

Treatment of Achilles Tendon Rupture: A Cost-Effectiveness Analysis

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Summary:

Using a cost effectiveness decision analysis model, the most cost effective treatments in order were, Percutaneous Repair, Open Repair, Functional Rehab, and lastly Immobilization.

Abstract:

Background: Rupture of the Achilles tendon is one of the most common tendon injuries in the adult population with the incidence on the rise. Recently, many studies have examined the outcomes of operative versus non-operative treatment of Achilles tendon rupture with conflicting results. With the increasing focus on value-based healthcare delivery, orthopedic surgeons must understand the cost implications of various treatment strategies. The purpose of this study was to examine the cost effectiveness of standard open surgery, percutaneous surgery, functional rehabilitation, and immobilization for Achilles tendon ruptures.

Methods: A decision-analytic model was constructed to evaluate the cost effectiveness of the four most common treatment strategies for Achilles tendon rupture (open repair, percutaneous repair, functional rehabilitation, and immobilization). Probabilities for complications following treatment, health utilities for particular health status, and direct costs were estimated from both the literature and institutional data. A theoretic cohort of patients was randomly assigned to one of the four treatment options to determine the most cost-effective strategy. An incremental cost-effectiveness ratio of \$100,000/quality-adjusted life year (QALY) was used as the threshold for cost-effectiveness.

Results: Percutaneous surgery was the most cost effective treatment in the base model (0.78 QALY). Percutaneous surgery and functional rehab dominated both open surgery and immobilization (less costly and more effective). The least expensive treatment strategy was functional rehab (\$2403.16) however the lower cost was offset by decreased effectiveness (0.70 QALY). However, if the utility state of functional rehab could be increased to 0.751 (7.3% increase), then it would be the most cost effective treatment.

Conclusion: This model suggests that percutaneous surgery may be the most cost effective treatment strategy for Achilles tendon rupture. However, specific clinical scenarios that change postoperative complication probabilities and utility states, as well as patient expectations, may sway surgeons to choose different treatment strategies.