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Massage therapy alone and in combination with meditation for breast cancer patients undergoing autologous tissue reconstruction: A randomized pilot study☆

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ABSTRACT

This study explored whether massage combined with meditation is more helpful than massage alone for women recovering from autologous tissue reconstruction after mastectomy for breast cancer. Forty patients were randomly assigned to either massage therapy or massage plus meditation on postoperative days 1 through 3. Outcome measures were 1) visual analog scale (VAS) scores for stress, anxiety, relaxation, insomnia, alertness, fatigue, tension, pain, mood, and energy, and 2) Perceived Stress Scale-14 scores. Nineteen patients in each group finished the study. Preintervention and postintervention mean total VAS scores improved significantly in both groups ($P < .001$), but no significant difference occurred between groups.

1. Introduction

Massage is one of the most widely used forms of complementary therapy in the United States. In a US survey conducted in 2007, 18 million persons (8.3% of the US population) who were older than 18 years reported use of massage therapy in the past 12 months [1]. Although traditionally, massage therapy has been used in the outpatient setting, more recent studies have explored its role in the hospital setting [2–11]. In regard to surgical patients—besides reducing anxiety, stress, and pain [12]—several studies have documented an association between increased stress levels and delayed wound healing [13–15], as well as increased pain levels and delayed wound healing [16]. With this evidence, massage therapy has been available for patients postoperatively on request at our institution since 2005.

Meditation has been defined by Kabat-Zinn [17] as "a mental exercise of regulatory practices intending to attain certain psychological states that involve mind and body interaction of being in the present moment with a nonjudgmental attitude." The term *meditation* encompasses a wide range of techniques, including mindfulness-based meditation (e.g., mindfulness-based stress reduction [MBSR], mindfulness-based cognitive therapy) and mantra meditation (including transcendental and clinically standardized meditation) [18]. Instructions for familiarity with various types of meditation are readily available and can be learned through group sessions, private instructions, or online. Positive results in psychological state are usually noted after about 8 weeks of practice [19]. Meditation has been reported to be helpful in reducing fatigue and depression of cancer survivors [20]. In guided meditation, the patient is verbally led into a state

Abbreviations: DIEP, deep inferior epigastric perforator; MBSR, mindfulness-based stress reduction; PSS-14, Perceived Stress Scale-14; TRAM, transverse rectus abdominis myocutaneous; VAS, visual analog scale.

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of consciousness by a person's live recorded voice. A subgroup of guided meditation is *gratitude meditation*, in which participants are guided to visualize the positive aspects in their lives and are reminded to focus on what they have rather than on what they lack, leading to more positive emotions. This intervention is usually short.

Breast cancer is the most common malignancy among US women, except for skin cancers. About 12% of women in the United States will have breast cancer during their lifetime. Most women with breast cancer will undergo either a lumpectomy or a mastectomy. For many women undergoing a mastectomy, breast reconstruction is an important option, improving their quality of life. Reconstructive options include prosthetic devices (e.g., saline implants, silicone implants, tissue expanders) and autologous reconstruction methods using tissue flaps from adjoining or distant donor sites. Tissue flaps harvested from the lower abdomen—with skin, fat, and, occasionally, muscle—to create a breast mound are most commonly used for autologous breast reconstruction. Use of the patient's own tissues is typically more natural in appearance and feel; however, autologous reconstruction is a longer surgical procedure with prolonged recovery time than prosthetic reconstruction, mostly due to the multiple surgical sites (namely, chest and abdomen). Postoperative pain, anxiety, stress, and fatigue are common among patients undergoing breast cancer surgery and especially among patients who decide to undergo complex reconstructive surgical procedures. Massage therapy has been used successfully in breast cancer patients during the postoperative period, decreasing pain, anxiety, tension, and fatigue [1,2]. Guided meditation has been shown to be helpful during the healing process by fostering relaxation, realization, contemplation, and reflection [21,22].

This study tried to explore whether massage combined with meditation is of more benefit than massage therapy alone for stress management in women recovering from autologous tissue reconstruction after mastectomy for breast cancer.

2. Patients and methods

2.1. Population studied

The study was approved by the Mayo Clinic Institutional Review Board and registered as NCT01736605 in clinicaltrials.gov. A signed consent form was obtained from each participant by the study coordinator. Women were invited to participate in the study if they had breast cancer, had undergone a mastectomy, and were scheduled to undergo one of the following 5 types of abdominally based autologous tissue reconstruction: 1) free transverse rectus abdominis myocutaneous (TRAM) flaps, 2) free muscle-sparing TRAM flaps, 3) deep inferior epigastric perforator (DIEP) flaps, 4) superficial inferior epigastric artery flaps, and 5) pedicled TRAM flaps. Breast reconstruction was either immediate (at mastectomy) or delayed (performed weeks, months, or even years after mastectomy).

2.2. Study design

Between January 13, 2013, and July 7, 2014, we conducted a randomized controlled pilot trial. Participants were randomly assigned to 1 of 2 treatment groups using a computerized randomization method. Treatments were balanced within each group. The primary outcome was evaluation of change in postoperative pain, anxiety, tension, stress, and fatigue.

2.2.1. Group 1: massage only

A licensed massage therapist with 20 years' experience provided massage for 20 min on postoperative days 1, 2, and 3. Each massage session was performed in a private hospital room. Participants wore their hospital gown for the session. Each session was individualized to patient preference and expressed needs, including location, techniques and pressure, positioning, use of music during massage, choice from among 5 essential oils, and dimmed lighting. Techniques were Swedish massage, acupressure, and foot reflexology.

2.2.2. Group 2: massage and guided meditation

This intervention started with a 15-min viewing of a DVD about paced breathing. When the DVD was completed, the massage therapist instructed the participant in gratitude meditation. This instruction was followed by a 20-min, individualized massage session, as described for group 1. The therapist cued the patient to do gratitude meditation midway through the 20 min. Following is the script for the gratitude meditation: “Think about the first person you want to be grateful for while taking a deep breath in. Bring this person's face in front of your closed eyes. Make sure you see the face as distinctly as possible. Now send your silent gratitude (like a mental e-mail) while breathing out. Next think about the second person, using the same sequence … while breathing in, try to visualize that person … while breathing out, send your gratitude. Repeat this exercise with 5 people.”

After completion of the session on day 3, patients were given a copy of the DVD. They were encouraged to continue practicing meditation after hospital dismissal.

2.3. Instruments

Participants were asked to complete a visual analog scale (VAS) for assessment of stress, anxiety, ability to relax, insomnia, alertness, fatigue, tension, pain, mood, and energy (score, 0–10) on postoperative days 1, 2, and 3 both before and after intervention. At hospital dismissal, patients were asked to complete a 5-point overall satisfaction questionnaire. They also were given a VAS questionnaire to complete at 3 weeks. Total VAS scores (sum VAS) were compiled through the following calculation, in which the overall scores are obtained by reversing the scores of the positive items:

Total VAS scores (sum VAS) = sum (stress, anxiety, 10-relax, insomnia, 10-alert, fatigue, tension, pain, 10-mood, 10-energy)

Participants were further asked to complete the Perceived Stress Scale-14 (PSS-14) [23] on postoperative day 1 before the intervention, on postoperative day 3 after the last intervention, and at week 3.

The PSS-14 measures the degree to which respondents consider their lives stressful. It was designed to assess the person's appraisal of life as unpredictable and controllable. The original version has 14 items—7 negatively stated and 7 positively stated. Participants are asked to indicate on a 5-point Likert scale how often they have felt or thought a certain way—never, almost never, sometimes, fairly often, or very often. PSS-14 scores are obtained by reversing the scores on the 7 positive items (e.g., 0 = 4, 1 = 3, 2 = 2) and then summing across all 14 items. Items 4 through 7, 9, 10, and 13 are the positively stated items.

2.4. Statistical analysis

Patients' demographic characteristics were summarized with descriptive statistics (i.e., mean [SD] or frequency [percentage]).