

# Controlled Breathing With or Without Peppermint Aromatherapy for Postoperative Nausea and/or Vomiting Symptom Relief: A Randomized Controlled Trial

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**Purpose:** With little scientific evidence to support use of aromatherapy for postoperative nausea and/or vomiting (PONV) symptoms, this study evaluated controlled breathing with peppermint aromatherapy (AR) and controlled breathing alone (CB) for PONV relief.

**Design:** A single blind randomized control trial design was used.

**Methods:** On initial PONV complaint, symptomatic subjects received either CB ( $n = 16$ ) or AR ( $n = 26$ ) intervention based on randomization at enrollment. A second treatment was repeated at 5 minutes if indicated. Final assessment occurred 10 minutes post initial treatment. Rescue medication was offered for persistent symptoms.

**Findings:** Among eligible subjects, PONV incidence was 21.4% (42/196). Gender was the only risk factor contributing to PONV symptoms ( $P = .0024$ ). Though not statistically significant, CB was more efficacious than AR, 62.5% versus 57.7%, respectively.

**Conclusions:** CB can be initiated without delay as an alternative to prescribed antiemetics. Data also support use of peppermint AR in conjunction with CB for PONV relief.

**Keywords:** aromatherapy, postoperative nausea and/or vomiting, controlled breathing, peppermint.

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**ONE OF THE MOST COMMON FEARS** patients express when facing surgery is postoperative nausea and/or vomiting (PONV), which ranges

from minor queasiness to protracted periods of vomiting. It remains one of the most predictable indicators of prolonged postoperative stays,

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unplanned admissions and delayed return to activities of daily living and employment.<sup>1</sup> A number of negative outcomes are associated with vomiting, including pulmonary aspiration, suture dehiscence, esophageal rupture, subcutaneous emphysema, and bilateral pneumothoraces.<sup>2,3</sup> PONV complications cost health care insurers and providers millions of dollars a year.

PONV occurs in approximately one third of the 75 million patients who undergo surgery annually.<sup>2</sup> Among patients deemed high-risk because of predisposing factors such as a history of motion sickness, the incidence of PONV can be as high as 70% to 80%.<sup>1</sup> History of migraines, female gender, and type and duration of surgery are also noted to be important predictors of PONV.<sup>3</sup>

Many times, health care providers turn first to medications when patients complain of nausea and vomiting. However, there are potentially adverse side effects associated with antiemetics, such as sedation, alterations in blood pressure, and electrocardiographic changes.<sup>2,4,5</sup> Furthermore, the cost of medications directly affects not only these patients but the health care industry as well.

Aromatherapy dates back thousands of years to the ancient cultures of Egypt and India.<sup>6</sup> Although it is one of the lesser-known alternative therapies in the United States, nonconventional therapies are commonly practiced in Germany, France, Australia, Finland, Canada, and the United Kingdom.<sup>7</sup> The American Society of PeriAnesthesia Nurses (ASPAN) Evidence-Based Clinical Practice Guideline for the Prevention and/or Treatment of PONV and Post Discharge Nausea and Vomiting (PDNV) in Adult Patients recommends implementation of rescue interventions to include aromatherapy during both Phase I and Phase II postanesthesia care.<sup>1</sup>

Maddocks-Jennings and Wilkinson<sup>8</sup> noted in an integrative literature review that aromatherapy has also been used in the treatment of cancer patients, obstetric patients, and for patients experiencing gastric distress. More recently, oncology nurses have researched orange aromatherapy for symptomatic treatment among patients receiving preserved stem cell infusions.<sup>9</sup> Lane and colleagues<sup>10</sup> evaluated nausea following C-section procedures where subjects were randomized to

one of three groups: peppermint spirits, placebo, or standard antiemetic treatment. They reported reduced nausea scores in the majority of subjects in the peppermint aromatherapy arm, whereas the postsurgical nausea scores of the other two groups remained high.

Much information on aromatherapy can be found in lay publications. In the medical realm, however, most aromatherapy research is anecdotal. A limited number of scientifically sound studies addressing postoperative nausea and/or vomiting have been published. Furthermore, there are only a few research studies that have been conducted to evaluate the efficacy of inhaled peppermint in the treatment of PONV, and it has been suggested that peppermint aromatherapy requires further study.<sup>1,3</sup>

Tate<sup>11</sup> studied the efficacy of peppermint oil (experimental) as a treatment for PONV versus peppermint essence (placebo) or no treatment (control) following gynecologic surgery. Neither subject assignment (N = 18) to the groups nor the number of subjects in each group was addressed. Subjects were given unrestricted use of the same volume of peppermint oil without documenting the extent of its use among subjects. Despite these limitations, this study did suggest that peppermint oil might improve postoperative nausea in gynecological patients. Anderson and Gross<sup>12</sup> sought to determine if peppermint oil, isopropyl alcohol (IPA), or a saline placebo decreased postoperative nausea. They found that the placebo was as effective as IPA or peppermint oil in reducing symptoms. Their results suggested that the benefit observed might be due to the consciously controlled breathing technique rather than the aroma inhaled.

A study by Winston and colleagues,<sup>13</sup> designed to evaluate ondansetron versus 70% IPA for the treatment of PONV, concluded that symptoms were resolved more readily with inhaled IPA. Furthermore, they evaluated the incidence of PONV up to 24 hours postoperatively by telephoning subjects. Their data revealed that subjects treated with IPA incurred a higher incidence of PONV after discharge home than their counterparts who were treated with ondansetron. Likewise, a replication of the Winston et al study reported similar findings in 2007.<sup>14</sup> The IPA group's symptoms resolved faster

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