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Effect of massage therapy on pain, anxiety, relaxation, and tension after colorectal surgery: A randomized study☆,☆☆,☆☆☆

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ABSTRACT

The purpose of this randomized controlled trial was to evaluate the effect of postoperative massage in patients undergoing abdominal colorectal surgery. One hundred twenty-seven patients were randomized to receive a 20-min massage (n = 61) or social visit and relaxation session (no massage; n = 66) on postoperative days 2 and 3. Vital signs and psychological well-being (pain, tension, anxiety, satisfaction with care, relaxation) were assessed before and after each intervention. The study results indicated that postoperative massage significantly improved the patients' perception of pain, tension, and anxiety, but overall satisfaction was unchanged. In conclusion, massage may be beneficial during postoperative recovery for patients undergoing abdominal colorectal surgery. Further studies are warranted to optimize timing and duration and to determine other benefits in this clinical setting.

1. Introduction

Modern surgical techniques often achieve impressive results in terms of preserving life and improving quality of life for many patients. But even with many advances in anesthesia and pharmaceuticals, many surgical patients are still challenged by pain and anxiety. Recent health care policy changes in the United States have focused attention on addressing pain and satisfaction of hospitalized patients, even to the point of tying reimbursement to these outcomes. Thus, for various reasons, the past decade has had a growing focus on reducing pain and anxiety for hospitalized patients.

Previous work from our institution [1–4] and others [5–8] has demonstrated that massage therapy can be effective for patients with postoperative pain, anxiety, and muscle tension. Similar results have been seen in other surgical [3,4] and nonsurgical groups [9]. However, patients undergoing colorectal surgery either were not studied at all or were included to a limited extent with other patient types. Previously, a small pilot trial of 20 patients undergoing colorectal surgery showed that massage therapy reduced perceptions of pain, tension, and anxiety (unpublished data); rated on a 10-point scale, pain decreased from 5.3 to 1.9, tension from 5.0 to 1.2, and anxiety from 4.7 to 1.3. Eighteen patients also indicated that, given the opportunity, they would again use integrative therapies. Thus, we undertook the current study to determine whether postoperative massage could reduce pain and anxiety more effectively than a control intervention for patients undergoing colorectal surgery. We also investigated the effects of postoperative massage on biomarkers such as blood pressure, heart rate, and opioid use.

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2. Methods

2.1. Inclusion and exclusion criteria

This study was approved by the Mayo Clinic Institutional Review Board. All eligible patients older than 18 years and scheduled for colorectal surgery were approached preoperatively for study participation from December 11, 2007, through March 24, 2009. We included only those who gave written, informed consent and were medically able to participate in massage therapy postoperatively. We excluded patients with contraindications such as new cellulitis, deep vein thrombosis, active skin infections, systemic infections, lymphoma, and hypotension or hypertension that was not medically controlled. In addition, patients undergoing surgery on a Thursday or Friday were excluded because of the lack of availability of massage therapists during the weekend.

2.2. Setting

The study took place at a large Midwestern medical center. Patients underwent lower anterior resection, ileal pouch anal anastomosis, colon resection, and anterior resection. The average length of hospitalization was approximately 3–5 days. The surgical units where this study took place included an 11-bed radial unit with all private rooms and a 24-bed linear unit with private and semiprivate rooms. All patients received standard anticoagulation therapy and pain management orders.

2.3. Randomization

Patients were invited to enroll in the clinical trial by signing a consent form before admission. Notably, enrollment did not guarantee participation. Each Tuesday, Wednesday, and Thursday, 5 patients (judged to have the greatest pain management needs [highest pain scale scores] from the roster of enrolled patients) were selected by a group that included physician assistants, midlevel nurses, charge nurses, nurse managers, and the study coordinator. The number of patients was limited by the availability of the massage therapist. Selected patients were randomly assigned to the treatment group or the control group.

2.4. Intervention

2.4.1. Massage therapy

Integrative massage was provided by a certified massage therapist on postoperative days 2 and 3. The therapist had 15 years' experience working as a patient care assistant and as a massage therapist in a hospital setting. Patients were briefly assessed (1–5 min to comfortably position the patient) before receiving a 20-min massage. Each integrative massage session consisted of the assessment, Swedish massage techniques, and quiet time (with dim lighting, a relaxation channel on the television, or soft music). Patients were instructed to relax for 20 min while lying in bed or sitting in a chair. Therapy focused on the areas of primary concern, as indicated by the patient, and therapy was individualized to each patient on the basis of the massage therapist's assessment and patient preference. This procedure was consistent with standard massage therapy practice. After the session, patients were again surveyed and their vital signs were recorded.

2.4.2. Control

For patients randomized to the control group, the massage therapist engaged the patient in a 20-min conversation that aimed to provide a positive interaction, focusing on topics such as where the patient lived, history of where the patient grew up, extended family (eg, children, grandchildren), summer activities, hobbies, or the weather and then quiet time. The conversations did not include the patient's medical condition or other topics or concerns that might induce stress. Patients then were instructed to relax for 20 min while lying in bed or sitting in a chair. A sign was posted on the door to indicate that a relaxation session was in progress. Patients were offered the relaxation channel on the television, soft music, or quiet time plus dim lighting. After the session, patients were again surveyed and their vital signs were recorded.

2.5. Evaluation

After patients were randomized, a nurse or personal care assistant worked with all patients before and after the intervention to collect survey data and vital signs (blood pressure, heart rate, respiratory rate). To the extent possible, this person was masked to the participant's treatment group. The massage therapist and patients were instructed to not reveal the treatment group to data collectors, and the researcher was to engage in discussion only to specifically address questions regarding the surveys or collection of physiologic data.

Patients reported measures of pain, anxiety, tension, relaxation, and overall satisfaction before and after interventions on postoperative days 2 and 3. Numeric rating scales, where 0 indicated none and 10 indicated most, were used for outcome evaluation. Numeric rating scales were used because this method of evaluation is familiar to patients and often is used for assessment of pain in the hospital setting. Further, the numeric rating scale is easier to administer, faster, and less burdensome for patients, thereby resulting in high response rates [10,11]. For pain, anxiety, and tension, negative changes indicated improvement, whereas for relaxation and satisfaction, positive changes indicated improvement. Both groups answered the same 4 questions and had vital signs measured before and after each intervention. In addition, an institutional form was used to track the amount and type of opioid medication used from the day of surgery through postoperative day 6 or discharge, whichever came first. Patients needed to complete all data points for inclusion in the study.

2.6. Sample size and statistical methods

The statistical power for the study was calculated based on a pilot study performed in June 2007 with 20 patients undergoing colorectal surgery. Results of the pilot study indicated that a minimum of 50 patients per group would have 80% power to detect a difference of 1.6 points or more between the massage and standard care groups. It also would be powered sufficiently to detect a difference of 1.3 points or more within a group when comparing measures before and after therapy. These calculations assumed a significance level of $\alpha = 0.05$ and 2-sided statistical test.

Data are described using summary statistics: mean (SD) or median (interquartile range) for continuous measures and count (percentage) for categorical variables. Patient characteristics and baseline clinical variables were compared using the χ^2 test, as appropriate. Changes in vital signs, pain, anxiety, tension, relaxation, and satisfaction were compared between groups. Linear regression models were used to adjust for pretreatment levels and age at surgery. Opioid use within 1 day was compared between treatment groups using Wilcoxon signed rank tests. All tests were 2-sided, and P values less than 0.05 were considered statistically significant. Analysis was performed with SAS version 9.0 (SAS Institute, Inc) and R [12].