LETTER TO THE EDITOR

Beyond the Nasal Prongs: A Joust of Oxygen Delivery Methods in Post-op Hypoxemia

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Dear Editor,

We read the article written by Mishra et al.[1] on the comparison of oxygen delivery devices in managing postoperative hypoxemia in adults recently published in IJCCM. Authors must be commended for carrying out a 3-pronged randomized trial in a busy setting of a postoperative care unit and the study has good statistical rigor as ANOVA and Chi-square tests were used to analyze data.

Postoperative adult patients aged 18–65 years were selected for the study. The selection criterion was hypoxia rather than hypoxemia as the title suggests. Though hypoxemia is the common cause of hypoxia, nonetheless in postoperative patients' other causes like anemia play a part too. However, the selection was skewed though randomization was carried out: Non-invasive ventilation (NIV) group had significantly lower SpO_2 and PaO_2 in comparison with the other 2 groups. Instead of simple randomization, block or stratified randomization using covariates could have been done.

The study compares high-flow nasal cannula (HFNC) with venturi mask (VM) and NIV. Each has its own merits and demerits, but the choice of device depends on a multitude of factors: Pathophysiology behind hypoxemia (pulmonary edema, atelectasis, pleural effusion, upper airway obstruction, etc.), the neurological status of patient (influence of sedatives, neuromuscular blockers), comfort, etc. So, a blanket comparison of these devices is not valid in clinical practice. For example, in a study quoted in article, after cardiothoracic surgery, BiPAP fared well compared to HFNC because of afterload support that positive pressure provides, but this cannot be generalized: HFNC fares well in case of postoperative airway edema.[2,3]

The rationale behind the primary outcome, the change in PaO_2/FiO_2 ratio after 2 hours of oxygen use is not clear. The short-term effects of the delivery device may not truly reflect the long-term effectiveness and again depending on pathophysiology, though any form of oxygen flow initially may improve oxygenation transiently, unless the underlying mechanism of hypoxemia is not tackled hypoxemia will persist. Also, the settings of these delivery systems were not patient-tailored. Assessing patient comfort by keeping nil per oral for the 2 hours of study period does not reflect the comfort of the delivery device.

Longer duration of intervention and follow-up, patient-tailored management, and objective comfort measures can be further explored and built upon this study.

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References

1. Mishra S, Kothari N, Sharma A, Goyal S, Rathod D, Meshram T, et al. Comparison of oxygen delivery devices in postoperative patients with hypoxemia: An open-labeled randomized controlled study. Indian J Crit Care Med 2024;28(3):294–298. DOI: 10.5005/jp-journals-10071-24659.
2. Stéphan F, Barrucand B, Petit P, Rézaiguia-Delclaux S, Médard A, Delannoy B, et al. High-flow nasal oxygen vs noninvasive positive airway pressure in hypoxemic patients after cardiothoracic surgery: A randomized clinical trial. JAMA 2015;313(23):2331–2339. DOI: 10.1001/jama.2015.5213.
3. Chaudhuri D, Granton D, Wang DX, Burns KEA, Helviz Y, Einav S, et al. High-flow nasal cannula in the immediate postoperative period: A systematic review and meta-analysis. Chest 2020;158(5):1934–1946. DOI: 10.1016/j.chest.2020.06.038.