Early Postoperative Predictors of Two-Year Satisfaction after Ream and Run Arthroplasty

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Introduction: Treatment of rotator cuff-intact glenohumeral arthritis in the young, active patient continues to be a challenge. Hemiarthroplasty with concentric glenoid reaming (ream-and-run arthroplasty) allows for unrestricted activity but is associated with a longer post-operative rehabilitation and a higher early revision rate. Improvement can continue up to 2 years after surgery, but some patients may remain unsatisfied with the results of the procedure at later time points. It is uncertain whether patients' early clinical course (pain levels, ability to sleep) after ream-and-run arthroplasty may be prognostic of ultimate outcome. Such information may help counsel patients on prognosis after surgery.

The objective of this study was to determine if there are early postoperative predictors of 2-year satisfaction after ream-and-run arthroplasty.

Materials and Methods: This study included 375 patients who underwent ream-and-run arthroplasty with minimum 2-year follow-up. Baseline patient and shoulder characteristics were collected as were Simple Shoulder Test (SST) scores at preoperative and regular postoperative intervals (6 weeks, 3 months, 6 months, 1 year). Satisfaction was assessed at 2 years using a 7-point Likert scale. We specifically examined responses to the SST question 1 ("is your shoulder comfortable at rest?") and SST question 2 ("does your shoulder allow you to sleep comfortably at night?") at early time intervals (3 months and 6 months postoperatively) in patients that were and were not satisfied at 24 months. Positive and negative predictive values (PPV and NPV) were calculated. A multivariable binomial logistic regression was performed to determine the baseline characteristics and early postoperative responses that were predictive of 2-year satisfaction.

Results:

PPV/NPV of comfort at rest and sleep: The PPV of SST-1 (comfort at rest) was nearly 80% at every time point, and the NPV of SST-1 reached 80% at 3 months. The PPV of SST-2 (comfort with sleep) was greater than 80% at every postoperative time point, while the NPV rose to 51% at 6 months and 64% at 12 months (Figure 1).

Multivariable logistic regression: multivariable analysis of baseline patient and shoulder characteristics as well as 3 and 6 month responses to SST-1 and SST2 revealed that male sex (OR 6.03, 95% CI 2.12-17.16, p<0.001), a positive response to SST-1 (shoulder comfortable at rest) at 3 months (OR 5.74, 95% CI 1.14-28.98, p=0.035), and a positive response to SST-2 (ability to sleep comfortably at night) at 6 months (OR 5.37, 95% CI 2.47-11.68, p<0.001) were significantly associated with satisfaction at 2 years (Table 1).

Discussion: Shoulder comfort at rest at 3 months and shoulder comfort with sleep at 6 months are independent predictors of 2-year satisfaction after ream-and-run arthroplasty. In particular, the ability to sleep comfortably at 6 months postoperatively was a strong predictor of the patient being satisfied at 2-years. This data can be considered in determining prognosis for patients in the early recovery after ream-and-run arthroplasty.

Figure 1: Positive (above) and negative (below) predictive value of SST-1 response (comfort with sleep) and SST-2 response (comfort with sleep) for 2-year satisfaction.
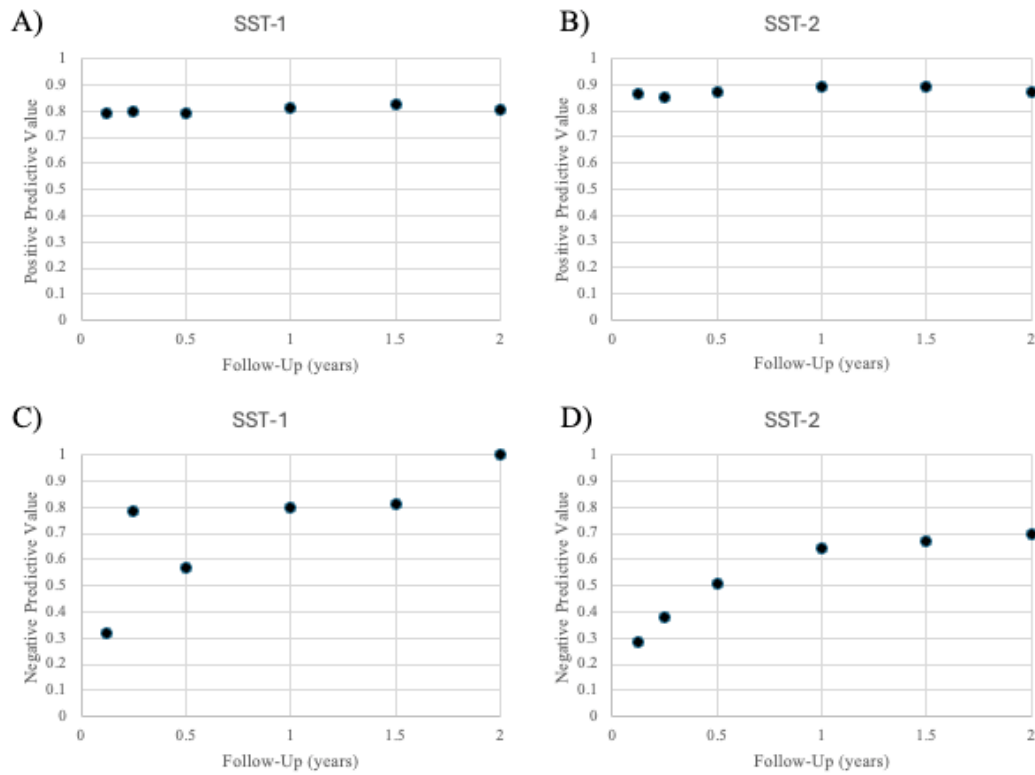

Table 1: Multivariable analysis of baseline characteristics and early postoperative responses to SST1/2 with 2-year satisfaction

Variables	OR	95% CI		p-value
		Lower	Upper	
Age	0.98	0.95	1.02	0.252
Sex (male)	6.03	2.12	17.16	<0.001*
Diabetes	0.41	0.10	1.73	0.227
Tobacco, active use	0.45	0.12	1.71	0.242
Alcohol	1.02	0.51	2.03	0.959
Narcotic use	1.22	0.49	3.02	0.664
SST-1 3mo	5.74	1.14	28.98	0.035*
SST-2 3mo	1.45	0.70	3.03	0.322
SST-1 6mo	0.87	0.21	3.66	0.844
SST-2 6mo	5.37	2.47	11.68	<0.001*

* denotes significance, p<0.05