Expectations of Shoulder Surgery Are Not Altered by Surgeon Counseling of the Patient

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Joints 2017;5:133–137.

Abstract

Purpose The primary objective of this study was to evaluate if the current mechanisms of preoperative counseling influence patients' expectations of shoulder surgery.

Methods Patients were asked to complete the Hospital for Special Surgery's (HSS) Shoulder Surgery Expectations Survey. The first survey was completed before the first appointment with one of four fellowship-trained shoulder surgeons. The second survey was completed after patients consented for surgery. Our analysis also included patient demographics and surgical factors.

Results A total of 41 patients completed the HSS Shoulder Surgery Expectations Survey before and after their first appointment with the surgeon during which they consented to shoulder surgery. Before seeing the surgeon, the mean HSS Shoulder Surgery Expectations score was 72.5. After seeing the surgeon and being consented for surgery, the mean HSS Shoulder Surgery Expectations score was 74.8. The mean change in HSS Shoulder Surgery Expectations score (+2.3) was not statistically significant (p value = 0.242). We did not find any significant correlations between patients' expectations and demographics or surgical factors. Total HSS Shoulder Surgery Expectations scores and change in scores were not statistically different between the four surgeons ($p = 0.146$).

Conclusion Patient expectations were not substantially altered after preoperative counseling. Further investigation is necessary to investigate factors correlated with expectations, the implication of unaltered expectations on the postoperative outcome, and methods for improving the preoperative counseling process.

Level of Evidence Level II, prospective cohort study.

Keywords

- expectations of surgery
- preoperative counseling
- patient recall
- patient comprehension
- patient satisfaction
- patient education

Introduction

There is increasing evidence supporting the association between patient expectations of shoulder surgery and outcomes of treatment. Expectations of surgery vary by demographics, diagnosis, functional status, and reason for seeking treatment.[1–4] Investigators have shown a positive association between greater preoperative expectations and self-assessed postoperative outcome.[3,5,6] One study[7] comparing physicians' and patients' expectations of knee pain and function after surgery found that physicians were more accurate at predicting pain and function, and expectations varied significantly between patients and physicians, indicating a lack of effective communication in preoperative patient counseling.

Qualitative research[8] shows expectations for recovery after musculoskeletal injury are formulated based on physician

published online
August 11, 2017

DOI https://doi.org/10.1055/s-0037-1605585.
ISSN 2282-4324.

diagnosis and treatment, prior experiences with injury, others' experiences and attitudes, information from the Internet, and a sense of self-resilience. These factors are not mutually exclusive, and further investigation is necessary to determine the relative importance of each. Patient satisfaction is correlated with met expectations, particularly regarding information and explanation of medical condition and treatment.[9,10] Conversely, patients are dissatisfied when they perceive a lack of information, whether the perception is accurate, or not.[11] While the implications of preoperative patient expectations have been evaluated, the effect of preoperative physician counseling on patients' expectations of shoulder surgery remains unknown. One of the primary roles of the surgeon during preoperative counseling is to explain the risks and benefits of surgery as well as to manage expectations. The purpose of this study was to determine whether the current mechanisms of preoperative counseling by the surgeon influence patients' expectations of shoulder surgery. We hypothesized that patient expectations of surgery would be unaffected by surgeon counseling.

Methods

After institutional board review approval, from March to April 2014, patients at a single institution were asked to complete two surveys regarding their expectations of shoulder surgery. Patients who completed the entirety of both surveys and who were consented for shoulder surgery met the inclusion criteria. The first survey was completed before the first ("new" patient) appointment with one of four fellowship-trained shoulder surgeons. The second survey was completed after patients were consented for surgery and during the surgical scheduling process. Patients with incomplete surveys and those who had previously been seen by a shoulder surgeon were excluded. While consent forms were standardized, there was no specific standardization in preoperative counseling between surgeons during the investigation. This methodology was selected as the optimal way to study the current clinical practice at our institution.

The Hospital for Special Surgery's (HSS) Shoulder Surgery Expectations Survey was used to measure preoperative expectations.[1] The 17-item questionnaire is a validated and reproducible tool used to evaluate expectations regarding physical and psychosocial function in addition to symptom relief.[1] The 17 statements regarding different expectations of shoulder surgery were rated as "very important," "somewhat important," "a little important," "I do not expect this," or "this does not apply to me." Scores were documented for each of the 17 items in addition to the cumulative score. Scores range from 0 to 100, with 100 indicating the greatest expectations.

In addition to data regarding preoperative expectations of shoulder surgery, our analysis also included patient demographics, body mass index (BMI), patient-reported comorbidities, previous shoulder surgeries, diagnosis, type of surgery the patient was consented for (arthroplasty versus arthroscopic versus open nonarthroplasty), preoperative active range of motion, and patient-reported outcomes (PROs). The PROs used were American Shoulder and Elbow Surgeons (ASES) score, the visual analog score for pain (VAS), Single Assessment Number Evaluation (SANE), Simple Shoulder Test (SST), and the Veterans RAND 12 Item Health Survey (VR-12). The subjective ASES score measures shoulder comfort and function on a scale of 0 to 100, with 100 being the highest score.[12] The VAS pain score was recorded when patients were asked: "How bad is your pain today?" Responses could range from 0 to 10 with 0 being "no pain at all" and 10 being "pain as bad as it could be." The SANE is an outcomes measure in which patients answer the question, "How would you rate your shoulder today as a percentage of being normal (0–100% scale with 100% being normal)?"[13] The SST is a 12-question survey that measures comfort and physical function of the shoulder.[14] The VR-12 is a health-related quality of life assessment in which patients answer questions related to eight domains of physical and mental health. A composite score is generated, which can be compared with the mean U.S. population score of 50.[15]

Statistical Analysis

For continuous variables, an absolute skewness less than 2 and an absolute kurtosis less than 12 was used to define data as normally distributed and appropriate for parametric testing.[16] As all continuous data in this analysis was normally distributed, mean and standard deviation (SD) for descriptive statistics. A paired *t*-test was performed to analyze the mean expectations scores pre- and postvisit with the surgeon. Student's *t*-test and Pearson's correlation were used detecting associations between patients' expectations and age, gender, BMI, the number of comorbidities, marital status, employment status, mechanism of injury, duration of symptoms, type of surgery scheduled, the surgeon performing the counseling, preoperative range of motion, and PROs. To confirm findings of the univariate analysis, multivariate linear regression including only significant variables in univariate analysis was performed for identifying predictors of precounseling expectations. All statistical tests were performed using R 3.2.3 (R Foundation for Statistical Computing, Vienna, Austria).

Results

A total of 41 patients completed the HSS Shoulder Surgery Expectations Survey before and after their appointment with the physician and were consented for shoulder surgery. The mean age was 57.9 years (SD: 12.6). Women comprised 41.5% (17 of 41 patients) of the study group. The mean patient BMI was 31.2 (SD: 6.05). Patients self-reported an average of 2.6 medical comorbidities (SD: 1.9) (►**Table 1**). Out of 41 patients, 10 patients (24.4%) had a disability, lawsuit, or workman's compensation claim related to their shoulder injury. Nine patients (22.0%) had a previous shoulder surgery, five of which were on the ipsilateral side. Eight patients (19.5%) consented for arthroplasty, 31 patients (75.6%) consented for arthroscopic surgery, and 2 patients (4.9%) consented for open, nonarthroplasty surgery.

Table 1 Patient demographics

Measure	Total cohort ($n = 41$)	SD	Association with pre-counseling Expectations		Association with change in Expectations with counseling	
			Statistic	p Value	Statistic	p Value
Age (y)	57.9	12.6	$R = -0.24$	0.13	R = 0.04	0.81
Female	17 (41.5%)	–	Mean: 66.0	0.04	Mean: 7.3	0.03
Male	24 (58.5%)	–	Mean: 77.1		Mean: −1.3	
BMI	31.2	6.1	$R = -0.08$	0.63	$R = 0.07$	0.64
No. of self-reported comorbidities	2.6	1.9	$R = -0.27$	0.09	$R = 0.06$	0.72
Traumatic injury	28 (68.3%)	–	Mean: 79.2	< 0.001	Mean: 1.7	0.63
Atraumatic injury	13 (31.7%)	–	Mean: 58.1		Mean: 3.7	
Arthroplasty	13 (31.7%)	–	Mean: 59.7	0.02	Mean: 2.5	0.96
Nonarthroplasty	28 (68.3%)	–	Mean: 75.6		Mean: 2.2	

Abbreviations: Expectations Score, Hospital for Special Surgery's Shoulder Surgery Expectations Survey Score; *n*, number of patients; R, Pearson's correlation coefficient; SD, standard deviation.

The mean ASES score was 40.2 (SD: 20.1). Patients reported a mean VAS pain score of 5.5 (SD: 2.7). The mean SANE score was 33.5 (SD: 27.8). The mean number of "yes" responses on the SST was 3.9 (SD: 2.9). Mean VR-12 mental and physical component scores were 55.3 (SD: 10.4) and 37.7 (SD: 8.1), respectively. Patients achieved a mean preoperative active forward elevation of 120 degrees (SD: 43.1 degrees) and a mean preoperative active external rotation of 42 degrees (SD: 23.3 degrees) (►**Table 2**).

Before seeing the surgeon, the mean HSS Shoulder Surgery Expectations score was 72.5 (SD: 17.0). After seeing the surgeon and being consented for surgery, the mean HSS Shoulder Surgery Expectations score was 74.8 (SD: 17.0). The mean change in HSS Shoulder Surgery Expectations score (+2.3; SD: 12.3) was not statistically significant (p value = 0.242; ►**Table 3**) for all comers. Patients with traumatic injuries leading to shoulder surgery and those undergoing nonarthroplasty surgeries had higher expectations before counseling (►**Table 1**). Higher precounseling expectations were also associated with worse shoulder function as determined by the ASES, VAS pain score, and SST functional scores (►**Table 2**). Also, females had lower precounseling HSS Shoulder Surgery Expectations score (►**Table 1**) with a significant increase in expectations after counseling (66.0 vs. 73.2; $p = 0.01$). Multivariate analysis found that only a traumatic injury (B = 25.9; $p = 0.003$) was independently associated with precounseling expectations. Total HSS Shoulder Surgery Expectations scores and the change in scores were not statistically different between the four surgeons ($p = 0.146$; ►**Table 4**).

Table 2 Patient preoperative outcomes measures

Measure	Mean	Range	SD	Association with pre-counseling Expectations Score		Association with change in Expectations Score with counseling	
				Correlation (R)	p Value	Correlation (R)	p Value
ASES	40.2	3.3–81.7	20.1	−0.47	0.01	0.08	0.70
VAS pain	5.5	0.0–10.0	2.7	0.37	0.03	−0.10	0.57
SANE	33.5	0.0–90.0	27.7	−0.16	0.32	0.10	0.53
SST (mean "yes" responses)	3.9	0.0–11.0	2.9	−0.34	0.03	−0.25	0.12
VR-12 M	55.3	33.4–69.7	10.4	−0.16	0.32	−0.24	0.13
VR-12 P	37.7	25.9–59.8	8.1	−0.15	0.36	−0.10	0.55
AFE	120 degrees	30–175 degrees	43.1	−0.14	0.38	−0.09	0.58
AER	42 degrees	−10 to 70 degrees	23.3	0.11	0.51	0.02	0.90

Abbreviations: AER, active external rotation; AFE, active forward elevation; ASES, American Shoulder and Elbow Surgeons Score; Expectations Score, Hospital for Special Surgery's Shoulder Surgery Expectations Survey Score; R, Pearson's correlation coefficient; SANE, Single Assessment Number Evaluation; SD, standard deviation; SST, Simple Shoulder Test; VAS, visual analog score for pain; VR-12 M, Veterans RAND 12 Item Health Survey Mental Component; VR-12 P, Veterans RAND 12 Item Health Survey Physical Component.

Table 3 Expectations Score pre- and postappointment with surgeon

Expectations Score	Mean	Range	SD	*p* Value	95% CI
Preappointment	72.5	33.8–100.0	17.0	–	67.3–77.7
Postappointment	74.8	31.3–100.0	17.7	–	69.4–80.2
Difference	−2.3	−28.8 to 27.5	12.3	0.242	−6.2 to 1.6

Abbreviations: CI, confidence interval; Expectations Score, Hospital for Special Surgery's Shoulder Surgery Expectations Score; SD, standard deviation.

Discussion

Baseline patient expectations were not substantially altered by preoperative counseling with a shoulder surgeon. Specific demographic or operative factors were not associated with a change in expectations before and after visiting the surgeon. These findings suggest that our current methods of preoperative counseling do not substantially influence patients' expectations of shoulder surgery and, when necessary, alternative strategies may be required to modify patient expectations of surgery.

The literature does show that patient comprehension, and recall of risks, benefits, and complications of surgery are limited in orthopedic patients. Hutson et al[17] have shown that immediately after the preoperative discussion of total joint arthroplasty, only 66% of patients recalled the potential benefit of relief of pain, 53% the benefits of improved function, and 24% recalled discussion of the potential benefit of increased range of motion. Similarly, Sandberg et al[18] assessed information recall in healthy volunteers who were questioned immediately after viewing a 5-minute video about the preoperative discussion of anesthesia. Immediately following the video, subjects were only able to recall 25% of the information spontaneously. It is plausible that poor patient recall of the risks, benefits, and complications of surgery may also underscore the ineffectiveness of the preoperative counseling process on changing expectations. It is unclear whether improving patient recall after counseling would alter patient expectations of the surgical procedure.

Since patient comprehension and recall of information discussed preoperatively is limited and since our current methods of counseling do not seem to influence patient expectations, clinicians should consider implementing techniques to enhance the process. One way to improve understanding of preoperative education and counseling is the use of multimedia tools. Patients undergoing orthopedic surgery who used multimedia tools as adjuncts to routine preoperative counseling felt more informed and performed higher on postoperative assessments, even when the multimedia tool did not provide any more information than what was routinely covered in the preoperative discussion.[19–21]

Table 4 Expectations Score scores by surgeon

	Mean previsit score	Mean postvisit score	Difference	*p* Value[a]
Surgeon 1	70.6	71.7	1.1	0.880
Surgeon 2	74.2	79.4	5.2	0.365
Surgeon 3	73.3	79.6	6.3	0.453
Surgeon 4	70.3	66.3	−4.0	0.659
p Value[b]	0.698	0.224	0.146	

Abbreviation: Expectations Score, Hospital for Special Surgery's Shoulder Surgery Expectations Score.
[a]Two-tailed *t*-test.
[b]One way analysis of variance comparison of delta score.

The present study focused on how preoperative counseling influences patients' expectations of shoulder surgery. The lack of difference in expectations could indicate that preoperative counseling does not substantially alter expectations. Many patients are referred by other physicians who may have already discussed certain aspects of surgery and contributed to the formation of the patient's expectations. Alternately, patients frequently use the Internet to obtain medical information and may have performed their research on their condition and options for treatment. Whether or not the information obtained is accurate is unknown, but regardless of accuracy, it may shape patients' expectations before meeting the surgeon. Another possible explanation for the lack of difference in expectations is that our current methods of preoperative education and counseling are inadequate. As evidenced in the studies mentioned above, patients do not sufficiently recall much of what is discussed preoperatively, even immediately after the preoperative discussion. This indicates the presence of a communication barrier between surgeons and patients that need to be addressed. The use of multimedia tools to enhance understanding of risks, benefits, and complications may be a promising solution. Also, asking patients what they already know about their condition and where they obtained the information may provide further insight and allow for management of expectations on an individual basis. Given that unrealistic expectations or unfulfilled expectations can result in poor patient satisfaction with outcome, methods to effectively manage preoperative expectations may have considerable value. Despite this, it remains unclear whether, in our cohort, alteration in patient's expectations preoperatively would have influenced ultimate satisfaction with surgery.

This study has several limitations. A minimal clinically important difference for this scoring scale does not exist, but we believe that the maximum difference of 6.2 points from the 95% confidence interval is not a substantial change in expectations. Because of this, even though this study may be underpowered, we do not believe that the small differences in HSS

expectation score observed are clinically important. Also, patients received preoperative education and counseling from four different shoulder surgeons, which may have influenced expectations of surgery; however, this is reflective of a true clinical scenario. Based on prior research, level of education influences patient comprehension and recall, and lower levels of education correspond with low health literacy.[22–24] We did not investigate the influence of education level or socioeconomic status on alteration of expectations. We included an assessment of medical comorbidities but did not use a validated quantification, such as Charlson's comorbidity scores. We included multiple different diagnoses which could have influenced the expectations scores. Given that we were primarily evaluating a change in expectations, we do not believe that the inclusion of multiple diagnoses substantially influences the results. Finally, we do not have a method to determine whether patient's expectations of surgery were appropriate or inappropriate, so it is possible that patient's appropriate expectations of surgery were simply reinforced or minimally altered by the surgeon. Based on previous literature noting poor patient recall and comprehension during preoperative counseling, we believe this to be an unlikely explanation for our findings.

In this patient cohort, preoperative counseling did not affect patients' expectations of shoulder surgery, and there were no significant correlations between patients' expectations and demographic or surgical factors. Further investigation is required to identify factors that specifically influence patients' expectations, the impact of unaltered expectations on postoperative satisfaction, and methods for improving the preoperative education and counseling process.

Note

This study was performed at the Rothman Institute, Thomas Jefferson University Hospital, Philadelphia, Pennsylvania, United States. Institutional review board approval number is #12D.233.

Conflict of Interest

None.

References

1 Mancuso CA, Altchek DW, Craig EV, et al. Patients' expectations of shoulder surgery. J Shoulder Elbow Surg 2002;11(06):541–549
2 Henn RF III, Ghomrawi H, Rutledge JR, Mazumdar M, Mancuso CA, Marx RG. Preoperative patient expectations of total shoulder arthroplasty. J Bone Joint Surg Am 2011;93(22):2110–2115
3 Mondloch MV, Cole DC, Frank JW. Does how you do depend on how you think you'll do? A systematic review of the evidence for a relation between patients' recovery expectations and health outcomes. CMAJ 2001;165(02):174–179
4 Warth RJ, Briggs KK, Dornan GJ, Horan MP, Millett PJ. Patient expectations before arthroscopic shoulder surgery: correlation with patients' reasons for seeking treatment. J Shoulder Elbow Surg 2013;22(12):1676–1681
5 Henn RF III, Kang L, Tashjian RZ, Green A. Patients' preoperative expectations predict the outcome of rotator cuff repair. J Bone Joint Surg Am 2007;89(09):1913–1919
6 Mahomed NN, Liang MH, Cook EF, et al. The importance of patient expectations in predicting functional outcomes after total joint arthroplasty. J Rheumatol 2002;29(06):1273–1279
7 Rosenberger PH, Jokl P, Cameron A, Ickovics JR. Shared decision making, preoperative expectations, and postoperative reality: differences in physician and patient predictions and ratings of knee surgery outcomes. Arthroscopy 2005;21(05):562–569
8 Carroll LJ, Lis A, Weiser S, Torti J. How well do you expect to recover, and what does recovery mean, anyway? qualitative study of expectations after a musculoskeletal injury. Phys Ther 2016;96(06):797–807
9 Hageman MG, Briët JP, Bossen JK, Blok RD, Ring DC, Vranceanu AM. Do previsit expectations correlate with satisfaction of new patients presenting for evaluation with an orthopaedic surgical practice? Clin Orthop Relat Res 2015;473(02):716–721
10 Bible JE, Shau DN, Kay HF, Cheng JS, Aaronson OS, Devin CJ. Are low patient satisfaction scores always due to the provider? determinants of patient satisfaction scores during spine clinic visits. Spine 2016. Doi: 10.1097/BRS.0000000000001453
11 McGaughey I. Informed consent and knee arthroscopies: an evaluation of patient understanding and satisfaction. Knee 2004;11(03): 237–242
12 Richards RR, An KN, Bigliani LU, et al. A standardized method for the assessment of shoulder function. J Shoulder Elbow Surg 1994; 3(06):347–352
13 Williams GN, Gangel TJ, Arciero RA, Uhorchak JM, Taylor DC. Comparison of the Single Assessment Numeric Evaluation method and two shoulder rating scales. Outcomes measures after shoulder surgery. Am J Sports Med 1999;27(02):214–221
14 Lippitt S, Harryman D, Matsen F. A practical tool for evaluating function: the Simple Shoulder Test. The shoulder: a balance of mobility and stability. Rosemont, IL: American Academy of Orthopaedic Surgeons; 1993:501–518
15 Selim AJ, Rogers W, Fleishman JA, et al. Updated U.S. population standard for the Veterans RAND 12-item Health Survey (VR-12). Qual Life Res 2009;18(01):43–52
16 West SG, Finch JF, Curran PJ. Structural equation models with nonnormal variables: problems and remedies. In: Hoyle RH, ed. Structural Equation Modeling: Concepts, Issues and Applications. Newbury Park, CA: Sage; 1995:56–75
17 Hutson MM, Blaha JD. Patients' recall of preoperative instruction for informed consent for an operation. J Bone Joint Surg Am 1991; 73(02):160–162
18 Sandberg EH, Sharma R, Sandberg WS. Deficits in retention for verbally presented medical information. Anesthesiology 2012; 117(04):772–779
19 Hoppe DJ, Denkers M, Hoppe FM, Wong IH. The use of video before arthroscopic shoulder surgery to enhance patient recall and satisfaction: a randomized-controlled study. J Shoulder Elbow Surg 2014;23(06):e134–e139
20 Yin B, Goldsmith L, Gambardella R. Web- based education prior to knee arthroscopy enhances informed consent and patient knowledge recall: a prospective, randomized controlled study. J Bone Joint Surg Am 2015;97(12):964–971
21 Cornoiu A, Beischer AD, Donnan L, Graves S, de Steiger R. Multimedia patient education to assist the informed consent process for knee arthroscopy. ANZ J Surg 2011;81(03):176–180
22 Kadakia RJ, Tsahakis JM, Issar NM, et al. Health literacy in an orthopedic trauma patient population: a cross-sectional survey of patient comprehension. J Orthop Trauma 2013;27(08):467–471
23 Sahin N, Oztürk A, Ozkan Y, Demirhan Erdemir A. What do patients recall from informed consent given before orthopedic surgery? Acta Orthop Traumatol Turc 2010;44(06):469–475
24 Paasche-Orlow MK, Parker RM, Gazmararian JA, Nielsen-Bohlman LT, Rudd RR. The prevalence of limited health literacy. J Gen Intern Med 2005;20(02):175–184