



Rotator Cuff Repair: An Opportunity for Improved Efficiency, Cost-Effectiveness and Ultimately, Cost Savings

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Purpose

To identify factors associated with increased overall cost and decreased operative time during rotator cuff repair at one academic institution's university hospital system and ambulatory surgery center.

Introduction

Rotator cuff repair is one of the most common orthopaedic procedures performed in the United States each year. However, just as the number of rotator cuff repairs increases each year, so do the overall national health care costs. Due to the unsustainability of the current health care model, surgeons and hospitals are increasingly urged to improve the value of health care delivery by offering more cost-effective and efficient patient care while maintaining superior patient results. In order to adequately develop and implement cost-saving measures, factors associated with increased cost and decreased efficiency must be clearly identified. We hypothesized that surgeon experience and an outpatient surgical setting would be associated with decreased overall cost of rotator cuff repairs at an academic institution.

Methods

In the first part of our study, we retrospectively reviewed all rotator cuff repairs performed by 7 fellowship-trained surgeons at our institution between July 1, 2014 and May 31, 2015. All procedures were performed at either one of two university hospitals or a university-owned ambulatory surgery center, which utilizes similar nursing and anesthesia staff. Data collected included direct costs associated with each procedure such as disposable equipment, surgical time, performing surgeon post-graduate surgical experience, and surgical location. This data was then analyzed to determine any differences in cost, operative time, surgeon experience and location of surgery. In the second part of the study, all rotator cuff repairs performed by the same surgeons were reviewed from July 1, 2015 to September 30, 2015. In addition to overall costs of each procedure, additional data collected included tear size, which tendons were torn, number of anchors used for each repair, concomitant procedures and location of

surgery. This data was analyzed to identify cost differences associated with tear size, number of anchors used, surgeon experience, and location of surgery.

Results

Between July 1, 2014 and May 31, 2015, a total of 441 rotator cuff repairs were performed. The average direct cost per procedure was \$1532.15, with a range of \$1167.55-\$1953.00. Surgeons with greater than 10 years of post-training surgical experience had overall shorter surgical times (134 minutes vs 170 minutes; $p < 0.001$) and lower surgical costs (\$1341 vs \$1841; $p=0.03$). Amongst surgeons, there were wide variations in the amount spent on specific equipment as a percentage of overall supply costs, including cannulas (1.4-8.9%), suture (1.3-7.6%), sterilized packs (4.5-10.6%), and sterilized equipment (6.0-18.7%). Between July 1, 2015 and September 30, 2015, a total of 84 rotator cuff repairs were performed and 68 repairs when excluding concomitant biceps tenodesis. The average direct cost per procedure was \$1411.47, with a range of \$451.50-\$3,269.25. Multiple tendon tears were associated with higher overall costs when compared to single tendon tears (\$1565.54 vs \$1278.61, $p = 0.019$). There was a trend toward greater number of anchors used with a greater number of tendons torn, although this difference was not statistically significant (2.08 vs 2.55, $p = 0.082$). Surgeons with greater than 10 years of post-training surgical experience had overall lower surgical costs when compared to those surgeons with less experience (\$1320.15 vs \$1871.99, $p = 0.001$). There was a trend toward rotator cuff repairs being more expensive in a hospital setting compared to an ambulatory setting, although this difference was not statistically significant (\$1364.99 vs \$1508.84, $p = 0.17$). The most-expensive single-tendon repairs had significantly higher costs associated with implants (\$397.51 vs \$253.68, $p = 0.017$), burrs (\$74.45 vs \$22.89, $p < 0.001$), surgical tools (\$364.04 vs \$89.81, $p < 0.001$), suture (\$142.09 vs \$43.34, $p = 0.003$), cannulas (\$48.07 vs \$20.62, $p = 0.003$), surgical sets/drape packs (\$174.67 vs \$117.14, $p = 0.013$), and arthroscopy fluid (\$28.55 vs \$12.17, $p = 0.024$).

Conclusion:

Increased costs of rotator cuff repairs are associated with multi-tendon tears and less post-training surgical experience. There is a trend toward higher costs associated with rotator cuff tears in university hospital setting. Costs of specific equipment as a percentage of overall costs vary greatly amongst individual surgeons. In addition, there are significant differences in direct costs on specific equipment such as implants, sutures, cannulas, and surgical tools between the most expensive and least expensive single-tendon rotator cuff tears. These results suggest an opportunity to lower overall supply costs by reducing the use of specific equipment amongst some surgeons.

Significance:

With increased pressures to decrease health care costs, hospital systems are seeking to improve the value of health care delivery by identifying more efficient and cost-effective ways of providing patient care. Understanding actual costs and the predictors of expenses are critical to improving the value of health care. Encouraging surgeons to be conservative in their use of surgical equipment and efficient in the operating room can provide significant opportunities for cost savings in rotator cuff repairs.