



Letter to the article by Daichi Fujimoto et al

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Dear Editor:

We read with great interest the article by Daichi Fujimoto et al. [1], which investigated the effect of intraoperative use of remimazolam on the occurrence of postoperative delirium (POD) in patients over 65 years old with proximal femoral fractures. This study showed that the use of remimazolam may reduce the incidence of early POD in this elderly population. This letter aims to commend the authors for their contributions; however, we believe that this conclusion should be interpreted with caution and warrants further exploration.

Firstly, the authors did not conduct a univariate logistic regression analysis beforehand, which may have resulted in the exclusion of factors influencing POD. The factors included in the multivariate logistic regression analysis were selected based on established predictors of POD, such as advanced age, preexisting cognitive impairment, cerebrovascular disease, benzodiazepine use, and low albumin levels. However, factors such as hypertension, a history of alcohol consumption, nutritional status, depression, and the use of non-narcotic analgesics should also be incorporated into the regression analysis [2, 3].

Secondly, the reduction in the incidence of POD in the "remimazolam group" was limited to postoperative day 0. Additionally, 93% of patients in the "other group" received inhalational anesthetics (sevoflurane or desflurane) for maintenance anesthesia. Compared to intravenous anesthetics, inhalation anesthetics may increase the risk of postoperative agitation [4, 5]. We suspect that emergence agitation associated with these agents may have contributed to a false-positive outcome in this study.

Thirdly, we recommend conducting subgroup analyses. For instance, analyses based on age and the presence of pre-existing cognitive impairments could be performed. Such subgroup evaluations would enhance the clinical relevance of the findings and provide insights into whether the effects of remimazolam vary among specific high-risk groups.

In conclusion, Fujimoto et al. provide valuable insights into remimazolam's potential benefits for reducing POD, further research is needed. Future studies should aim to expand the sample size and use propensity score matching or prospective cohort designs to produce more reliable results. These approaches will enhance our understanding of remimazolam's effects in this at-risk population.

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Data availability No additional data are available.

Declarations

Conflict of interest The authors declare no competing interests.

Ethics declarations Not applicable.

References

1. Fujimoto D, Obata N, Mizobuchi S. Effectiveness of remimazolam in preventing postoperative delirium in elderly patients with proximal femoral fractures. *J Anesth*. 2024;38(4):475–82.
2. Wu J, Yin Y, Jin M, Li B. The risk factors for postoperative delirium in adult patients after hip fracture surgery: a systematic review and meta-analysis. *Int J Geriatr Psychiatry*. 2021;36(1):3–14.
3. Dong B, Wang J, Li P, Li J, Liu M, Zhang H. The impact of preoperative malnutrition on postoperative delirium: a systematic review and meta-analysis. *Perioper Med (Lond)*. 2023;12(1):55.

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4. Kanaya A, Kuratani N, Satoh D, Kurosawa S. Lower incidence of emergence agitation in children after propofol anesthesia compared with sevoflurane: a meta-analysis of randomized controlled trials. *J Anesth.* 2014;28(1):4–11.
5. Miyake T, Miyamoto Y, Nakamura N. Subanesthetic-dose propofol infusion for preventing emergence agitation in children: a retrospective observational study. *J Anesth.* 2023;37(4):546–54.

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