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Anticipatory Psychological Distress in Women Scheduled for Diagnostic and Curative Breast Cancer Surgery

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Background: *Psychological distress is a central experience for women facing diagnostic and curative breast cancer surgery.* ***Purpose:*** *The present study was designed to predict anticipatory distress in 187 women scheduled to undergo excisional breast biopsy or lumpectomy.* ***Method:*** *Participants completed questionnaires assessing emotional distress and predictors of this distress (surgery type, worry about the surgical procedure, and worry about what the surgeon will find).* ***Results:*** *The study found that lumpectomy patients experienced greater anticipatory distress than excisional breast biopsy patients on three of the four distress measures (all ps < 0.05) and that worry about what the surgeon might find partially mediated these effects.* ***Conclusion:*** *The results suggest that although women awaiting lumpectomy are more distressed than women awaiting biopsy, both groups report substantial distress, and, consequently, psychosocial interventions are recommended for both groups.*

Key words: affective disturbance, breast neoplasms, surgical procedures, operative

According to the American Cancer Society (ACS, 2007) 178,480 women in the United States will be diagnosed with breast cancer this year, and 40,460 women will die of the disease. Surgery is an essential component of all current treatments to cure breast cancer and is commonly used to achieve definitive diagnosis (ACS, 2006). While medically necessary, both diagnostic (excisional breast biopsy) and curative breast cancer surgery (e.g., lumpectomy) can be emotionally taxing for women, as evidenced by research that has consistently found heightened distress in these patients (Deane & Degner, 1998; Ganz, Schag, Lee, Polinsky, & Tan, 1992; Hughson, Cooper, McArdle, & Smith, 1988; Montgomery et al., 2003; Montgomery, Weltz, Seltz, & Bovbjerg, 2002; Poole, 1997; Stanton & Snider, 1993). In addition to the direct negative effects, anticipatory psychological distress (distress experienced during the period before a scheduled medical procedure) has also been linked to patients' subsequent experiences of postsurgery side effects (Montgomery & Bovbjerg, 2004).

Although the literature has generally found women awaiting breast surgery to be distressed, no study to date has explicitly focused on comparing psychological distress levels prior to diagnostic (i.e., excisional breast biopsy) and curative (i.e., lumpectomy) surgery. However, some evidence suggests that women awaiting breast biopsy may be more distressed than women awaiting lumpectomy. Nosarti, Roberts, Crayford, McKenzie, and David (2002) studied 87 breast cancer patients prior to being diagnosed with cancer and approximately 8 weeks following the start of cancer treatment. These authors reported that psychological distress was greater before diagnosis than after, and they go on to propose that the experience of uncertainty prior to a biopsy may be more anxiety-provoking than the actual cancer diagnosis. Northouse (1989) found in retrospective interviews that 83% of her sample of breast cancer surgical patients reported that the diagnostic phase before surgery was the most difficult phase, rife with anxiety, and that uncertainty about their cancer status was viewed as more difficult than knowledge of a positive cancer diagnosis. These findings are consistent with recent work in the decision-making literature. This research suggests that ambiguity is aversive, and that in decision-making games, people are willing to pay an "ambiguity premium" to avoid uncertainty (Rustichini, 2005). These findings suggest that excisional biopsy (an ambiguous situation) would

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be judged more aversive to patients than lumpectomy (a less ambiguous situation). In terms of the relationship between surgery type and distress, these studies suggest that excisional breast biopsy patients may experience greater distress during the period prior to surgery than patients with a known cancer diagnosis (i.e., lumpectomy patients).

Interestingly, however, no research to date has explicitly examined psychological distress prior to lumpectomy and excisional biopsy in the same study. A better understanding of the relationship between surgical procedure and anticipatory distress might have important clinical implications in terms of ensuring that interventions are targeted to major sources of distress. Therefore, the first aim of the present study was to determine whether differences in anticipatory distress are related to surgery type (diagnostic, i.e., excisional breast biopsy, versus curative, i.e., lumpectomy).

If the surgery groups are found to differ in terms of anticipatory distress, it would be important to determine what basic aspects of the surgical procedures might be responsible for these differences. More specifically, although from a purely surgical standpoint they are similar procedures (DeVita, Hellman, & Rosenberg, 1997), excisional biopsy and lumpectomy differ along two key dimensions. First, they differ in terms of the surgery itself (e.g., the size of the surgical margin taken). Lumpectomy patients have a greater amount of tissue removed than excisional breast biopsy patients to ensure that all tumor has been removed. Although this is not a critical difference from a surgical perspective, it may well be from a psychological perspective. Women facing lumpectomy may be more concerned than women facing excisional breast biopsy about factors associated with the procedure itself, such as changes in physical appearance and scarring (Holland, 1998). Second, the surgery types differ in the type of medical information obtained by the pathology evaluation afterward. All women facing lumpectomy approach the surgery knowing that they have cancer. The medical uncertainty for them is in regard to prognostic pathological features of the tumor. However, women awaiting diagnostic surgery (excisional breast biopsy) are faced with the potentially devastating shock of an initial cancer diagnosis. Thus, in addition to concerns about what the surgeon will do, excisional breast biopsy patients may be particularly concerned about what the surgeon may find. A deeper understanding of the relationship between these two types of worry and distress could be of great benefit clinically, as it could guide the development of interventions to reduce distress. Previous research on a smaller sample of breast surgery patients ($N = 61$, Montgomery et al., 2003) revealed that both worry about what the surgeon might find and worry about the surgery itself were significant predictors of patients' distress levels at home during the week prior to breast surgery. However, that study did not examine whether these types of worry mediated the relationship between surgery type and distress. Therefore, the secondary aim of the study was to investigate whether a relationship between surgery type and distress could be due to worry about the procedure itself and/or worry about the possible prognostic consequences of the procedure (i.e., what the surgeon might find).

Method

Participants

One hundred eighty-seven women participated in the current study. Participants scheduled for breast surgery (i.e., excisional breast biopsy, lumpectomy) were referred to the study by Mount Sinai Hospital breast surgeons. Participants were eligible for the present study if they were women at least 18 years of age and if they were scheduled to undergo breast surgery; they were ineligible if they were unable to read and understand English, or if they had uncontrolled psychiatric illness (as determined by medical chart review).

Participants ranged in age from 18 years to 77 years ($M = 47.4$, $SD = 12.5$); 143 patients (76.5%) were scheduled to have an excisional biopsy and 44 patients (23.5%) were scheduled to have a lumpectomy. In terms of other demographic information, 72% of participants described themselves as white (not Hispanic), 67% had attained at least a college degree, and 51% were currently married. In terms of prior procedures, 23.5% of participants had had a prior excisional biopsy, 17.7% of participants had had a prior fine needle aspiration, and 7.5% had had a prior lumpectomy. In terms of cancer history, 12.8% of participants had prior cancer, and 13.4% had a family history of breast cancer. All participants provided written informed consent, and data was collected in accordance with Mount Sinai School of Medicine human subjects protection guidelines.

Measures

Demographics. A background questionnaire was used to gather basic demographic information including age, ethnicity, level of education, and marital status.

Outcome Variables. In order to fully capture the potentially multifaceted nature of patients' presurgical emotional experience, we used four measures of anticipatory distress, all of which were completed by participants in the hospital on the morning of surgery (prior to surgery):

1. *The Emotional Well-Being (EWB) Subscale of the Functional Assessment of Cancer Therapy—*

General (FACT-G, Version 4): The 6-item EWB subscale of this self-report measure was used to assess participants' emotional well-being since the clinic appointment with their breast surgeon during which their surgery was scheduled and they were informed of their surgery type. The FACT-G is a well-validated measure of quality of life (Webster, Cella, & Yost, 2003), has been used extensively with cancer patients (including breast cancer patients), has been specifically used prior to surgery with breast cancer surgical patients (Roth, Lowery, Davis, & Wilkins, 2005; Wilkins et al., 2000), and has normative data available for breast cancer patients. In the current research sample, Cronbach's alpha for the EWB subscale of the FACT-G was .77.

2. *Short Version—Profile of Mood States (SV-POMS)*: This 37-item self-report measure, which participants completed on the morning of their breast surgery, assessed their level of psychological distress (i.e., mood disturbance) over the past week (Shacham, 1983). Previous research has found the Total Mood Disturbance (TMD) score to have adequate internal consistency (ranging from $\alpha = 0.93$ to $\alpha = 0.96$) and validity (DiLorenzo, Bovbjerg, Montgomery, Valdimarsdottir, & Jacobsen, 1999). In the current research sample, Cronbach's alpha for TMD was 0.95. This measure has been used previously to assess anticipatory distress in breast cancer surgery patients (Montgomery et al., 2003).
3. *Impact of Events Scale—Intrusion Subscale (IES-Intrusion)*: This self-report questionnaire was used to measure surgery-specific distress. The 7-item intrusion subscale assesses frequency of intrusive thoughts and feelings about a stressful event (Horowitz, Wilner, & Alvarez, 1979). In the present study, participants were asked to rate how often they experienced surgery-specific intrusion symptoms "in the last month, including today." Frequency for each item was rated: 0 = not at all, 1 = rarely, 3 = sometimes, or 5 = often. The IES has previously been used to measure psychological distress prior to breast cancer surgery (Tjemsland, Soreide, Matre, & Malt, 1997). The IES-intrusion subscale has high test-retest reliability (0.89) as well as high internal consistency ($\alpha = 0.78$) (Horowitz et al., 1979). In the current sample, Cronbach's alpha was 0.87 for the Intrusion subscale.
4. *Visual Analog Scale (VAS) Emotional Upset*: This item was used to assess acute emotional upset on the morning of surgery. Participants were asked "Right now, how emotionally upset do you feel? Please put a slash through this line (a 100-mm line shown below on actual forms) to indicate how emotionally upset you feel." This line was anchored by "not at all upset" and "as upset as I could be." VAS scores range from 0–100 based on how many millimeters from the left participants made their mark on the line. The use of VAS questions has been well supported in previous studies related to breast cancer (e.g., DiLorenzo et al., 1995; Montgomery et al., 2002), and have been used in previous research to measure anticipatory distress in breast cancer surgery patients (Montgomery & Bovbjerg, 2004). VAS measures, which were initially developed in the 1920s, are commonly used to allow for rapid measurement of a diverse array of clinical symptoms including emotional distress, and have been consistently demonstrated to be reliable and valid (e.g., Ahearn, 1997; Miller & Ferris, 1993).

Predictor Variables. Three predictor variables were used:

1. *Surgery Type*: Information regarding patients' scheduled surgery type (excisional breast biopsy or lumpectomy) was obtained from the surgeon at the time of referral.
2. *Visual Analog Scale (VAS) Worry about Surgery*: This face-valid item was completed by participants at home prior to surgery and was used to assess worry about the surgery itself. It was identical in format to the VAS for emotional upset, except that it asked patients: "Thinking about your surgery, how worried are you about the surgery itself and what the surgeon will do during your operation?" Anchors were "not at all worried" and "as worried as I could be."
3. *Visual Analog Scale (VAS) Worry about What the Surgeon Might Find*: This face-valid item was completed by participants at home prior to surgery and was used to assess worry about the results of the surgery. It was identical in format to the other VASs, except that it asked patients "Thinking about your surgery, how worried are you about what the surgeon may find?" and was anchored by "not at all worried" and "as worried as I could be."

Visual analog scales are commonly used to measure worry in surgical contexts (e.g., Grunberg et al., 2003), and, more specifically, a VAS item measuring fear of surgery has been found to demonstrate convergent validity with the state anxiety subscale of the State-Trait Anxiety Inventory (Kindler, Harms, Amsler, Ihde-Scholl, & Scheidegger, 2000). Although the two worry items were found to be significantly related to one another ($p < 0.0001$) in the present study, the correlation between them was 0.44 ($R^2 = 0.19$), suggesting only 19% of shared variance between the two items.

Procedure

Following consultation with their surgeon, during which breast surgery was scheduled, study personnel contacted and described the study to all interested

patients. All participants completed consent forms before any assessments were conducted. Participants were mailed take-home questionnaire packets which assessed demographics as well as the two worry items described above. Participants were asked to return this packet on the day of their surgery. On the day of surgery, participants were asked to complete an additional questionnaire packet containing the FACT-G, the SV-POMS, the IES, and the VAS measure of emotional upset. A research assistant was available to answer any questions the participants had about the study materials. Data were analyzed using between-subjects MANOVAs, between-subjects ANOVAs, and regression analyses. All statistical tests were computed using SAS 9.0 (SAS Institute, Cary, NC).

Results

Four outcome variables were examined: emotional well-being (EWB subscale of the FACT-G), surgery-specific distress (IES-Intrusion), mood disturbance (TMD of the SV-POMS), and acute emotional upset on the day of surgery (prior to surgery) (VAS). Demographic variables (i.e., marital status, level of education, ethnicity, age, family history of breast cancer) were not significantly associated with any outcome variable and therefore were not included in any subsequent analyses (ps > 0.10). The average number of days between when patients' surgery appointments were scheduled and when the surgery occurred was 4.36 (SD = 8.93); this variable was neither significantly related to surgery type nor any of the outcome variables (all ps > 0.20). We then examined the relationships between surgery type and medical history/prior treatment variables to determine whether any of the latter variables were confounded with surgery type. Based on chi-square analyses, we found that history of excisional biopsy was not significantly related to surgery type (Fisher's exact test, two-sided probability = 0.16), nor was history of fine needle aspiration (Fisher's exact test, two-sided probability = 0.11). However, history of lumpectomy was significantly related to surgery type ($p < 0.0001$), as was one's own prior cancer ($p < 0.0002$). Therefore, history of lumpectomy and prior cancer were included in subsequent analyses.

To address the first study aim, while controlling for experimentwise Type I error, a MANOVA was conducted to determine whether the set of outcome variables differed as a function of surgery type (controlling for lumpectomy history and prior cancer). A significant multivariate main effect of surgery type was found (Wilks' Lambda = 0.90, $F(4, 180) = 4.75$, $p < 0.0013$). Investigation of the univariate ANOVAs (by outcome variable) indicated that 3 out of the 4 outcome variables (EWB, VAS-emotional upset, IES-Intrusion) differed significantly across scheduled surgery type (controlling for prior lumpectomy and prior cancer), and in each case, women scheduled for lumpectomy were significantly more distressed than women scheduled for excisional breast biopsy (see Table 1). Results also revealed that prior cancer accounted for unique variance over and above surgery type when IES-Intrusion and POMS-TMD were the outcome variables ($p < 0.05$), and that in each case women with prior cancer were more distressed than women without prior cancer (IES means: 13.71 versus 9.09, $p < 0.01$; POMS-TMD means: 0.93 versus 0.52, $p < 0.01$).

To address the second study aim, that is, to determine whether the effect of surgery type on distress was mediated by either of the worry variables, we first used the classic approach developed by Baron and Kenny (1986). As we had already established a relationship between surgery type (IV) and three outcome variables, we next examined the relationship between surgery type and our hypothesized mediators—worry about the surgery itself and worry about the surgeon's findings. Results revealed that surgery type was significantly related to worry about what the surgeon might find (standardized parameter estimate = 0.14, $p = 0.05$), but not to worry about the surgery itself (standardized parameter estimate = 0.09, $p > 0.20$). More specifically, women scheduled for lumpectomy worried significantly more about what the surgeon might find than women scheduled for excisional biopsy

Table 1. *Mean Distress by Scheduled Surgery Type (n = 187).*

	Excisional Biopsy ($n = 143$)		Lumpectomy ($n = 44$)			
	Mean	SD	Mean	SD	$F(1, 185)$	$p <$
EWB	18.27	4.29	16.73	4.02	4.57	.04
VAS-emotional upset	32.97	27.62	50.02	28.51	12.64	.001
IES-Intrusion	8.78	8.05	13.18	8.06	10.04	.002
TMD	0.54	0.68	0.71	0.68	2.10	.14

Note: EWB = Emotional well-being subscale of the FACT-G—Version 4 (This scale is scored so that higher scores indicate *better* emotional well-being.); VAS = Visual Analog Scale; IES-Intrusion = the Intrusion subscale of the Impact of Events Scale; TMD = Total Mood Disturbance score of the SV-POMS.

(excisional breast biopsy mean = 45.98, SD = 27.04; lumpectomy mean = 55.21, SD = 27.95; $p < 0.05$). Based on these results, we continued on to explore whether worry about what the surgeon might find affected EWB, VAS-emotional upset, and IES-Intrusion while controlling for surgery type (and in the case of IES-Intrusion, controlling for prior cancer as well, as prior cancer contributed unique variance to the prediction of IES-Intrusion over and above surgery type). Figure 1 demonstrates that this was the case. Finally, when worry about what the surgeon might find was entered into each model, the results indicated that (1) the relationship between surgery type and emotional well-being (EWB scale of FACT-G) decreased and became non-significant (suggesting complete mediation), (2) the relationship between surgery type and acute emotional upset (VAS-emotional upset) decreased but remained significant (suggesting partial mediation), (3) the relationship between surgery type and surgery-specific distress (IES-Intrusion) decreased but remained significant (suggesting partial mediation).

In order to determine both the statistical significance and effect size of the above-listed mediation effects, we used the $\alpha\beta/\mathrm{se}_{\alpha\beta}$ test statistic (dubbed z') and accompanying empirical distribution tables as recommended by Mackinnon and colleagues (Mackinnon, Lockwood, & Hoffman, 1998; Mackinnon, Lockwood, Hoffman, West, & Sheets, 2002) Simulation studies have found this approach to have markedly better power than the Sobel (1982) test, while retaining an acceptable Type I error rate ($\alpha = 0.05$). Based on these tests, it was determined that relationships between surgery type and

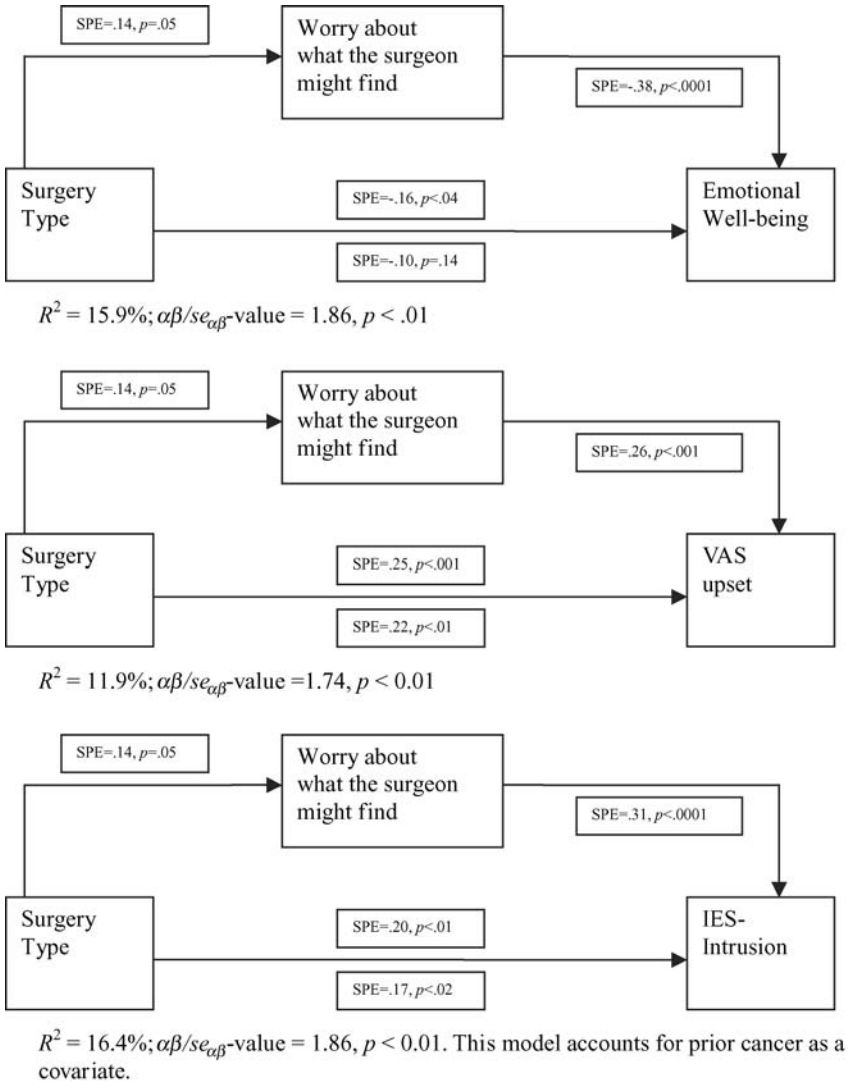

Figure 1. Models of worry about what the surgeon might find as a mediator of the relationship between surgery type and psychological distress (EWB, VAS, IES-Intrusion). ***Note:*** **SPE = standardized parameter estimate. Values above the line represent bivariate relations, while values below the line represent simultaneous relations.**

emotional well-being, VAS-emotional upset, and IES-Intrusion were significantly mediated by worry about what the surgeon might find ($ps < 0.01$). Additional exploration suggested that these mediation effects were consistent with a small to medium mediation effect (as outlined by Mackinnon et al., 2002).

Discussion

The primary aim of the present investigation was to determine whether women scheduled for diagnostic versus curative breast cancer surgery differed in terms of psychological distress prior to surgery. The results indicated that across three distress measures (emotional well-being, acute emotional upset, and surgery-specific distress), women scheduled for lumpectomy had higher levels of anticipatory distress than women awaiting excisional breast biopsy. The anticipatory distress associated with curative breast cancer surgery thus appears to be greater than that associated with diagnostic breast surgery. To our knowledge, this is the first time this result has been reported in the literature. It is important to note, however, that based on comparisons to other published data, both groups had levels of mood disturbance on par with breast cancer chemotherapy patients early in the course of their treatment (DiLorenzo et al., 1999). Similarly, although one cannot directly compare our IES-Intrusion results (anchored to surgery) to studies using the IES with other anchors, it appears that the levels of intrusion symptoms in our sample, regardless of surgery type, are greater than those of women following diagnosis of metastatic breast cancer (Turner, Kelly, Swanson, Allison, & Wetzig, 2005). From a clinical perspective, these findings highlight the marked level of distress that many women experience while awaiting breast cancer surgery, and suggest that these patients might particularly benefit from psychosocial interventions at this time (e.g., Baum & Andersen, 2001; Montgomery et al., 2002).

Additionally, we found that having had cancer in the past made a unique contribution to the prediction of anticipatory distress over and above surgery type. More specifically, the 12.8% of the women in the sample who had cancer in the past had higher levels of surgery-specific distress and total mood disturbance on the POMS than women who had not had cancer in the past. This suggests that cancer survivors facing an additional cancer surgery might be particularly distressed, and might also benefit from psychosocial interventions to reduce this distress.

The second aim of the present study, to determine which central aspects of the threats posed by surgery were related to distress, provided some interesting results. First, we found that surgery type was significantly related to worry about what the surgeon might find, and not to worry about the procedure itself. This finding is consistent with literature indicating that the most important information need for biopsy patients is learning of their cancer diagnosis, and that information about the diagnostic procedures themselves were considered less important (Deane & Degner, 1998). Contrary to our initial hypothesis, the women awaiting lumpectomy (who have a known cancer diagnosis) were more worried about what the surgeon might find than were women awaiting excisional breast biopsy (for whom their diagnosis is unknown). It should be recognized that the VAS items used to measure worry about the procedure and worry about what the surgeon might find are somewhat coarse, and lack the specificity to precisely identify the nature of these worries (e.g., worry about scarring, worry about insufficient anesthesia, worry about number of lymph nodes that are cancer positive). Consequently, if possible within the context of preoperative time constraints, future research might want to use a more extensive measure of these two types of worry. One possible explanation for the higher levels of anticipatory distress in the lumpectomy patients, which represents a departure from previous literature, is as follows. It has been theorized that prior to a trauma, people may have an "assumption of invulnerability" (Janoff-Bulman & Frieze, 1983, p. 4). However, the experience of a traumatic event can shatter this assumption and necessitate cognitive processing to develop new assumptions about the world or to incorporate the traumatic experience into existing assumptions (Janoff-Bulman, 1992; Janoff-Bulman & Frieze, 1983). As applied to the present results, this raises the possibility that women awaiting excisional biopsy may largely be operating under this "assumption of invulnerability" and assume that they will not be diagnosed with cancer. On the other hand, women scheduled for lumpectomy, who may have already had their assumptions disabused by their definitive cancer diagnosis, may no longer assume that the world is benevolent and may therefore be significantly more worried about what the surgeon might find. On a related note, it is possible that women scheduled for a biopsy, perhaps by virtue of not yet having their assumptions shattered, retain more hope for a positive postsurgical outcome (i.e., no cancer diagnosis) than lumpectomy patients. However, the relationship between hope, surgery type, and distress remains in need of empirical investigation.

Second, we found that worry about what the surgeon might find explains some of the variance in distress. Clinically, this suggests that interventions designed to decrease anticipatory distress in women awaiting breast cancer surgery should focus at least in part on helping women to manage this worry. Additionally, although this point is speculative at this time, our findings suggest that interventions focused on reducing worry about cancer-related findings might be beneficial

in reducing distress, even outside of a surgical context (e.g., mammography). Third, we found that worry about what the surgeon might find accounted for a significant portion of the relationship between surgery type and distress but not all of this relationship. These findings suggest that other variables, not explored in the present paper, might also contribute to the surgery type-distress relationship. For example, the majority of women getting a lumpectomy may anticipate subsequent radiation treatment and/or adjuvant chemotherapy, both of which can be accompanied by significant side effects, whereas excisional breast biopsy patients, who, as noted above, may assume that their diagnosis will be negative, may anticipate no further treatment. Additional variables such as this should be explored in future research.

When interpreting the results of the present study, certain limitations must be taken into account. First, as in all studies, the generalizability beyond the current sample requires support. For example, it remains to be determined whether our results will generalize to other settings (e.g., developing countries) and other surgeons. In addition, it remains to be determined whether these results will generalize to other types of curative breast cancer surgery, such as mastectomy. This is an open question, as mastectomy is a more extensive surgical procedure than lumpectomy, with much more dramatic cosmetic results. One might predict, based on the present study's findings, that mastectomy patients will be more distressed than excisional biopsy patients. However, this may not be the case. For example, it is possible that women scheduled for mastectomy might actually experience lower levels of distress. They might believe that their cancer will be completely removed and reconstruction might further alleviate potential body image concerns (Cohen, Hack, de Moor, Katz, & Goss, 2000). A third but related issue is whether the aforementioned differences between surgery types on anticipatory distress will generalize to the postsurgical period. Future research would do well to include excisional breast biopsy, lumpectomy, and mastectomy patients in the same prospective study to better understand the distress of women across the spectrum of breast cancer surgical treatments, both prior to and following surgery. Fourth, the construct of "surgery type" is admittedly broad, and although the two worry items were intended to shed initial light on which basic aspects of surgery type contribute to anticipatory distress, the surgery types certainly differ in ways not addressed in the present study. For example, the reason given by the surgeon to the patient for the surgery (e.g., to remove known cancer versus to rule out cancer), women's belief regarding the reason for the surgery, other aspects of patient-provider communication, and women's beliefs about their cancer status could potentially contribute to variability in patients' levels of distress prior to surgery as well. Future research might want to include specific questions on these concepts to more fully explicate the relationship between surgery type and distress. Fifth, the list of predictor variables of distress included in this study should by no means be considered exhaustive, particularly as they accounted for 12–16% of the variance in our distress outcome measures. This study was focused on an initial description of differences in distress based on surgery type and worry about surgical factors. However, it is likely that other variables not assessed in the present study may also contribute to distress (e.g., stable personality characteristics). For example, Montgomery et al. (2003) demonstrated that optimism was a significant predictor of anticipatory distress in breast surgery patients. Future research, designed with the intent to more broadly understand predictors of anticipatory distress, might benefit from including assessments of additional variables. Last, although the results are consistent with the possibility that it is patients' worry about what the surgeon will find that results in anticipatory distress, the correlational nature of the present study precludes drawing conclusions about causality.

The present study is consistent with the view that women awaiting breast cancer surgery, be it diagnostic or curative, exhibit considerable distress. Given that distress prior to surgery has been shown to be predictive of postsurgical outcomes such as fatigue, nausea, and discomfort (e.g., Montgomery & Bovbjerg, 2004), as well as of continuing postsurgical distress (e.g., Millar, Purushotham, McLatchie, George, & Murray, 2005), presurgical distress is a valid target for clinical interventions. The present study concludes that women awaiting lumpectomy experience greater distress than women awaiting breast surgery for diagnostic purposes. It may be that a positive breast cancer diagnosis leads to greater distress than uncertainty about a potential diagnosis. These data should serve as a reminder to clinicians that anticipatory distress is a common and aversive part of breast cancer surgical patients' experiences. By effectively treating women's anticipatory distress, we may not only help these patients emotionally, but may improve their physical recovery (e.g., reduce their postsurgical side effects) as well.

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