Rotator Cuff Treatments Pay Off

New study shows impact on societal costs, savings

Mary Ann Porucznik

Shoulder pain associated with an injury to the rotator cuff affects millions of people in the United States and leads to millions of patient visits to physicians. The functional limitations due to these injuries may result in reduced earning for individuals as well as lost productivity and increased costs to society.

Two trends contribute to increasing concerns about the appropriate treatment for rotator cuff disease. First is the greying of America’s workforce, particularly because the prevalence of rotator cuff tears increases with age. Second is the issue of rising healthcare costs as the burden of the disease increases.

To address these concerns, the AAOS took the following steps:

- Developed clinical practice guidelines (CPGs) on “Optimizing the Management of Rotator Cuff Disease”
- Prepared appropriate use criteria (AUC), based on the CPGs and incorporating both the evidence base and the expertise of clinicians to determine the appropriateness of various treatment modalities in different patient populations
- Provided research funding for a study on the social and economic value of rotator cuff repair

A comprehensive look

“A torn rotator cuff will weaken the shoulder and may make daily activities painful and more difficult, but the decision-making process as to when surgery is warranted is not always black-and-white,” said Richard C. Mather III, MD, lead author of “The Societal and Economic Value of Rotator Cuff Repair,” which appeared in The Journal of Bone and Joint Surgery (Nov. 20, 2013). “This study and the new AUC can help physicians improve the care they provide and contribute to informed decision-making by patients.” (See “AAOS Approves AUC on Rotator Cuff Tears,” AAOS Now, October 2013.)
Although both surgical and nonsurgical treatments may result in improved outcomes and satisfied patients, little information exists on the cost-effectiveness or the potential savings to society of surgery or conservative treatment. The new study offers a comprehensive look at the societal impact of rotator cuff disease and its treatments.

**Fig. 1** Coronal MRI can be used to estimate the size of a rotator cuff tear (double-headed arrow). (Reproduced from Iannotti JP, Joy E: Pitfalls in rotator cuff surgery, in Kibler WB, Clarke HD, eds: Pitfalls in the Management of Common Shoulder Problems. Rosemont, IL, American Academy of Orthopaedic Surgeons, 2011, pp 59-70.)

**Cost-effective treatment**
Comparing surgical and nonsurgical treatment options, the study’s investigators found rotator cuff repair is cost-effective across all patient age groups. Additionally, societal savings offset the direct costs of treatment in patients younger than age 61, resulting in an average net savings to society of $13,771 per patient. This number significantly increased to $77,662 for patients younger than 40 years.

“More than two-thirds of rotator cuff surgery patients are of working age and have many questions related to how quickly they can get back to work and activities and whether they will still have pain,” said Lane Koenig, health economist at KNG Health Consulting and a study author. “Fortunately, what this research enables us to do is quantify this value. It truly offers a new perspective to the body of information available about this condition.”

To conduct the study, researchers reviewed literature and Medicare claims data. The collected data were applied to a Markov Decision Model, which enabled them to estimate cost effectiveness. All patients were assumed to undergo 6 weeks of nonsurgical treatment prior to entering the model. Researchers also took a counterfactual approach, assuming that once patients entered the nonsurgical treatment arm of the model, they could not cross over to surgery.
By comparing costs for probability of employment, household income, missed workdays and disability payments among patients ages 30 through 80, researchers were able to estimate lifetime direct and indirect costs associated with surgical and continued nonsurgical treatment for rotator cuff tears. According to the study, rotator cuff repair results in nearly $14,000 in per patient lifetime savings compared with nonsurgical treatment. The lifetime quality-adjusted life years (QALYs) were “consistently higher for those who received surgical treatment in all age groups,” ranging from 0.97 QALY in the youngest cohort to 0.33 QALY in the oldest.

Individual patient simulations showed that about half (52 percent) of patients had better outcomes with nonsurgical treatment. “However,” they write, “the cost savings to society for patients for whom surgery is the preferred strategy far exceeds the savings from those patients when nonoperative treatment is the preferred strategy.” In other words, the costs of nonsurgical treatment were skewed; if a patient did need a rotator cuff repair and couldn’t get it, the indirect costs associated with this outcome far outweighed the direct costs of surgery.

As a result, the mean cost of rotator cuff repair for everyone younger than age 61 is less than that of nonsurgical treatment. With approximately 250,000 rotator cuff repairs performed annually in the United States, the total savings to society total approximately $3.44 billion.

Exercise caution
The authors note that nonsurgical treatment is the preferred strategy for a significant number of patients. Physicians are challenged, however, in distinguishing between patients who would benefit more from nonsurgical treatment and those who would benefit more from surgical treatment. This study demonstrates that flexibility in decision making by patient and providers should be maintained and that the overall goal remains to deliver the right treatment to the right patient at the right time.

“That’s where the rotator cuff AUC web-based mobile app comes in handy,” said Dr. Mather. “By combining the evidence from the CPG with the clinical experience of surgeons, the AUC help direct physicians to appropriate treatments. The app itself is easy to use and enables the clinician to select specific patient characteristics to build an indication profile. The app then generates the list of treatment recommendations and shows how appropriate a specific treatment might be for that profile.”

“The economic burden to society of rotator cuff tears is substantial,” conclude the authors, “and rotator cuff repair may plan an important role in reducing that burden. Rotator cuff repair is both cost-saving for society in younger patients and cost-effective for all patient age groups.”

The authors of “The Societal and Economic Value of Rotator Cuff Repair” include Richard C. Mather III, MD; Lane Koenig, PhD; Daniel C. Acevedo, MD; Gerald Williams, Jr., MD; Timothy M. Dall, MS; Paul Gallo, BS; Anthony A. Romeo, MD; and John R. Tongue, MD.

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Additional Information:
Link to the study
Link to the app

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