Willingness to Pay for Anterior Cruciate Ligament Reconstruction

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Abstract

The outcomes of ACL reconstructions in terms of patient satisfaction and function are well known. Most orthopaedic surgeons feel that Medicare and other payors do not reimburse enough for this surgery. The purpose of this study is to determine how much patients are willing to pay for this surgery and compare it to reimbursement rates.

Methods: We constructed a survey which described the function and limitations of an ACL deficient knee and the expected function of that knee after an ACL reconstruction. We then asked the volunteers how much they would be willing to pay for an ACL reconstruction if it were their knee. We also gathered data on the yearly earnings and Tegner activity level of the volunteers. In all, 143 volunteers completed the survey. We computed correlation coefficients between willingness to pay and both yearly earnings and Tegner activity level.

Results: The average amount that the volunteers were willing to pay for an ACL reconstruction was $4,867.00. There was no correlation between yearly earnings and willingness to pay. The correlation coefficient was 0.34. There was a weak correlation between Tegner activity level and willingness to pay. This correlation coefficient was 0.81. The Medicare allowable rate for ACL reconstruction (CPT 29888) in the geographic area of the study was $1,132.00.

Conclusion: The data demonstrates that patients are willing to pay much more than traditional payors for ACL reconstruction. These payors undervalue the benefit of this surgery to the patient. There is increasing pressure on orthopaedic surgeons to not participate in insurance plans that reimburse poorly. This places an increasing financial burden on the patient. This study suggests that patients may be willing to pay more for their surgery than their insurance plan and accept more of this burden.

Over 100,000 anterior cruciate ligament reconstructions are performed annually in the USA. With reports of good to excellent clinical outcomes exceeding 90%, it continues to be one of the most successful procedures performed in orthopaedics. Despite its success, many orthopaedic surgeons are frustrated with reimbursement and believe Medicare and other payors do not pay enough for this surgery.

Declining physician reimbursement has become the rule in our cost-driven health care system. With over 1.9 trillion dollars spent on health care in the USA in 2005, Medicare and insurance plans have placed greater emphasis on the true value of medical and surgical interventions and their ability to improve quality of life. As a result, economic evaluations, such as cost-effectiveness and cost-utility analysis, have been increasingly used in research to complement clinical outcome measures. Recently, the concept of “willingness to pay” has emerged as an additional economic tool. Although it has seen limited study in orthopaedics, it has been evaluated in several health care fields and has helped provide further information on the true value of an intervention to society.

To our knowledge, there have been no published studies evaluating willingness to pay and ACL reconstruction. The purpose of the present study was to examine patients’ willingness to pay and to compare it to actual reimbursement...
from Medicare, as well as patient income and activity level. We hypothesize that Medicare and other payors undervalue ACL reconstruction, and that patients are willing to pay more than current reimbursement.

Methods
A two page document was constructed and distributed to volunteers. Participants included patients from the senior investigator’s office and medical students at our home institution. The first page of the document included a description of the function and limitations of an ACL deficient knee and the expected function after an ACL reconstruction. Choice of graft was not included. The second page was a questionnaire.

The primary question was how much in US dollars would the participant be willing to pay out of pocket for an ACL reconstruction. Other questions included age, previous surgery, prior or current knee problems, and annual earnings. Annual earnings were reported per a constructed scale from 1 to 5 (1 = less than $20,000; 2 = $20,000 to $50,000; 3 = $50,000 to $100,000; 4 = $100,000 to $250,000; 5 = greater than $250,000). Lastly, patients were asked to complete a Tegner activity scale.

After collection of all data, we computed correlation coefficients between willingness to pay and both yearly earnings and Tegner activity level. We compared local and national Medicare reimbursement rates for ACL reconstruction with the patient reported amounts.

Results
One hundred forty-three participants completed the survey. There were 79 male and 63 female subjects, with a mean age of 27.6 years (range: 16 to 68 years). Only nine participants reported prior or current problems with the knee, and two patients had undergone ACL reconstruction. The mean amount that the volunteers were willing to pay for an ACL reconstruction was $4,867 (range $250 to $25,000). The two participants having undergone ACL reconstruction reported willingness to pay of $1,500 and $4,800. The mean annual income per the constructed scale was 2.52 out of 5.0 ($20,000 to $50,000). The mean Tegner activity level reported was 4.2 out of a possible 10.

The correlation coefficient between annual income and willingness to pay was 0.34, as shown in Figure 1. The correlation coefficient between Tegner activity level and willingness to pay was 0.81, as shown in Figure 2. The Medicare allowable rate for ACL reconstruction (CPT 29888) in the geographic area of the study was $1,132.

Discussion
Anterior cruciate ligament reconstruction has been shown to be both a clinically successful and cost-effective procedure, yet physician reimbursement continues to decline. Although legislation has recently maintained reimburse-
ment, reports from the Centers for Medicare and Medicaid Services estimate as much as a 5% annual reduction in physician reimbursement over the next 5 years.\textsuperscript{7,18} As many insurance plans are driven by Medicare, there will be increasing pressure on orthopaedic surgeons to not participate with those which reimburse poorly, shifting increasing financial responsibility onto the patient.

The results of the present study suggest that patients may be willing to accept more of this financial burden. Our data demonstrated that patients were willing to pay over 400\% of the amount reimbursed for ACL reconstruction by Medicare in our area. This further supports the belief that the benefit ACL reconstruction provides patients is undervalued by current payors.

Willingness to pay is commonly thought to be affected by personal income, but this was not seen in the present study. A weak correlation with Tegner activity level suggests that patients with a higher pre-injury level of activity were willing to pay more to maintain their current state of health. Although two participants had undergone ACL reconstruction, no conclusions could be reached about their willingness to pay.

Few studies have evaluated willingness to pay for interventions in orthopaedic surgery. Cross and colleagues evaluated 143 patients in Australia who had undergone total knee or hip replacement and their willingness to pay 2 to 3 years postoperatively. They found that over 70\% of patients were willing to pay “something” for both total knee and hip replacement, with a high correlation with patient satisfaction and pain relief.\textsuperscript{19} Direct comparison to the current study, however, was not possible as it evaluated patients in a different health care system.

There were several limitations in the present study. As with any questionnaire, our results are based purely on opinion and interpretation depends on the accurate reporting of respondents. Although participants were given a description of ACL deficiency and postoperative expectations, evaluating patients who underwent ACL reconstruction may provide even greater insight into the value of this procedure. In addition, medical student participants may have been biased in their responses if they had knowledge of current costs and reimbursement.

Conclusion
In conclusion, our data demonstrates that patients are willing to pay much more than traditional payors for ACL reconstruction. This study supports the value of this procedure and suggests that patients may be willing to accept more of the financial burden in our current health care system.

Disclosure Statement
None of the authors have a financial or proprietary interest in the subject matter or materials discussed, including, but not limited to, employment, consultancies, stock ownership, honoraria, and paid expert testimony.

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