

Correlates of Patient Satisfaction and Provider Trust After Breast-conserving Surgery

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Funded by the Robert Wood Johnson Foundation through the Robert Wood Johnson Clinical Scholars Program at the University of Michigan.

We thank Gretchen Miela and the University of Michigan Cancer Center Registry for their assistance in data collection.

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Received June 21, 2007; revision received September 21, 2007; accepted October 1, 2007.

BACKGROUND. Although breast-conserving therapy (BCS) is considered the standard of care for early-stage breast cancer, up to 20% of patients are dissatisfied. The effect of treatment-related factors on patient satisfaction with their health-care experiences is unclear.

METHODS. All BCS patients at the University of Michigan Medical Center who were treated between January 2002 and May 2006 were surveyed (n = 714; response rate, 79.5%). Patients were queried regarding 4 aspects of their decision for surgery: satisfaction with the decision, decision regret, decisional conflict, and trust in surgeons. Independent variables included the number of re-excisions, the occurrence of postoperative complications, and postoperative breast appearance, which was assessed by using the Breast Cancer Treatment and Outcomes scale. Multiple logistic regression was used to assess the effect of the independent variables on each outcome controlling for demographic and clinical characteristics.

RESULTS. Breast asymmetry after BCS was correlated significantly with patient satisfaction with their treatment experiences and patient distrust in surgeons. Women who reported pronounced asymmetry were significantly less likely to be satisfied with the decision for surgery compared with women who reported minimal asymmetry (odds ratio [OR], 0.43; 95% confidence interval [95% CI], 0.21–0.89). Women with pronounced asymmetry were less likely to be certain about their surgical decision (OR, 0.36; 95% CI, 0.21–0.60) and to believe that they were prepared to make the decision for surgery (OR, 0.25; 95% CI, 0.14–0.43). Increasing breast asymmetry was associated with higher surgeon distrust scores (2.14 vs 2.30 vs 2.35; $P = .04$) and with the occurrence of postoperative complications (distrust score: 2.23 vs 2.35; $P = .03$). Reoperation after BCS was not associated with patient satisfaction or trust in providers.

CONCLUSIONS. Esthetic result after BCS was associated more profoundly with aspects of satisfaction than either surgical therapy or the occurrence of postoperative complications. The current findings indicated that surgeons who care for patients with breast cancer should identify the women at an increased risk for breast asymmetry preoperatively to effectively address their expectations of treatment outcomes. *Cancer* 2008;112:1679–87. © 2008 American Cancer Society.

KEYWORDS: breast cancer, surgery, patient satisfaction, patient-provider interaction, esthetic outcome.

Recent healthcare policy has focused increasingly on developing appropriate measures of quality for breast cancer care. For patients with breast cancer, patient-centered outcomes, such as satisfaction with care, are important indicators of quality. Many patients have a choice between mastectomy and breast-conserving surgery (BCS), and the long-term survival after surgery is excellent.¹ Therefore, understanding the factors related to patient satisfaction with care is paramount to optimizing healthcare for these patients.

It often is assumed that choosing BCS will lead to increasing patient satisfaction, because mastectomy is associated with more disfigurement and morbidity compared with lumpectomy.^{2,3} However, recent literature suggests that other aspects of care during consultation are more important than the type of surgery alone. These include patient involvement in the decision for surgery, surgeon specialization in breast surgery, and access to informational materials.⁴⁻⁶ However, much less is known regarding the effect of treatment-related outcomes on patient satisfaction. For example, approximately 50% of women will require re-excision lumpectomy, and postoperative asymmetry is common.⁷⁻¹¹ The occurrence of postoperative complications can increase the cost and morbidity associated with care and can delay the initiation of adjuvant therapy. Therefore, a more thorough understanding of the effects of postoperative outcomes after BCS on patient satisfaction with care can inform strategies to improve the quality of breast cancer care. To study this issue, we surveyed women undergoing BCS at our institution to evaluate the effect of 1) esthetic outcome, 2) need for re-excision or mastectomy after BCS, and 3) occurrence of postoperative complications on patient satisfaction with the treatment experience and patient trust in providers.

MATERIALS AND METHODS

Study Population

Patients who underwent BCS between January 2002 and May 2006 at the University of Michigan Medical Center for a diagnosis of breast cancer were identified for the study ($n = 898$). All women in this sample underwent their cancer surgery at the University of Michigan. Patients at this center are evaluated in a multidisciplinary clinic and receive both an educational video and written materials regarding surgical treatment, chemotherapy, and radiotherapy for breast cancer. Patients were mailed a survey using the Dillman method along with a small cash incentive.^{12,13} Of the eligible patients, 714 responded to the survey (response rate, 79.5%). The study protocol was approved by the Institutional Review Board at the University of Michigan.

Dependent Variables

We selected 4 measures of patient satisfaction with their treatment experience: satisfaction with the decision for surgery, regret with the decision for surgery, conflict with the decision for surgery, and patient trust in physicians. To measure satisfaction with the decision for surgery, we used items from the

Holmes-Rovner Satisfaction with Decision Making Scale,¹⁴ which developed to measure satisfaction with healthcare decisions in the context of postmenopausal hormone-replacement therapy decisions. The 6-item scale has excellent reliability (Cronbach α , .86) and has been used extensively to evaluate satisfaction with the decision for breast cancer surgery.^{4,6,14-16} To measure decisional regret after the decision for surgery, we used items from the Decision Regret Scale.¹⁷ This 5-item scale has excellent reliability (Cronbach α , .81-0.92) and is well correlated with decision satisfaction, decisional conflict, and overall rated quality of life. Decisional conflict was measured by using a 15-item Decisional Conflict scale,¹⁸ which was developed to understand uncertainty and regret among patients making healthcare decisions. The items included in this scale are reliable (Cronbach α , .81), and the scale is modified easily for use in the breast cancer patient population. Along this scale, 3 subsets are identified: certainty with the decision for surgery, feeling equipped to make the decision for surgery, and feeling effective in the decision-making process. In addition, patient trust in providers was measured by using an 11-item scale,¹⁹ the Hall Trust in Physicians Scale, which was developed to measure patient trust in physicians. This instrument has been used previously in rheumatoid arthritis patients and general internal medicine ambulatory patients with excellent reliability (Cronbach α , .89).

All items were answered on a 5-point Likert scale (strongly agree to strongly disagree) to measure the patient's level of agreement with each statement. For each of the domains of patient satisfaction detailed above, scales were created by averaging responses to generate a response score. Then, scores were dichotomized: Scores ≥ 4 were categorized as satisfied, and scores < 4 were categorized as dissatisfied.

Independent Variables

The independent variables of interest included the following: 1) breast asymmetry, 2) the need for re-excision or mastectomy after initial BCS attempt, and 3) the occurrence of postoperative complications. Postoperative breast asymmetry was assessed by patient response to items from the Breast Cancer Treatment and Outcomes Survey.²⁰ Patients also were asked to rate differences in breast skin color. Answers to each item were rated on a 4-point scale (1, no difference between breasts; 2, slight difference between breasts; 3, moderate difference between breasts; and 4, large difference between breasts). Responses were summed to generate an overall asymmetry score. Response scores were categorized into 3 groups:

minimal asymmetry (scores ≤ 15), moderate asymmetry (scores from 15 to 20), and high asymmetry (scores >20).

Information regarding surgical procedure was obtained from a review of the medical record. Re-excision lumpectomy was classified as any further operation after either an excisional biopsy or lumpectomy or if it was recorded as a re-excision lumpectomy in the surgical report. Information concerning the receipt of axillary lymph node dissection (ALND) and of neoadjuvant chemotherapy administration was obtained by patient report. Procedures that were performed for immediate postoperative complications, such as hematoma or seroma evacuation, were not included in this definition. Information on the occurrence of postoperative complications (bleeding, wound complications requiring return to the operating room, thromboembolic phenomena, infection requiring antibiotic therapy, and seroma) was obtained by patient report in the mailed survey and was confirmed by medical record review.

Tumor stage also was included in this analysis based on the sixth edition of the *American Joint Commission on Cancer Coding and Staging Manual* and was obtained by report to the University of Michigan Cancer Registry. Women who were treated before January 1, 2003 were staged according to the fifth edition of the *American Joint Commission on Cancer Coding and Staging Manual*. Information on the receipt of radiotherapy was obtained by patient report on the mailed survey. Patient demographic information (age at the time of diagnosis, time from surgery in years, ethnicity, marital status, and level of education) was self-reported.

Statistical Analysis

We used descriptive statistics to display the characteristics of the patient sample. For 3 of our outcomes, satisfaction with the decision for surgery, decisional regret, and decisional conflict, patient scores were highly skewed toward increased satisfaction. Therefore, we dichotomized response scores for these outcomes, with scores ≤ 2 categorized as satisfied and scores ≥ 2.1 categorized as dissatisfied. Scores of patient trust were distributed normally; therefore, we elected to analyze these responses on a continuous scale. We tested the correlations between each dependent variable and each independent variable by using chi-square tests and Student *t* tests to generate univariate statistics. Then, we used logistic regression to generate odds ratios to determine the correlation between our independent variables and our outcomes of patient satisfaction after including

TABLE 1
Demographic Characteristics of the Study Population

Characteristic	No. of patients	%
Race		
Caucasian	626	90.3
African American	37	5.3
Other	30	4.3
Education		
High school or less	153	22.7
Some college	227	33.7
College graduates or beyond	293	43.5
Marital status		
Married or partnered	514	74.1
Age, y		
≤ 40	64	10.1
41–50	177	27.8
51–60	219	34.4
61–70	112	17.6
≥ 71	65	10.2

the patient demographic variables (age, education, race, and marital status) and clinical variables (tumor stage, receipt of radiotherapy, timing of chemotherapy, receipt of ALND, and time from surgery received) in the model. We used linear regression to predict adjusted scores of patient trust after including the patient demographic variables (age, education, race, and marital status) and clinical variables (tumor stage, receipt of radiotherapy, timing of chemotherapy, receipt of ALND, and time from surgery received) in the model. All models were examined for multicollinearity. Second-order interactions were tested, but no significant interactions were observed. Wald tests were used to test for differences in group variables. All *P* values $<.05$ were considered statistically significant. All analyses were performed by using Stata release 9.0 (Stata Corp., College Station, Tex).

RESULTS

Table 1 lists the demographic characteristics of our study sample. The majority of women were Caucasian (90.3%), 77.2% of women had attended some college or were college graduates, 56.1% of the sample had annual incomes that exceeded \$60,000, and 74% were married. In addition, 10.1% of women were aged ≤ 40 years, 27.8% were aged 41 to 50 years, 34.4% were aged 51 to 60 years, 17.6% were aged 61 to 70 years, and 10.2% were aged ≥ 71 years.

Table 2 lists the clinical characteristics of the study patients. Of these patients, 44.9% underwent only 1 lumpectomy, 43.3% required 2 excisions, and 11.8% underwent 3 tumor excisions. Ultimately,

TABLE 2
Clinical Characteristics of the Study Population

Characteristic	No. of patients	%
Surgical therapy		
1 excision	316	44.9
2 excisions	305	43.3
≥3 excisions	83	11.8
Underwent mastectomy after lumpectomy	76	10.8
Received radiotherapy		
Yes	605	86.7
Disease stage		
In situ disease	150	21.3
I	327	46.5
II	190	27
III or IV	37	5.3
Postoperative complications		
Hemorrhage	25	3.7
Wound dehiscence	25	3.7
Thromboembolism	5	0.7
Infection	60	8.9
Seroma	92	13.6
Any complication	172	25
Breast asymmetry		
Minimal	247	35.9
Moderate	231	33.5
Pronounced	211	30.6
Time from surgery, y		
≤1	199	30.9
2–3	292	45.3
≥4	154	23.9
Underwent ALND		
No	418	78.4
Yes	115	21.6
Chemotherapy administration		
No chemotherapy or adjuvant chemotherapy	605	90.3
Neoadjuvant chemotherapy	65	9.7

ALND indicates axillary lymph node dissection.

10.8% of women underwent a mastectomy after an initial attempt at breast conservation. The majority of women in the sample (86.7%) underwent radiotherapy, and 67.8% had either carcinoma in situ or stage I disease. Overall, 24.3% of women reported experiencing a postoperative complication, and the most common complications reported were infection (13%) and seroma (14.2%). For the breast asymmetry variable, 35.9% of women reported minimal breast asymmetry, 33.5% reported moderate breast asymmetry, and 30.6% reported pronounced breast asymmetry.

Table 3 details the rates of satisfaction in the study sample. Overall, rates of satisfaction were high across each outcome, and few patients reported decisional regret. In this sample, 86.5% of patients reported satisfaction with the decision for surgery, and only 13.5% reported regret with their decision. For aspects of decisional conflict, 55.6% of women

TABLE 3
Satisfaction With the Decision for Surgery, Decisional Conflict, Decisional Regret, and Trust in Surgeons Among Women Undergoing Breast-conserving Surgery

Variable	No. of patients	%
The decision for surgery		
Satisfied	603	86.5
Dissatisfied	94	13.5
Conflict with the decision for surgery		
Certain with the decision for surgery		
Yes	384	55.7
No	307	44.3
Prepared for surgery decision		
Yes	426	61.56
No	266	38.44
Effective in decision-making		
Yes	608	87.11
No	90	12.89
Regret the decision for surgery		
Yes	602	86.49
No	94	13.51
Trust in surgeons		
Mean score		2.24

reported feeling certainty with the decision for surgery, 61.6% reported feeling prepared for the decision for surgery, and 87.1% reported feeling effective in the decision-making process. The mean surgeon distrust score in the sample was 2.24 (range, 1–4.8).

Tables 4 through 7 detail the association of breast asymmetry, the number of procedures, and the occurrence of postoperative complications and satisfaction with the treatment experience, controlling for clinical and demographic characteristics. There was a significant correlation between breast asymmetry and patient satisfaction with their treatment experiences and patient distrust in surgeons. Women who reported pronounced breast asymmetry were significantly less likely to be satisfied with the decision for surgery compared with women who reported minimal breast asymmetry (moderate asymmetry: odds ratio [OR], 0.74; 95% confidence interval [95%CI], 0.35–1.57; pronounced asymmetry: OR, 0.43; 95%CI, 0.21–0.89; Wald test, 5.81; $P = .06$) (Table 4). Other clinical and demographic variables were not correlated significantly with satisfaction with the decision for surgery.

Breast asymmetry also was correlated with aspects of decisional conflict in multivariate analysis (Table 5). Women with pronounced breast asymmetry were less likely to report feeling certain concerning the decision for surgery compared with women who experienced little breast asymmetry (moderate asymmetry: OR, 0.57; 95%CI, 0.34–0.94; pronounced asymmetry: OR, 0.36; 95%CI, 0.21–0.60; Wald test,

TABLE 4
Patient Satisfaction With the Decision to Undergo Surgery Among Women Undergoing Breast-conserving Surgery

Characteristic	Odds of satisfaction with the decision to undergo surgery (95%CI)
Demographic characteristics	
Race	
Caucasian*	—
African American	2.91 (0.34–24.9)
Other	1.71 (0.36–8.10)
Wald test	1.39 (<i>P</i> = .50)
Education	
High school or less	1.21 (0.54–2.72)
Some college	1.09 (0.57–2.07)
College graduates or beyond*	—
Wald test	0.22 (<i>P</i> = .90)
Marital status	
Married or partnered*	—
Not partnered	0.97 (0.49–1.90)
Age, y	
≤40	0.60 (0.23–1.56)
41–50	0.67 (0.34–1.35)
51–60*	—
61–70	1.54 (0.56–4.19)
≥71	0.57 (0.2–1.62)
Wald test	4.61 (<i>P</i> = .32)
Clinical characteristics	
No. of excisions	
1 excision*	—
2 excisions	0.97 (0.53–1.76)
Mastectomy	2.56 (0.75–8.66)
Wald test	2.53 (<i>P</i> = .28)
Breast asymmetry	
Minimal*	—
Moderate	0.74 (0.35–1.57)
Pronounced	0.43 (0.21–0.89)
Wald test	5.81 (<i>P</i> = .06)
Postoperative complication	
No*	—
Yes	1.0 (0.52–1.86)
Received radiotherapy	
Yes*	—
No	2.06 (0.68–6.23)
Disease stage	
In situ disease*	
I	1.44 (0.48–4.37)
II	0.97 (0.28–3.34)
III or IV	1.25 (0.24–6.35)
Wald test	1.27 (<i>P</i> = .74)
Time from surgery, y	
≤1*	—
2–3	0.91 (0.47–1.73)
≥4	1.0 (0.46–2.12)
Wald test	0.12 (<i>P</i> = .94)
Received ALND	
No*	—
Yes	1.12 (0.52–2.42)
Neoadjuvant chemotherapy	
No*	—
Yes	1.09 (0.44–2.64)

95% CI indicates 95% confidence interval; ALND, axillary lymph node dissection.

* Reference group.

15.1; *P* < .001), and they were less likely to report feeling prepared for the decision for surgery (moderate asymmetry: OR, 0.40; 95%CI, 0.23–0.69; pronounced asymmetry: OR, 0.25; 95%CI, 0.14–0.43; Wald test, 24.4; *P* < .009). Women with more pronounced breast asymmetry also were less likely to report feeling that they were effective in the decision-making process, although this trend did not reach statistical significance. In addition, women aged <40 years were less likely than women ages 51 to 60 years to be certain about their decision for surgery (OR, 0.37; 95%CI, 0.18–0.79).

Women who experienced pronounced breast asymmetry were more likely to experience regret with their decision for surgery compared with women who experienced minimal asymmetry (moderate asymmetry: OR, 2.27; 95%CI, 1.01–5.12; pronounced asymmetry: OR, 4.13; 95%CI, 1.85–9.19; Wald test, 12.41; *P* = .002) (Table 6). Breast asymmetry and the occurrence of postoperative complications also were correlated significantly with distrust of surgeons after controlling for other factors (Table 7).

Women with increasing breast asymmetry were more likely to report distrust of their surgeons compared with women who experienced little asymmetry (distrust scores: 2.14 vs 2.30 vs 2.35; *P* = .04), and women who experienced postoperative complications reported higher distrust scores compared with patients who did not (2.23 vs 2.35; *P* = .03). In addition, women who underwent ≥2 surgical excisions reported higher distrust scores compared with women who required only 1 excisions (2.36 vs 2.21; *P* = .05).

DISCUSSION

In our sample of women who underwent BCS, breast asymmetry and patient satisfaction with care were correlated significantly. Increasing breast asymmetry was correlated with patient-reported regret and dissatisfaction with the decision for surgery. Breast asymmetry also was correlated significantly with higher levels of decisional conflict. Overall, the occurrence of postoperative complications, the need for ≥2 surgical excisions, and postoperative breast asymmetry all were associated with increasing levels of patient distrust of surgeons.

Although it is clear that esthetic outcomes play an important role in the patient treatment experience, the mechanisms underlying this association are not well understood. Women with more breast asymmetry may believe that their expectations for surgery were not met. Patient satisfaction is highly dependent on the extent to which postoperative outcomes match preoperative expectations, and previous litera-

TABLE 5
Patient Satisfaction With Decision Making Among Women Undergoing Breast-conserving Surgery

	Conflict with the decision for surgery	Odds of feeling certain with the decision for surgery (95%CI)	Odds of feeling prepared for the decision for surgery (95%CI)	Odds of feeling effective in the decision making process (95%CI)
Demographic characteristics				
	Race			
	Caucasian*	—	—	—
	African American	0.78 (0.26–2.37)	1.64 (0.51–5.23)	*
	Other	1.06 (0.38–2.93)	0.79 (0.28–2.20)	1.75 (0.36–8.50)
	Wald test [P]	0.20 [.91]	0.90 [.64]	0.49 [.49]
	Education			
	High school or less	0.74 (0.42–1.29)	0.70 (0.39–1.25)	1.82 (0.75–4.41)
	Some college	1.17 (0.73–1.86)	0.82 (0.51–1.33)	1.44 (0.74–2.80)
	College graduates or beyond*	—	—	—
	Wald test [P]	2.39 [.30]	1.60 [.45]	2.28 [.32]
	Marital status			
	Married or partnered*	—	—	—
	Not partnered	0.71 (0.44–1.14)	0.64 (0.39–1.04)	0.80 (0.40–1.58)
	Age, y			
	≤40	0.37 (0.18–0.79)	0.72 (0.34–1.56)	0.62 (0.24–1.59)
	41–50	0.89 (0.54–1.49)	1.16 (0.68–1.99)	0.80 (0.40–1.63)
	51–60*	—	—	—
	61–70	0.96 (0.53–1.74)	0.71 (0.39–1.30)	1.79 (0.67–4.80)
	≥71	0.96 (0.45–2.04)	0.65 (0.30–1.41)	1.80 (0.48–6.83)
	Wald test	6.97 (P = 0.14)	4.01 (P = 0.40)	4.48 (P = 0.34)
Clinical characteristics				
No. of excisions	1 excision*	—	—	—
	2 excisions	1.24 (0.80–1.91)	0.81 (0.52–1.28)	0.96 (0.52–1.80)
	Mastectomy	1.33 (0.59–2.98)	1.69 (0.72–3.99)	1.80 (0.54–6.00)
	Wald test	1.08 (P = 0.58)	3.12 (P = 0.21)	1.05 (P = 0.59)
Breast asymmetry	Minimal*	—	—	—
	Moderate	0.57 (0.34–0.94)	0.40 (0.23–0.69)	0.70 (0.32–1.54)
	Pronounced	0.36 (0.21–0.60)	0.25 (0.14–0.43)	0.46 (0.22–0.99)
	Wald test	15.10 (P < 0.001)	24.43 (P < 0.001)	4.23 (P = 0.12)
Postoperative complication	No*	—	—	—
	Yes	1.20 (0.75–1.92)	1.45 (0.89–2.36)	0.77 (0.41–1.46)
Received radiotherapy	Yes*	—	—	—
	No	3.47 (1.53–7.88)	3.25 (1.40–7.52)	1.02 (0.29–3.62)
Disease stage	In situ disease*	—	—	—
	I	0.90 (0.40–2.05)	1.06 (0.46–2.45)	1.68 (0.56–5.02)
	II	0.62 (0.26–1.46)	0.77 (0.32–1.84)	1.57 (0.50–4.95)
	III or IV	0.40 (0.13–1.28)	0.41 (0.13–1.33)	0.94 (0.21–4.12)
	Wald test	4.04 (P = 0.26)	4.08 (P = 0.25)	1.68 (P = 0.64)
Time from surgery, y	≤1*	—	—	—
	2–3	1.08 (0.68–1.73)	1.43 (0.88–2.32)	0.55 (0.27–1.11)
	≥4	1.19 (0.69–2.06)	1.52 (0.86–2.67)	0.67 (0.29–1.56)
	Wald test	0.39 (P = 0.82)	2.85 (P = 0.24)	2.79 (P = 0.25)
Received ALND	No*	—	—	—
	Yes	1.59 (0.90–2.84)	1.32 (0.73–2.39)	0.62 (0.28–1.36)
Neoadjuvant chemotherapy	No*	—	—	—
	Yes	0.82 (0.42–1.60)	1.36 (0.67–2.78)	1.78 (0.66–4.80)

95% CI indicates 95% confidence interval; ALND, axillary lymph node dissection.

* Reference group.

ture indicates that women who receive educational tools are more satisfied with outcomes and perceive that they are more informed about their treatment.^{21–23} Women who are dissatisfied with their breast appearance after BCS may perceive that they did not participate in the decision for surgery to the

extent that they desired. Matching patient involvement in the decision for surgery to their desired level can improve patient satisfaction with the treatment experience and trust in providers.^{4,24–26} Patients who participate in the decision for surgery may be informed more adequately about the surgical proce-

TABLE 6
Decision Regret Among Women Undergoing Breast-conserving Surgery

	Regret decision to undergo surgery	Odds of decision regret (95% CI)
Demographic characteristics		
Race	Caucasian*	—
	African American	1.04 (0.26–4.17)
Education	Other	0.72 (0.15–3.49)
	Wald test	0.17 (<i>P</i> = 0.92)
	High school or less	1.18 (0.54–2.59)
	Some college	1.13 (0.59–2.16)
	College graduates or beyond*	—
Marital status	Wald test	0.22 (<i>P</i> = 0.89)
	Married or partnered*	—
Age, y	Not partnered	1.29 (0.67–2.48)
	≤40	1.58 (0.60–4.15)
	41–50	0.96 (0.46–1.99)
	51–60*	—
	61–70	1.31 (0.58–2.99)
	≥71	0.69 (0.21–2.29)
	Wald test	2.13 (<i>P</i> = 0.71)
Clinical characteristics		
No. of excisions	1 excision*	—
	2 excisions	0.99 (0.54–1.81)
	Mastectomy	0.44 (0.14–1.38)
	Wald test	2.09 (<i>P</i> = 0.35)
Breast asymmetry	Minimal*	—
	Moderate	2.27 (1.01–5.12)
	Pronounced	4.13 (1.85–9.19)
	Wald test	12.41 (<i>P</i> = 0.002)
Postoperative complication	No*	—
	Yes	0.99 (0.53–1.85)
Received radiotherapy	Yes*	—
	No	0.37 (0.13–1.08)
Disease stage	In situ disease*	—
	I	1.07 (0.33–3.53)
	II	1.66 (0.50–5.54)
	III or IV	1.52 (0.32–7.25)
	Wald test	1.68 (<i>P</i> = 0.64)
Time from surgery, y	≤1*	—
	2–3	0.88 (0.46–1.69)
	≥4	0.97 (0.45–2.05)
	Wald test	0.17 (<i>P</i> = 0.92)
Received ALND	No*	—
	Yes	0.81 (0.38–1.72)
Neoadjuvant chemotherapy	No*	—
	Yes	1.26 (0.49–3.20)

95% CI indicates 95% confidence interval; ALND, axillary lymph node dissection.
* Reference group.

dures and may have more realistic expectations regarding the esthetic result.

Another possible explanation for the associations we observed is that poor esthetic outcomes result in greater postoperative psychological burden. Previous studies suggested that poor esthetic results after surgery were correlated with increased anxiety, depression, and dissatisfaction with body image.²⁷ It is

interesting to note that the majority of women who chose mastectomy and did not have a clinical contraindication to BCS reported that they were involved in the surgical treatment decision and that their surgeon favored BCS. Although this may appear counterintuitive given recent efforts by professional organizations to define BCS as the standard of care, patients may desire mastectomy because they have a

TABLE 7
Trust in Surgeons Among Women Undergoing Breast-conserving Surgery[†]

Characteristic	Trust in surgeons (Mean score)	P
Demographic characteristics		
Race		
Caucasian*	2.28	—
African American	2.11	.346
Other	1.92	.03
Wald test	2.75	.07
Education		
High school or less	2.10	.02
Some college	2.28	.64
College graduates or beyond*	2.32	—
Wald test	2.79	.06
Marital status		
Married or partnered*	2.23	—
Not partnered	2.36	.12
Age, y		
≤40	2.32	.71
41–50	2.29	.90
51–60*	2.28	—
61–70	2.22	.56
≥71	2.18	.43
Wald test	0.33	.86
Clinical characteristics		
No. of excisions		
1 excision*	2.21	—
2 excisions	2.36	.05
Mastectomy	2.12	.44
Wald test	2.82	.06
Breast asymmetry		
Minimal*	2.14	—
Moderate	2.30	.04
Pronounced	2.35	.02
Wald test	3.24	.04
Postoperative complication		
No*	2.23	—
Yes	2.35	.03
Received radiotherapy		
Yes*	2.22	—
No	2.58	.01
Disease stage		
In situ disease*	2.25	—
I	2.27	.90
II	2.26	.96
III or IV	2.27	.94
Wald test	0.01	1.0
Time from surgery, y		
≤1*	2.24	—
2–3	2.27	.70
≥4	2.29	.52
Wald test	0.21	.81
Received ALND		
No*	2.27	—
Yes	2.22	.60
Neoadjuvant chemotherapy		
No*	2.21	—
Yes	2.27	.61

95% CI indicates 95% confidence interval; ALND, axillary lymph node dissection.

* Reference group

[†] Higher scores indicate greater patient distrust.

fear of adjuvant therapy, such as radiation, and concerns regarding long-term survival and disease recurrence.²⁸ In addition, other studies have demonstrated that women who underwent mastectomy with autologous tissue reconstruction achieved a superior esthetic result compared with women who underwent BCS alone.²⁹ Surgeons may not be fully aware of the psychosocial and esthetic burden of BCS on patients in the long-term recovery period and its effect on postoperative quality of life.

The current study has several notable limitations. Because the patient sample was drawn from a tertiary care center, our results may not be generalizable to women who are cared for at other facilities. In addition, our study sample was relatively homogenous with respect to sociodemographic characteristics. Therefore, we may have been unable to capture important differences in patient satisfaction by ethnicity and economic factors. Third, although we achieved an excellent response rate, nonresponders did differ slightly with respect to race and receipt of re-excision. Compared with responders, nonresponders were more likely to be nonwhite and were less likely to have undergone re-excision lumpectomy. Finally, we surveyed patients retrospectively, and patients' recollection of their experience may change over time. However, controlling for the time from diagnosis in our analysis did not change our results substantially.

Despite these limitations, these results underscore the importance of effective provider-patient communication during the consultation for breast cancer surgery. The Accreditation Council for Graduate Medical Education now lists interpersonal communication skills as 1 of the 6 core competencies in physician training.³⁰ A recent analysis by the American College of Surgeons revealed that nearly 20% of liability claims are a result of communication breakdowns between patients and providers.³¹ Such efforts by professional organizations signal the importance of communication to ensure that patients receive optimal care by their physicians. Our results suggest that patients may not anticipate the extent of asymmetry that can occur after BCS, and this may lead to a sense of regret, dissatisfaction, and distrust of the treatment experience. Surgeons who are caring for patients with breast cancer should identify women who are at an increased risk for breast asymmetry or complication after BCS preoperatively to address their expectations of treatment outcomes as realistically as possible.

In conclusion, the majority of women with a diagnosis of breast cancer have a choice between mastectomy and BCS. Patients choose BCS for different reasons, such as faster surgical recovery and less

postoperative disfigurement. Although women may opt for BCS because it preserves breast size and shape, our findings suggest that patients may be more tolerant of a surgical complication or repeat operation as long as esthetic expectations are met. Breast asymmetry is common after BCS, but many surgeons underestimate the impact of breast appearance on patient satisfaction. Meeting patient expectations and facilitating communication between patients and providers is important to ensure that patients make an informed choice for surgery. Women who opt for breast conservation should be aware of the prevalence of breast asymmetry after BCS, and efforts should be made to develop educational tools that incorporate reconstructive options for all women undergoing breast surgery. Such strategies to improve patient satisfaction ultimately will improve the quality of breast cancer care.

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