

CASE REPORT FROM ACUTE ACHILLES TENDON RUPTURE TO RETURN TO PLAY – A CASE REPORT EVALUATING RECOVERY OF TENDON STRUCTURE, MECHANICAL PROPERTIES, CLINICAL AND FUNCTIONAL OUTCOMES

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ABSTRACT

Introduction: Achilles tendon rupture results in significant functional deficits regardless of treatment strategy (surgical versus non-surgical intervention). Recovery post-rupture is highly variable, making comprehensive patient assessment critical. Assessment tools may change along the course of recovery as the patient progresses – for instance, moving from a seated heel-rise to standing heel-rise to jump testing. However, tools that serve as biomarkers for early recovery may be particularly useful in informing clinical decision-making. The purpose of this case report was to describe the progress of a young, athletic individual following Achilles tendon rupture managed non-surgically, using patient reported and functional performance outcome measures and comprehensively evaluating Achilles tendon structure and function incorporating a novel imaging technique (cSWE).

Subject Description: The subject is a 26 year-old, female basketball coach who sustained an Achilles tendon rupture and was managed non-surgically.

Outcome: The subject was able to steadily progress using a gradual tendon loading treatment approach well-supported by the literature. Multiple evaluative techniques including the addition of diagnostic ultrasound imaging and continuous shear wave elastography (cSWE) to standard clinical tests and measures were used to assess patient-reported symptoms, tendon structure, and tendon functional performance. Five assessments were performed over the course of 2-14 months post-rupture. By the 14-month follow-up, the subject had achieved full self-reported function. Tendon structural and mechanical properties showed similar shear modulus by 14 months, however, viscosity continued to be lower and tendon length longer on the ruptured side. Functional performance, evidenced by the heel-rise test and jump tests, also showed a positive trajectory, however, deficits of 12-28% remained between ruptured and non-ruptured sides at 14 months.

Discussion: This case report outlines comprehensive outcomes assessment in an athletic individual following non-surgically managed Achilles tendon rupture using a wide variety of tools that capture different aspects of tendon health. Interestingly, the course of recovery of patient symptoms, functional performance, and tendon structure do not occur in the same time frame. Therefore, it is important to assess patient outcomes using multiple outcome measures encompassing different aspects of patient performance to ensure the patient is progressing steadily with rehabilitation.

Key words: Elastography, imaging, rehabilitation, ultrasound, viscoelastic properties

Level of Evidence: Level 4.

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Acknowledgements

Research reported in this publication was supported by the National Institute of Arthritis and Musculoskeletal and Skin Diseases of the National Institutes of Health under Award Number R21AR067390 and NIH 1P30-GM103333. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health. This research was also supported by the Foundation for Physical Therapy and the University of Delaware Research Foundation.

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