



## Editorial

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### Corresponding author:

Hyub Huh, M.D., Ph.D.

Department of Anesthesiology and Pain  
Medicine, Kyung Hee University Hospital at  
Gangdong, Kyung Hee University College of  
Medicine, 892 Dongnam-ro, Gangdong-gu,  
Seoul 05278, Korea

Tel: +82-2-440-7809

Fax: +82-2-440-7808

Email: [clumania@khu.ac.kr](mailto:clumania@khu.ac.kr)

ORCID: <https://orcid.org/0000-0002-2321-1148>



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# Postoperative nausea and vomiting in spinal anesthesia

Hyub Huh

Department of Anesthesiology and Pain Medicine, Kyung Hee University Hospital at Gangdong, Kyung Hee University College of Medicine, Seoul, Korea

Preventing and treating both postoperative pain and postoperative nausea and vomiting (PONV) are critical for anesthesiologists to promote successful recovery and improve patient outcomes. PONV is a common side effect of anesthesia and surgery, affecting approximately 30% of patients undergoing surgery and up to 80% of high-risk patients [1,2]. Untreated PONV can lead to various complications, including increased risk of postoperative bleeding, delayed wound healing, wound dehiscence, gastric aspiration, and electrolyte imbalances such as dehydration and metabolic disturbances [3]. Additionally, PONV can have a significant impact on the patient's experience, leading to prolonged hospital stays, increased healthcare costs, and a considerable disruption of daily life [4]. Therefore, the effective management of PONV is crucial to minimize patient discomfort, reduce healthcare costs, and improve overall patient satisfaction and outcomes.

Various antiemetic agents have been developed and tested to prevent PONV, including corticosteroids, 5-HT<sub>3</sub> receptor antagonists, antihistamines, antidopaminergics, and neurokinin-1 receptor antagonists. Although these agents can be effective at reducing the occurrence of PONV, none is capable of fully preventing PONV owing to the various causes of PONV. Therefore, a multimodal approach involving the use of multiple antiemetic agents with different mechanisms of action along with non-pharmacological interventions such as preoperative fasting, intraoperative fluid management, and the use of regional anesthesia techniques, is often recommended [5].

Furthermore, identifying patients at high risk of developing PONV and initiating preventative measures early can also help to decrease the occurrence of PONV. Recent consensus-based guidelines suggest assessing risk factors (i.e., female sex, postoperative opioid administration, non-smoking status, a history of PONV or motion sickness, young patient age, longer duration of anesthesia, volatile anesthetics, and type of surgery) and reducing the patient's baseline risk [6]. However, most studies on PONV have primarily focused on patients receiving general anesthesia, and the majority of information regarding PONV risk factors has been derived from this patient population [5,7].

In this issue of the *Korean Journal of Anesthesiology*, Ju et al. [8] conducted a retrospective analysis of a large cohort of 5,691 patients who underwent orthopedic surgery under spinal anesthesia to determine whether the Apfel score, a tool commonly used to predict the likelihood of PONV based on four risk factors (female sex, history of motion sickness or PONV, non-smoking status, and use of postoperative opioids) remains a valid predictor of PONV during spinal anesthesia. The study found that the Apfel score does remain a valid predictor of PONV after spinal anesthesia and that baseline heart rate, non-smoking status, and postoperative opioid use were significant risk factors for PONV after spinal anesthesia. The multivariate analysis revealed an independent association between the overall incidence of PONV and baseline heart rate  $\geq 60$  beats/min (OR: 1.38, 95% CI [1.10, 1.72],  $P = 0.005$ ), nonsmoker (OR: 2.12, 95% CI [1.46, 3.07],  $P < 0.001$ ), and postoperative opioid use (OR: 2.57, 95% CI [1.80, 3.67],  $P < 0.001$ ). The findings revealed a

significant association between smoking and PONV incidence and between postoperative opioid use and PONV incidence after spinal anesthesia. These associations have not been previously reported [9,10].

Furthermore, this study showed that prophylactic dexamethasone and 5-HT<sub>3</sub> receptor antagonists can decrease the incidence of PONV after spinal anesthesia. A significant interaction was also found between this prophylactic combination and high PONV risk, suggesting that a multimodal approach to PONV prophylaxis is necessary for patients at a high risk of developing PONV after spinal anesthesia.

Despite the inherent limitations associated with a retrospective design, this study provides useful information for anesthesiologists to assess the risk of PONV and implement effective prophylactic strategies for patients undergoing spinal anesthesia. These findings also highlight the importance of multimodal PONV prophylaxis in spinal anesthesia.

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## Conflicts of Interest

No potential conflict of interest relevant to this article was reported.

## References

1. Weibel S, Rücker G, Eberhart LH, Pace NL, Hartl HM, Jordan OL, et al. Drugs for preventing postoperative nausea and vomiting in adults after general anaesthesia: a network meta-analysis. *Cochrane Database Syst Rev* 2020; 10: CD012859.
2. Weibel S, Pace NL, Schaefer MS, Raj D, Schlesinger T, Meybohm P, et al. Drugs for preventing postoperative nausea and vomiting in adults after general anesthesia: an abridged Cochrane network meta-analysis. *J Evid Based Med* 2021; 14: 188-97.
3. Awad K, Ahmed H, Abushouk AI, Al Nahravi S, Elsherbeny MY, Mustafa SM, et al. Dexamethasone combined with other antiemetics versus single antiemetics for prevention of postoperative nausea and vomiting after laparoscopic cholecystectomy: an updated systematic review and meta-analysis. *Int J Surg* 2016; 36: 152-63.
4. Cho YJ, Choi GJ, Ahn EJ, Kang H. Pharmacologic interventions for postoperative nausea and vomiting after thyroidectomy: a systematic review and network meta-analysis. *PLoS One* 2021; 16: e0243865.
5. Gan TJ, Belani KG, Bergese S, Chung F, Diemunsch P, Habib AS, et al. Fourth consensus guidelines for the management of postoperative nausea and vomiting. *Anesth Analg* 2020; 131: 411-48.
6. Kienbaum P, Schaefer MS, Weibel S, Schlesinger T, Meybohm P, Eberhart LH, et al. Update on PONV-what is new in prophylaxis and treatment of postoperative nausea and vomiting?: Summary of recent consensus recommendations and Cochrane reviews on prophylaxis and treatment of postoperative nausea and vomiting. *Anaesthesist* 2022; 71: 123-8.
7. Apfel CC, Heidrich FM, Jukar-Rao S, Jalota L, Hornuss C, Whelan RP, et al. Evidence-based analysis of risk factors for postoperative nausea and vomiting. *Br J Anaesth* 2012; 109: 742-53.
8. Ju JW, Kwon J, Yoo S, Lee HJ. Retrospective analysis of the incidence and predictors of postoperative nausea and vomiting after orthopedic surgery under spinal anesthesia. *Korean J Anesthesiol* 2023; 76: 99-106.
9. Moraitis A, Hultin M, Walldén J. Risk of postoperative nausea and vomiting in hip and knee arthroplasty: a prospective cohort study after spinal anaesthesia including intrathecal morphine. *BMC Anesthesiol* 2020; 20: 242.
10. Paul JE, Arya A, Hurlburt L, Cheng J, Thabane L, Tidy A, et al. Femoral nerve block improves analgesia outcomes after total knee arthroplasty: a meta-analysis of randomized controlled trials. *Anesthesiology* 2010; 113: 1144-62.