5 Points on Nonoperative Treatment of Rotator Cuff Tears

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Rotator cuff disease is extremely common, yet indications for surgery are not well established. Unfortunately, data on the natural history of patients with rotator cuff disease are lacking, as are high-level studies evaluating the effectiveness of rotator cuff repair. This deficit is highlighted by the recent American Academy of Orthopaedic Surgeons clinical practice guideline on optimizing the management of rotator cuff problems,[1] in which none of the position statements were based on high-level evidence, and 22 of 25 statements were inconclusive or based on weak evidence or represented the panel's consensus opinion. Although the traditional teaching is that rotator cuff tears (RCTs) should be surgically repaired, the present article reviews the evidence supporting physical therapy as a treatment for atraumatic full-thickness RCTs.

1 Less than 5% of people with RCTs undergo surgery

Studies on symptomatic and asymptomatic patients have found a high incidence of RCTs in the population at large.[2,3] By conservative estimate, 10% of people older than 65 years have full-thickness RCTs. Therefore, the 2010 US Census[4] finding of 57 million people over age 65 years translates to 5.7 million with full-thickness RCTs. In the United States, about 275,000 rotator cuff surgeries are performed annually.[5] That is, less than 5% of people with RCTs undergo surgery each year.

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2 Symptoms do not correlate well with RCT severity

Pain is statistically more likely in patients who experience RCT progression than in those who do not.[6-8] However, RCTs may progress without pain, or there may be pain without progression, making pain a poor sign of RCT progression.[9] The Multicenter Orthopaedic Outcome Network (MOON) Shoulder Group, studying a cohort of patients with atraumatic full-thickness RCTs, found no relationship between RCT severity and pain,[10] symptom duration,[11] or activity level,[12] suggesting the relationship between RCTs and symptoms is not robust.

3 The high failure rates of surgical repairs do not affect patient-reported outcomes

Postoperative imaging has demonstrated high failure rates for rotator cuff repairs, yet patient-reported outcome scores do not differ between cases of intact and failed repairs.[13,14] Strength is better, however, in intact repairs.[14]

4 Physical therapy is effective in treating atraumatic RCTs

The MOON Shoulder Group conducted a prospective cohort study to determine the predictors of failed physical therapy for atraumatic full-thickness RCTs and to help define the indications for rotator cuff surgery.[15] All enrolled patients started with a well-defined physical therapy program, and they could opt out and have surgery at any time. The physical therapy program, derived from a systematic review of the literature, was found to be effective in more than 80% of patients with follow-up of 2 years or longer.[15] The most important predictor of failed nonoperative treatment was patient expectations: For a patient who thought physical therapy would work, it worked; for a patient who thought it would not work, surgery was the more likely choice. No measure of pain or RCT severity predicted the need for surgery.[16] For 2 randomized trials that compared surgery and physical therapy, the success of nonoperative treatment was similar: 76% (Moosmayer and colleagues[17]) and 92% (Kukkonen and colleagues[18]).

5 What are the indications for surgery?

These data suggest that physical therapy is reasonable for patients with atraumatic RCTs. Some data suggest that traumatic RCTs should be treated with surgery

and that it should be performed early.[19] Other data suggest strength is better after rotator cuff repair.[13,14] What, then, are the indications for surgery? Patients with acute tears probably should have surgery; patients concerned about weakness should consider surgery but should keep in mind that its benefit depends on an intact rotator cuff repair; and patients with low expectations about the effectiveness of physical therapy probably should consider surgery.

When discussing options with a patient, you might approach informed consent as follows:

"Mr. Smith, you have a rotator cuff tear. So do at least 6 million other Americans over age 60 years. Only 5% of those undergo surgery. If your problem is weakness or functional loss, you should have surgery, though there is about a 30% chance the repair will fail. I don't know how to predict the outcome of repair yet, but I worry your atraumatic tear is at risk for repair failure.

"If your problem is pain, you have an 80% chance of improving with physical therapy, and pain relief seems to last at least 2 years. If you go with physical therapy, however, there is a risk your tear could progress and start causing symptoms. I don't yet know how likely it is your tear will progress or, if it does progress, how likely it is the tear will cause symptoms. I wish we had better information to help you make your decision."

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Erratum

In the January 2016 issue of *The American Journal of Orthopedics*, Dr. Jeffrey Sawyer's disclosure statement for his guest editorial "The Changing Face of Pediatric Orthopedics" [*Am J Orthop*. 2016;45(1):10-11] was incorrect. The corrected disclosure statement is below. We apologize for the error.

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