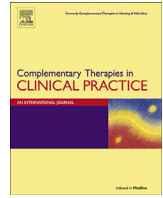




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Massage as adjuvant therapy in the management of post-cesarean pain and anxiety: A randomized clinical trial



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ABSTRACT

Objective: The present study was conducted to determine the effect of massage on post-cesarean pain and anxiety.

Methods: The present single-blind clinical trial was conducted on 156 primiparous women undergone elective cesarean section. The participants were randomly divided into three groups, including a hand and foot massage group, a foot massage group and a control group (n = 52 per group). The patients' intensity of pain, vital signs and anxiety level were measured before, immediately after and 90 min after the massage.

Results: A significant reduction was observed in the intensity of pain immediately and 90 min after massage (P < 0.001). Moreover, changes in some of the physiological parameters, including blood pressure and respiration rate, were significant after massage (P < 0.001); however, this change was not significant for pulse rate. A significant reduction was also observed in the level of anxiety (P < 0.001) and a significant increase in the frequency of breastfeeding (P < 0.001) after massage.

Conclusion: As an effective nursing intervention presenting no side-effects, hand and foot massage can be helpful in the management of postoperative pain and stress.

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1. Introduction

Childbirth through cesarean section is among the most common surgical procedures in the world, and comprised 60% of childbirths [1]. In Iran, cesarean section is also highly prevalent, and research shows that 47.9% of childbirths are performed in this way [2]. Cesarean birth imposes physiological stresses of anesthesia, surgical procedure, physical recovery, and postoperative complications [3] such as pain and stress [4]. Many other researchers reported an increased anxiety in women who undergo cesarean section for childbirth. Hospitalization, undergoing surgical operation, an incomplete pain relief, fear of abdominal wound infection and the administration of analgesics and other drugs affect the patient's breast milk and are commonly experienced as situations that cause anxiety [5–7].

Through a neuroendocrine reflex and an increased sympathetic

tone, postoperative pain can lead to such complications as compromising the immune system, reactive hypoglycemia (delaying wound healing), increased myocardial oxygen consumption, paralytic ileus and reduced respiratory function [8]. Postoperative pain relief is a highly important issue in midwifery, because pain-induced endocrine changes can lead to anxiety. Moreover, the pain caused by the abdominal scar interferes with the mother's proper positioning for breastfeeding and an effective breastfeeding as a result [9]. The management of postoperative anxiety and pain reduces the patient's discomfort, enables early walking, reduces hospital stay and hospital costs and increases patient satisfaction [10]. In addition, an adequate and rapid pain control scheme following cesarean section contributes to an earlier beginning of breastfeeding, which itself aids the postpartum uterine contraction [11]. A wide range of postoperative pain management methods are available, including the use of opioid analgesics, which are considered the most common pain relief intervention [9]. Opioid pain relief causes complications such as nausea and vomiting, overdose, mood disorders and delayed return to normal life after discharge from the hospital, which then increase the financial costs incurred by the patient [12,13]. The use of opioid reduces the

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mother's level of consciousness and subsequently her attention to the newborn and prevents the development of an effective mother-child bond [14]. The inadequacy of analgesics in and by themselves for pain relief [15], the patients' tendency to economize on medication use and many other contributing factors have drawn the nursing system to focus on adjuvant therapies and non-medical pain relief methods [16]. The majority of these interventions are inexpensive and have little or no side-effects [17], increase the patients' activity levels and coping abilities, increase the family's share in care for their patient and reduce the patient's anxiety, medical costs and hospital bed occupancy. These methods are now being used independently or in combination with other therapies [18]. Other therapies such as massage therapy, music therapy, relaxation techniques, hypnosis, medicinal herbs and therapeutic touch have become common methods of pain management [19]. Further studies are undoubtedly required for examining the benefits of these interventions.

The review of literature has shown some evidence on the benefits of hand and foot massage for postoperative pain relief [20]. Massage seeks to affect the motor, nervous and cardiovascular systems, thus leading to a full body rest and total body relaxation, deep breathing and drowsiness [21]. The pain sensory receptors are mainly located under the skin and in the deep tissues and are concentrated in the hands and feet [22]. Massage aids the venous return and the lymphatic flow, stimulates cutaneous and subcutaneous sensory receptors and helps reduce the feeling of pain. Massage also helps with the removal of lactic acid from between the muscle fibers and reduces fatigue and anxiety. It is therefore reasonable to expect good outcomes from hand and foot massage [23]. Various studies have examined the efficacy of massage in reducing postoperative anxiety and pain and have yielded contradictory results. Some studies have shown hand and foot massage to have no significant effects on the postoperative intensity of pain and anxiety [24,25]. Some others, however, have shown it to be effective [6,13,26,27]. In a review of studies conducted between 1999 and 2007, massage was found to reduce pain. The researchers, however, noted that the type of surgery performed, the subjects examined and the duration and method of performing the massage have not been homogeneous in the reviewed studies, and as these factors affect the results of the interventions, more in-depth studies are recommended to be conducted on this subject [19].

The uncertainties in the medical community about the effectiveness of adjuvant medicine are one of the major challenges for the inclusion of these measures in routine care procedures, further necessitating a rich research-based evidence for the faster inclusion of these measures in routine care interventions.

The present study was conducted to determine the effect of massage on post-cesarean pain and anxiety as well as on the patients' vital signs and breastfeeding frequency.

2. Methodology and design

2.1. Design

The present single-blind clinical trial was conducted to determine the effect of massage on post-cesarean pain and stress in a statistical population comprising of all the pregnant women presenting to the hospital for elective cesarean section.

2.2. Data collection

This study was conducted over a period of 11 months from July 2014 to June 2015 at Imam Ali teaching hospital of Amol, affiliated with Mazandaran University of Medical Sciences.

2.3. Subjects

Study participants included 156 primiparous women undergoing elective cesarean section at the above hospital, who were selected by convenience sampling method.

The study inclusion criteria consisted of being aged 20–35, being primiparous, giving birth to a living and healthy child, being conscious and having junior high school or higher degree of education to comprehend the numerical pain scale. Subjects with cardiovascular diseases, respiratory diseases and psychological disorders such as depression and fear, those sensitive to touch, those who had wounds on their hands or feet that could interfere with the massage, those with phlebitis or traumatic arthritis in the massage area and those who had received local anesthetics or had longitudinal abdominal incisions during their cesarean section were excluded from the study. Written consents were obtained from eligible participants, who were then randomly divided into a foot massage group, a hand and foot massage group and a control group. The card drawing technique was used to randomize the assignment of subjects to the groups. A total of 156 identical cards were first prepared, and 52 were labeled "foot massage", 52 "hand and foot massage" and 52 "no interventions". A card was randomly drawn for each participant who entered the study by an independent assistant researcher (engaged only in the randomization process) and the type of intervention written on the card was announced by another researcher (in charge of the hand and foot massage).

2.4. Data collection tools

Data were collected using a demographic information form (age, degree of education, occupation, place of residence, type of insurance, history of surgery, underlying diseases, etc.), a form enquiring about analgesic use (quantity and frequency), a checklist for controlling the vital signs (pulse rate, respiration rate and blood pressure), the Visual Analog Scale (VAS) to assess the intensity of pain and Spielberger's State Anxiety Inventory to assess anxiety.

The VAS is a measurement instrument for assessing the intensity of pain on a 10 cm line with one end marked "no pain" and the other marked "the worst imaginable pain". The patient marks his intensity of pain on this line. The reliability and validity of this pain measuring instrument has been previously confirmed [28–30]. A score of 1–3 indicates mild pain, 4–7 moderate pain and 8–10 severe pain.

Spielberger's anxiety inventory comprises 20 items scored from 1 to 4 based on a 4-point scale of "not at all", "somewhat", "moderately so" and "very much so", counting for a maximum score of 80 and a minimum of 20, with higher scores suggesting greater levels of anxiety. Scores from 20 to 31 suggest mild anxiety, 32 to 42 moderate to low anxiety, 43 to 53 moderate to high anxiety, 54 to 64 relatively severe anxieties, 65 to 75 severe anxiety and 76 and higher very severe anxiety. This questionnaire has been standardized for use in Iran with reliability of 0.91 and concurrent validity of 99% [31].

2.5. Procedures

After the surgery ended, the precise timing of the patient's admission to the surgical ward was recorded. In the afternoon of the day of surgery and 4 h after the administration of the last dose of the analgesic commonly prescribed in the ward, i.e. Diclofenac suppository, the mean intensity of pain was measured by an assistant researcher who was blinded to the group allocation procedures and was not involved in performing the massages. In the intervention groups, in addition to the routine care provided in the

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