A Prospective Randomized Study of the Effectiveness of Aromatherapy for Relief of Postoperative Nausea and Vomiting

Nancy S. Hodge, RN, MSN, BSN, ACNS-BC, Mary S. McCarthy, RN, PhD, MN, BSN, Roslyn M. Pierce, BA

Introduction: *Postoperative nausea and vomiting (PONV) is a major concern for patients having surgery under general anesthesia as it causes subjective distress along with increased complications and delays in discharge from the hospital. Aromatherapy represents a complementary and alternative therapy for the management of PONV.*
Purpose: *The objective of this study was to compare the effectiveness of aromatherapy (QueaseEase, Soothing Scents, Inc, Enterprise, AL) versus an unscented inhalant in relieving PONV.*
Methods: *One hundred twenty-one patients with postoperative nausea were randomized into a treatment group receiving an aromatic inhaler and a control group receiving a placebo inhaler to evaluate the effectiveness of aromatherapy.*
Findings: *Initial and follow-up nausea assessment scores in both treatment and placebo groups decreased significantly ($P < .01$), and there was a significant difference between the two groups ($P = .03$). Perceived effectiveness of aromatherapy was significantly higher in the treatment group ($P < .001$).*
Conclusions: *Aromatherapy was favorably received by most patients and represents an effective treatment option for postoperative nausea.*

Keywords: *aromatherapy, postoperative nausea, complementary therapy, CAM, research, perianesthesia nursing.*
Published by Elsevier Inc. on behalf of the American Society of PeriAnesthesia Nurses

POSTOPERATIVE NAUSEA AND VOMITING (PONV) is a major concern of providers for patients having surgery under general anesthesia. PONV is associated with subjective distress as well as increased complications and delays in discharge from the hospital. The consequences of prolonged nausea and vomiting significantly affect postoperative morbidity and include dehydration, electrolyte disturbances, aspiration, and even wound dehiscence.[1] Aromatherapy represents a complementary and alternative therapy to the management of PONV.

Nancy S. Hodge, RN, MSN, BSN, ACNS-BC, is a Medical-Surgical Clinical Nurse Specialist, Center for Nursing Science & Clinical Inquiry, Madigan Army Medical Center, Tacoma, WA; Mary S. McCarthy, RN, PhD, MN, BSN, is a Senior Nurse Scientist, Center for Nursing Science & Clinical Inquiry, Madigan Army Medical Center, Tacoma, WA; and Roslyn M. Pierce, BA, is a Research Assistant, Center for Nursing Science & Clinical Inquiry, Madigan Army Medical Center, Tacoma, WA.

The views expressed in this article are those of the authors and do not reflect the official policy of the Department of the Army, the Department of Defense, or the US Government. The investigators have adhered to the policies for protection of human subjects as prescribed in 45 CFR 46.

Conflict of interest: QueaseEase and placebos were provided free of charge.

Address correspondence to Nancy S. Hodge, 6908 65th Avenue West, Lakewood, WA 98499; e-mail address: nancy.s.hodge@us.army.mil.

Published by Elsevier Inc. on behalf of the American Society of PeriAnesthesia Nurses
1089-9472/$36.00
http://dx.doi.org/10.1016/j.jopan.2012.12.004

Literature Review

Depending on the number of risk factors a patient has for PONV, the incidence ranges anywhere from 10% to 87%. This is not surprising, given that different surgical populations, procedures, and anesthetic methods influence PONV.[2,3] Most patients and surgeons believe PONV is caused by the anesthetic agent used for the procedure.[4] However, there is literature to support a significant reduction in PONV with the introduction of halogenated inhalational agents in the 1960s.[5] The problem of PONV continues to persist unfortunately; the mechanisms for it are numerous and the causative pathways are not well elucidated.

In 1997, Koivuranta et al described PONV risk factors in the adult surgical population. These risk factors included female gender, non-smoking status, history of PONV, history of motion sickness, and duration of surgery greater than 60 minutes.[6] In 1999, Apfel et al identified female gender, nonsmoking status, history of PONV or motion sickness, and postoperative opioids as the four most significant predictors of PONV. The propensity for the development of PONV is cumulative with each additional risk factor adding to the risk of occurrence. For example, with one risk factor the PONV risk is 10%, but if four risk factors are reported, the PONV risk rises to 80%.[7]

Current drug therapies used to treat PONV such as dopamine receptor antagonists (eg, metoclopramide) and butyrophenones (eg, droperidol) have occasional undesirable side effects that include excessive sedation, hypotension, dry mouth, extrapyramidal reactions, and limited dosing abilities.[8] Some drug combinations may have additional adverse effects such as headache, dizziness, and drowsiness. The negative outcomes of PONV may require additional medications, more attention from nurses and physicians, and an extended hospital length of stay, all of which increase the cost of related health care.

Alternative treatments are now being used to help control PONV with early favorable results. These treatments include nausea relief bands (pressure point or electrical stimulation), intraoperative high concentration oxygen administration, acupressure, acupuncture, music, and aromatherapy. Aromatherapy, a complementary therapy, is defined as "treatment using scents."[9] It is a relatively new area of research for PONV. These nonpharmacologic modalities are appealing to many patients and assist in the emotional and physical healing that enhances one's overall well-being and quality of life.[1] Smiler and Srock found that aromatherapy with isopropyl alcohol effectively treated the nausea caused by the motion patients experience while being transported on a gurney.[10] Wang et al found that isopropyl alcohol was more effective than placebo as the initial treatment for nausea in children, although the effect was limited to less than 1 hour.[11] Merritt et al were unable to demonstrate a beneficial effect of isopropyl alcohol inhalation in patients with PONV; their study had no control group and a small sample size.[12]

A randomized, double blind study by Anderson and Gross enrolled subjects experiencing PONV to receive aromatherapy with isopropyl alcohol, oil of peppermint, or placebo (saline).[13] The vapors were inhaled from scented gauze pads held directly beneath the nose. Subjects were instructed to exhale slowly through their mouth. They rated their nausea on a visual analog scale at 2 and 5 minutes after the inhalation. Overall nausea scores decreased from 60.6 $\pm$ 4.3 mm before aromatherapy to 43.1 $\pm$ 4.9 mm ($P < .005$) at 2 minutes and to 28.0 $\pm$ 4.6 mm ($P < .0001$) at 5 minutes after aromatherapy. While decreased, nausea scores did not differ between groups. Only 52% of the subjects required additional antiemetic therapy during their post-anesthesia care unit (PACU) stay. Overall patient satisfaction with postoperative nausea management was 86.9 $\pm$ 4.1 mm and was independent of treatment group. The researchers concluded that aromatherapy effectively reduced perceived severity of PONV and that the beneficial effect may be related to the controlled breathing patterns that subjects were instructed on during the study. This study did provide support for isopropyl alcohol as well as herbal inhalations. No safety concerns for subjects were identified.

Aromatherapy formulations that have been popular alone or as adjuncts to conventional treatments include peppermint oil ingestion for morning sickness, dyspepsia, and other gastrointestinal complaints; peppermint oil vapor for the reduction of postoperative nausea in surgical gynecology patients; and ginger as a powder, candy, or oil to reduce the incidence of 24-hour PONV among