

Hypnosis Decreases Presurgical Distress in Excisional Breast Biopsy Patients

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BACKGROUND: Excisional breast biopsy is associated with presurgical psychological distress. Such distress is emotionally taxing, and may have negative implications for postsurgical side effects and satisfaction with anesthesia. We investigated the ability of a brief hypnosis session to reduce presurgical psychological distress in excisional breast biopsy patients.

METHODS: Ninety patients presenting for excisional breast biopsy were randomly assigned to receive either a 15-minute presurgery hypnosis session ($n = 49$, mean age: 46.4 (95% CI: 42.3–50.4)) or a 15-minute presurgery attention control session ($n = 41$, mean age: 45.0 (95% CI: 40.8–49.2)). The hypnosis session involved suggestions for increased relaxation and decreased distress. The attention control session involved nondirective empathic listening. Presurgery distress was measured using visual analog scales (VAS) and the short version of the Profile of Mood States (SV-POMS). Data were analyzed using analysis of variance and χ^2 procedures.

RESULTS: Groups did not differ in terms of the following: demographics (age, education, ethnicity, marital status, all P 's > 0.28); medical variables (presurgery diagnosis, previous excisional biopsy, previous breast cancer, all P 's > 0.11); or preintervention distress (SV-POMS $P > 0.74$) assessed on the day of surgery. Postintervention, and before surgery, patients in the hypnosis group had significantly lower mean values for presurgery VAS emotional upset (16.5 vs 38.2, $P < 0.0001$, $d = .85$), VAS depressed mood (6.6 vs 19.9, $P < 0.02$, $d = .67$), and SV-POMS anxiety (10.0 vs 5.0, $P < 0.0001$, $d = 0.85$); and significantly higher levels for VAS relaxation (75.7 vs 54.2, $P < 0.001$, $d = -0.76$) than attention controls.

CONCLUSIONS: The study results indicate that a brief presurgery hypnosis intervention can be an effective means of controlling presurgical distress in women awaiting diagnostic breast cancer surgery.

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Hypnosis has been shown to be an effective means of reducing preprocedure distress in a variety of surgical settings, including gynecologic surgery,¹ ambulatory surgery,² and excisional breast biopsy.³ Patients presenting for excisional breast biopsy typically have substantial levels of presurgical emotional distress,⁴ which has been shown to predict both anesthesia-related (satisfaction with anesthesia, analgesic requirements)^{5,6} and postsurgical (nausea, fatigue,

discomfort, pain)^{7,8} outcomes. It is thus important to conduct a controlled, randomized clinical trial to determine the effectiveness of hypnosis in excisional breast biopsy patients. The aim of the present study was to determine whether a brief, presurgery, hypnosis intervention would be effective in reducing patients' experience of presurgical psychological distress in a sample of women scheduled for diagnostic breast cancer surgery (excisional breast biopsy) relative to an attention control condition. The hypothesis was that presurgical distress would be significantly lower in the hypnosis group than in the attention control group.

METHODS

Participants

The data for the present paper was collected as part of a larger continuing study on the potential beneficial effects of hypnosis in breast cancer surgical patients. The study was approved by the Mount Sinai School of Medicine IRB, and written informed consent was obtained from all participants.

Eligibility criteria for the present study included being scheduled for excisional breast biopsy; able to

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speak and read English (as the hypnosis intervention and all questionnaires were in English); older than 18 yr; and willing to be randomized to a study intervention group. Exclusion criteria were uncontrolled mental illness (as determined by medical chart review) and psychotropic medication use. Patients were recruited from two Mount Sinai Medical Center surgical practices (CW and AG). As patients received the brief intervention before their breast surgery, and were assessed for outcome variables before surgery that same day, no patients were lost to follow-up.

On the basis of our previous meta-analysis,⁹ we anticipated a medium to large effect size, defined as $d = 0.65$ using Cohen's¹⁰ criteria. The necessary N to achieve a minimum power of 0.80 in a two group study, with a two-tailed α of 0.05, would be 90 participants overall using Powpal Software.¹¹ Therefore, our present study with 90 participants was appropriately powered to detect medium to large effects on presurgical distress.

Measures

A Demographics/Medical History Questionnaire was completed by patients at home, 5 days before surgery. The Short Version of the Profile of Mood States (SV-POMS),¹² a self-report measure was used to assess each participant's current level of distress before the intervention. This measure is a 37-item mood adjective checklist designed to provide information on six different mood states as well as to provide a total distress score.¹² Participants are asked to evaluate the degree to which each adjective (e.g., restless, anxious, on edge) applied to them by rating that adjective on a scale from 0 (not at all) to 4 (extremely). Scores for each separate mood state are calculated by summing responses to all the items in that particular subscale. The six subscales are: tension-anxiety, depression-dejection, anger-hostility, fatigue-inertia, vigor-activity, and confusion-bewilderment. To arrive at a Total Mood Disturbance score, the values of the six subscales were added, with the vigor-activity items scored negatively. Previous research has found the Total Mood Disturbance score of this measure to have adequate internal consistency (ranging from $\alpha = 0.93$ to 0.96)¹³ and validity.¹³ This measure has been used previously to assess anticipatory distress in breast cancer surgery patients.¹⁴ In the validation study for the SV-POMS,¹³ healthy participants received a mean tension-anxiety score of 4.80, whereas cancer chemotherapy patients received a mean tension anxiety score of 7.32.

Visual Analog Scale Items

These items were used to assess current levels of emotional upset, depressed mood, and level of relaxation after the intervention, on the morning of surgery. Each item was assessed using a 100 mm visual analog scale (VAS), and each had the same format. For example the VAS item for emotional upset stated,

"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 to 100 based on how many millimeters from the left participants made their mark on the line. VAS scores have been shown to provide a reliable and valid measure of mood in a wide variety of patient populations¹⁵ including breast cancer,^{7,16} and are ideally suited to busy surgical settings where time is of the essence.

Procedures

Patients who were scheduled for excisional breast biopsy were referred by their surgeon and, if they expressed interest, were then contacted by study personnel who described the study and obtained written informed consent. Consenting participants completed the demographics questionnaire at home 5 days before surgery. On the day of surgery, all participants were asked by a research assistant to complete the entire SV-POMS before the intervention, to assess differences in baseline distress levels. Participants were asked to complete a second packet, containing the 3 VAS items and the tension-anxiety subscale of the SV-POMS, immediately after the 15-min intervention (before surgery). Research assistants and medical staff were blind to patients' intervention group assignment, and the interventionists did not collect any of the data. Participants were randomly assigned to either a hypnosis or an attention control group using computer-generated random positive integers (SAS).¹⁷ Randomization was designed to ensure that group assignment was due to random factors, and unbiased; not to ensure equal group sample sizes. As indicated in the Participants section, this is a preliminary report of a larger continuing study.

Both the hypnosis intervention and attention control sessions were delivered according to the study protocol manual and were standardized to last 15 min. The protocol manual was developed in a preliminary study³ and is specifically tailored to breast cancer surgical patients. The hypnosis intervention included 1) debunking of common misconceptions about hypnosis; 2) giving the patient an opportunity to ask questions about hypnosis; 3) presentation of a scripted hypnotic induction (adapted from Refs. 3 and 18) involving a relaxation-based induction, guided imagery, deepening, and specific surgery-related suggestions for decreased pain, nausea, and distress; and 4) instructions for how participants could reenter hypnosis on their own, at will. The development of the hypnosis component of the intervention was guided by response expectancy theory.¹⁹

The procedure for the attention control group was based on a manualized structured attention paradigm, which has been used by Lang et al.²⁰ Patients in the attention control group spent identical amounts of

time with study personnel as patients in the hypnosis group to control for professional attention. During attention control sessions, the interventionist did not direct participants in imagery, relaxation, or even simple discussion. Instead, the interventionist allowed patients to guide the conversation and provided empathic listening and supportive/empathic remarks for 15 min.²⁰ More specifically, the interventionist matched verbal and nonverbal communication patterns, listened attentively, avoided the use of prejudicial or negatively valued language, and used emotionally neutral descriptors in conversation.²¹

The interventions were conducted by four interventionists, all PhD level clinical psychologists with advanced training in using hypnosis in a medical setting. The interventionists did not participate in the collection of data, and each interventionist worked with an equal number of hypnosis and control patients.

Analytic Approach

Skewness and kurtosis values were calculated for all outcome variables to check for deviations from normality. These values were acceptable for all outcomes (between -3 and 3), with the exception of the kurtosis value for depressed mood (the variable is somewhat leptokurtic). Following Tabachnick and Fidell,²² the depressed mood variable was transformed (square root) and the pattern of results was then checked. The pattern was found to be identical to that reported for the raw data. To keep the presentation of the results (i.e., metric) consistent across VAS outcomes, we report the raw data for the VAS depressed mood variable.

All between-group data were analyzed using analysis of variance and χ^2 procedures in SAS 9.1.¹⁷

RESULTS

Table 1 contains descriptive information on the demographics, medical characteristics, and baseline distress of each group. There were no significant between-group differences on demographics (age, education, ethnicity, marital status; all $P > 0.28$) or medical history (presurgery cancer diagnosis, previous excisional biopsy, previous breast cancer; all $P > 0.11$). There were no significant between-group differences with regard to baseline, pre-intervention distress levels [total SV-POMS, $P > 0.74$ (Table 1)]. There were no significant effects of particular interventionist on any outcome variable ($P > 0.63$). Therefore, none of these variables was used as a covariate in further analyses, and randomization was confirmed for all of these factors.

Analyses of variance revealed a significant intervention effect such that hypnosis group participants experienced significantly less presurgical distress after the intervention than attention control group patients. More specifically, postintervention, hypnosis patients had significantly lower mean levels of presurgical VAS emotional upset, VAS depressed mood, and

Table 1. Pretreatment Comparisons of Treatment Groups

	Hypnosis group (n = 49)	Attention control group (n = 41)
Ethnicity		
White	34	24
African-American	6	10
Hispanic	6	3
Other	3	4
Marital status		
Currently married	24	20
Not currently married	25	21
Education		
Less than college degree	15	14
College degree	18	15
Graduate degree	16	12
Presurgery cancer diagnosis		
No cancer	4	3
Cancer	2	0
Unknown	43	38
Previous excisional biopsy		
Yes	14	6
No	35	35
Previous breast cancer		
Yes	2	1
No	47	40
Age (yr)		
Mean \pm SE	46.4 \pm 1.9	45.0 \pm 2.2
Range	(19.0–77.0)	(21.0–73.0)
Preintervention distress (SV-POMS; day of surgery, before surgery)		
Mean \pm SE	18.9 \pm 3.9	17.0 \pm 4.1
95% CI	(11.1 to 26.7)	(8.7 to 25.3)

There were no significant differences between the two groups on any of these variables.

SV-POMS = Short version-Profile of Mood States; SE = standard error; CI = confidence interval.

SV-POMS anxiety; and significantly higher levels of VAS relaxation than attention controls (Fig. 1).

DISCUSSION

The present study demonstrated that patients who received a brief (15 min) hypnosis session before excisional breast biopsy experienced lower levels of presurgical distress than patients who received the same amount of professional attention but no active intervention. More specifically, patients who received hypnosis before their surgery were significantly less emotionally upset, less depressed, less anxious, and were significantly more relaxed before surgery (post-hypnosis) than patients who were in the attention control condition. All effect sizes were in the large or medium-to-large range,²¹ and suggest that more than 75% of participants in the hypnosis group felt significantly better emotionally (less distressed and more relaxed) than control participants.

These results are consistent with earlier work on hypnosis and presurgical distress in a variety of patient samples,^{1,2} as well as a previous meta-analysis

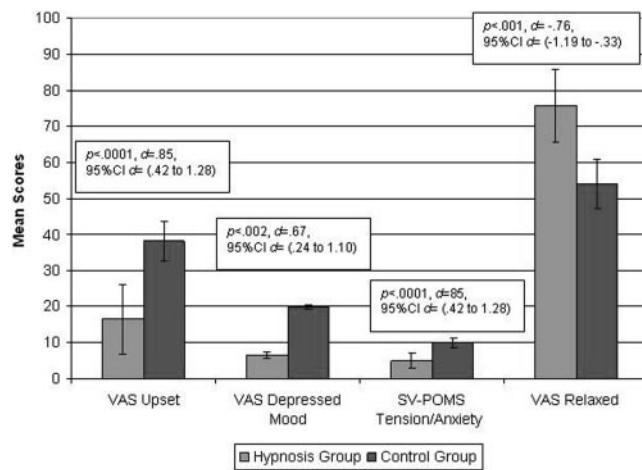


Figure 1. Hypnosis intervention effects on presurgical distress. (a) VAS = visual analog scale, SV-POMS = Short version-Profile of Mood States; (b) VAS range 0–100; SV-POMS range 0–24; (c) VAS relaxation is scored such that higher scores indicate higher levels of relaxation. All other measures are scored such that higher scores indicate higher levels of distress. Therefore, the effect size for relaxation is represented as negative; (d) Error bars indicate 95% CI for means.

on the effectiveness of hypnosis in surgical populations more generally.⁹ The present results extend the prior work on hypnosis in breast biopsy patients³ by including a larger sample size and an attention control condition to control for effects of professional attention. The present study demonstrates that a brief behavioral procedure can bring substantial relief to breast biopsy patients at a particularly stressful time, similar to that seen with pharmacologic (e.g., benzodiazepines,²³ azapirone anxiolytics²⁴) and nonpharmacologic techniques (e.g., acupuncture,²⁵) used to manage presurgical distress.

The results of the present study suggest several future research directions. The medium to large effect sizes suggest that the hypnosis intervention is helpful for the vast majority of breast biopsy patients, regardless of level of hypnotic suggestibility. It is possible, however, that increased levels of hypnotic suggestibility might relate to increased benefit from the intervention; hence, hypnotic suggestibility as a moderator of treatment effect should be explored in future research. Patients' previous experience with hypnosis should similarly be explored as a moderator of intervention effects in future research. As this was a randomized trial, between-group differences on either variable (hypnotic susceptibility, hypnosis experience) are unlikely, and therefore neither variable is likely to account for the present results. The results of the present study also have implications for research on the contribution of psychological distress to patients' experiences of postsurgery side effects. Previous research has demonstrated⁷ that presurgical distress predicts postoperative outcomes, including postsurgical nausea, fatigue, and discomfort in breast cancer surgical patients. Additional research to more directly

investigate the relationship between presurgery hypnosis, presurgical distress, and postsurgical symptom outcomes, perhaps via a mediational model, is now warranted. Finally, it would be of interest to explore the generalizability of the present findings to other stressful oncology procedures (e.g., prostatectomy, stereotactic radiosurgery) in future research.

In conclusion, the results of the present study reveal that a brief hypnosis session prior to surgery is effective in decreasing presurgical distress prior to excisional breast biopsy, a time when many women have high levels of distress.

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