

Comparison of Operative versus Non-Operative Treatment of Acute Achilles Tendon Rupture: A Propensity Score Matched Analysis of a Large National Dataset

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INTRODUCTION:

Achilles tendon ruptures are a common injury that is increasing in incidence. No consensus exists regarding superiority of operative versus nonoperative management, as multiple RCTs have found outcomes for operative and nonoperative management of Achilles tendon are more similar than was once traditionally held, especially with early mobilization protocols. Thus, the purpose of this study was to compare reoperation and complication rates between operative and nonoperative treatment of acute Achilles tendon ruptures. Secondary aims were to evaluate trends in treatment and cost over time.

METHODS:

This study used the MarketScan Commercial Claims and Encounters database to identify an unmatched cohort of 31,515 patients who sustained a primary Achilles tendon rupture between 2007 – 2016. Patients were stratified into operative and nonoperative treatment groups and matched using a propensity score matching algorithm. Reoperation rates, complications and aggregate payments were compared via student-t tests and Chi-squared tests as appropriate with an alpha level of 0.05. A number needed to harm (NNH) was calculated from the absolute risk difference in complications between cohorts.

RESULTS: The operative cohort experienced a significantly greater total number of complications within 30 days of injury (1026 vs. 917, p=0.0088). The absolute increase in cumulative risk with operative treatment in our data was 1.2%, which would result in a NNH of 83. Neither 1-year (1.1% for operative vs. 1.3% for nonoperative, p=0.1201) nor 2-year reoperation rates (1.9% vs. 2.0%, p=0.2810) were significantly different. At 9 months and 2 years post injury, operative care was more expensive than nonoperative management, but at 5 years there was no difference in cost between treatments. Prior to matching, the rate of surgical repair for Achilles tendon rupture increased from 69.7% to 71.7% between 2007 and 2015.

DISCUSSION AND CONCLUSION: This study found no differences in reoperation rates between operative and non-operative management of Achilles tendon ruptures. Operative management was associated with increased risk of complications and higher initial cost which dissipated over time. From 2007-2015 the proportion of Achilles tendon ruptures managed operatively increased slightly.

Variable (%)	Operative n=1992	Non-operative n=1992	p value
Age, mean (SD)	44.5 (11.6)	44.2 (11.9)	0.3058
Female sex	4718 (23.6)	4718 (23.6)	1
Hypertension	2802 (14.1)	2716 (13.6)	0.1641
Hypertension	2281 (11.4)	2244 (11.3)	0.5473
Diabetes	480 (2.4)	501 (2.5)	0.2401
Obesity	1011 (5.1)	916 (4.6)	0.0014
Enrollment	558 (2.8)	445 (2.2)	0.0001
Follow-up time (months)	27.2 (7.3)	24.1 (6.8)	<0.0001

Outcome (%)	Operative n=1992	Non-operative n=1992	p value
Any Complication	1026 (51.4)	917 (45.8)	0.0088
VTE	118 (5.9)	133 (6.7)	0.3403
Hemotoma	13 (0.6)	0 (0)	0.3935
Infection	25 (1.2)	17 (0.8)	0.2165
Heterotopic Ossification	460 (23.1)	502 (25.2)	0.0042
Stiffness	92 (4.6)	100 (5.0)	0.3517
Wound Complication	42 (2.1)	14 (0.7)	0.0007

Variable (%)	Operative n=1992	Non-operative n=1992	p value
1 Year Revision/Total	201 (10.1)	224 (11.2)	0.1201
2 Year Revision/Total	372 (18.7)	388 (19.5)	0.2810

	Operative n=1992	Non-operative n=1992	p value
9 Months	\$16,574 (\$13,683)	\$9,608 (\$12,187)	<0.0001
2 Years	\$18,328 (\$14,449)	\$14,487 (\$14,090)	<0.0001
5 Years	\$18,996 (\$21,276)	\$19,441 (\$14,345)	0.2158

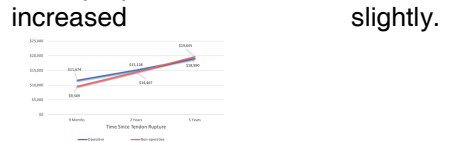


Figure 1. Payments for operative and non-operative management of Achilles tendon rupture over 5 discrete time points.