



The value of shoulder replacement and rotator cuff surgery: the patients' perspective

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Background: With the continued rise in health care costs, value-based care in orthopedics is more important than ever. Health care providers, policymakers, and insurance companies all have input into defining and setting the level of this value. The purpose of this study was to evaluate patient perception of value in rotator cuff repair (RCR) and total shoulder replacement (TSA) using a population composed only of patients who underwent the procedure.

Methods: We were able to obtain complete data from 191 of the 250 patients in the RCR cohort and 211 of the 250 patients in the TSA cohort. Patients were asked what they believe a surgeon should be reimbursed for performing RCR or TSA, what they would be willing to pay for the procedure, and to rate the importance of each aspect of their care. Patients then estimated what Medicare reimbursed for the procedure they underwent.

Results: The mean result for patients surveyed regarding a reasonable fee for surgeons was \$9870 for RCR and \$14,231 for TSA. The mean patient estimate for actual Medicare reimbursement was \$5705 for RCR and \$9372 for TSA. Fifty-seven percent thought that payment for RCR was too low, and 76% thought that it was too low for TSA. When asked to rate the importance of each aspect of their care, RCR patients felt that 46% should go to the surgeon. TSA patients felt that surgeons should receive 47%.

Conclusion: In agreement with prior studies, patients perceived the monetary value of RCR and TSA to be much higher than current Medicare schedules.

Level of evidence: Survey Study; Patients

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No Institutional Review Board approval was required for this survey study.

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Over the past several decades, there have been steadily declining Medicare reimbursements to physicians.^{4,5} During this time, there also has been an increasing emphasis on value-based care, defined as optimizing the ratio of quality to cost. With the continued rise in health

care costs, value-based care in orthopedics is more important than ever. Policymakers and insurance companies, more so than physicians and consumers, have the most input into defining and setting the level of this value. In contrast, most patients often have little understanding of cost or value when it comes to health care. This was highlighted by Foran et al³ when they looked at patient perceived surgeon reimbursement for total hip and total knee arthroplasty. They found that patients estimated the reimbursement to orthopedic surgeons to be \$8212 for total hip arthroplasty (THA) and \$7196 for total knee arthroplasty (TKA).³ Also they reported that almost 70% of patients felt that orthopedic surgeons were not adequately reimbursed.

As the number of rotator cuff repairs (RCR) and total shoulder arthroplasties (TSA) continue to rise in the United States, the question of perceived patient value for shoulder and elbow procedures becomes important.⁷ A previous study by Nagda et al⁶ revealed the patient perception of physician reimbursement to be much higher than current Medicare schedules for RCR and shoulder replacement. In that study, 75% and 80% of patients felt that surgeons were under-reimbursed for RCR and TSA, respectively.⁶ However, the vast number of patients surveyed in that study had not undergone either procedure. As such, any measure of value derived from this population has limitations. Given those limitations in the prior study, we sought to evaluate patient perception of value in RCR and total shoulder replacement using a population composed only of patients who underwent the procedure. Our hypothesis was that patients who had undergone the procedures would place a similarly higher value on their surgery than the current reimbursement schedule and that a high percentage of patients would feel that orthopedic surgeons were under-reimbursed for their work.

Methods

This prospective study involved contacting 500 patients. Two hundred and fifty of these patients underwent an RCR and 250 patients underwent a TSA. They were surveyed anonymously between 6 and 12 months postoperatively specifically on the procedure they underwent—RCR patients at a minimum of 6 months and TSA patients at a minimum of 1 year. Patients were first asked demographic questions such as age, gender, highest level of education, household income, and primary health insurance. Given the personal nature of some of the questions, the patients were instructed to either to fill out the survey and place into a sealed bin or, if they felt uncomfortable, to place the blank survey back into the sealed bin. They were then asked what they believe a surgeon should be reimbursed for performing RCR or TSA. Patients were also asked what they would be willing to pay for the procedure, and to rate the importance of each aspect of their care (surgeon, anesthesia, facility, and physical therapy). The questions clearly stated that this reimbursement fee was only for the surgeon and the 90 days of care after the surgery and did not include the hospital

fee, cost of implants, or anesthesia. They were also asked to estimate a reasonable cost for the implants used during surgery, and asked how much they would pay for those implants. Finally, patients were asked to estimate what Medicare reimbursed for the procedure they underwent. We then revealed the Medicare reimbursement rate for RCR and TSA, and patients were asked to comment and decide if surgeons with specialized fellowship training should receive an additional payment along with how much they would be willing to pay a surgeon with specialized fellowship training. Surveys with incomplete data or missing answers were dropped. Also, data points that were more than 2 standard deviations (SDs) away from the mean were also dropped. We further attempted to limit this response bias by going through all the survey responses and eliminating responses where patients reported that they felt that surgeons should be reimbursed more than \$40,000. The surveys that were distributed were labeled as TSA value survey and RCR value survey ([Supplemental Files S1 and S2](#)).

Results

We were able to obtain complete data from 191 of the 250 patients in the RCR cohort and 211 of the 250 patients in the TSA cohort. Patient demographics in the RCR cohort included an average age of 63 with 87% saying that their shoulder felt normal. In the TSA cohort, the average age was 72 with 88% saying that their shoulder felt normal. Patient level of education was also assessed ([Table I](#)). Approximate household income was also assessed ([Table II](#)). Patients were asked a series of questions regarding orthopedic surgeon reimbursement and value placed on operative procedures ([Table III](#)).

The responding patients were then asked to rank 4 parts of the surgical procedure in order of importance. These parts included the surgeon, the facility, anesthesia, and physical therapy. Both groups ranked the surgeon as being the most important followed by anesthesia, then the facility, and lastly physical therapy. The responding patients were then asked to assign a percentage of the total procedure reimbursement to each aspect of their care. In the RCR group, each percentage was averaged and 46% of the fees were allocated to the surgeon, 20% to the facility, 18% to anesthesia, and 17% to physical therapy. Next the patients were asked how much they thought the implants cost ([Table III](#)).

In the next part of the survey, we revealed how much, on average, Medicare reimburses an orthopedic surgeon for each procedure. We then asked if the patients thought that this amount was much lower, a little lower, correct, a little more, or much more than what a surgeon should make. The results showed that 108 (57%) thought that payment for RCR was much lower or a little lower, and 160 of patients (76%) stated that Medicare reimbursement was much lower or a little lower for TSA.

The next questions involved if surgeons with specialized training should receive an additional payment for

Table I Education level

Education level	RCR (%)	TSA (%)
Did not graduate high school	<1	2
High school equivalent	18	21
Some college/university	18	18
Undergraduate degree	29	22
Any graduate degree	29	33
Prefer not to answer	5	1

RCR, rotator cuff repairs; TSA, total shoulder arthroplasty.

performing a shoulder procedure and, if so, how much (Table III). The RCR group averaged that orthopedic surgeons with specialized fellowship training should receive an additional \$5279 (range = \$24,500; SD = \$5767), whereas the TSA group averaged an additional \$5669 (range = \$39,633; SD = \$7051). They were finally asked how much extra they would pay the specialized orthopedic surgeons out of pocket (Table III).

Discussion

The results of our study corroborate the results of the prior studies in the shoulder and hip and knee literature demonstrating that patients feel that orthopedic surgeons are under-reimbursed for their work compared with the utility the patient derives from the procedure.^{1,6,8} Patients stated that they felt that orthopedic surgeons should, on average, be reimbursed \$9870 for RCR and \$14,231 for TSA, which is 91% and 90% more than what Medicare currently reimburses orthopedic surgeons for RCR and TSA, respectively. The potentially more interesting result that came from the study was what patients would be willing to pay out of pocket to have their surgery. On average, we found that patients would be willing to pay \$9465 for RCR and \$10,691 for TSA. The higher monetary value that patients placed on TSA may be related to the fact that a higher percentage of patients reported that they were happy with TSA compared with RCR. These results support our hypothesis that patients place a much higher

Table II Yearly income ranges reported by patients undergoing RCR and TSA

Yearly income	RCR (%)	TSA (%)
<\$20,000	3	8
Between \$20,000 and \$75,000	17	29
Between \$75,000 and \$150,000	32	26
>\$150,000	21	16
Prefer not to answer	28	25

RCR, rotator cuff repairs; TSA, total shoulder arthroplasty.

monetary value on RCR and TSA compared with the amount that surgeons are actually reimbursed.

Courtney et al¹ reported similar results in a patient-perceived value study related to THA and TKA. They found that patients felt the orthopedic surgeon should receive \$27,430 for THA and \$19,830 for TKA. When asked what patients would be willing to pay as an out-of-pocket cost for these procedures, patients reported that they would be willing to pay 50.3% of total fees for THA and 46.3% of total fees for TKA.¹ Our study adds to the body of literature that supports the idea that patients place much higher value on the role of the surgeon in their overall care relative to the amount they are actually reimbursed by Medicare. Specifically, we found that patients felt that the surgeon should receive 46% of total fees for RCR and 47% of total fees for TSA.

As reimbursement rates continue to be scrutinized and episode of care and bundled payments are becoming more of a reality, the results from this study provide a valuable resource for the orthopedic surgeon when negotiating these payments with Medicare and private payers. This also becomes more important as the overall volume of these procedures continues to increase in the United States. Padegimas et al⁷ looked at the national projections for the future demand for TSA in the United States and found that it is increasing at a rate of 8.2% per year for patients below 55 years old and 12.1% per year for patients over 55 years old.⁷ Even more impressive was the projected percent increase in demand for TSA from 2011 to 2030. They projected demand for TSA to increase by 333.3% and 755.4% for patients below 55 and over 55, respectively.⁷ These results are similar to the results reported by Day et al.² They found the growth rates for upper extremity arthroplasty to be equivalent to and/or higher than the growth rates for THA and TKA and only projected those numbers to continue to rise.² These numbers become very important when considering them in light of the results of our study. With the rise of bundled payments and value-based care, 1 question from the results of this study is: should a larger percentage of the bundle go to the surgeon when the bundle is paid out by Medicare?

Although the results of our study add to the growing body of literature of patients' perceived value for orthopedic procedures, it is not without its limitations. Given that our study was a survey study, there is the potential for response bias. Some patients did not completely fill out their surveys, in which case we did not include their responses in our final results. As mentioned earlier, we further attempted to limit this response bias by going through all the survey responses and eliminating responses where patients reported that they felt that surgeons should be reimbursed more than \$40,000. We also surveyed patients who had had a RCR or TSA recently within the past 2 years in an attempt to mitigate any potential recall bias. A potential additional issue is that we placed the actual amount that surgeons were reimbursed by Medicare on the

Table III Results of patient value survey from 211 patients who underwent TSA and 191 patients who underwent RCR

Survey questions	RCR (averages)	TSA (averages)
What do you think is a reasonable fee that an orthopedic surgeon should receive?	\$9870	\$14,231
How much do you estimate that Medicare reimburses an orthopedic surgeon?	\$5705	\$9372
How much would you pay an orthopedic surgeon for the procedure if insurance was not involved?	\$9465	\$10,691
What do you think is a reasonable cost for the shoulder implants that were placed into your shoulder?	\$2785	\$5172
How much would you pay for the shoulder implants that were placed into your shoulder if insurance were not involved and you had to pay directly?	\$3463	\$4250
Now knowing the amount that Medicare reimbursed, do you think the surgeon is reimbursed enough?	56%	76%
What percentage of the total fees of the entire procedure (including the surgeon, the facility, the anesthesia, and the physical therapy) do you think the surgeon should receive?	46%	47%
How much extra would you pay a fellowship trained orthopedic surgeon out of pocket?	\$4488	\$4819
Do you think a surgeon with specialized fellowship training in shoulder surgery should receive additional payment?	73%	85%
Are you happy with the outcome of your surgery?	93%	96%

RCR, rotator cuff repairs; TSA, total shoulder arthroplasty.

The table represents the monetary amount and percentages reported by patients for reimbursement, amount they would be willing to pay, and how reimbursement should be allocated as well as patient satisfaction with their operation.

final page of the survey. Even though we asked patients not to look ahead to the final page, there is a possibility that some patients saw these numbers and it may have influenced how they subsequently filled out the survey. Furthermore, we did not obtain patient-reported outcome scores for the patients who filled out our survey. As such we do not know if patients who may have had lower outcome scores responded with lower monetary value numbers.

This study serves to highlight 2 major points from previous studies. Patients perceive orthopedic surgeon reimbursement to be much higher than it actually is and that patients place a significant monetary value on the results of these surgeries that is much higher than what Medicare currently reimburses. The prior study by Nagda et al⁶ revealed that survey respondents felt that the surgeon should be reimbursed \$8459 for RCR and \$13,178 for TSA. In that study, only 20.8% and 7.6% of patients responding had undergone RCR and TSA, respectively. The results from the current study serve to highlight that patients who have undergone the procedures assign a higher monetary value to these procedures, with patients in the current study stating that they felt that orthopedic surgeons should be reimbursed \$9870 for RCR and \$14,231 for TSA.

This study also serves as the first to report on patient perception of the value and cost of implants. Implant costs for both RCR and TSA can easily be more than surgeon reimbursement. This is not often highlighted and patients may not even consider this as a high-cost item.

In addition, patients felt that the orthopedic surgeon should be receiving the bulk of the total fees for RCR and TSA. This is important information for orthopedic surgeons

as bundled care models become more prevalent. The patients in our survey gave similar percentages to the surgeon as the patients in the study by Courtney et al.¹ The vast majority of patients surveyed feel that orthopedic surgeons are underpaid for their work. As we enter an era of health care where patient-perceived value is playing an ever increasing role in insurance reimbursements, the results of this study are invaluable for orthopedic surgeons when it comes to discussions with Medicare and even private insurers over the monetary reimbursement for these procedures. In conclusion, patients not only would be willing to pay much more out of pocket than Medicare currently reimburses but they also feel that orthopedic surgeons should receive the largest percentage of the total fees for RCR and TSA.

Conclusion

In agreement with prior studies, patients perceived the monetary value of TSA and RCR to be much higher than current Medicare schedules. This cohort of patients who had undergone the procedure placed a higher value on the procedure and were willing to pay much higher rates than current reimbursement rates. This survey also revealed that patients felt that almost half of the overall cost of a procedure should go to the surgeon. Future policy regarding value in shoulder surgery should take this information into consideration. This information could also be used as an educational factor for patients and policy makers alike. Furthermore, studies could include patient-perceived value of different procedures,

other types of insurance reimbursement, and reimbursement rates in different countries.

Disclaimer

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Supplementary data

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