Level V Evidence

Patient Understanding, Expectations, and Satisfaction Regarding Rotator Cuff Injuries and Surgical Management

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Abstract: Rotator cuff injuries are among the most common in orthopaedics, with rotator cuff repair surgery consistently reported as one of the most commonly performed orthopaedic procedures. Patient satisfaction is becoming an increasingly important outcome metric as health care continues to evolve with regard to quality measures affecting physician reimbursement. Evidence supports that postoperative patient satisfaction, an important quality outcome metric, is highly influenced by preoperative patient expectations, which are in turn governed by patient knowledge and understanding. Many authors have delineated patient-, injury-, and surgery-specific variables associated with high preoperative expectations and satisfaction after rotator cuff surgery. Specifically, large rotator cuff tears, subscapularis tears, persistence of postoperative pain and dysfunction, worker's compensation cases, lower education level, and preoperative disability have been seen more frequently in patients reporting poor satisfaction. Others have reported variables associated with higher patient satisfaction such as being married, employed, and of older age at the time of surgery (>55 years old) predictive of higher satisfaction. Patient education preoperatively regarding details about the surgery and the postoperative plan both immediately after the procedure and for rehabilitation are critical in helping set patients' preoperative expectations that have a known effect on patients' subjective clinical outcomes.

Introduction: Association Between Patient Understanding, Expectations, and Satisfaction

Patient satisfaction and patient-reported outcomes (PROs) are becoming increasingly important outcome metrics as orthopaedics and health care in general strive for a more patient-centered model. Pain and functional limitation are frequently driving factors for patients seeking intervention, and patients have variable expectations of the level of improvement that they will experience after surgery.[1] Although many variables influence patient satisfaction with orthopaedic surgery, a key determinant is the fulfillment of patients' preoperative expectations for their care. A relationship between overly optimistic patient expectations preoperatively and poor postoperative satisfaction has been reported.[1,2] Setting realistic preoperative expectations begins at the first clinic visit with thorough counseling at the appropriate education level by the treating surgeon.[3-6] The purpose of this paper is to evaluate the relationship between patient comprehension of rotator cuff injury and surgical management, patient preoperative expectations for care, and postoperative patient satisfaction, so as to provide readers with patient- and injury-specific factors influencing expectations and satisfaction.

Patient Education: Rotator Cuff Injuries and Surgical Management

Rotator cuff injuries affect about 17 million people in the United States and are among the most common

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presentations for orthopaedic care.[7,8] Rotator cuff repair surgery is one of the most common orthopaedic procedures with an estimated 200,000 to 300,000 repairs each year.[9] Although a paucity of information exists regarding patient understanding/perception of rotator cuff injuries and management options, many have reported on the quality of patient education materials with regard to rotator cuff injuries and surgical management. Dalton et al.[10] evaluated the online information about the diagnosis and management of rotator cuff tears by rating the readability of 125 websites found by searching "rotator cuff tear" in the 5 most popular internet search engines (Google, AOL, Yahoo!, BING, and Ask). The authors reported an average ninth grade reading level of the websites, well above the recommended sixth grade level.[5,11-15] In addition, Eltorai et al.[6] analyzed American Academy of Orthopaedic Surgeons reading materials and showed that shoulder and elbow resources were written at the highest reading level of all resources. The average reading level in the United States is an eighth grade level, so it should come as no surprise that patients often have misperceptions about rotator cuff injuries and treatment options.[6,16]

Patient Expectations and Concerns for Rotator Cuff Surgery

Many investigators have sought to elucidate patient-specific and injury-specific factors that influence expectations and concerns for surgical management of rotator cuff tears. In a prospective study of 125 patients who underwent primary repair for chronic rotator cuff tears, Henn et al.[17] evaluated preoperative patient expectations. They used 6 questions from the Musculoskeletal Outcomes Data Evaluation and Management System (MODEMS) questionnaire, and obtained PROs both preoperatively and postoperatively (Simple Shoulder Test [SST], Disabilities of the Arm, Shoulder, and Hand, and visual analog pain, function, and quality of life scales). The MODEMS questionnaire asks patients questions on a Likert scale of 1 to 5, with 1 corresponding to the lowest level of expectations (i.e., not likely at all) and 5 corresponding to the highest level (i.e., extremely likely). The parameters evaluated were likelihood of ability to do household or yard activities, to sleep comfortably, to return to usual work, to exercise, and do recreational activities, in addition to likelihood of symptoms relief and of future disability prevention. The authors reported that patients had high expectations regarding surgical management of rotator cuff tears, with more than 85% of patients expecting that surgery was "very likely" or "extremely likely" to improve the parameter evaluated by each question. Furthermore, the authors reported that greater preoperative expectations correlated with better postoperative performance on the SST, Disabilities of the Arm, Shoulder, and Hand, visual analog scales, and Short Form 36-Item Health Survey (SF-36).[17]

Oh et al.[18] administered surveys to 128 South Korean patients scheduled to undergo rotator cuff surgery. They administered PROs (SST, Constant-Murley score, and SF-36), 6 questions regarding preoperative expectations from the validated MODEMS scoring system, and 64 questions regarding patient concerns for surgery taken from previous studies.[19,20] The authors correlated expectations and PROs with sociodemographic patient factors. Each question regarding preoperative expectations consisted of the same 5-point Likert scale used by Henn et al.[17] Oh and colleagues reported that the main preoperative concerns of patients were length of the recovery period, proceedings of the hospital stay, and postoperative pain. Of note, female patients and patients with inferior scores on SF-36 Mental Component Summary were found to have significantly higher preoperative concerns. Similar to Henn et al.,[17] the authors reported overall high patient expectations for rotator cuff repair outcomes. Specifically, employed patients, patients with higher perceived level of information obtained directly from their doctor, and patients with poorer preoperative functional status had significantly higher preoperative expectations. The authors also reported a significant correlation between high preoperative expectations and improved postoperative PROs, specifically SST and Constant-Murley score.[18] These results, although in a single population, show several critical factors orthopaedic surgeons should be aware of to provide their patients with clear, comprehensive preoperative counseling.

Factors Influencing Patient Satisfaction With Rotator Cuff Surgery

As Makhni et al.[21] showed in their recent systematic review of outcome assessment measures for rotator cuff pathology, obtaining patient satisfaction scores has not yet become routine for many orthopaedic practices. However, there is little doubt regarding the significance of patient satisfaction scores going forward. O'Holleran and colleagues[22] evaluated determinants of patient satisfaction after rotator cuff surgery. In their cohort of 57 patients with minimum 1-year follow-up, the authors showed no significant association between demographic variables and satisfaction; however, several surgical variables including debridement of massive, irreparable cuff tears, presence of subscapularis tear, and comparatively larger supraspinatus and infraspinatus tears were associated with decreased satisfaction. Furthermore, subjective variables including persistence of pain and dysfunction were also shown to be predictors of poor satisfaction. Interestingly, the authors found a significant relationship between poor satisfaction and decreased willingness to recommend

the surgery.[22] Although that fact may seem intuitive, it does not lessen its importance. Patients who have perceived poor outcomes may, in a sense, negatively advocate for the same procedure.

Tashjian et al.[23] sought to determine which patient-specific factors correlated with good or poor outcomes after rotator cuff repair. In a prospective cohort study of 112 patients, the authors obtained preoperative expectations by using 5 questions from the MODEMS questionnaire as well as patient satisfaction at an average 54-month follow-up. Significant correlations were found between increased patient satisfaction and marriage status, employment status, older age at the time of surgery (average 59 years old compared with 51), and greater preoperative expectations. In addition, patients who reported being disabled preoperatively were shown to have poorer satisfaction.[23]

Similarly, Kim et al.[24] sought to identify factors affecting outcomes and satisfaction of patients with recurrent rotator cuff tears. They administered PROs and a satisfaction survey, and evaluated the integrity of previously repaired rotator cuffs via ultrasound. Of the 180 patients enrolled in this study, 47 had evidence of a full-thickness retear on ultrasound. After stratifying their cohort by age, numerous variables—including satisfaction, American Shoulder and Elbow Surgeons, and SST scores—were found to be significantly lower in patients with retear compared with those with intact repairs. In addition, a worker's compensation claim and lower education level were significant predictors of poorer satisfaction.[24] This study contradicts the finding that patients do well regardless of repair integrity, which has been shown by several authors, including the senior author.[25]

Although the aforementioned clinical studies aimed to gain a better understanding of factors influencing clinical outcomes and satisfaction, the authors have reported contradictory findings in well-designed studies with regard to the relationship between PROs/satisfaction and rotator cuff repair integrity. Slabaugh et al.[26] conducted a systematic review to address this controversial topic in 2010. The authors included 13 studies with an imaging component to evaluate repair integrity and reported a statistically significant improvement in Constant Score in 6 of 9 studies and University of California, Los Angeles score in 1 of 2 studies in patients with intact repairs; however, the remaining PROs (American Shoulder and Elbow Surgeons and SST) showed no significant difference. Importantly, 3 of the included studies evaluated patient satisfaction, with only a single publication reporting a significantly greater satisfaction score in those with intact repairs. In addition, in their meta-analysis of Level I and Level II studies including 861 patients, Russell and colleagues[27] reported that structural integrity of rotator cuff repair did not correlate with clinically significant differences in PROs, objective strength measurements, or satisfaction. Furthermore, in a randomized controlled trial of 160 patients treated with physiotherapy (PT) only, or acromioplasty and PT, or rotator cuff repair, acromioplasty, and PT, Kukkonen et al.[28] reported no significant difference in clinical outcomes or satisfaction at 2 years. This is in contrast to Sugaya and colleagues,[29] who reported that patients with massive tears more frequently have retears and subsequently reported inferior satisfaction scores and clinical outcomes. Clearly, more work needs to be done to further define patient-, injury-, and treatment-specific factors influencing outcomes and satisfaction, especially in patients treated operatively. Although this topic remains controversial, it shows the variability in patients' desired functional status and expectations for outcomes. Patients who desire a higher level of activity may in turn report lower PROs and satisfaction as they become functionally limited by degradation of their repair, whereas a less active individual may be able to perform all activities of daily living regardless of repair integrity and report a good outcome as a result. Oh and colleagues[30] have previously reported that those with evidence of retear at 1 year on computed tomography arthrography were of older age (63.7 years compared with 58.4 years; $P < .001$) but that older patients exhibited a better functional improvement in Constant Score ($P = .009$).

Discussion

Although this evidence is important for treating providers to be aware of when counseling patients, the approach to counseling should be patient specific. It is essential to understand and address patients' individual concerns and goals for treatment. Patients often present to orthopaedic surgeons with limited knowledge regarding their injury and management options. Information is often obtained from the internet, frequently through sources with low-quality, difficult-to-understand content leading to misconceptions and confusion by patients. Many patients find it challenging to retain much of what they hear at physicians' offices as the mix of foreign medical terms and seriousness of discussions involving surgery can be anxiety provoking and overwhelming. The use of multimedia applications including targeted videos can be excellent augmentation resources to improve patient understanding and ultimately set realistic expectations for management and improve satisfaction with care.[31]

Conclusions

Many factors affect patient satisfaction after rotator cuff surgery. Large rotator cuff tears, subscapularis tears, persistence of postoperative pain and dysfunction, worker's compensation cases, lower education level, and preoperative disability are more frequently seen in patients reporting poor satisfaction.

Comparatively, being married, employed, and of older age at the time of surgery (>55 years old) predicts higher satisfaction. Patient education preoperatively regarding details about the surgery and the postoperative plan both immediately after the procedure and for the rehabilitation period are critical in helping set patients' preoperative expectations that have a known effect on patients' subjective clinical outcomes.

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