

## Value of Supine Positioning in Repair of Achilles Tendon Ruptures

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**Introduction/Purpose:** The optimal method of Achilles tendon repair remains undefined. Few previous studies have quantified the financial expenses of Achilles tendon repairs in relation to functional outcomes in order to assess the overall value of the accepted repair techniques. The purpose of this study is to demonstrate the value of supine positioning during open repair (OS) of acute Achilles tendon ruptures through the quantification of operative times, costs, and outcomes in comparison to the commonly performed percutaneous prone (PP) repair technique.

**Methods:** A retrospective review was conducted on 67 patients undergoing OS and 67 patients undergoing PP primary Achilles tendon repair with two surgeons at four surgical locations. Total operating room usage times and operating times were collected from surgical site records. Total operating room times were used to estimate the costs of room usage and anesthesia, while costs of repair equipment were collected from the respective manufacturers. Patients undergoing OS repair completed the Foot and Ankle Ability Measure (FAAM) questionnaire, with activities of daily living (ADL) and sports subscales, Short Form-12 (SF-12), with mental (MCS) and physical (PCS) health subcategories, and the visual analog scale (VAS) for pain preoperatively and at final follow-up.

**Results:** Even with a significantly longer mean surgical time ( $P=.035$ ), OS repairs had a shorter duration of total operating room time when compared to that of PP repairs (58.4 versus 69.7 minutes,  $P<.001$ ). Estimated time-dependent costs were lower in OS repairs (\$739 versus \$861 per procedure,  $P<.001$ ), while the estimated average total per procedure cost was also lower for OS repairs (\$801 versus \$1,910 per procedure,  $P<.001$ ). For patients undergoing OS repair, FAAM-ADL ( $P<.001$ ), FAAM-Sports ( $P<.001$ ), SF-12-PCS ( $P<.001$ ) all increased and VAS grades ( $P<0.001$ ) decreased from time of initial encounter to final follow-up and were comparable to reported outcomes in the current literature. The complication rate in OS repairs (6.0%) was lower than PP repairs (11.9%), with revisions only occurring in the latter technique.

**Conclusion:** Performing open Achilles tendon repair in the supine position offers substantial value, or “health outcomes achieved per dollar spent”, to providers due to decreased total operating room times and costs with satisfactory functional outcomes.

**Table 1 - Comparison of Open Supine and Percutaneous Prone Repairs**

|                                      | Open Supine<br>(n=67) | Percutaneous Prone<br>(n=67) | <i>P</i> -value |
|--------------------------------------|-----------------------|------------------------------|-----------------|
| <b>Patient Data</b>                  |                       |                              |                 |
| Male/Female                          | 57/10                 | 53/14                        | .499            |
| Age (years)                          | 37.6                  | 41.1                         | .061            |
| Body Mass Index (kg/m <sup>2</sup> ) | 28.8                  | 27.7                         | .200            |
| Injury to Surgery Time Delay (days)  | 8.5                   | 7.9                          | .414            |
| Complications                        | 4 (6.0%)              | 8 (11.9%)                    | .365            |
| <b>Operative Times</b>               |                       |                              |                 |
| Tourniquet Time (minutes)            | 32.3                  | 29.8                         | .035*           |
| Non-Tourniquet OR Time (minutes)     | 26.1                  | 40.0                         | <.001*          |
| Total OR Time (minutes)              | 58.4                  | 69.7                         | <.001*          |
| <b>Operative Costs</b>               |                       |                              |                 |
| OR Use Cost (\$)                     | 543                   | 648                          | <.001*          |
| Anesthesia Cost (\$)                 | 196                   | 213                          | <.001*          |
| Time-Dependent Costs (\$)            | 739                   | 861                          | <.001*          |
| Surgical Equipment Cost (\$)         | 62                    | 1049                         | <.001*          |
| Total Operative Cost (\$)            | 801                   | 1910                         | <.001*          |

\* Indicates statistical significance ( $P < .05$ )