Breast Conservation Versus Mastectomy: Distress Sequelae as a Function of Choice

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Between 1981 and 1984, 93 stage I and II breast cancer patients were entered onto a trial at the National Cancer Institute (NCI) randomizing patients to excisional biopsy plus radiation *v* mastectomy. Between 1984 and 1987, 98 stage I and II breast cancer patients were entered onto a behavioral study in Pittsburgh, approximately 70% of whom elected to have breast conservation surgery. Patients at both sites were assessed three to five days postsurgery, and again at 3-month's follow-up, using a well-validated mood measure, the Profile of Mood States (POMS). There were no demographic or disease differences between the two samples. In the Pittsburgh sample, using a repeated measures multivariate analysis of covariance (MANCOVA) analysis, after adjusting for menopausal status and radiotherapy and chemotherapy toxicity, the conservation group was psychologically worse off ($F = 2.7$, $P < .03$). For example, they were significantly more distressed over time ($F = 5.5$, $P < .02$), and more depressed in general ($F = 9.2$, $P < .005$). Using Karnofsky ratings, the two groups were identical in terms of disability at 3-month's follow-up. In contrast, for the NCI patients participating in the randomized trial, after adjusting for chemotherapy and radiotherapy treatments, reported overall distress decreased over time ($F = 17.4$, $P < .0001$) for all patients, irrespective of treatment group, and the between-groups MANCOVA was not significant. Thus, when comparing the two samples, when "choice" played a major role, the conservation patients were psychologically worse off—at least at 3-month's follow-up. If there was a biological advantage, it would have favored the conservation group. However, the psychological prospective data showed just the opposite pattern. The assumption that a woman is psychologically better off opting for breast conservation may need to be re-examined.

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RESULTS of several studies,[1-4] including findings from two recent randomized trials,[5,6] have demonstrated that long-term survival of early-stage breast cancer patients receiving conservative treatment was not significantly different than for those receiving a mastectomy. Despite the biological significance of these findings, ie, that breast cancer is inherently a systemic disease, the assumption has been that for the patient, these results are good news. That is, the patient is assumed to be psychologically better off receiving a breast-sparing treatment.

There have been several studies over the years examining breast cancer patients' psychological adjustment to medical treatment.[7-11] However, only six studies have been directly concerned with the comparative analysis of psychological status between patients treated with mastectomy *v* excisional biopsy plus radiation.[12-17] Taken together, the results from these latter projects suggest either no difference in outcome as a result of surgical treatment, or where a difference in outcome was found, the findings were clearly in favor of the women who received a breast-sparing procedure. (An exception to this trend was reported by Fallowfield et al[17] and their findings will be discussed later in conjunction with findings from our current research reported here.) However, except for the study by Wolberg et al,[16] the methods used in these comparative analyses were relatively weak. For example, several of the studies reported using samples that were self-selected and small; the studies of Schain et al[12] and Steinberg et al[15] used retrospective self-report, without controlling for the time since treatment.

Wolberg et al[16] studied a sample of early-stage breast cancer patients who were eligible for

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breast-sparing technology, and examined psychological and demographic factors that differentiated those who chose a "lumpectomy," from those who elected mastectomy. These researchers found that those who chose mastectomy were more anxious and depressed, while those who chose a breast-sparing procedure placed significantly more value on their physical appearance. These assessments were made before any surgery was actually performed. Although no prospective follow-up was reported for these patients, there was a clear assumption that the lumpectomy patients were psychologically better off, both pre- and postsurgery.

Our research group, first at the National Cancer Institute (NCI) and now at the University of Pittsburgh School of Medicine, has been following two samples of early-stage breast cancer patients, a proportion of each having received breast-sparing procedures. At the NCI, approximately 93 women who are participating in a randomized trial (NCI protocol 79-C-111) testing the efficacy of excisional biopsy plus radiotherapy *v* mastectomy are being followed prospectively. All patients who are node-positive also receive a course of adjuvant chemotherapy. (Complete details of treatment schedule and dose-intensity have been published.[18])

At Pittsburgh, approximately 100 stage I and II patients, recruited primarily from the practices of four university-based surgeons, have been enrolled in a prospective study, examining behavioral and immunological predictors of time to recurrence of disease. As the National Surgical Adjuvant Breast and Bowel Project (NSABP) B-06 trial had ended 4 months before patients started being accrued to this present study, patients "elected" (ie, were not randomized, but "negotiated" in some sense) their treatment modality. At the time that these data were examined, approximately 50 patients had completed 3-month follow-up assessment. These are the patients who will be reported on here.

These two prospective studies were not initiated in order to examine psychological sequelae of breast-sparing surgery *v* mastectomy. But the two samples offered an opportunity, prospectively to examine baseline (approximately five days postsurgery) and 3-month follow-up data on women who were randomized to treatment on the one hand, *v* those who exercised some choice in the treatment decision on the other.

Table 1. Pittsburgh and NCI Breast Cancer Sample Characteristics

Variable	Pittsburgh	NCI
Age	50.6	50.4
Education (yr)	13.6	14.1
% Caucasian	90	82
% Node ± negative	42	51
% Receiving excisional biopsy	72	43

MATERIALS AND METHODS

Patients

Table 1 displays demographic, stage, and treatment characteristics of the two samples. There were no differences between the two samples in terms of age, educational status, or racial composition. A somewhat higher, but nonsignificant proportion of the sample at Pittsburgh had at least some positive axillary lymph nodes. Approximately half of the NCI sample received excisional biopsy (a reflection of the randomization procedure used in that trial), whereas a larger proportion of the Pittsburgh stage I and II breast cancer sample elected excisional biopsy. The relatively larger proportion of Pittsburgh patients receiving breast conservation surgery may also reflect the fact that the NSABP Headquarters is in Pittsburgh, and the popularity of excisional biopsy has been greatly influenced by the NSABP experience in that city.

We use the term "elected" here to denote the nonrandomized treatment experience of the patients in the Pittsburgh sample. Based on previous data,[16] approximately two thirds of stage I and II patients may be eligible for conservative treatment. Patients with centrally located tumors, multifocal or bilateral tumors, or patients who have previously undergone contralateral mastectomy are typically ineligible for breast-sparing surgery. Given that approximately 70% of the Pittsburgh sample actually received an excisional biopsy plus radiation, it is apparent that most, if not all, of the patients offered a breast-sparing technique accepted this option. It is also probably safe to assume for this sample that there was a discussion of treatment options with their surgeon, as well as a clinical rule-out for procedures that were deemed inappropriate for the individual case. Thus, treatment plans for the Pittsburgh sample were not made by a process of randomization, but by a clinical decision process involving discussion between physician and patient.

Procedures

Baseline. The assessment schedule for the two study sites was identical, and the test battery was similar for both the Pittsburgh and NCI samples. As detailed in our earlier publications,[19,20] in addition to a structured interview being conducted approximately five days postsurgery, all patients were assessed using the Profile of Mood States (POMS),[21] and were rated by independent observers for their disability status using the Karnofsky rating scale.[22] Scores on this latter scale range in deciles, reflecting functional status (eg, 100 = fully functional and active; 60 = needs assistance in daily activities; 20 = bedridden).

We expanded our measurement of perceived social support and coping styles used by patients because of our earlier NCI findings, and because of other research suggesting that such

factors play an important role in both adjustment and host status during distress.[23-25] Thus, we measured in a more detailed and methodologically sophisticated way the character of perceived social support in this sample, using a self-report instrument that was developed at the University of Michigan specifically to measure the quality of social support in breast cancer populations. This scale allows the quantification of perceived emotional support from a variety of others, including spouse (or intimate other), family members, and friends. Test–retest reliability over a 3-month period for subscales ranged from $r = .5$ (perceived support from a family member) to $r = .62$ (perceived support from a spouse). Inter-item correlations (Cronbach's alpha coefficient) for items associated with each category of social other were all highly significant (eg, $r = .95$ for perceived support from a spouse).

Three-month follow-up. At 3 months postsurgery, all patients were seen as outpatients, were administered the POMS, and were rated again on their psychological and physical adjustment to the illness. The Pittsburgh sample was also re-assessed, using the Michigan Perceived Social Support Questionnaire.

RESULTS

Using repeated measures two-way analysis of covariance (ANCOVA) tests,[26] we analyzed differences in psychological distress and functional status, stratifying by type of surgery (excisional biopsy *v* mastectomy) and time of measurement (baseline *v* 3-month follow-up). Because of the inherent methodological differences between the two samples, one attached to a randomized trial and the other not, we did not use study site as a third factor, but initially carried out separate statistical analyses on the two samples for comparison purposes. However, we did make direct comparisons between the two samples at baseline, using *t* tests to examine distress differences between identical baseline surgical treatments.

For both samples, menopausal status and chemotherapy and radiotherapy treatment were co-varied at follow-up. Specifically, for the Pittsburgh sample, in addition to menopausal status, number of radiotherapy treatments (ranging from 0 to *n*th treatment at follow-up) and type of chemotherapy categorized according to toxicity of side effects (0 = none, 1 = tamoxifen alone, 2 = multimodality chemotherapy) were co-varied in all ANVOCA analyses. For the NCI sample, a somewhat simpler co-varying scheme was used. As stipulated by protocol NCI-C-111, if patients had any nodes positive, they were rated as receiving chemotherapy on follow-up (virtually all patients receiving the same regimen), and their scores were coded accordingly (1 = chemotherapy, 0 = none). Similarly, if they had received an excisional biopsy, they were rated as also receiving radiotherapy postsurgery, and scores were also appropriately coded to reflect receiving that type of treatment on follow-up (1 = radiotherapy, 0 = none).

For the Pittsburgh sample, we examined emotional distress scores (POMS total and subscores), physical disability, and perceived social support factors as dependent variables. First, in order to control for potentially inflated *F* values for repeated univariate tests using the six subscales and total score of the POMS, we performed a multivariate analysis of covariance (MANCOVA) on this measure, testing for overall significant main effects and interactions using the POMS scale. We found a significant overall main effect for the surgery group ($F = 2.7$, $P < .03$), as well as a significant overall main effect for time ($F = 4.3$, $P < .003$). There was no overall surgery group × time interaction for the emotional distress measures.

Table 2 displays means, standard errors, and the main effect and interaction results for the repeated measures ANOVA. Although the overall main effect of time was significant, only two of the univariate emotional distress variables were significantly different over time for the sample as a whole. Anxiety tended to decrease over time for all patients, although less so for the excisional biopsy patients ($F = 3.5$, $P < .06$); and fatigue tended to increase over the 3-month follow-up period, again with excisional biopsy patients reporting higher average levels of fatigue than mastectomy patients ($F = 6.5$, $P < .01$). Again, it should be kept in mind that we co-varied chemotherapy and radiotherapy dosing. Thus, the increase in fatigue symptoms are likely a reflection of psychological, rather than just physical status.

When considering main effects for the surgery group stratification, four univariate tests were statistically significant. In every case, the excisional biopsy group emerged as the most distressed overall, compared with the mastectomy group. Specifically, they reported higher symptoms of confusion ($F = 5.8$, $P < .02$), more anger ($F = 10.2$, $P < .003$), and more depression ($F = 9.2$, $P < .005$) than the mastectomy group, and had higher overall total distress scores ($F = 5.5$, $P < .02$). Again, although there were no significant interactions between surgery group and

Table 2. Analysis of Variance for Mood, Disability, and Social Support Variables (Pittsburgh Sample)

	Baseline X (SE)	Follow-Up X (SE)	F Value	P Value
Main Effect-Time				
POMS-total	19.2 (4.8)	20.3 (6.4)	.1	NS
Fatigue	6.7 (1.1)	10.1 (1.2)	6.5	.01
Depression	9.1 (1.5)	8.6 (1.5)	.4	NS
Confusion	3.4 (.7)	2.4 (.8)	2.2	NS
Anxiety	8.9 (1.2)	7.3 (1.2)	3.5	.06
Vigor	15.0 (1.0)	15.1 (1.2)	.5	NS
Anger	6.0 (1.5)	7.3 (1.6)	.4	NS
Karnofsky	86.4 (1.6)	88.9 (1.5)	.7	NS
Social support				
Spouse	34.4 (.8)	31.4 (1.1)	5.3	.02
Friend	35.1 (.8)	33.1 (.8)	6.9	.01
Family	35.4 (.7)	31.1 (1.1)	10.3	.003
Over follow-up	54.8 (1.6)	51.0 (1.7)	.7	NS
	Mastectomy X (SE)	**Biopsy X (SE)**	**F Value**	**P Value**
Main Effect-Surgery Group				
POMS-total	3.2 (4.7)	26.2 (4.9)	5.5	.02
Fatigue	7.2 (1.1)	8.8 (.9)	.05	NS
Depression	3.9 (1.0)	10.9 (1.3)	9.2	.005
Confusion	.8 (.8)	2.4 (.8)	5.8	.02
Anxiety	5.6 (1.5)	7.3 (1.2)	2.0	NS
Vigor	16.8 (1.2)	14.4 (1.0)	1.4	NS
Anger	2.3 (.8)	8.4 (1.4)	10.2	.003
Karnofsky	89.4 (1.5)	87.0 (1.3)	4.1	.05
Social support				
Spouse	34.5 (1.1)	32.4 (.9)	.3	NS
Friend	36.6 (.9)	33.2 (.7)	4.4	.04
Family	34.6 (1.1)	32.7 (.9)	2.0	NS
Over follow-up	56.8 (.8)	51.6 (1.5)	7.5	.01
	Mastectomy		**Lumpectomy**			
	Baseline	**Follow-Up**	**Baseline**	**Follow-Up**	**F Value**	**P Value**
Time × Surgery Group						
POMS-total	8.9 (6.9)	−2.3 (6.0)	23.2 (6.0)	29.2 (8)	1.6	.19
Fatigue	9.6 (1.6)	8.1 (1.5)	6.8 (.9)	10.8 (1.4)	1.0	NS
Depression	5.2 (1.6)	2.6 (1.1)	10.7 (1.9)	11.0 (1.9)	.7	NS
Confusion	2.1 (1.4)	.3 (.7)	3.9 (.9)	3.5 (1.0)	1.1	NS
Anxiety	8.2 (2.2)	3.1 (1.6)	9.3 (1.4)	8.9 (1.4)	2.7	.1
Vigor	15.2 (1.8)	18.3 (1.7)	14.9 (1.3)	13.8 (1.4)	2.4	.1
Anger	1.7 (.7)	2.8 (1.5)	7.7	9.0 (2.1)	.01	NS
Karnofsky	90.0 (1.7)	88.8 (2.6)	85.1 (2.1)	88.9 (1.8)	2.3	NS
Social support						
Spouse	35.5 (1.8)	33.5 (1.4)	34.1 (.9)	30.6 (1.3)	.4	NS
Friend	38.1 (.8)	35.1 (1.3)	34.0 (1.0)	32.3 (1.0)	.6	NS
Family	35.7 (1.3)	33.4 (1.9)	35.2 (.8)	30.1 (1.4)	1.4	NS
Over follow-up	55.5 (1.2)	58.1 (1.0)	54.6 (2.0)	48.8 (2.1)	5.8	.02

time on these mood factors, an examination of the subgroup means showed that the excisional biopsy patients tended to look more "stressed" or dysphoric over the 3-month follow-up period.

In addition to controlling for the effects of therapy in these data, we also compared patients in terms of disability ratings. As shown in Table 2, mastectomy patients had an overall higher Karnofsky rating, but there was no significant interaction between surgical groups over time. It is somewhat puzzling that mastectomy patients were rated functionally higher postsurgery than patients receiving an excisional biopsy. However, this main effect for surgery group was only marginally significant ($P < .05$). The differences in mean values for the two groups were in fact

clinically insignificant in terms of functional ratings. At 3 month's follow-up, the surgery groups were identical in terms of overall disability ratings. Thus, the differences in distress scores at follow-up were not likely a function of number of radiotherapy treatments, toxicity of chemotherapy, or physical disability status.

Interestingly, coincident with the biopsy patients reporting either greater distress in general, or increasing distress over time, they also reported significantly less social support from family and friends than the mastectomy patient group. Specifically, everyone in general reported less social support over time from a family member ($F = 10.3$, $P < .003$), from a friend ($F = 6.9$, $P < .01$), and from a spouse ($F = 5.3$, $P < .02$). However, there were also significant main effects by surgery group, with the excisional biopsy group reporting overall less social support from a friend ($F = 4.4$, $P < .04$) and from people in general over the follow-up period ($F = 7.5$, $P < .01$). In fact, there was a group × time interaction on this latter variable, with biopsy patients reporting a significant decrease in emotional support from people in general over the 3-month follow-up period compared with mastectomy patients ($F = 5.4$, $P < .02$).

Turning to the NCI sample, because this was an earlier study and we had not yet refined our behavioral measures, we could only compare the two surgery groups over time on the emotional distress measures. In general, the pattern of findings was strikingly distinct from those reported above. Table 3 displays means, standard errors, and the main effect and interaction results for the repeat measures ANOVA for the NCI sample.

First, in terms of overall significance of the group × time comparison for the distress variables, there was only a significant overall multivariate F value for time when analyzing the distress scores ($F = 43.6$, $P < .0001$). Specifically, the overall distress score decreased over time ($F = 17.4$, $P < .0001$), as did the report of vigor ($F = 43.8$, $P < .0001$). However, the report of anger ($F = 8.5$, $P < .005$), confusion ($F = 6.2$, $P < .01$), and fatigue ($F = 35.8$, $P < .0001$) increased over time. When comparing surgery

Table 3. Analysis of Variance for Mood Variables (NCI Sample)

	Baseline X (SE)	Follow-Up X (SE)	F Value	P Value
Main Effect-Time				
POMS-total	18.1 (3.4)	5.2 (.5)	17.4	.0001
Fatigue	7.6 (.8)	15.6 (.8)	35.8	.0001
Depression	8.2 (1.0)	8.6 (.7)	.1	NS
Confusion	6.1 (.6)	8.3 (.7)	6.1	.01
Anxiety	9.9 (.8)	9.0 (.6)	1.1	NS
Vigor	14.5 (.7)	5.2 (.9)	43.9	.0001
Anger	4.4 (.8)	7.9 (1.1)	8.5	.005
	Mastectomy X (SE)	Biopsy X (SE)	F Value	P Value
Main Effect-Surgery				
POMS-total	14.1 (3.1)	10.0 (1.9)	1.3	NS
Fatigue	12.6 (1.0)	10.7 (.9)	3.3	.07
Depression	9.6 (1.1)	7.2 (.7)	2.5	.1
Confusion	8.1 (.9)	6.4 (.6)	1.4	NS
Anxiety	9.9 (.6)	8.9 (.4)	1.1	NS
Vigor	9.5 (1.0)	10.3 (1.1)	.7	NS
Anger	6.2 (1.1)	6.0 (.9)	.0	NS

	Mastectomy		Lumpectomy			
	Baseline X (SE)	Follow-Up X (SE)	Baseline X (SE)	Follow-Up X (SE)	F Value	P Value
Time × Surgery Group						
POMS-total	22.9 (5.7)	5.4 (.76)	14.5 (3.6)	5.1 (.6)	1.6	NS
Fatigue	9.0 (1.4)	16.1 (1.2)	6.2 (.9)	15.1 (1.2)	.5	NS
Depression	10.5 (1.9)	8.7 (1.0)	5.9 (.9)	8.5	5.2	.02
Anxiety	10.8 (1.2)	9.0 (.8)	8.8 (.7)	9.0 (.8)	1.7	NS
Vigor	13.7 (1.0)	5.3 (1.3)	15.3 (1.1)	5.1 (1.3)	.4	NS
Anger	5.0 (1.3)	7.5 (1.7)	3.8 (.8)	8.3 (1.5)	.6	NS

groups, trends occurred for fatigue and depression, with mastectomy patients reporting more depression and fatigue overall than excisional biopsy patients. Again, as with the Pittsburgh sample and as described earlier, we adjusted group means in order to control for the effects of chemotherapy and radiotherapy. Thus, report of these distress symptoms is interpreted here as being primarily psychological, rather than physical in nature.

As shown in Table 3, there was a significant group × time interaction for depression ($F = 5.2$, $P < .02$). Although mastectomy patients were significantly more depressed at baseline testing than the excisional biopsy patients, over time the latter group became strikingly more depressed in comparison with the mastectomy group.

Finally, Table 4 shows means, standard deviations, and t tests, comparing the NCI and Pittsburgh sample directly on baseline distress symptoms, stratified by treatment group. That is, groups with identical surgical treatment (excisional biopsy plus axillary dissection or mastectomy) were compared within 1 week of surgery, before receiving any additional therapy. (Means are slightly different from means shown in Tables 2 and 3 due to differential numbers of patients entering the repeated measures ANOVAs and t test comparisons.) As there were no significant differences in disease status, age, or educational levels, one major difference at this point was the experience of being randomized to surgical treatment or not.

As can be seen, there were no significant differences between mastectomy patients at the two research sites on distress scores. However, for patients who received an excisional biopsy, the patients at the Pittsburgh site were significantly more depressed ($t = 3.4$, $P < .001$) and angry ($t = 2.1$, $P < .04$), and had overall significantly higher total distress scores ($t = 2.0$, $P < .04$) at baseline than patients at the NCI research site. As can also be seen, there were no significant differences in axillary nodal status or delay time to diagnosis for either surgery group between research sites. Thus, again, differential emotional distress scores may more likely be attributable to the significance of the treatment choice within the immediate healthcare context, rather than to differences in treatment technology or extent of disease at baseline.

DISCUSSION

There are at least three conclusions that can be drawn from these data. First, when early-stage

Table 4. Means and *t* Tests for Baseline "Distress" Factors, by Treatment Group, for the Pittsburgh and NCI Samples

	NCI			Pittsburgh				
Variable	*N*	X	SD	*N*	X	SD	*t*	Significance
Excisional biopsy								
No. positive nodes	39	2.0	3	56	1.2	2.8	.7	NS
Delay to diagnosis (d)	40	70.5	103.8	54	103.7	179.3	.6	NS
Tension	37	8.8	4.3	51	10.4	8.5	1.0	NS
Depression	37	5.7	5.0	51	10.8	9.3	3.4	.001
Anger	37	3.5	4.4	51	6.1	7.6	2.1	.04
Vigor	37	15.7	6.7	51	14.4	6.8	.6	NS
Fatigue	37	6.2	4.8	51	8.2	6.0	1.5	NS
Confusion	37	5.1	3.8	51	3.9	5.2	1.2	NS
Total score	37	13.6	19.7	51	25.1	30.6	2.0	.04
Mastectomy								
No. positive nodes	46	2.5	5.2	29	3.3	5.2	.6	NS
Delay to diagnosis (d)	46	158.0	257.0	29	173.8	244.0	.2	NS
Tension	40	10.8	8.2	26	9.8	8.4	.4	NS
Depression	40	10.4	10.6	26	9.6	10.6	.2	NS
Anger	40	5.3	6.8	26	4.7	7.0	.3	NS
Vigor	40	13.4	5.8	26	15.1	6.2	1.1	NS
Fatigue	40	8.9	7.8	26	8.1	5.9	.4	NS
Confusion	40	7.1	6.1	26	4.3	5.8	1.8	NS
Total score	40	24.1	32.7	26	21.4	35.1	.3	NS

breast cancer patients have some choice regarding extent of surgery, with the potential option of "sparing" the compromised breast, emotional distress in general increases, at least in the short run (in this case, over a 3-month follow-up period). This distress does not appear to be attributable to disability status, subsequent adjuvant treatment, or extent of the early-stage disease.

Second, coincident with overall higher levels of emotional distress in patients opting for an excisional biopsy is a decrease in emotional support from significant others in the biopsy patients' environment. Examples of items on this social support measure are the following: "In the last month, did you feel that the people in your life let you down by not showing you as much love and concern as you would like? Have you felt isolated from others? Have you felt irritated or resentful toward people in your personal life?"

Third, within the context of a randomized treatment trial, emotional distress sequelae increased over time, irrespective of treatment modality. Surgical group differences appeared to be more subtle, with depression increasing over the follow-up period for those assigned to excisional biopsy.

Because these studies were not planned with these comparisons in mind, there clearly are some unknowns in the data. First, in the Pittsburgh sample, we do not know what proportion of early-stage breast cancer patients who received a mastectomy could have chosen a lumpectomy if they had preferred the latter breast-sparing technique. Excisional biopsy, plus radiation, is not appropriate for all early-stage patients (for example, those with a relatively large, centrally located lesion). As discussed earlier, given the proportion of patients in the sample receiving a mastectomy, approximately 30%, it is highly likely based on other literature[16] that most of the mastectomy patients did not receive breast-sparing treatment for medical, rather than psychological reasons. Viewed another way, it appears that most, if not all those who had the choice, opted for a breast-sparing procedure. However, despite this unknown, if there were any biological advantage in the data, it would have favored the lumpectomy patients. But the psychological pattern that emerged was exactly the opposite. Those most biologically advantaged as a group appeared to be more distressed, or to increase in distress over time.

Another unknown is the psychological comparability of the Pittsburgh and NCI samples. Although the issue has not been systematically studied, it may be the case that patients who are treated at the NCI and/or who agree to participate in randomized trials are not representative of patients in general, and at least psychologically are a distinct group. Although there were no significant biological or demographic differences between the Pittsburgh and NCI samples, the women who participated in the trial knew that they would be randomized within an experimental context, and may have been attracted to such a process for a variety of reasons, including the possible desire not to make a treatment choice. In contrast, women in the community did have to consider options. And when surgery was an excisional biopsy, rather than mastectomy, such choice was at least correlated with more distress. Again, as shown in Table 4, there were no significant baseline differences in psychological factors between the randomized and community sample when the choice was a mastectomy.

An additional unknown in these data is the personality makeup of the samples before surgical choice was considered. A hint regarding stable personality characteristics in the Pittsburgh sample was reflected in the coping strategy endorsed by these women. Those receiving a biopsy compared with mastectomy patients tended to report that they coped by using escape fantasies in dealing with life's difficulties. Of course, they reported using other coping strategies also, but this was the coping strategy that significantly differentiated the two treatment groups. Further, if there are not significant differences between early-stage breast cancer patients in Wisconsin and those in Pennsylvania, then the findings of Wolberg et al[16] may generalize to our Pittsburgh population. That is, perhaps "narcissistic" concern over body image also plays a role in treatment choice. We will return to this latter possibility when discussing educational implications.

Caution needs to be raised in terms of data interpretation and methodological limits inherent in this study. First, emotional distress symp-

toms that were reported were not of psychopathological severity. These were psychiatrically normal women who reported varying degrees of emotional disturbance. Here we presented within group comparisons, and in that context, we believe the findings are noteworthy. Second, these data are predominantly self-report, albeit self-report on validated and reliable test instruments.

It is the pattern of self-report symptoms that we believe are potentially clinically significant. On reflection, this pattern of higher reported distress in the excisional biopsy group is not surprising. The treated breast frequently remains difficult to monitor due to surgical sequelae such as scarring. The patient, particularly in the early aftermath of surgical treatment, is examined and monitored closely. Such patients undergoing radiation therapy are reminded nearly daily of their need for treatment. Future studies, analyzing patients' perceptions of the need for treatment as a contributor to distress sequelae, might shed light in this regard. Overall, it may not be that surprising that this group of patients may be particularly vulnerable to anxiety and distress postsurgery.

Having made the above qualifications with respect to unknowns, ie, pretreatment personality and actual suitability for excisional biopsy, as well as the limits of self-report, one implication that could be drawn here is that to make a treatment choice within a risky context of perceived unknowns is threat-producing. Rodin et al[27] suggested that perhaps choice and control are only positively motivating for an individual "when he or she has enough information to evaluate the alternatives effectively." In the layperson's view, lumpectomy may still be an experimental treatment, and the patient lives everyday with the subjective experience of possibly still harboring malignancy in the spared breast. The concern, and even anxiety, of her physicians may be subtly conveyed to the patient, reinforcing her fears.

Several intervention implications can be drawn from these findings. First, women (and their families) need to be educated about the biological significance of the recent trials, that there truly appears to be no survival advantage using more radical surgeries. There is always the difficulty of conveying individual risk on the basis of population statistics. Nevertheless, we may not be doing a good job translating journal reports for patient comprehension and consumption.

Perhaps more simply accomplished is educating the patient regarding the clinical aftermath of breast-sparing surgery. Very few women are "good as new." Whatever the basis of the breast-sparing choice ("narcissism," "escape," "appropriate self-interest," and so on), it may well be the case that the woman is not prepared for the scarring and the physical monitoring that follow. If narcissism plays any role, such women may be particularly vulnerable to distress faced with the postsurgery reality of cosmetic compromise.

Finally, educational implications can be drawn from these data regarding the erosion of social support coincident with higher distress levels in the excisional biopsy group. Spouses, family members, and others can be encouraged to meet the emotional distress needs of these patients. Although perhaps the assumption has been that this group needs less support than the woman who has had a mastectomy, these data would suggest that this may not be the case. In fact, these women may be at particular mental health risk, at least in the short run. One could argue that even short-term mental health needs, if unmet, cause unnecessary suffering that perhaps could be alleviated by support interventions and the like. However, complementary to our short-term findings, there is evidence that such psychological discomfort may in fact continue in patients undergoing conservative treatment. A recent article by Fallowfield et al[17] reported longer-term follow-up data for comparable women in Great Britain who had had a lumpectomy. They concluded that the level of distress among women treated with lumpectomy and radiation "was a disappointing finding, but one which cannot be ignored. These women clearly need just as much counseling support as patients who undergo mastectomy."

Now that the woman has a choice, is she better off? Given the results of the recent trials, she is not biologically better off, as there appears to be no biological advantage favoring one surgery over another. Is she cosmetically better off? In some cases she is. But psychologically is she

better off? We believe that the verdict is not in. But based on the data reported here, as well as the results reported from the British study, we may have to question our assumptions in this regard.

In conclusion, we are not suggesting that a woman should not opt for a breast-sparing technique. What we are suggesting is that this option is not a panacea. Health care professionals should recognize the special needs that may remain in this group of patients.

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