A Hip Strengthening Protocol for a Patient Following Achilles Repair: A Case Report

OA Centers for Orthopaedics
Spectrum Healthcare Partners

Matt Morris, BS, Doctor of Physical Therapy Student

University of New England, Doctor of Physical Therapy Program, Portland, Maine

UNE UNIVERSITY OF NEW ENGLAND
INNOVATION FOR A HEALTHIER PLANET

Background

- The Achilles tendon is the most frequently ruptured tendon in the body and rupture most commonly occurs in men ages 30-50.[1,2]
- Operative repair has more complications, but lower re-rupture rate, than non-operative management.[3]
- Early weight-bearing after surgery has been shown to be beneficial.[4,5]
- Hip weakness has been associated with lower extremity conditions such as gait deviations, ankle sprains, and knee instability.[6]
- Previous research has found that individuals with Achilles tendinopathy have hip muscle weakness compared to controls.[7]
- There is a lack of literature assessing the effect of using a hip strengthening protocol following Achilles repair.

Purpose

The purpose of this case report was to describe a comprehensive hip strengthening protocol for a patient following a left Achilles tendon repair whose rehab was complicated by a right proximal humerus fracture.

Case Description

- 32-year-old female nurse ruptured left Achilles playing tennis and underwent repair 3 weeks later
- Presented to PT 4 weeks after Achilles repair
- Non-weight-bearing (NWB) for 7 weeks total
- Primary complaints: Unable to work, difficulty with activities of daily living, unable to participate in recreational activities
- Mother of young daughter
- Significant calf weakness, markedly reduced ankle range of motion (ROM), antalgic gait with bilateral axillary crutches, mild weakness in bilateral hips
- Past medical history: Depression, anxiety, hypercholesterolemia, no past surgeries
- Patient fell down stairs and fractured proximal right humerus following visit #9 – See timeline (Figure 4)

Interventions

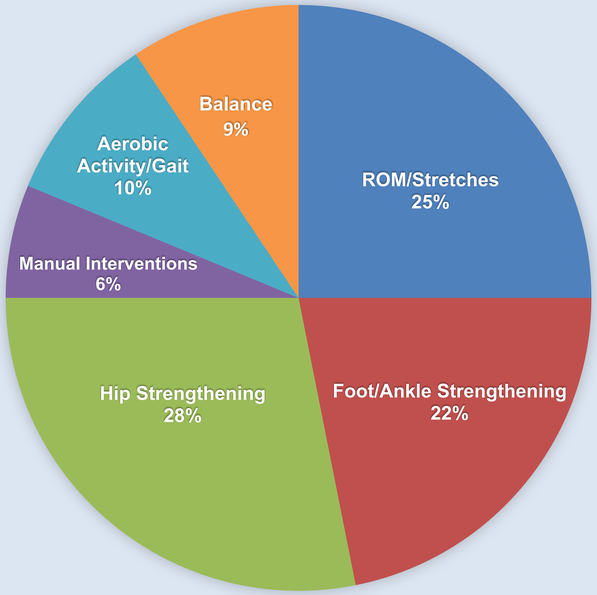

Figure 1: Therapeutic Interventions by Category

Figure 2: Sidelying Hip Abduction

Figure 3: Glute Bridge

Figure 4: Timeline of Care

Outcomes

Tests & Measures	Initial Evaluation (IE)		Final Visit	
Lower Extremity Functional Scale (Max = 80/80)	28/80		57/80	
Foot and Ankle Disability Index (Max = 100%)	Not measured at IE Visit #8 score = 37%		91.3%	
Achilles tendon Total Rupture Score (Max = 0/100)	Not measured at IE Visit #8 score = 52/100		32/100	
ROM (º)	**Left**	**Right**	**Left**	**Right**
Ankle Dorsiflexion	-20º	10º	10º	10º
Ankle Plantarflexion	10º	50º	51º	50º
Manual Muscle Testing (0-5/5)	**Left**	**Right**	**Left**	**Right**
Ankle Plantarflexion	+3/5	5/5	-5/5	5/5
Hip Abduction	4/5	-5/5	-5/5	-5/5
Hip Extension	+4/5	-5/5	-5/5	-5/5

Discussion/Conclusion

- The patient showed functional improvements in all outcome measures, which is consistent with the current literature concerning Achilles repair.[2,5,8]
- Utilizing a hip strengthening protocol may be beneficial for patients following Achilles repair.
- Future research may want to investigate hip strengthening for the rehabilitation of Achilles repairs to find the most effective protocol.

Acknowledgements

The author acknowledges Kirsten Buchanan, PT, PhD, ATC for assistance with case report conceptualization, Erika Gordon, PT, DPT, Cert. MDT, CSCS for supervision and assistance with patient care, and the patient for her participation.

References

1. Teoh KH, Tanaka H, Hariharan K. Management of acute achilles tendon rupture. *Orthop Trauma*. 2018;32(6):401-407. http://www.sciencedirect.com.une.idm.oclc.org/science/article/pii/S1877132718301192. doi: //doi-org.une.idm.oclc.org/10.1016/j.mporth.2018.09.002
2. Eliasson P, Svensson R, Warming N, et al. The ruptured achilles tendon elongates for 6 months after surgical repair regardless of early or late weightbearing in combination with ankle mobilization: a randomized clinical trial. *Am J Sports Med*. 2018;46(10):2492-2502. http://search.ebscohost.com/login.aspx?direct=true&db=ccm&AN=131033869&site=ehost-live&scope=site. doi: 10.1177/0363546518781826
3. Khan RJ, Fick D, Keogh A, et al. Treatment of acute achilles tendon ruptures. a meta-analysis of randomized, controlled trials. *J Bone Joint Surg (AM)*. 2005;87(10):2202-2210. http://search.ebscohost.com.une.idm.oclc.org/login.aspx?direct=true&db=ccm&AN=105906039&site=ehost-live&scope=site.
4. Brumann M, Baumbach SF, Mutschler W, Polzer H. Accelerated rehabilitation following achilles tendon repair after acute rupture – development of an evidence-based treatment protocol. *Injury*. 2014;45(11):1782-1790. http://www.sciencedirect.com/science/article/pii/S0020138314003155. doi: //doi.org/10.1016/j.injury.2014.06.022
5. Olsson N, Silbernagel KG, Eriksson BI, et al. Stable surgical repair with accelerated rehabilitation versus nonsurgical treatment for acute achilles tendon ruptures: a randomized controlled study. *Am J Sports Med*. 2013;41(12):2867-2876. http://search.ebscohost.com/login.aspx?direct=true&db=ccm&AN=104167736&site=ehost-live&scope=site. doi: 10.1177/0363546513503282
6. Neumann D. *Kinesiology of the Musculoskeletal System*. Third ed. St. Louis, Missouri: Elsevier; 2017:515.
7. Habets B, Smits HW, Backx FJG, van Cingel, R. E. H., Huisstede BMA. Hip muscle strength is decreased in middle-aged recreational male athletes with midportion achilles tendinopathy: a cross-sectional study. *Phys Ther Sport*. 2017;25:55-61. http://search.ebscohost.com/login.aspx?direct=true&db=ccm&AN=123132534&site=ehost-live&scope=site. doi: 10.1016/j.ptsp.2016.09.008
8. Mayo Clinic. Achilles tendon rupture. https://www.mayoclinic.org/diseases-conditions/achilles-tendon-rupture/diagnosis-treatment/drc-20353239. Updated 2017. Accessed July 13, 2019.