Effects of Controlled Breathing, With or Without Aromatherapy, in the Treatment of Postoperative Nausea

Sherill Nones Cronin, PhD, RN-BC, Jan Odom-Forren, PhD, RN, CPAN, FAAN, Holli Roberts, MSN, RN, Melissa Thomas, BSN, RN, CAPA, Sandy Williams, BSN, RN, Margaret Imelda Wright, BSN, RN, CNOR

Purpose: *The purpose of this study was to compare the effectiveness of controlled breathing (CB), with and without aromatherapy (isopropyl alcohol [IPA]), in the treatment of postoperative nausea (PON) in adult females undergoing elective outpatient laparoscopic procedures.*
Design: *A prospective randomized two-group quasi-experimental design was used.*
Methods: *A convenience sample was used. Patients were consented and assigned to either a control (CB) or treatment (IPA) group. Symptomatic patients rated nausea severity before and at 2 and 5 minutes after receiving either CB or CB with IPA.*
Findings: *Complete data for one episode of nausea were obtained on 82 patients (41 in each group). Results showed that although nausea severity decreased significantly over time, there was no significant difference in PON treatment effectiveness between the two groups, nor was there a difference in requests for rescue medications.*
Conclusions: *Patients who experience PON should be encouraged to take slow deep breaths as an initial response to symptoms. This approach has no side effects or costs and could also aid the patient to self-manage symptoms after discharge.*

Keywords: *aromatherapy, controlled breathing, postoperative nausea.*

DESPITE MAJOR ADVANCES IN ANESTHESIA, the rate of postoperative nausea (PON) for all patients undergoing anesthesia remains between 20% and 30%. This rate rises to as high as 80% in patients at high risk, such as females or those with a history of PON. PON contributes to

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Sherill Nones Cronin, PhD, RN-BC, is a Professor of Nursing, Bellarmine University and a Research and Evidence-based Practice Consultant, Baptist Health Louisville, Louisville, KY; Jan Odom-Forren, PhD, RN, CPAN, FAAN, is a Assistant Professor, College of Nursing, University of Kentucky, Lexington, KY; Holli Roberts, MSN, RN, is a Nursing Quality Coordinator, Baptist Health Louisville, Louisville, KY; Melissa Thomas, BSN, RN, CAPA, is a Perioperative Education Coordinator, Baptist Health Louisville, Louisville, KY; Sandy Williams, BSN, RN, is a Nurse Manager PACU/Phase II Recovery, Baptist Health Louisville, Louisville, KY; and Margaret Imelda Wright, BSN, RN, CNOR, is a Unit Educator/Clinical Informatics; Outpatient Surgical Services, Baptist Health Louisville, Louisville, KY.

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Address correspondence to Sherill Nones Cronin, Bellarmine University, Research and Evidence-based Practice Consultant, Baptist Health Louisville, Louisville, KY; e-mail address: scronin@bellarmine.edu.

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increased cost of care and increased length of postoperative recovery and is a prevalent source of patient discomfort and dissatisfaction.[1,2]

Postoperative nausea and vomiting (PONV) is the result of several mechanisms, although the exact physiology is unclear. The nausea and vomiting reflex is comprised of peripheral mechanisms in the gastrointestinal tract and central mechanisms in the chemoreceptor trigger zone (CTZ).[3] Stimulation of either the GI tract or the CTZ pathway can result in emesis. Several factors may impact the likelihood of PONV after surgery, including operative site, type of surgery, type of anesthesia used, and patient characteristics, including age, gender, and previous history of PONV.[4]

In the fight against PONV, many anesthesia care providers elect to order a single pharmacologic agent with reduced adverse effects. Although using a combination of therapies, known as "multimodal antiemetic therapy" is more effective than using a single therapy. The multimodal action can be laden with adverse effects such as prolonged emergence from anesthesia, delayed recovery time, and reduced patient satisfaction.[5] As a result, anesthesia providers and postoperative nurses are continuously seeking alternative methods to relieve PONV that have low cost and minimal side effects. The use of aromatherapy is one of the approaches that has gained increasing attention over recent years.

Literature Review

Aromatherapy is recognized by the American Society of PeriAnesthesia Nursing (ASPAN) as a complementary modality in the treatment of PONV.[6] The ASPAN evidence-based clinical practice guideline for the prevention and/or management of PONV/PDNV recommends consideration of aromatherapy in the management of postoperative patients. The Society for Ambulatory Anesthesiology's newest consensus guidelines for the management of postoperative nausea and vomiting also suggest the use of aromatherapy to achieve a faster reduction of PONV severity.[2]

A review of the literature revealed several studies pertaining to aromatherapy in the treatment of PONV. In 2002, Merritt et al[7] studied the effectiveness of inhalation isopropyl alcohol (IPA) for the treatment of PONV. The study showed no difference between the use of IPA and treatment with pharmacologic therapy in the reduction of PONV. The researchers recommended the use of IPA over medications as a cost reduction measure. Additional literature on the impact of aromatherapy for PONV supports IPA inhalation as a complementary therapy.[8]

Winston et al[3] hypothesized that IPA inhalation influences the neurotransmitters that activate the CTZ. After a study comparing IPA aromatherapy to a pharmacologic agent, Winston et al,[3] claimed that IPA is faster than ondansetron in resolving PON. IPA inhalation has also been demonstrated to be a therapeutic, cost-effective, and readily available means of treating postdischarge nausea and vomiting.[9]

Studies have focused on the inhalation aspect of treatment as opposed to comparing inhalation with standard antiemetic pharmacological measures. In 1997, Tate[10] investigated the efficacy of peppermint oil as a treatment for PONV compared with peppermint essence or deep breathing alone without inhalation of an aromatherapy. Tate concluded that there was some evidence to suggest that the inhalation of peppermint oil improved PON in gynecologic patients. Anderson and Gross[11] compared groups of patients inhaling IPA, peppermint, and saline. The researchers found that aromatherapy reduced patients' perceived severity of PON, leading to a 50% reduction in the use of pharmacologic measures. The lack of significant difference among the groups led them to conclude that the actual inhalation of air was effective in relieving symptoms of PON as opposed to any specific type of aromatherapy. The study's limitations include a small sample size of 33 patients.

Similarly, in a 2012 study, Ferruggiari et al[12] investigated the effect of aromatherapy on PON in women using saline and peppermint and found no significant differences between the control group and the intervention group. Sites et al[13] further demonstrated that there was no statistically significant difference in PON between the two groups of patients using inhalation of peppermint and controlled breathing. This study concluded that controlled breathing can be initiated as an alternative to pharmacologic agents.[13]