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RESEARCH

Effects of Connective Tissue Massage on Pain in Primiparous Women After Cesarean Birth

Mary Colleen Simonelli, Louise T. Doyle, MaryAnn Columbia, Phoebe D. Wells, Kelly V. Benson, and Christopher S. Lee Q13

Correspondence
Mary Colleen Simonelli, RN, PhD, Boston College Connell School of Nursing, 140 Commonwealth Ave., Maloney Hall 239, Chestnut Hill, MA 02467.
mary.simonelli@bc.edu

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ABSTRACT

Objective: To evaluate the efficacy of connective tissue massage to reduce postoperative pain in primiparous women on Postoperative Day 1 after unplanned cesarean birth.

Design: A randomized controlled trial with three groups: intervention (Group 1), control or standard care (Group 2), and individualized attention (Group 3).

Setting: Family/newborn units of a large teaching hospital in the Northeastern United States.

Participants: A total of 165 women who experienced unplanned cesarean births of singleton newborns at term gestation. Q1

Methods: Participants were randomized to three groups: those in Group 1 received a 20-minute massage, those in Group 2 received the usual standard of care, and those in Group 3 received 20 minutes of individualized attention. On Postoperative Day 1, participants completed questionnaires to measure overall pain, stress, and relaxation at Time 1 and again 60 minutes later. Daily numeric pain ratings and medication consumption data were retrieved from the electronic health care records. Latent growth modeling and analysis of variance were used to analyze data, as appropriate.

Results: Participants in Group 1 had increased relaxation ($p < .001$), decreased pain ($p < .001$), decreased stress ($p < .001$), and decreased opioid use on Day 1 ($p = .031$) and Day 2 ($p = .006$) of the hospital stay after the intervention compared with the other groups. Additionally, opioid use in Group 1 decreased linearly, whereas the control groups had a nonlinear pattern of change. Q2

Conclusion: Using massage therapy during postoperative hospitalization improved relaxation and decreased pain, stress, and opioid use in this sample of women after unplanned cesarean births.

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Mary Colleen Simonelli, RN, PhD, is the Assistant Department Chair and a clinical professor in the William F. Connell School of Nursing, Boston College, Chestnut Hill, MA, and a staff member, Newborn Family Unit, Massachusetts General Hospital, Boston, MA.

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Postoperative pain management for women who have given birth through unplanned cesareans requires a multimodal, integrative approach. The traditional practice of administering opioids for pain control impairs women's abilities to remain awake and alert during the critical transition to parenting in general and to bond with, breastfeed, and nurture their newborns in particular (Sakalis, William, Hepworth, Hartmann, & Tamimi, 2013; Zanardo et al., 2010). In addition to postoperative pain, unplanned cesarean birth is associated with psychological stress that further complicates maternal self-care and care of the newborn (Modarres, Afrasiabi, Rahnama, & Montazen, 2012). Hence, nonpharmacologic strategies for the management of postoperative pain and stress may play an important role in routine clinical practice after cesarean birth.

There have been only a few studies on nonpharmacologic interventions for post-cesarean birth pain, and although evidence was found for the effectiveness of massage as adjuvant therapy for post-cesarean pain, the samples in the studies comprised women who had elective cesarean births (Abbaspoor, Akbari, & Najar, 2014; Saatsaz, Rezaei, Alipour, & Beheshti, 2016). Moreover, there is a paucity of empirical evidence to support any specific clinical practices that can be used to reduce psychological stress after unplanned cesarean. Although previous

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Women who experienced unplanned cesarean births have been excluded from prior research on optimal pain management techniques.

Louise T. Doyle, RNC-OB, HNB-BC, LMT, is a resource/staff nurse, Newborn Family Unit, Massachusetts General Hospital, Boston, MA.

MaryAnn Columbia, RN, IBCLC, is a lactation consultant/resource/staff nurse, Newborn Family Unit, Massachusetts General Hospital, Boston, MA.

Phoebe D. Wells, RN, MS, HWNC-BC, is a lactation consultant/resource/staff nurse, Newborn Family Unit, Massachusetts General Hospital, Boston, MA.

Kelly V. Benson, RN, LMT, is staff nurse, Newborn Family Unit, Massachusetts General Hospital, Boston, MA.

Christopher S. Lee, PhD, RN, FAHA, FAAN, FHFSA, is the Associate Dean of Research and professor, William F. Connell School of Nursing, Boston College, Chestnut Hill, MA.

researchers identified the unique challenges faced by women who had unplanned cesareans, this group of women has largely been excluded from prior research on interventions to improve maternal outcomes. To address these important knowledge gaps, the purpose of this prospective randomized controlled trial was to test the efficacy of massage therapy as a relaxation, pain, and stress management strategy in primiparous women who experienced unplanned cesareans. We hypothesized that the use of massage therapy would improve relaxation and reduce pain, stress, and medication use in participants assigned to this intervention group compared with standard of care and individualized attention groups.

During the past two decades, cesarean rates have increased dramatically worldwide (Betrán et al., 2016). Despite a lack of evidence to link cesarean birth with improved maternal and neonatal outcomes, currently in the United States nearly one third of all newborns are born by cesarean (Martin, Hamilton, Osterman, Driscoll, & Drake, 2018). Given this reality, nurses must evaluate current practices and develop effective pain management strategies that do not compromise a woman's ability to bond with or care for her newborn effectively.

Women who experience cesarean births are at risk for anesthetic, surgical, and postoperative complications (Clark & Silver, 2011). They have longer hospitalizations and recoveries after childbirth compared with women who experience vaginal births. In our institution, the length of a typical hospitalization after a cesarean is 96 hours, whereas the standard hospital stay after a vaginal birth is 48 hours. The current standard of care at our institution after cesarean is to administer long-acting intrathecal morphine along with the anesthetic for surgery, timed nonsteroidal anti-inflammatory drugs (NSAIDs) for the first 24 hours after surgery, and oral opioids and NSAIDs as needed for the duration of the woman's hospitalization. At discharge, women who experienced cesarean births receive a prescription for opioids. Because women who experience unplanned cesareans are at increased risk for physical and psychological complications beyond those associated with elective cesareans, it is important to include them in research regarding postoperative pain management.

Role of the Maternity Care Provider

Perinatal nurses provide physical care, emotional support, and education to new mothers and families. Critical to this role is the reduction of pain and stress to promote wellness for the mother and her newborn (Abbaspoor et al., 2014). Unplanned cesarean birth is associated with an increase in pain and stress compared with vaginal birth. Surgical incisions and exhaustion after labor and surgery can impair a mother's ability to bond with, breastfeed, and nurture her newborn (Zanardo et al., 2010). In prior studies, researchers suggested that emergent or unplanned cesarean births could have negative effects on breastfeeding, especially during the initial postpartum period (Sakalis et al., 2013; Zanardo et al., 2010).

Massage Therapy

Massage therapy may present an effective way to manage postoperative pain and decrease opioid use. Connective tissue massage can decrease pain perception and increase β-endorphin production (Bauer et al., 2010). Researchers at the Buck Institute for Research on Aging at McMaster University in Ontario, Canada, showed that massage works on a cellular level to decrease inflammation and increase the energy-producing organelles of the muscle (Turchaninov, 2011). McRee et al. (2007) found the acute response to massage was equal to a dose of morphine in improving sleep and decreasing anxiety for women after gynecologic surgery.

Authors of prior clinical studies showed the positive effects of back massage on the reduction of pain and anxiety after cardiac and thoracic surgery (Adams, White, & Beckett, 2010; Bauer et al., 2010; Cutshall et al., 2010). Additionally, massage decreased anxiety and muscular tension and increased relaxation and patient satisfaction compared with standard care after cardiac surgery (Bauer et al., 2010). Dion et al. (2011) reported that massage, in conjunction with regular pain medication, significantly improved patient pain and anxiety after major surgery.

In their meta-analysis, Boyd et al. (2016) identified the following issues with the 16 studies (12 high quality and 4 low quality) on massage