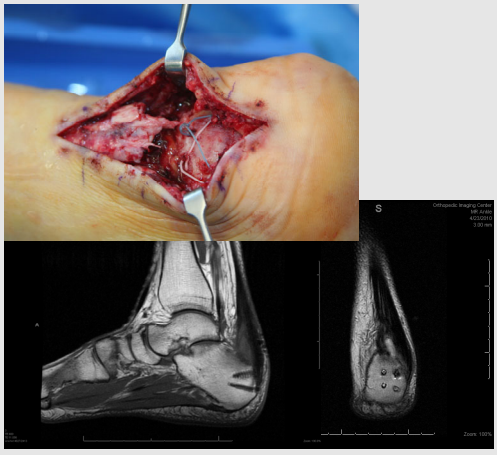
Insertional Achilles Tendinosis

- Surgical Treatment
  - Resection of calcaneal bone deformity
  - Double row anchor reattachment of insertion

25

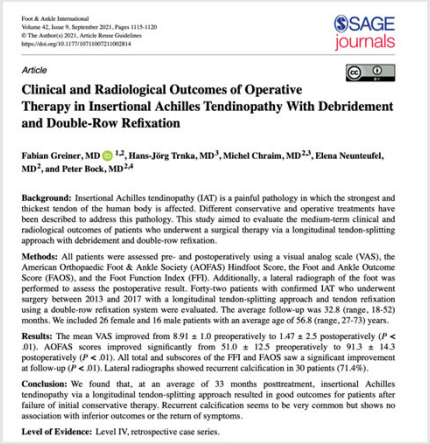
Insertional Achilles Tendinosis

- Complications
  - Rupture after fall
  - Persistent pain
  - Infection
  - Thickened insertion



26

Recurrent calcifications common but not associated with inferior outcomes or recurrence



Foot & Ankle International
Volume 42, Issue 9, September 2021, Pages 1115-1120
© The Author(s) 2021, Article Reuse Guidelines
https://doi.org/10.1177/1071100721100281

SAGE journals

Article

Clinical and Radiological Outcomes of Operative Therapy in Insertional Achilles Tendinopathy With Debridement and Double-Row Refixation

Fabian Greiner, MD [1,2], Hans-Jörg Trnka, MD [3], Michel Chraim, MD [2,3], Elena Neunteufel, MD [2], and Peter Bock, MD [2,4]

Background: Insertional Achilles tendinopathy (IAT) is a painful pathology in which the strongest and thickest tendon of the human body is affected. Different conservative and operative treatments have been described to address this pathology. This study aimed to evaluate the medium-term clinical and radiological outcomes of patients who underwent a surgical therapy via a longitudinal tendon-splitting approach with debridement and double-row refixation.

Methods: All patients were assessed pre- and postoperatively using a visual analog scale (VAS), the American Orthopaedic Foot & Ankle Society (AOFAS) Hindfoot Score, the Foot and Ankle Outcome Score (FAOS), and the Foot Function Index (FFI). Additionally, a lateral radiograph of the foot was performed to assess the postoperative result. Forty-two patients with confirmed IAT who underwent surgery between 2013 and 2017 with a longitudinal tendon-splitting approach and tendon refixation using a double-row refixation system were evaluated. The average follow-up was 32.8 (range, 18-52) months. We included 26 female and 16 male patients with an average age of 56.8 (range, 27-73) years.

Results: The mean VAS improved from 8.91 ± 1.0 preoperatively to 1.47 ± 2.5 postoperatively ($P <$ .01). AOFAS scores improved significantly from 51.0 ± 12.5 preoperatively to 91.3 ± 14.3 postoperatively ($P <$ .01). All total and subscores of the FFI and FAOS saw a significant improvement at follow-up ($P <$ .01). Lateral radiographs showed recurrent calcification in 30 patients (71.4%).

Conclusion: We found that, at an average of 33 months posttreatment, insertional Achilles tendinopathy via a longitudinal tendon-splitting approach resulted in good outcomes for patients after failure of initial conservative therapy. Recurrent calcification seems to be very common but shows no association with inferior outcomes or the return of symptoms.

Level of Evidence: Level IV, retrospective case series.

27

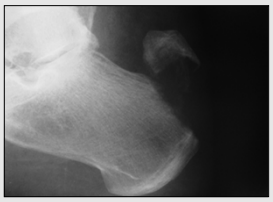
Achilles Rupture

- Clinical presentation
  - Acute presentation
    - Violent onset
    - Pop
    - Unable to play or walk
    - Weak PF
  - Gap sign

28

Achilles Rupture

- Imaging
  - X-ray
    - Always
    - Look for avulsion fracture
  - MR
    - Not needed
    - Frequently ordered prior to presentation



29

Achilles Rupture

- Clinical presentation
  - Posterior leg swelling/bruising
  - Achilles tenderness
  - Hyper-dorsiflexion
  - Thompson sign
  - Decreased tension

30

Achilles Rupture

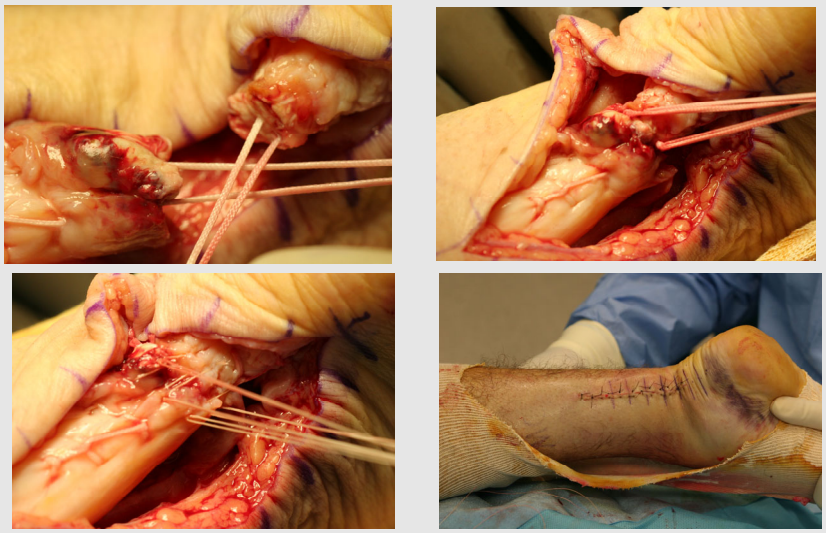
- Non-surgical treatment
- TREATMENT
- Functional rehabilitation similar to post-surgical rehab
  - NWB plantarflexed splint or boot x 2 wk
  - Partial WB with wedged boot x 4 wk
  - Full WB with boot and PT x 6 wk

31

Achilles Rupture

- Surgical treatment
- Open vs. Percutaneous Repair
- Functional rehabilitation
  - NWB plantarflexed splint x 2 wk
  - Partial WB with wedged boot x 4 wk
  - PT full WB with boot x 6 wk

32



33

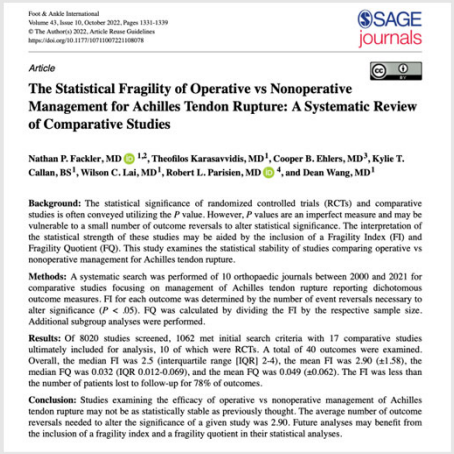
Achilles Rupture

- Complications
- Re-rupture
  - Non-surgical
- Dehiscence/infection/re-rupture
  - Any surgical
- Sural nerve injury
  - Percutaneous Surgical

34

"The average number of outcome reversals needed to alter significance of a given study was 2.90."

"These studies [conclusions] may not be as stable as once thought."



Foot & Ankle International
Volume 43, Issue 10, October 2022, Pages 1331-1339
© The Author(s) 2022, Article Reuse Guidelines
https://doi.org/10.1177/10711007221108078

SAGE journals

Article

The Statistical Fragility of Operative vs Nonoperative Management for Achilles Tendon Rupture: A Systematic Review of Comparative Studies

Nathan P. Fackler, MD [1,2], Theofilos Karasavvidis, MD [1], Cooper B. Ehlers, MD [3], Kylie T. Callan, BS [1], Wilson C. Lai, MD [1], Robert L. Parisien, MD [4], and Dean Wang, MD [1]

Background: The statistical significance of randomized controlled trials (RCTs) and comparative studies is often conveyed utilizing the *P* value. However, *P* values are an imperfect measure and may be vulnerable to a small number of outcome reversals to alter statistical significance. The interpretation of the statistical strength of these studies may be aided by the inclusion of a Fragility Index (FI) and Fragility Quotient (FQ). This study examines the statistical stability of studies comparing operative vs nonoperative management for Achilles tendon rupture.

Methods: A systematic search was performed of 10 orthopaedic journals between 2000 and 2021 for comparative studies focusing on management of Achilles tendon rupture reporting dichotomous outcome measures. FI for each outcome was determined by the number of event reversals necessary to alter significance ($P < .05$). FQ was calculated by dividing the FI by the respective sample size. Additional subgroup analyses were performed.

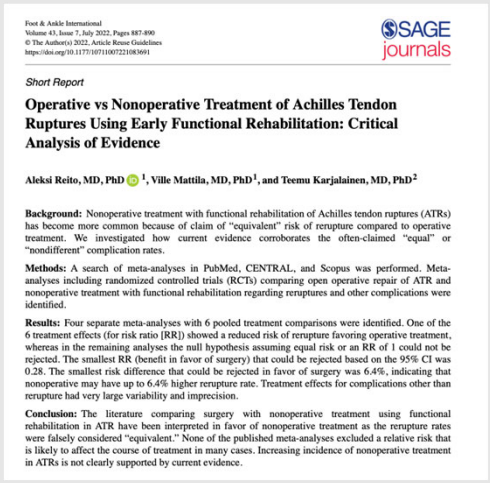
Results: Of 8020 studies screened, 1062 met initial search criteria with 17 comparative studies ultimately included for analysis, 10 of which were RCTs. A total of 40 outcomes were examined. Overall, the median FI was 2.5 (interquartile range [IQR] 2-4), the mean FI was 2.90 (±1.58), the median FQ was 0.032 (IQR 0.012-0.069), and the mean FQ was 0.049 (±0.062). The FI was less than the number of patients lost to follow-up for 78% of outcomes.

Conclusion: Studies examining the efficacy of operative vs nonoperative management of Achilles tendon rupture may not be as statistically stable as previously thought. The average number of outcome reversals needed to alter the significance of a given study was 2.90. Future analyses may benefit from the inclusion of a fragility index and a fragility quotient in their statistical analyses.

35

"The absence of evidence is not evidence of absence."

"Increasing incidence of nonoperative treatment in ATRs is not clearly supported by current evidence."



Foot & Ankle International
Volume 43, Issue 7, July 2022, Pages 887-890
© The Author(s) 2022, Article Reuse Guidelines
https://doi.org/10.1177/10711007221083691

SAGE journals

Short Report

Operative vs Nonoperative Treatment of Achilles Tendon Ruptures Using Early Functional Rehabilitation: Critical Analysis of Evidence

Aleksi Reito, MD, PhD [1], Ville Mattila, MD, PhD [1], and Teemu Karjalainen, MD, PhD [2]

Background: Nonoperative treatment with functional rehabilitation of Achilles tendon ruptures (ATRs) has become more common because of claim of "equivalent" risk of rerupture compared to operative treatment. We investigated how current evidence corroborates the often-claimed "equal" or "nondifferent" complication rates.

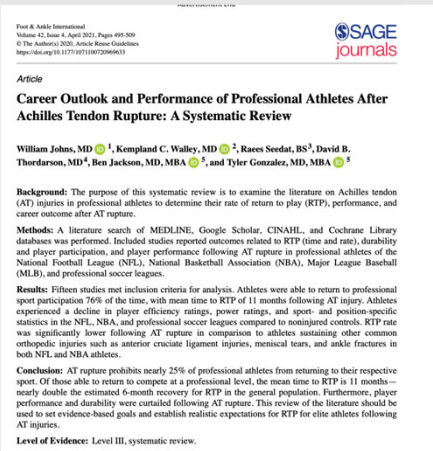
Methods: A search of meta-analyses in PubMed, CENTRAL, and Scopus was performed. Meta-analyses including randomized controlled trials (RCTs) comparing open operative repair of ATR and nonoperative treatment with functional rehabilitation regarding reruptures and other complications were identified.

Results: Four separate meta-analyses with 6 pooled treatment comparisons were identified. One of the 6 treatment effects (for risk ratio [RR]) showed a reduced risk of rerupture favoring operative treatment, whereas in the remaining analyses the null hypothesis assuming equal risk or an RR of 1 could not be rejected. The smallest RR (benefit in favor of surgery) that could be rejected based on the 95% CI was 0.28. The smallest risk difference that could be rejected in favor of surgery was 6.4%, indicating that nonoperative may have up to 6.4% higher rerupture rate. Treatment effects for complications other than rerupture had very large variability and imprecision.

Conclusion: The literature comparing surgery with nonoperative treatment using functional rehabilitation in ATR have been interpreted in favor of nonoperative treatment as the rerupture rates were falsely considered "equivalent." None of the published meta-analyses excluded a relative risk that is likely to affect the course of treatment in many cases. Increasing incidence of nonoperative treatment in ATRs is not clearly supported by current evidence.

36

AT rupture prohibits nearly 25% of professional athletes from returning to their respective sport. Of those able to return to compete at a professional level, the mean time to RTP is 11 months—nearly double the estimated 6-month recovery for RTP in the general population.



Foot & Ankle International
Volume 42, Issue 4, April 2021, Pages 495-509
© The Author(s) 2020, Article Reuse Guidelines
https://doi.org/10.1177/1071100720969633

SAGE journals

Article

Career Outlook and Performance of Professional Athletes After Achilles Tendon Rupture: A Systematic Review

William Johns, MD [1], Kempland C. Walley, MD [2], Raees Seedat, BS[3], David B. Thordarson, MD[4], Ben Jackson, MD, MBA [5], and Tyler Gonzalez, MD, MBA [5]

Background: The purpose of this systematic review is to examine the literature on Achilles tendon (AT) injuries in professional athletes to determine their rate of return to play (RTP), performance, and career outcome after AT rupture.

Methods: A literature search of MEDLINE, Google Scholar, CINAHL, and Cochrane Library databases was performed. Included studies reported outcomes related to RTP (time and rate), durability and player participation, and player performance following AT rupture in professional athletes of the National Football League (NFL), National Basketball Association (NBA), Major League Baseball (MLB), and professional soccer leagues.

Results: Fifteen studies met inclusion criteria for analysis. Athletes were able to return to professional sport participation 76% of the time, with mean time to RTP of 11 months following AT injury. Athletes experienced a decline in player efficiency ratings, power ratings, and sport- and position-specific statistics in the NFL, NBA, and professional soccer leagues compared to noninjured controls. RTP rate was significantly lower following AT rupture in comparison to athletes sustaining other common orthopedic injuries such as anterior cruciate ligament injuries, meniscal tears, and ankle fractures in both NFL and NBA athletes.

Conclusion: AT rupture prohibits nearly 25% of professional athletes from returning to their respective sport. Of those able to return to compete at a professional level, the mean time to RTP is 11 months—nearly double the estimated 6-month recovery for RTP in the general population. Furthermore, player performance and durability were curtailed following AT rupture. This review of the literature should be used to set evidence-based goals and establish realistic expectations for RTP for elite athletes following AT injuries.

Level of Evidence: Level III, systematic review.

37

Richard Barber, M.D. – Orthopedic Surgery, Trauma

Mark M. Casillas, M.D. – Orthopedic Surgery, Lower Leg, Foot & Ankle

Cuyler J. Dear, M.D. – Orthopedic Surgery, Sports Medicine

Jeremy L. Dickerson, M.D. – Family Practice, Sports Medicine

Nicholas Gerken, M.D. – Orthopedic Surgery, Adult Reconstruction

Craig Glauser, M.D. – Orthopedic Surgery, Lower Leg, Foot & Ankle

Stacé S. Rust, M.D. – Orthopedic Surgery, Hand, Wrist, Elbow & Shoulder

38

What Is the B… Acute Achilles Tendon Ruptu… Meta-analysis

Brad Meulenkamp, … egan Richards, MD,

- AOFAS An…
- Network r… eous comparisc… g both direct and indire…
- We performed a … answer the following questio… repair, functional rehabilitation, or … es, (1) Which intervention is as… intervention is associated with t…
- Nineteen RCTs (1…
- "Faced with acute… hat the risk of rerupture likely is…

What Is the Best Evidence to Guide Management of Acute Achilles Tendon Ruptures? A Systematic Review and Network Meta-analysis of Randomized Controlled Trials

Brad Meulenkamp, MD, Taylor Woolnough, MD, Wei Cheng, Dawn Stacey, Megan Richards, MD, FRCSC, Arnav Gupta, Dean Fergusson, Ian D. Graham

Category: Sports; Trauma

Keywords: acute Achilles injuries; Achilles tendon rupture; Achilles tendon repair

Introduction/Purpose: Uncertainty exists regarding the best treatment for acute Achilles tendon ruptures. Simultaneous comparison of the multiple treatment options using traditional study designs is problematic; multiarm clinical trials often are logistically constrained to small sample sizes, and traditional meta-analyses are limited to comparisons of only 2 treatments that have been compared in head-to-head trials. Network meta-analyses allow for simultaneous comparison of all existing treatments using both direct and indirect evidence. We performed a network meta-analysis of randomized controlled trials to answer the following questions: Considering open repair, minimally invasive surgery repair, functional rehabilitation, or primary immobilization for acute Achilles tendon ruptures, (1) Which intervention is associated with the lowest risk of rerupture? and (2) Which intervention is associated with the lowest risk of complications resulting in surgery?

Methods: Five databases and gray literature sources were searched from inception to September 30, 2019. Included studies were randomized controlled trials (RCTs) comparing treatment of acute Achilles tendon ruptures using 2 or more of the following interventions: primary immobilization, functional rehabilitation, open surgical repair, or minimally invasive surgical (MIS) repair. We excluded studies enrolling patients with chronic ruptures, reruptures, and preexisting Achilles tendinopathy as well as studies with more than 20% loss to follow-up or less than 6 months of follow-up. Nineteen RCTs (1316 patients) were included in the final analysis. The mean number of patients per study treatment arm was 35 ± 16, mean age was 41 ± 5 years, mean sex composition was 80% ± 10% males, and mean follow-up was 22 ± 12 months. The 4 treatment groups were compared for the main outcomes of rerupture and complications resulting in operation. The analysis was conducted using random effects Bayesian network meta-analysis with vague priors.

Results: Treatment with primary immobilization had a greater risk of rerupture than open surgery (odds ratio [OR] 4.06, 95% credible interval {CrI} 1.47-11.88; $P < .05$). There were no other differences between treatments for risk of rerupture. MIS was ranked first for fewest complications resulting in surgery and was associated with a lower risk of complications resulting in surgery than functional rehabilitation (OR 0.16, 95% CrI 0.02-0.90; $P < .05$), open surgery (OR 0.22, 95% CrI 0.04-0.93; $P < .05$), and primary immobilization (OR < 0.01, 95% CrI <0.01-0.01; $P < .05$). Risk of complications resulting in surgery was no different between primary immobilization and open surgery (OR 1.46, 95% CrI 0.35-5.36). Data for patient-reported outcome scores and return to activity were inappropriate for pooling secondary to considerable clinical heterogeneity and imprecision associated with small sample sizes.

Conclusion: Faced with acute Achilles tendon rupture, patients should be counseled that the risk of rerupture likely is no different across contemporary treatments. Considering the possibly lower risk of complications resulting in surgery associated with MIS repair, patients and surgeons must balance any benefit with the potential risks of MIS techniques. As treatments continue to evolve, consistent reporting of validated patient-reported outcome measures is critically important to facilitate analysis with existing RCT evidence. Infrequent but serious complications such as rerupture and deep infection should be further explored to determine whether meaningful differences exist in specific patient populations.

Foot & Ankle International, 43(1S)
DOI: 10.1177/10711007225S00027

AOFAS Annual Meeting 2022

39

A System… Wave Therapy (… tional

Matthew B. Wei… billus, MD, Mehreen A… Orth)

- AOFAS Annu…
- Systematic… ave therapy to… in efficacy fo… /T for IAT and nIAT
- Sixteen studies w… l II, 5 with Level III, and 1 wit…
- AS pain scores an… r both cohorts.

A Systematic Review of Extracorporeal Shock Wave Therapy (ESWT) for Insertional and Noninsertional Achilles Tendinopathy

Matthew B. Weiss, BS, Mohammad T. Azam, BS, Nathan Jia, Hugo A. Ubillus, MD, Mehreen A. Pasha, George Jejelava, John G. Kennedy, MD, FRCS(Orth)

Category: Sports; Other

Keywords: Achilles tendinopathy; Achilles tendon; Achilles

Introduction/Purpose: Depending on the site of injury, Achilles tendinopathy (AT) can be either insertional (IAT) or noninsertional (nIAT). AT has long been managed by conservative measures such as eccentric exercises, but now extracorporeal shock wave therapy (ESWT) has emerged as a noninvasive treatment to stimulate self-repair. However, the native biology at the insertion of the Achilles tendon and midsubstance are intrinsically different, with the midsubstance (2-6 cm above the insertion) being significantly less perfused. Thus, we performed a systematic review of the literature on shockwave therapy to determine if there was a difference in efficacy for patients who have undergone ESWT for IAT and nIAT.

Methods: In January 2022, the MEDLINE and EMBASE databases were systematically reviewed based on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. We included randomized controlled trials, prospective and retrospective studies, published in English, with pre- and postoperative scores for at least either visual analog scale (VAS) or Victorian Institute of Sport Assessment–Achilles (VISA-A). We excluded basic science studies, systematic reviews and meta-analyses, retrospective studies, case reports, studies without preoperative scores, studies that do not differentiate IAT and nIAT. The LoE and QoE of the included studies were evaluated using the *Journal of Bone and Joint Surgery* Criteria and the Modified Coleman Methodology Score, respectively. We calculated weighted mean values for age, body mass index, the number of ESWT sessions and their frequency, duration of symptoms prior to ESWT, follow-up time, as well as for each outcome score.

Results: Sixteen studies were included in this review, 6 with Level I evidence, 4 with Level II, 5 with Level III, and 1 with Level IV. There were 505 cases of AT: 325 patients with IAT and 180 with nIAT. For the IAT cohort, the weighted mean (WM) duration of symptoms prior to treatment was 18.1 months, and WM follow-up was 8.1 months. For the nIAT cohort, the WM duration of symptoms prior to treatment was 15.0 months, and WM follow-up was 11.6 months. In terms of outcome scores, for VAS, the WM preoperative scores were 6.89 for IAT and 7.76 for nIAT and the WM postoperative scores were 2.76 for IAT and 2.49 for nIAT. For VISA-A, the WM preoperative scores were 49.3 for IAT and 42.8 for nIAT, and the WM postoperative scores were 75.4 for IAT and 75.7 for nIAT.

Conclusion: As the midsubstance portion of the Achilles tendon has diminished blood supply compared to the insertional portion, we expected outcomes after ESWT to be inferior for the nIAT cohort. Interestingly, the VAS pain scores and VISA-A functional scores displayed similar positive results for both cohorts. We see that the virtually equivalent functional and pain outcomes mean that ESWT is stimulating cellular components of the tendon to promote healing regardless of injury location.

Foot & Ankle International, 43(1S)
DOI: 10.1177/10711007225S00043

AOFAS Annual Meeting 2022

40