

# Methodological Confounding from Neuromuscular Reversal and Unreported PACU Data in Intranasal Dexmedetomidine for Extubation [Letter]

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## Dear editor

We read with interest the recent article by Liu et al, who demonstrated that 100 µg of intranasal dexmedetomidine significantly increased the rate of smooth tracheal extubation after laparoscopic surgery (93.5% vs 64.5%).<sup>1</sup> This innovative, noninvasive approach is clinically valuable and deserves recognition. However, we wish to comment on several methodological aspects that may affect the interpretation of the secondary outcomes—extubation time and postoperative sedation—as certain unaddressed factors might have introduced systematic bias.

First, the anesthetic protocol itself may have predisposed patients to delayed emergence. Anesthesia was maintained with sevoflurane (1.3 MAC) combined with propofol and remifentanyl infusions, all discontinued only at the end of surgery. Additionally, a vecuronium bromide infusion was administered throughout the case, yet the study did not mention the use of quantitative neuromuscular monitoring, such as a train-of-four ratio  $\geq 0.9$ , or reversal agents. Residual neuromuscular blockade is a major cause of extubation delay, as emphasized by the current guidelines of the American Society of Anesthesiologists and the European Society of Anaesthesiology and Intensive Care.<sup>2,3</sup> Such omissions likely account for the high rates of “delayed extubation” (66–76%) and the prolonged median extubation times (20 and 25.5 min), both exceeding the study’s own 15-minute threshold. The small 5.5-minute difference between groups should therefore be interpreted with caution, as it may not reflect a true pharmacologic effect of dexmedetomidine.

Second, the postoperative sedation findings appear paradoxical. At 30 minutes postoperatively, the control group showed a higher proportion of sedated patients (Ramsay Sedation Scale [RSS] 4–6: 35.5% vs 17.7%), contradicting the well-established sedative properties of dexmedetomidine. A more plausible explanation is the use of unrecorded rescue sedatives or opioids in the post-anesthesia care unit (PACU), given the control group’s greater coughing and hemodynamic instability during extubation. The lack of documentation on PACU medications represents a major limitation and limits meaningful interpretation of recovery quality.

In conclusion, while intranasal dexmedetomidine clearly improves extubation smoothness, its effects on extubation time and postoperative sedation remain confounded by the anesthetic protocol and limited reporting of perioperative data. Future trials would benefit from including standardized neuromuscular reversal, depth-guided anesthetic discontinuation, and detailed PACU medication records to better clarify these important outcomes.

## Acknowledgments

During the preparation of this work, we used OpenAI’s ChatGPT-5 (2025) to improve language and readability of the manuscript. We reviewed and edited the content as needed and take full responsibility for the content of the publication.

## Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

## Disclosure

The authors report no conflicts of interest in this communication.

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<https://doi.org/10.2147/TCRM.S578858>