

Long-Term Role of External Breast Prostheses After Total Mastectomy

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■ **Abstract:** After total mastectomy, many women choose to wear external breast prosthesis rather than undergo breast reconstruction. The purpose of this study was to evaluate long-term satisfaction among external breast prosthesis wearers and the impact of satisfaction on prosthesis use. A questionnaire was designed to assess demographic information, prosthesis information provision, prosthesis use, and satisfaction with prosthesis. Fifty-nine women who had undergone total mastectomy without breast reconstruction completed the questionnaire. The majority of women (68%) were at least 5 years out from mastectomy. Approximately half (49%) of the women had received information about breast prostheses prior to mastectomy; 29% received information from the surgeon performing the operation. Frequent and prolonged prosthesis use was prevalent with 64% of participants reporting prosthesis use all the time, 6–7 days/week. Participants showed high rates (83%) of overall satisfaction. However, women who wore their prosthesis out in public only were less satisfied than more frequent wearers (50% versus 89%, $\chi^2 = 8.83$, d.f. = 1, $\alpha = 0.05$). Satisfaction increased over time, as women who were greater than 5 years out from mastectomy were more satisfied than women less than 5 years post-mastectomy (90% versus 67%, $\chi^2 = 4.43$, d.f. = 1, $\alpha = 0.05$). The vast majority of women are satisfied with their external breast prosthesis several years after mastectomy. Most women used their prosthesis all the time and overall satisfaction contributed to higher levels of prosthesis use. Given the long-term importance of external breast prostheses for women who have undergone mastectomy, a greater effort to inform patients about external breast prostheses prior to surgery is needed. ■

Key Words: breast prosthesis, information, mastectomy, satisfaction, usage

Clinical trials have demonstrated that mastectomy and breast conservation operations followed by whole-breast irradiation have equivalent outcomes in appropriately selected patients (1). While breast conservation therapy is an option for approximately 75% of women diagnosed with breast cancer (2), over half of all breast cancer patients are treated with total mastectomy.

After total mastectomy, restoration of the breast form and of body symmetry may be achieved by either surgical breast reconstruction or external breast prosthesis. It has been widely assumed that breast reconstruction offers superior psychological benefits to mastectomy patients. However, quality of life comparisons between women who undergo immediate breast reconstruction and those who have mastectomy alone have failed to prove this assumption, showing similar

outcomes (3–5). The differences that do exist have not yielded a clearly superior procedure: while reconstruction may be associated with better body image and greater feelings of attractiveness, it has also been associated with lower sexual responsiveness and sexual activity in the immediate postoperative period as well as greater mood disturbance and poorer well-being persistent over time (6). Therefore, presenting each patient with information about all of her options and allowing for individual decision making is critical.

External breast prosthesis can assist in both cosmetic restoration and weight balance for women who undergo mastectomy without reconstruction. A woman is typically fitted in the immediate postoperative period with a temporary breast prosthesis constructed of a lightweight material such as fiberfill or foam. Six to eight weeks later, when the mastectomy wound has healed, she may be fitted for a permanent prosthesis (7,8).

Drastic improvements in breast prostheses have been made over the past 25 years, creating a multitude of prosthesis options available for today's women. Prostheses come in a wide variety of sizes,

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shapes, and skin color tones, with or without a nipple and areola, so that women of all ages can find a prosthesis that approximates their existing breast. The prosthesis may be composed of silicone, lightweight silicone that has been whipped to incorporate air, water, glycerin, or latex to provide a variety of weights and consistencies (9). Conventional prostheses that are inserted into the pocket of a custom bra are available, as well as self-adhesive prostheses, which are secured to the chest wall by an adhesive Velcro skin strip and may be worn without a bra (10,11). Leisure forms such as waterproof prostheses for swimming and weighted foam prostheses for aerobics are also available.

The handful of studies that have evaluated satisfaction among women with external breast prostheses have shown that the majority of wearers are satisfied overall with their breast prosthesis (12–14). However, in a prospective study by Livingston et al. that measured satisfaction at 1 week, 3 months, and 6 months post fitting, the proportion of women who were *extremely satisfied* with their prosthesis was shown to decrease over time.

Provision of preoperative information about breast prostheses has been associated with higher levels of satisfaction (15). Patients who had received honest information from their surgeon or the lay literature were better prepared to cope with their post-mastectomy deformity and the limitations of breast prosthesis (16). Despite the importance of providing information about prostheses to mastectomy candidates, a number of studies from Australia between 1974 and 2005 have shown that 35–45% will not receive information from a health professional before or after surgery (12,14,17).

Only a handful of studies have examined usage patterns for external breast prostheses, with conflicting results. Among the 47 women surveyed by Tanner et al., 77% wore their prosthesis all day, with the remaining 23% wearing their prosthesis only when going out of the house, or on special occasions. Most of the women interviewed by Roberts et al., however, preferred not to wear their prosthesis while home alone due to discomfort and wore their prosthesis mainly for going out or dressing up. Livingston et al. reported 75% of patients wearing their prosthesis every day or most days; duration of use was not reported.

The aim of this study was to evaluate long-term satisfaction with external breast prostheses and the

impact of satisfaction on usage patterns among women who have undergone total mastectomy. We sought to identify specific prosthesis characteristics that contributed to overall patient satisfaction. Additionally, the provision of prosthesis information preoperatively and postoperatively was investigated.

METHODS

Women with a history of simple, modified radical or radical mastectomy who had not undergone breast reconstruction were eligible for the study. Women who were less than 18 years of age, who were non-English speaking, or who had a history of breast reconstruction were excluded from the study. Participants were recruited among patients presenting to the Winship Cancer Institute Division of Surgical Oncology in Atlanta, Georgia for routine follow-up between June 2005 and July 2006. At the conclusion of the patient's clinic appointment, clinic staff obtained written informed consent and distributed the questionnaire. The completed questionnaire was collected from the patient prior to departure. Fifty-nine completed questionnaires were collected. A preliminary questionnaire was developed and revised based on the feedback of a pilot group of ten eligible participants. The final questionnaire consisted of three components:

Background Information

Demographic information including age, marital status, and presence of children, ethnic background, education level, and yearly household income were assessed. Additionally, medical information including height, weight, pre-mastectomy and present brassiere measurements, medical comorbidities, breast cancer stage, unilateral versus bilateral mastectomy, time since mastectomy, and treatment with radiation, hormone, and chemotherapy were assessed.

Prosthesis Evaluation

Provision of information regarding prostheses and breast reconstruction, types of prostheses worn, and frequency and duration of use were assessed. Satisfaction with the following breast prosthesis features was measured on a five-point Likert scale, ranging from *very dissatisfied* to *very satisfied*: fit, overall comfort, appearance when worn, weight, how natural it felt, how well it moved with the woman's body, ease of cleaning, durability, value for money (14), ability to wear different types of clothing, and overall satisfaction.

Emotional Response

The questionnaire contained the following questions, assessed on a five-point Likert scales, ranging from strongly disagree to *strongly agree*.

- (1) Having a mastectomy was upsetting to me.
- (2) While I am wearing my prosthesis, I forget about my mastectomy.
- (3) When I wear it, my prosthesis feels like a part of my own body.
- (4) I felt like my mastectomy took away some of my femininity.
- (5) If *agree* or *strongly agree*: My prosthesis helps me feel as feminine as I felt before my mastectomy.
- (6) It makes me uncomfortable to look at myself while getting dressed.
- (7) Even when I wear my prosthesis, I still do not feel normal.
- (8) I felt like my mastectomy took away some of my sexuality.
- (9) If *agree* or *strongly agree*: My prosthesis has helped restore my sense of sexuality.
- (10) I frequently think about whether I should have breast reconstruction.
- (11) I regret that I did not have breast reconstruction after my mastectomy.
- (12) I have a positive attitude towards myself.

The Institutional Review Board of Emory University granted approval of the questionnaire and permission to enroll participants.

Data obtained from the completed questionnaires were analyzed using Microsoft Excel. The chi-square test was performed to test for independence between variables. When multiple significant relationships were found to exist, risk ratios with 95% confidence intervals (CI) were also calculated. Due to the small *n*, *satisfied* and *very satisfied* responses were combined for analysis as “satisfied.” *Neutral*, *dissatisfied*, and *very dissatisfied* responses were grouped as “not satisfied.” Likewise, *agree* and *strongly agree* responses and *neutral*, *disagree*, and *strongly disagree* responses were combined as “agree” and “do not agree,” respectively.

RESULTS

Demographic Characteristics and Medical Profile

Table 1 shows the demographic characteristics for the 59 participants, who ranged in age from 26 to 88 years (mean age 68.2 years). Our participant popu-

Table 1. Demographic Characteristics of Study Participants

Variable	N (%)
Marital Status (n = 59)	
Single	2 (3.4)
Coupled	2 (3.4)
Married	35 (59.3)
Divorced	3 (5.1)
Widowed	17 (29.8)
Children (n = 58)	
Yes	50 (86.2)
No	8 (13.8)
Ethnic Background (n = 59)	
African-American, Black, African	9 (15.3)
Asian, Asian-American, Pacific Islander	1 (1.7)
Caucasian, White	48 (81.4)
Hispanic, Latino	1 (1.7)
Native American, Alaskan native	0 (0)
Biracial or other	0 (0)
Education (n = 59)	
Did not complete high school	2 (3.4)
High school diploma or equivalent	14 (23.7)
Some college	14 (23.7)
Associate's or Bachelor's degree	16 (27.1)
Graduate degree	13 (22.0)
Yearly Household Income (n = 50)	
<25,000 dollars	11 (22)
25,000–125,000 dollars	31 (62)
125,000–250,000 dollars	5 (10)
>250,000 dollars	3 (6)

lation consisted predominantly of older, married or widowed, Caucasian, middle class women. Some participants omitted answers for individual questions, accounting for the differences in *n*. Medical characteristics of the participant population, including breast cancer stage, unilateral versus bilateral mastectomy, time since mastectomy, and adjuvant therapy history are presented in Table 2. Of the 28 women who reported their breast cancer stage, most received an early stage diagnosis. The majority of women underwent unilateral mastectomy with adjuvant medical therapy and were at least 5 years removed from their operation at the time of questionnaire administration.

Prosthesis Use

Participants were asked to select all prosthesis models currently used from a list provided on the questionnaire. The values in Table 3 represent the percentage of our study sample who indicated using a given prosthesis model. Three quarters of the women surveyed used silicone prosthesis of either standard or lightweight density. Of the women employing silicone prostheses, 27% also took advantage of waterproof, foam, or adhesive models. Most participants reported frequent and prolonged prosthesis use (Table 3).

Table 2. Medical Characteristics of Study Participants

Variable	N (%)
Breast cancer stage (<i>n</i> = 28)	
Stage 0	5 (17.9)
Stage I	12 (42.9)
Stage II	6 (21.4)
Stage III	3 (10.7)
Stage IV	2 (7.1)
Operation performed (<i>n</i> = 58)	
Unilateral mastectomy without alteration of opposite breast	51 (87.9)
Unilateral mastectomy with alteration of opposite breast	4 (6.9)
Bilateral mastectomy	3 (5.2)
Time since mastectomy (<i>n</i> = 57)	
Less than 1 year	5 (8.8)
1–5 years	13 (22.8)
5–10 years	9 (15.8)
>10 years	30 (52.6)
Medical therapy (<i>n</i> = 59)	
Radiation therapy	15 (25.4)
Chemotherapy	23 (39)
Hormone therapy	12 (20.3)
None	24 (40.7)

Table 3. Prosthesis Use Among Study Participants

Variable	N (%)
Prosthesis type (<i>n</i> = 58)	
Standard silicone	28 (48.3)
Lightweight silicone	16 (27.6)
Foam, weighted foam	6 (10.3)
Fiberfill	3 (5.2)
Adhesive, attachable	4 (6.9)
Waterproof	13 (22.4)
Custom	2 (3.5)
Frequency of use (days/week; <i>n</i> = 59)	
0	1 (1.7)
1–2	3 (5.1)
3–5	5 (8.5)
6–7	50 (84.7)
Duration of use (<i>n</i> = 59)	
Only while out in public	10 (16.9)
1–6 hours/day	3 (5.1)
6–12 hours/day	8 (13.6)
All the time except while sleeping	36 (61)
All the time including while sleeping	2 (3.4)

Sixty-four percent wore their prosthesis both 6–7 days/week and all the time ± while sleeping.

Satisfaction with Prosthesis

Eighty-three percent of study participants indicated overall satisfaction with their breast prosthesis. Most women expressed satisfaction with each of the prosthesis attributes as well (Fig. 1). Wearers of lightweight silicone prostheses reported significantly greater satisfaction with the weight characteristic of

the prosthesis than wearers of all other models including standard silicone ($\chi^2 = 5.67$, critical value = 3.84, d.f. = 1, $\alpha = 0.05$): 94% percent of lightweight silicone prosthesis wearers were satisfied with the weight of their prosthesis, compared with 62% of women who wore other models. Lightweight silicone models were not associated with significant differences in satisfaction for any of the other prosthesis characteristics, although slightly higher rates of satisfaction were seen in all other characteristic categories. The number of women wearing nonsilicone models was too small to permit subset analysis of these models.

Contributors to Satisfaction with Prosthesis

The women who reported overall satisfaction (*n* = 47) were compared with those who did not report satisfaction (*n* = 10). There were no significant demographic differences between the subsets of women. A significant relationship existed between satisfaction and the number of years elapsed since mastectomy ($\chi^2 = 4.43$, critical value = 3.84, d.f. = 1, $\alpha = 0.05$); women who were greater than 5 years out from mastectomy had an 90% overall satisfaction rate, compared with 67% in women less than 5 years post-mastectomy. Satisfaction trends over time are shown in Figure 2. Whether the patient underwent unilateral versus bilateral mastectomy or received adjuvant medical therapy did not significantly affect satisfaction.

Many of the evaluated prosthesis attributes significantly affected overall satisfaction. Relative risks (RR) shown in Table 4 represent the increased likelihood that a woman was satisfied overall with her prosthesis if she was satisfied with a particular aspect of her prosthesis. For example, a woman who was satisfied with the comfort of her prosthesis was 9.15 times more likely to be satisfied overall with her prosthesis than a woman who was not satisfied with the comfort of her prosthesis. Satisfaction with comfort, value for money, ability to wear different types of clothing, naturalness, movement with body, appearance, weight, and fit all significantly increased the likelihood that a woman would be satisfied overall with her prosthesis. Satisfaction with prosthesis durability and ease of cleaning also increased the likelihood of overall satisfaction but were not statistically significant.

Contributors to Increased Prosthesis Use

To determine whether use was significantly impacted by prosthesis satisfaction, women who wore

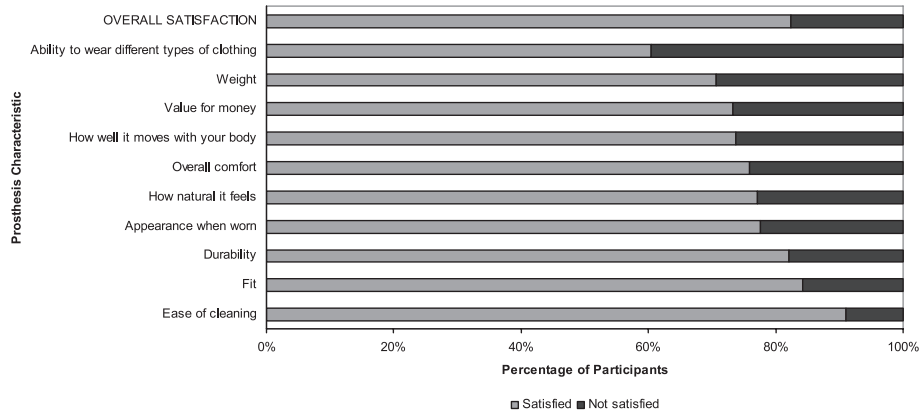


Figure 1. Overall satisfaction and satisfaction with individual prosthesis attributes. Satisfaction was measured on a five-point Likert scale, ranging from *very dissatisfied* to *very satisfied*. “Satisfied” includes *satisfied* and *very satisfied* responses. “Not satisfied” includes *neutral*, *dissatisfied*, and *very dissatisfied* responses.

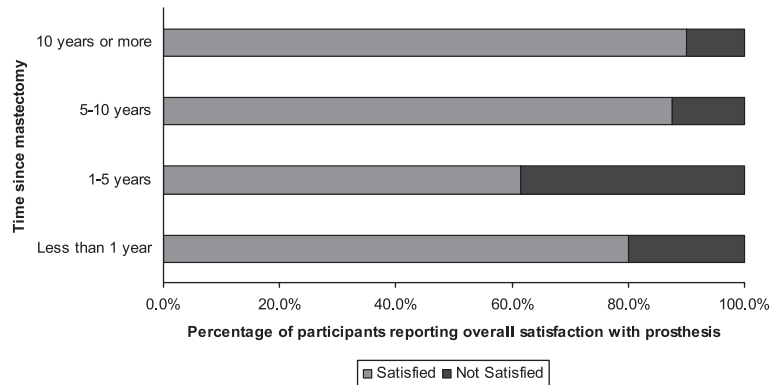


Figure 2. Trends in satisfaction over time. Satisfaction was measured on a five-point Likert scale, ranging from *very dissatisfied* to *very satisfied*. “Satisfied” includes *satisfied* and *very satisfied* responses. “Not satisfied” includes *neutral*, *dissatisfied*, and *very dissatisfied* responses.

Table 4. Contribution of Individual Prosthesis Attributes to Overall Satisfaction

Variable	Relative risk (RR)	95% Confidence interval (CI)
Comfort	9.15	1.44, 58.86
Value for money	8.67	1.34, 55.84
Ability to wear different types of clothing	6.49	1.01, 41.56
How natural it feels	4.46	1.28, 15.46
How well it moves with your body	4.35	1.25, 15.09
Appearance when worn	2.98	1.14, 7.71
Weight	2.69	1.03, 7.02
Fit	2.34	1.09, 5.01
Durability	1.78	0.94, 3.33
Ease of cleaning	1.76	0.98, 3.16

their prosthesis 6–7 days/week and all the time ± while sleeping ($n = 38$) were compared with women who reported less frequent or prolonged use ($n = 21$). There were no significant demographic or medical differences between the subsets of women. Chi-square testing revealed that the comfort rating of the prosthe-

sis significantly affected level of prosthesis use ($\chi^2 = 6.30$, critical value = 3.84, d.f. = 1, $\alpha = 0.05$): 86% of heavy wearers were satisfied with the comfort of their prosthesis, compared with 57% of women with lesser use. Overall satisfaction with the breast prosthesis trended toward being associated with heavy levels of use, but significance was not achieved ($\chi^2 = 3.30$, critical value = 3.84, d.f. = 1, $\alpha = 0.05$). When those women who reported wearing their prosthesis “only out in public” ($n = 10$) were compared with women with greater use ($n = 47$), however, a significant association was present between overall satisfaction and use ($\chi^2 = 8.83$, critical value = 3.84, d.f. = 1, $\alpha = 0.05$). Only 50% of the women wearing their prosthesis in public only reported overall satisfaction, compared with 89% of more frequent wearers. Prosthesis use was independent of prosthesis weight ($\chi^2 = 2.91$), appearance ($\chi^2 = 2.25$), ease of cleaning ($\chi^2 = 1.32$), movement with body ($\chi^2 = 1.20$), ability to wear different types of clothing ($\chi^2 = 0.74$),

durability ($\chi^2 = 0.17$), value ($\chi^2 = 0.16$), naturalness ($\chi^2 = 0.019$), or fit ($\chi^2 = 0.014$).

Body Image

Seventy-three percent of women agreed that having a mastectomy was personally upsetting. However, 77% reported that wearing their prosthesis allowed them to forget about their mastectomy. Greater than a quarter reported feeling like their mastectomy took away some of their femininity (37%) or sexuality (28%). Of those who felt some loss of femininity or sexuality, wearing prosthesis was helpful in restoring femininity in 37% and in restoring sexuality in 29%.

Most women reported that their prosthesis felt like a part of their own body during wear (59%) and were able to feel normal while wearing prosthesis (61%). However, 27% of women still did not feel normal even while wearing their prosthesis and 16% felt uncomfortable looking at themselves while dressing. Twelve percent of women agreed to frequently thinking about whether to have breast reconstruction, and 10% expressed regret that they did not have breast reconstruction after mastectomy. Women overwhelmingly (95%) reported having a positive attitude towards themselves.

Contributors to Body Image

Overall satisfaction with the prosthesis impacted participant body image. If a woman was unsatisfied with her prosthesis, she had a threefold greater risk of still feeling abnormal while wearing her prosthesis (RR: 3.00; 95% CI: 1.38, 6.50) and nearly a fourfold risk of experiencing discomfort looking at herself while dressing (RR: 3.68; 95% CI: 1.20, 11.31). Additionally, she was at increased risk of being unable to feel her prosthesis was like a part of her own body (RR: 2.57; 95% CI: 1.51, 4.38) or of being unable to forget her mastectomy during prosthesis use (RR: 4.60; 95% CI: 1.87, 11.33).

No differences in demographic characteristics, surgical or medical history, or satisfaction with prosthesis were found between those women who felt their mastectomy had taken away some of their femininity or sexuality and those who had not felt the loss. Due to a prohibitively small *n*, the women who thought frequently about reconstruction or regretted not undergoing breast reconstruction could not be compared with the rest of the study participants.

Provision of Information

Only 49% of study participants received information about breast prostheses prior to their mastectomy. The questionnaire asked that the women who received information prior to mastectomy indicate all information providers. Common sources of information included the surgeon performing the mastectomy (59%), the patient's oncologist (28%), another health care worker (17%), a prosthesis fitter (14%), the patient's primary care physician (10%), or another family member (10%). Seventy percent of participants were told about the option of breast reconstruction prior to mastectomy.

Ninety-one percent of study participants received information about breast prostheses after their mastectomy. Again, women were asked to indicate all information providers. Common sources of information included a prosthesis fitter (44%), the surgeon (42%), another health care worker (23%), the oncologist (19%), another patient (15%), or the patient finding the information herself (13%).

Of all the women surveyed, only 29% were informed about breast prostheses by their surgeon prior to mastectomy. The surgeon or his/her staff referred 59% to a prosthesis shop either before or after surgery.

DISCUSSION

Consistent with prior studies that reported satisfaction among the majority of breast prosthesis wearers (12–14), 83% of study participants were satisfied overall with their prosthesis. Satisfaction was greater long-term, with a significant increase among women who had worn a breast prosthesis for greater than 5 years compared with women who had worn a prosthesis for less than 5 years. Overall satisfaction trended downwards between the first year and fifth year of prosthesis use but then rose again by the tenth year and was greatest beyond 10 years post-mastectomy. The short-term decrease in satisfaction is reminiscent of the progressive decrease in extremely satisfied women at 3 and 6 months of prosthesis use compared with 1 month described by Livingston et al. It is possible that the dip in satisfaction rates over the first few months or years corresponds to the period of physical and emotional adjustment occurring after recovery from the initial shock of the cancer diagnosis and mastectomy. This adjustment period may be pro-

longed. A prior study of the psychological effect of mastectomy showed that women still reported feeling conscious of altered body image 1 year postoperatively despite reduction in psychological distress over the first year, independent of whether or not they had undergone reconstruction (3). Women might, therefore, be initially satisfied with the ability of their prosthesis to restore the breast shape in the immediate postoperative period but become less satisfied as they deal with this persistent body consciousness. The long-term return to higher rates of satisfaction would then coincide with increase acceptance of one's altered body over time. Surveying satisfaction and body image measures at a greater number of time points would be necessary to confirm this trend. High levels of long-term satisfaction despite a period of decreased satisfaction corresponding to postoperative adjustment would both reaffirm the external breast prosthesis as a good option for post-mastectomy restoration of the breast form and provide insight into satisfaction trends health providers might encounter in the clinic.

Among the prosthesis characteristics evaluated, comfort was most strongly associated with overall satisfaction. Value for money, ability to wear different types of clothing, naturalness, movement with body, appearance when worn, weight, and fit were also found to significantly impact overall satisfaction. Many of these features can be influenced, leading to an increased chance of overall satisfaction. For example, wearers of lightweight silicone prostheses were significantly more satisfied with the weight of their prosthesis than wearers of other prosthesis models. Comfort can be optimized by having an experienced prosthesis fitter ensure the proper size and fit of the breast prosthesis and evaluate or change the accompanying brassiere every 6 months to see that it fits, provides adequate support, and holds the prosthesis in the appropriate area. In hot weather, comfort can be increased by applying pads between the prosthesis and skin to decrease heat transfer and absorb perspiration. Ability to wear different types of clothing might be enhanced by attachable prostheses that help prostheses stay in place during movement and do not require a traditional mastectomy bra for use. (9) Improving satisfaction with these characteristics will lead to greater overall satisfaction.

Overall satisfaction, in turn, affects body image and prosthesis utilization. Women who were not satisfied with their prosthesis were more likely to feel abnormal while wearing the prosthesis and to experi-

ence discomfort looking at themselves while dressing. Additionally, they were less likely to be able to forget their mastectomy experience while wearing their prosthesis or to incorporate their prostheses as a part of their own bodies. Clearly, two important goals of breast prosthesis provision are to improve body image and quality of life and to decrease emotional distress associated with mastectomy (15). That women would continue to feel abnormal and uncomfortable looking at themselves is truly unfortunate. Although many other factors contribute to self-image, and self-image may reciprocally affect satisfaction, the data imply that improving overall satisfaction may contribute to improved body image.

There was a high level of breast prosthesis use among the women surveyed which is similar to levels previously described in the literature. Eighty-five percent of women wore their prosthesis 6 or 7 days/week. Livingston et al. previously reported that 75% of their patients wore their prosthesis every day or most days; 64% of our participants wore their prosthesis *all the time*. Tanner et al. reported 77% of their survey population wore their prosthesis all day. Combining frequency and duration measures, 64% of women wore their prosthesis *all the time*, 6–7 days/week.

Comfort of the prosthesis, which was the top contributor to overall satisfaction, also was associated with greater prosthesis wear. Overall satisfaction impacted prosthesis use as well. While higher overall satisfaction ratings only approached significance in predicting *all the time* use, low overall satisfaction ratings were significantly associated with the least prosthesis use, wearing the prosthesis *only out in public*. While a woman may opt out of wearing prosthesis for such reasons as not needing prosthesis to match a small unaffected breast, discomfort and dissatisfaction are unacceptable causes; they should be minimized so that women may enjoy wearing their prosthesis as often as they like.

That most women continued to wear their prosthesis all the time and expressed high satisfaction several years after surgery reinforces the long-term importance of external breast prostheses for women who have undergone mastectomy. Although less glamorous than breast reconstruction, prostheses are a safe, effective, and cost-conscious option for restoration of the breast form. Additionally, prostheses have been found to have quality of life outcomes similar to (3–5) or better than (6) breast reconstruction in other studies.

However, despite the long-term importance and short-term positive effect of prostheses on recovery (16), many women are denied information about external breast prostheses prior to mastectomy.

In this study, just less than half (49%) of the women who underwent mastectomy received information about breast prostheses prior to mastectomy from any source, and an even smaller percentage (29%) received information about prostheses from their surgeon prior to mastectomy. Previous studies had found that 35–45% of patients did not receive information from a health professional either before or after surgery. Fortunately, the vast majority of women we surveyed (91%) did receive information about prostheses from any source postoperatively.

A greater effort to inform patients prior to surgery must be made. Provision of preoperative information about breast prostheses has been associated with higher levels of satisfaction (15) and has been observed to help patients cope with post-mastectomy deformity and prosthesis limitations (16). To deny patients information that facilitates recovery and increases satisfaction is to do them a disservice. Information about all options for regaining body symmetry should be provided in a nonbiased manner. It has been noted that women are more likely to receive information about breast reconstruction than about breast prostheses (9). This was true within our population of women: 70% of women had been informed about breast reconstruction before surgery, whereas only 49% received information about breast prostheses. This difference seems to reflect a view held by many in the medical community that prostheses are an inferior option or an option that women choose despite many shortcomings (18). However, as discussed above, prostheses have done well in quality of life comparisons with breast reconstruction. They are a viable option that leads to long-term satisfaction in a majority of wearers. More information, especially about the variety of prosthesis models available to women today, may further increase satisfaction.

There are several limitations to this study. First, the small sample size ($n = 59$) allowed for limited statistical analysis, and some relationships that might have been significant with a bigger n were likely missed. Second, the sample was relatively homogenous, being English literate and ethnically nondiverse and having received care at one private institution. Third, recall error may have been present as many questions were posed retrospectively and a majority of women were

years out from their mastectomy experience. Last, although many of the measures used in our questionnaire were derived from existing literature, none were validated. As the inception of the study, new validated questionnaires for use in breast surgery patients have been published that would be useful in future breast prostheses studies (19,20).

Despite these limitations, the findings from this study provide insight into the long-term satisfaction present among most external breast prosthesis wearers, the impact of satisfaction on prosthesis usage, and the persistent need for better provision of prosthesis information to mastectomy patients.

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