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Attitudes and Decisional Conflict regarding Breast Reconstruction Among Breast Cancer Patients

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Abstract

Background—The decision to undergo breast reconstruction (BR) surgery following mastectomy is made during stressful circumstances. Many women do not feel well-prepared to make this decision.

Objective—Using the Ottawa Decision Support Framework, this study aimed to describe women's reasons to choose or not choose BR, BR knowledge, decisional preparedness, and decisional conflict about BR. Possible demographic, medical, BR knowledge, and attitudinal correlates of decisional conflict about BR were also evaluated.

Methods—Participants were 55 women with early stage breast cancer drawn from the baseline data of a pilot randomized trial evaluating the efficacy of a breast reconstruction decision support aid for breast cancer patients considering BR.

Results—The most highly-ranked reasons to choose BR were the desire for breasts to be equal in size, the desire to wake up from surgery with a breast in place, and perceived bother of a scar with no breast. The most highly-ranked reasons not to choose BR were related to the surgical risks and complications. Regression analyses indicated that decisional conflict was associated with higher number of reasons not to choose BR and lower levels of decisional preparedness.

Conclusions—The results suggest that breast cancer patients considering BR may benefit from decisional support.

Keywords

breast reconstruction; decisional conflict; knowledge; breast cancer

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Introduction

More than 295,140 women will be diagnosed with breast cancer in the US in 2014.[1] The choice of surgical treatment for breast cancer is largely dependent on the characteristics of the tumor and wishes of the patient. Although national rates are difficult to estimate, mastectomy is performed on approximately 45% of women diagnosed with early stage breast cancer.[2] Surgical procedures such as skin and nipple-areola sparing mastectomy[3], which preserve the cosmetic appearance of the breast, are increasingly common among women undergoing mastectomy.[3] Such improvements, along with breast reconstruction, may have resulted to the increase in mastectomy uptake in the last decade,[4] particularly among women less than 50 and older than 70.[2] The loss of a breast after mastectomy can lead to worries about body image, femininity, concerns about feeling normal, compromised self-esteem, concerns about intimate relationships, and, for some, elevated psychological distress.[5–7] In an attempt to restore body image and address these concerns, women scheduled to undergo mastectomy who are appropriate candidates for the surgery may be offered breast reconstruction (BR). Exact rates of BR after mastectomy are difficult to estimate, as there is no national reporting of this figure. Rates reported in studies have varied depending on the number of institutions surveyed, with figures between 42% and 59% of early stage breast cancer patients undergoing BR.[8–9] Since 2000, BR utilization in the US has increased by 21%, with increases of approximately 4% per year for the past three years.[10]

BR is a term that describes a range of surgical procedures attempting to create a breast shape. BR can be performed immediately at the time of mastectomy or as a delayed procedure. The major methods used for BR are implants, autologous tissue, or a combination of both. Implants are placed below the pectoral muscle. Often this process begins with a tissue expander that is gradually filled with saline over several months, and ultimately changed for a permanent implant in a separate operation. There are several types of autologous tissue for BR, which are labeled flaps. The most common flaps are the rectus abodminus (TRAM) or latissimus dorsi (Lat) flap. Fat, skin, and muscle are removed and relocated to the mastectomy site to create a new breast.[11] Insertion of implants is a less complicated surgery and recovery than a flap procedure, but implant surgery carries complication risks that include implant rupture (8%),[12] wound separation and/or implant exposure (range from 10–30%),[13] and infection (range from 1–30%)[14]. Long-term implant risks include scarring (range from 2–5%),[12] and capsular contracture and failure of implantation leading to placement of another implant or the construction of a flap, particularly if implant placement occurs after the breast is irradiated.[15–16] BR with autologous tissue leaves extensive scarring and muscle weakness at the donor site, but look and feel more natural than an implant. In addition, reconstruction of the nipple and areola can be performed. Regardless of the type, BR is a major operation that carries significant risks.

Although well-being and body image are factors in women's decisions to choose BR[17], the literature supporting the degree to which these goals are achieved is inconsistent. Most studies report that women are satisfied with the cosmetic outcome of BR,[18–20] and many studies report better psychological and sexual outcomes among women selecting BR

compared with women selecting mastectomy without BR.[5,21–22] A recent meta-analysis that compared mastectomy only versus mastectomy with BR indicated that overall body image was significantly higher among women who had BR, but there were no differences with regard to body stigma (i.e., the perception of feeling abnormal or different from others).[23] Not all studies indicate positive effects from BR. Post-surgical dissatisfaction with surgical outcomes has been described.[17,24–25] About half of women undergoing BR report some decisional regret.[26] Women who have post-operative complications experience elevated anxiety, depression, and cancer-specific distress.[27] Women who report body image concerns are more likely to experience decisional regret.[26] Other studies have reported no differences in perceived body image between women choosing BR and women who don't choose BR,[28] or reported mixed psychological outcomes. These studies indicate no differences with regard to some psychological outcomes (e.g., anxiety), but significant differences on other psychological outcomes (e.g., lower depressive symptoms among women undergoing mastectomy without BR as compared to women undergoing mastectomy with BR.[29] A number of studies have reported that there are differences with regard to satisfaction and psychological distress between different BR procedures.[30] Overall, the literature is mixed.

The BR decision making process typically has several steps. First, the surgeon recommends mastectomy due to clinical factors or the patient has the option of either mastectomy or breast-conserving surgery. Next, the patient decides whether she wishes to consider BR. If the patient is considering BR, she patient schedules a consultation with the plastic surgeon to discuss types of BR. After this, she decides whether she wishes to pursue BR, and if she does, what type of BR she wishes to choose (e.g., implant versus autologous tissue reconstruction). In making the BR choice, the patient weighs the importance of potential benefits of each surgical option and her personal values and preferences against the medical risks associated with each procedure. The decision process is complicated by the stressful circumstance of being recently diagnosed with breast cancer and the compact timeline for decision-making. Other than consultation with the surgical oncologist and plastic surgeon and information obtained from the internet, social media, such as YouTube,[31] or family/friends, most hospital settings do not have a formalized structure in place to help women make decisions. This is unfortunate, because studies indicate that women prefer more time and information than is provided before making the decision.[11,32] In sum, BR can be a complicated decision made under stressful circumstances, and women do not always feel well-prepared.

There are a number of limitations to the extant literature. First, data has been collected using retrospective methods, which are colored by post-surgical outcomes.[33] Second, beneficial appearance expectations and positive psychosocial expectations including the desire to feel normal and feminine, the expectation of improved quality of life, and wanting to "move on," are cited as common reasons for choosing BR,[17,25,34–36] and fear of complications and anxiety are cited as reasons not to choose BR.[25] However, with few exceptions,[37] research has used qualitative methods or assessed effects of BR on patient-reported outcomes after surgery, rather than a standardized assessment to evaluate reasons for choosing or not choosing BR. Third, other factors that contribute to decisions, such as satisfaction with preparation for the decision and decisional conflict, have not been examined during the time period when women are making the decision using standard instruments. Finally, little is

known about the role of knowledge and attitudes on decisional conflict. A greater understanding of these associations would provide information to more effectively prepare women to make the decision.

Our work was guided by the Ottawa Decision Support Framework (ODSF).[38] This framework defines decisional conflict and the factors contributing to it. Decisional conflict is defined as a state of uncertainty about the course of action to take.[38] Factors contributing to decisional conflict include lack of information about alternatives, benefits, and risks, a lack of clarity with regard to personal values, emotional distress, and perceiving a lack of support with regard to making a choice or perceiving pressure to choose a particular course of action.[39] The ODSF proposes that decisional conflict can be reduced if individuals are provided with information about options, benefits, risks, as well as assistance with values clarification and how to work through the steps of deliberate decision making. Our selection of predictors was based on this model, in that BR knowledge (information provided), perceived reasons to choose BR (benefits, support and pressure from others), perceived reasons not to choose BR (risks), preparedness to make the decision (perceived comfort and satisfaction with information about surgical alternatives, benefits, and risks), and anxiety correspond to the factors contributing to decisional conflict.

The first study aim was to characterize the level of BR knowledge, reasons to choose or not choose BR, the level of preparedness to make the BR decision, decisional conflict about BR, and anticipated decisions about having BR among women diagnosed with early stage breast cancer who had either decided to choose or were informed that they required a mastectomy or were still in the process of deciding whether to choose a mastectomy or lumpectomy who were considering BR. At the time of recruitment, women had not yet had breast cancer surgery. The second study aim was to evaluate demographic, medical, and ODSF factors (knowledge, reasons to choose BR, reasons not to choose BR, decisional preparedness, and anxiety) associated with decisional conflict. It was hypothesized that higher decisional conflict would be associated with lower BR knowledge, fewer reasons to choose BR, more reasons not to choose BR, lower decision preparedness, and greater general anxiety.

Methods

Participants

Participants were 55 women with early stage breast cancer drawn from baseline data from a pilot randomized clinical trial evaluating the efficacy of a web-based breast reconstruction decision support aid for women scheduled for mastectomy (first author et al., under review).

Procedure

Patients were approached for study participation from outpatient clinics of surgical oncologists in four hospitals in the Northeastern United States. Criteria for the current study inclusion were: a) patient had a primary diagnosis of Ductal Carcinoma In Situ or Stage 1, 2, or 3a breast cancer; b) patient was female; c) patient was considering BR. Thus, the sample included patients who had not yet decided whether to choose mastectomy or lumpectomy who were considering BR, patients for whom mastectomy was recommended by the surgeon

who were considering BR, and patients who chose mastectomy who were considering BR; d) patient was 18 years of age or older; e) patient was able to give informed consent, and; f) patient was English-speaking.

Eligible patients were identified and approached in person after the initial surgical visit or by telephone if the patient was referred to the study by the surgical oncologist. The patient was provided with a written informed consent and the baseline survey to complete and return by mail.

Of the 104 patients screened for eligibility, 97 (93.6%) were eligible and 55 (56.7%) agreed to participate. Reasons for ineligibility included: did not speak/read English, n= 3, stage 3b cancer, n = 2, prophylactic surgery, n= 1, and definitely decided upon lumpectomy, n = 1. Refusers ranged in age from 30 to 76 years (M = 52.5) and were predominantly White (59.5%), non-Hispanic (92.9%), diagnosed with DCIS or stage 1 disease (50%), and ECOG performance status asymptomatic (92.9%). Over 61% of those who declined did not provide a reason. Among women providing a reason, the most common reason for refusal was a lack of perceived benefit from participation (9.5%). Comparisons were made between the 55 participants and 472 refusers with regard to available data (i.e., age, race, ethnicity, disease stage, ECOG status, and time since diagnosis). No statistically significant differences were observed.

Measures

Demographic and medical variables—Patients reported age, income, ethnicity, marital status, occupational status, insurance status, and education. Patients' stage of disease, date of diagnosis, and ECOG performance status[40] were collected from study chart. In addition, we recorded whether or not the participant had seen a plastic surgeon for a BR consult before completing the survey (*yes/no*).

Knowledge about Breast Reconstruction—A 19-item knowledge survey was developed by the study's breast reconstruction surgeon (N.T.). This measure included 11 face-valid true-false items assessing knowledge about procedures and risks and 8 multiple choice items assessing knowledge about complications and BR types. Sample true-false items included: "Implants last a lifetime so you will never need more surgery to replace them," and "After surgery, it may take as long as 1 to 2 years to completely heal." Response choices also included "Don't know." Multiple choice items included: "Tissue flap procedures use tissue from which of the following areas of the body to rebuild the breast" (choices: tummy, back, thighs, buttocks, do not know, all of the above (a-d). Responses marked as "Do not know" were coded as incorrect. The score was calculated as the percent correct (0–100). The coefficient alpha is shown in Table 3.

Reasons to choose and not choose BR—A 33-item survey was developed using two methods. First, we loosely adapted six items from the Breast Cancer Decision Making measure[41], which was developed to examine women's choices of mastectomy versus breast-conserving surgery. The six items assessed physician support, partner support, attractiveness to one's partner, physical appearance, a sense of femininity, and sexuality. The remaining items were developed based on a review of the BR literature.[25,42–43] Feedback and

subsequent revisions were made by three breast cancer surgeons. Items were rated on a 5-point scale (1= *strongly disagree* to 5 = *strongly disagree*). Reasons included appearance, femininity, emotions, relationship influences and concerns, surgical risks, knowledge, and physician interaction. Two scales were formed: Reasons to choose BR (17 items) and Reasons not to choose BR scale (8 items). Eight items were excluded from the final scales. Three items assessing knowledge (do not know risks or benefits) were excluded because they overlapped with the preparation for decision scale, an item about dating was excluded because too few women answered the question (n= 7), and four items were excluded due to very low item total correlations. Descriptive information for items on the two scales and the eight items not included the final analyses is shown in Table 2. The coefficient alpha for the reasons to choose BR scale is shown in Table 3.

Internal consistency for the reasons not to choose BR was not reported because the literature suggests that the reasons perception of one reason not to engage in a particular behavior is not associated with a different reason not to engage in a behavior.[44] For the data analyses, an average score was used for each scale. Thus, scores could range from 1 to 5.

Decisional Preparedness—Two scales measured this construct. First, a 12-item completeness of preparation scale was adapted from prior research on decisions regarding MSI testing.[45] Items included "I have been given a sufficient amount of information about the purpose of undergoing breast reconstruction surgery," and "The information I received covered the main reasons some people choose not to have breast reconstruction." Items were rated on a five-point scale (1 = *Strongly disagree;* 5 = *Strongly agree).* Second a, 7-item measure assessed satisfaction with the preparation to make a decision was adapted from prior research on decisions regarding MSI testing.[45] Items included, "How satisfied are you with the amount of information you received thus far?" and "How satisfied are you with the information you received about the risks of breast reconstruction surgery?" Items were rated on a 5-point scale (1 = *Not at all satisfied*, 5= *Extremely satisfied*). The correlation between the completeness and satisfaction scales was very high (r = .90), and therefore the two scales were combined into one scale labeled Decisional Preparedness. An average score was used for the analyses. Thus, scores could range from 1 to 5. The coefficient alpha for the scale is shown in Table 3.

Decisional conflict—The Decisional Conflict Scale[46–47] consists of 16 items. This validated scale has been used in studies evaluating decisional processes in medical settings.[48] Items are rated from *strongly agree* to *strongly disagree*. To calculate the scores, the average item score was multiplied by 25, as advised by the scale's authors, so that the scores could range from 0 to 100.[38] Higher scores indicate greater decisional conflict. For purposes of this study, we revised items to reflect the BR decision (e.g., "I am clear about how important the potential benefits of breast reconstruction are to me in this decision. The coefficient alpha is shown in Table 3.

Anxiety—The State version of the State-Trait Anxiety Inventory[49] was used. This widely-used 21-item measure assesses common symptoms of anxiety (e.g., "I am tense"). Items are rated on a four point scale (1= *almost never*, 4 = *almost always*). Participants were asked

how they presently feel. The coefficient alpha is shown in Table 3. A summary score was used for the analyses, and the possible range of scores was 20 to 80.

Anticipated decision—Participants were asked whether they think they have made a decision about BR (*yes/no*) and what reconstruction option they were most interested in pursuing (including not having BR or perhaps having BR at a later time).

Overview of Analysis

For Aim 1, descriptive statistics were conducted. The analyses for Aim 2 were conducted in two steps to reduce the possible number of variables included in the regression analysis predicting decisional conflict due to the small sample size. First, we examined the associations between demographic (age, income, education, partner status (partnered or not), ethnicity (caucasian vs not) and medical (cancer stage, prior plastics consult, ECOG status, time since diagnosis) factors and decision conflict, using appropriate statistical tests (t-tests, ANOVA, or correlations). Second, significant correlates from this analysis were included in the stepwise regression. The order of entry was determined by the expected importance in decisional conflict according to ODSF (e.g., knowledge is considered a key predictor). Knowledge was entered in the first step, reasons to choose and not choose BR were added the second step, and decisional preparedness and anxiety were entered on the third step.

Results

Descriptive Information about the Sample

Characteristics of the sample are shown in Table 1. The sample was primarily white, well-educated, primarily under age 50, married or in a committed relationship, carried medical insurance, and had not had a consultation with a plastic surgeon regarding BR.

Reasons to choose and not choose BR

Descriptive information for items included in the reasons to choose and not choose BR scales are shown in Table 2, and scale scores are shown in Table 3. As can be seen in Table 2, the four most highly-ranked reasons to choose BR were: the participant wanted her breasts to be equal in size ($M = 4.38$), she wanted to wake up from surgery with a breast in place ($M = 4.13$), she felt it would bother her to look in the mirror and see a scar with no breast ($M = 4.02$), and having BR would make her feel whole again (M=3.98). The four lowest-ranked reasons to choose BR were the partner had asked the participant to choose BR ($M = 2.42$), it would help the participant to forget about having breast cancer ($M = 2.49$), BR would improve the relationship with one's partner ($M = 2.64$), and BR would improve the sexual relationship with one's partner ($M = 2.73$).

The most highly-ranked reasons not to choose BR were related to the medical risks: the participant did not want to have more surgeries than she needed ($M = 3.93$), she worried about the risks and possible complications of BR (M= 3.76), and she worried about long-term problems that may happen after BR surgery such as scarring or pain ($M = 3.27$). The lowest highly-rated reason not to choose BR was feeling uncomfortable asking the doctor about BR ($M = 1.31$).

BR Knowledge, Decisional Preparedness, and Decisional Conflict

Descriptive information is contained in Table 3. The average BR knowledge score was low, with an average of 34% of questions answered correctly. Scores ranged from 0 to 74%. The mean score on decisional preparedness was 2.56 (3 corresponds to “moderate” and the scale had a possible range of 1–5). Decisional conflict was low, with an average score of 33.5 on a 100 point scale. Table 4 illustrates correlations between knowledge, decisional preparedness, and decisional conflict.

It is interesting to note that women who had consulted with a plastic surgeon about BR consult reported significantly higher levels of BR knowledge ($t(46) = 2.7$, $p < .01$), had significantly higher levels of decisional preparedness ($t(41) = 2.1$, $p < .05$), and reported higher anxiety ($t(45) = 2.0$, $p < .05$), but did not report significantly more reasons to choose or not choose BR or report lower decisional conflict.

Anticipated BR Decisions and Correlates of Anticipated Decisions

As shown in Table 3, almost half of the sample stated that they had made a decision regarding BR. Of the 26 women reporting that they made a decision, 22 women reported choosing some form of BR, with the majority anticipating that they would choose implants (20%). Twenty-eight women reported that they had not made a decision. Women who had not made a decision about BR reported significantly more reasons not to choose BR ($t(46) = 3.1$, $p < .001$), lower levels of decisional preparedness ($t(42) = 4.1$, $p < .001$), and greater decisional conflict ($t(46) = -6.4$, $p < .001$), but no differences with regard to BR knowledge or reasons to choose BR.

Regression Analysis Predicting Decisional Conflict

As noted above, associations between demographic and medical factors (and decisional conflict were examined first, and only variables significantly associated with decisional conflict were included in the stepwise regression. The comparisons indicated that a greater time since diagnosis was associated with significantly more decisional conflict ($r = .32$, $p < .05$). Other comparisons did not indicate significant associations. Therefore, time since diagnosis was entered on the first step, BR knowledge was entered on the second step, reasons to choose and not choose BR were entered on the third step, and decisional preparedness and anxiety were entered on the fourth step. Results are shown in Table 5. Significant predictors on the final step were a number of reasons not to choose BR (b = .28, $p < .05$) and decisional preparedness (b = -.69, $p < .001$). Higher decisional conflict was associated with higher scores on the reasons not to choose BR scale and lower levels of decisional preparedness. In the final step, when other variables were controlled for, time since diagnosis, BR knowledge, reasons to choose BR, and anxiety were not associated with decisional conflict when the other variables were included in the model. Together, the set of variables accounted for 71% of the variance in decisional conflict.

Discussion

Breast reconstruction is an increasingly common choice for women diagnosed with early stage breast cancer after mastectomy. However, levels of patient knowledge, reasons to

choose or not choose BR, preparedness for making this decision, and decisional conflict regarding BR have not been well-described during the time period when women are making this decision. In this relatively small sample, knowledge about BR and decisional preparedness were both relatively low. These findings are consistent with studies indicating that women desire more information about BR[21,32] and do not feel as prepared as they would like.[11] Women's reasons for choosing BR were primarily appearance/femininity and emotional concerns (e.g., feeling whole again). These results are consistent with qualitative literature reporting that attractiveness, femininity concerns, and feeling whole again are primary motivations for choosing BR.[19,34] For the majority of women who had partners, the partner was not a key influence on the BR decision, and BR was not viewed as a way to restore their sexual relationships or help women forget about having breast cancer. The restoration of intimacy has not been a common motivation for BR noted in the prior qualitative literature.[30] As reported in the qualitative literature,[25,50] surgical risks and post-operative complications were the most common reasons for not having BR.

It is interesting to note that BR decisional conflict was relatively low. For example, participants reported that the BR decision was relatively easy to make (Decisional conflict item: "This decision is easy for me to make") and reported that it was clear what BR decision was right for them (Item: "It's clear what choice is best for me") (average item scores ranged from 1.4 to 1.5; 1= *agree*, 2 = *neither agree nor disagree*). On average, participants reported that their decision showed what was important to them, that they expected to stick with their decision, and that they were satisfied with their choice (average item scores ranged from .84 to 1.37, 0 = *strongly agree*). The low levels of decisional conflict are surprising because participants reported that they did not feel well-prepared to make the BR decision and knowledge about BR was relatively low. It is also surprising that decisional conflict was not significantly lower among women who had already had a consultation with a plastic surgeon, because the plastic surgeon typically attempts to resolve decisional conflict.

The second aim was to evaluate factors associated with decisional conflict. It was hypothesized that higher decisional conflict would be associated with lower BR knowledge, lower decisional preparedness, higher scores on the reasons not to choose BR scale, lower scores on the reasons to choose BR scale, and greater general anxiety. Our results were partially consistent with these hypotheses. Higher scores on the reasons not to choose BR scale and lower levels of decisional preparedness were significant predictors in the final regression model. According to the ODSF,[47] decision conflict is reduced by addressing contributors to uncertainty, including providing information about benefits and risks for options, helping patients understand their values and emotion reactions, and improving perceived preparedness. Studies have suggested that less preparedness[51] and knowledge[52] are associated with greater decisional conflict.[51] Thus, our results partially support the ODSF and prior work. However, knowledge, reasons to choose BR, and anxiety were not associated with decisional conflict when the other variables were included in the model, which is not consistent with the ODSF.

During the decision making period before breast surgery, almost half of our sample stated that had made a decision regarding BR. Most chose to have BR. Among those who reported

that they were likely to choose BR, the majority chose implants. Women who stated that they had not yet made a decision about BR had significantly higher scores on the reasons not to choose BR scale, lower levels of decisional preparedness, and greater decisional conflict, but they did not report significant differences with regard to BR knowledge or with regard to scores on the reasons to choose BR scale.

Our study has several limitations. Despite our best efforts to include women over 60, minorities, and women who did not carry medical insurance, the majority of our sample was white and carried medical insurance, and less than a quarter of our sample was older than 60. Second, the sample size was small because it was pilot study evaluating a new BR decision support aid. These factors may have resulted in non-representativeness of the patient population and the findings may differ with a larger sample. Third, the sample included patients who had not had a plastic surgery consult as well as a subset of patients who had already had a consultation with a plastic surgeon before completing the survey. Due to the small sample size, we could not examine whether there were significant differences in knowledge, attitudes about BR, decisional preparedness, and decisional conflict between these two groups. Our exploratory post-hoc analyses indicated that levels of BR knowledge and decisional preparedness were significantly higher among women who had a plastic surgery consult, but levels of decisional conflict and anxiety did not significantly differ among women who had a plastic surgery consult. These preliminary findings suggest that some patients may experience decisional conflict after the plastic surgery consult. Future studies may focus on understanding more about decisional conflict after the plastic surgery consultation has occurred to examine decision support needs for this patient group. Fourth, although all participants were considering BR, some participants stated they had already made a decision about BR at the time they completed the survey. This finding suggests patients may seek decision support even when they do not experience high levels of conflict over the BR decision. Finally, we did not collect medical information such as whether or not the patient had bilateral breast cancer, prior contralateral breast cancer, or was at elevated breast cancer risk due to a family history. Each of these factors may have influenced BR decisions. High familial risk patients may be more likely to consider prophylactic contralateral mastectomy, and thus they may have needed different types of reasons for having BR.

Our findings have clinical implications for nurses and other health professionals working with patients considering BR. Taken together, the results suggest that health care professionals can facilitate lower levels of decisional conflict and increase decisional preparedness if they address patients' questions about the possible risks and benefits of BR. Our findings suggest that decision support may be helpful before the patient decides to consult with a plastic surgeon, but also indicate that decisions support may prove helpful for some women even after they complete their consultation with a plastic surgeon, because some women evidenced decisional conflict after the consultation.

Decision support that is tailored to help women weigh risks against benefits may be particularly helpful because reasons not to choose BR played particularly key role in decision conflict. Indeed, small scale studies are currently underway[52] (first author,

manuscript under review) that focus on developing an acceptable and efficacious decision support aid to facilitate informed BR decisions among women facing mastectomy.

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Implications for Clinical Practice

Health care professionals may facilitate decision-making by focusing on reasons for each patient's uncertainty and unaddressed concerns. All patients, even those who have consulted with a plastic surgeon and remain uncertain about their decision, may benefit from decision support from a health professional.

Table 1

Characteristics of the Study Sample

Characteristic	N	%	M	SD
Age			50.2	10.5
Race/ethnicity				
White	39	70.9		
Non-white	16	29.1		
Education				
High School	8	14.5		
Some college	10	18.3		
4 year degree	16	29.0		
Trade or technical degree	6	10.9		
Some graduate education	3	5.5		
Graduate degree	10	18.3		
Missing	2	3.6		
Annual income				
≤ $9999	1	1.8		
$10,000–$19,999	3	5.5		
$20,000–$39,999	9	16.4		
$40,000–$59,999	9	16.4		
$60,000–$100,000	15	27.3		
$100,000–$140,000	6	10.9		
> $140,000	6	10.9		
Missing	6	10.9		
Marital Status				
Married	30	54.5		
Single, partnered	19	34.6		
Single, not partnered	5	9.1		
Widowed				
Separated/Divorced	1	1.8		
Insurance Status (yes)				
Yes	53	96.4		
No	1	1.8		
Missing	1	1.8		
Disease stage				
Ductal Carcinoma in Situ	9	16.4		
1	12	21.9		
2	24	43.4		
3a	10	18.3		
Months since diagnosis			2.4	2.0
ECOG performance status				
0	53	96.4		

Characteristic	N	%	M	SD
1	2	3.6		
Prior Plastic surg consult (Yes)	8	14.5		

Table 2

Descriptive Information Regarding Reasons to Choose or Not Choose Breast Reconstruction

Item	M (*SD*)
Reasons to choose BR (17 items)	
Wearing an external breast prosthesis would be uncomfortable for me.	3.62 (1.10)
It is important to me to be able to wear the same kind of clothing I wore before my breast cancer and I'd like to have the freedom to wear low–cut tops.	3.87 (1.07)
I would feel self-conscious going out socially if I did not have a normal breast shape under my clothes.	3.87 (0.96)
It is important to me to be able to wear a regular bra like I before I had a mastectomy.	3.76 (0.94)
My sense of feeling like a woman is really related to how my breasts look.	3.20 (1.34)
Breast reconstruction surgery would help me feel whole again.	3.98 (0.93)
Having my breasts be equal in size is important to me.	4.38 (0.78)
Breast reconstruction surgery would help me to forget about having breast cancer	2.49 (1.30)
After having a mastectomy, I want my breasts to look the way they did before my breast cancer	3.49 (1.07)
My breasts contribute to me feeling more confident and sexy.	3.46 (1.10)
Breast reconstruction surgery would help to improve my relationship with my spouse or with my partner after the mastectomy.	2.64 (1.16)
Breast reconstruction would help to improve my sexual relationship with my partner.[a]	2.73 (1.04)
Breast reconstruction would allow me to feel more comfortable and confident around my partner.[b]	3.39 (1.20)
It would bother me to look in the mirror and see a scar with no breast.	4.02 (1.18)
I prefer to wake up after the mastectomy and have a breast there.	4.13 (0.88)
My partner has told me he or she wants me to have breast reconstruction.[c]	2.42 (1.38)
I would feel more desirable if I had a normally-shaped breast.	3.62 (1.16)
Reasons not to choose BR (8 items)	
I do not feel comfortable asking my doctor about breast reconstruction surgery.	1.31 (0.47)
I don't like the idea of having something unnatural like a breast implant put into my body.	2.58 (1.21)
I do not want to have any more surgeries than I need to.	3.93 (1.17)
I worry about risks and possible complications involved with breast reconstruction surgery.	3.76 (0.96)
I'm not impressed with the results from breast reconstruction surgeries that I have seen in other women.	2.47 (0.86)
I worry about long-term problems that may happen after breast reconstruction surgery such as scarring or pain.	3.27 (1.04)
Breast reconstruction surgery would be too expensive.	2.45 (0.92)
I'm not comfortable having a scar on my back or abdomen or thighs from breast reconstruction surgery (to build a new breast).	2.53 (1.09)
Items Not Included in the Final Scales (8 items)	
I feel I am too old to consider breast reconstruction.	1.65 (1.11)
Breast reconstruction surgery is not essential for my emotional well-being.	2.09 (1.06)
I don't know how to talk with my partner about reconstruction.	1.57 (0.67)
My partner does not really care if I have breast reconstruction.[b]	3.26 (1.11)
I do not know enough about the risks of breast reconstruction to make a decision about it.	3.02 (1.25)
I do not know enough about the possible benefits of breast reconstruction to make a decision about it.	2.67 (1.25)
I would not feel confident dating unless I had a reconstructed breast.[d]	3.50 (1.65)[a]
I do not know what questions to ask my doctor about breast reconstruction.[a]	2.78 (1.24)

[a] N = 54

[b] N = 51

[c] N = 52

[d] N = 45.

Table 3

Descriptive Information on Knowledge, Reasons to Choose and Not Choose Breast Reconstruction, Decisional Preparedness, Decisional Conflict, Anxiety, and Anticipated Breast Reconstruction Decisions

Variable	M (SD)	Range	N (%)	Cronbach's Alpha
BR Knowledge (% correct)	34.00 (22.4)	0–74		.84
Reasons to choose BR[a]	3.46 (0.62)	2.13–5.00		.84
Reasons not to choose BR	2.79 (0.52)	1.38–3.75		–
Decisional Preparedness[b]	2.56 (0.95)	1–4.32		.97
Decisional Conflict	33.53 (24.1)	0–100		.96
Anxiety[a]	45.67 (12.27)	21–80		.94
Anticipated decision about BR			27 (49.1)	
BR option most interested in (n= 27)				
Does not want to choose BR			1 (3.7)	
May want to choose BR in the future			3 (11.1)	
Decided to choose BR			3 (11.1)	
Implant			11 (20.0)	
Autologous tissue BR			9 (32.3)	
Unsure which type			3 (11.1)	

Note:

[a] N = 54

[b] N = 50. The anticipated decision score reflects the number who reported making a decision (answered yes). Higher scores indicate greater decisional conflict.

Table 4

Correlations between Decisional Conflict and Knowledge, Attitudes, Anxiety, and Decisional Preparedness

Variable	1	2	3	4	5	6
1. BR knowledge		.20[e]	−.09	.3[a,c]	.04[e]	−.18
2. Reasons to choose BR			−.10[e]	.28[c]	.09[d]	−.19[e]
3. Reasons not to choose BR				−.45[a,c]	−.48[b,e]	.64[b]
4. Decisional preparedness					−.20[c]	−.75[b,c]
5. Anxiety						.25[e]
6. Decisional conflict						

Note: BR = Breast reconstruction. Higher scores indicate less decisional conflict.

[a] $p < .01$

[b] $p < .001$

[c] $\underline{N} = 50$

[d] $\underline{N} = 53$

[e] $\underline{N} = 54$.

Table 5

Regression Analysis Predicting BR Decisional Conflict (N = 50)

Variable entered	Standardized Beta	R^2	Adjusted R^2	R^2 change
Step 1		.10	.08	.10
Constant				
Months since diagnosis	−.32[a]			
Step 2		.11	.07	.10
Constant				
Months since diagnosis	−.33[a]			
BR knowledge	−.10			
Step 3		.42	.36	.31
Constant				
Months since diagnosis	−.11			
BR knowledge	−.08			
Reasons to choose BR	−.15			
Reasons not to choose BR	.57[b]			
Step 4		.70	.66	.29
Constant				
Months since diagnosis	−.15			
BR Knowledge	.18			
Reasons to choose BR	.00			
Reasons not to choose BR	.28[a]			
Decisional preparedness	−.69[b]			
Anxiety	−.07			

[a] $p < .05$

[b] $p < .001$