



## High-flow nasal cannula oxygenation for awake craniotomy in patients with obesity: looking beyond oxygenation

**TO THE EDITOR:** We read with interest the use of high-flow nasal cannula (HFNC) oxygenation to prevent sedation-induced hypoxia in patients undergoing awake craniotomy. The authors report interesting observations, particularly the case of obstructive sleep apnea (OSA) [1]. While the findings could be applied in future clinical practice, some methodological aspects are worth a discussion.

The authors used the oxygen reserve index (ORI) to predict desaturation early and found it better compared to peripheral oxyhemoglobin saturation. While monitoring for oxygenation is vital in procedural sedation, the ventilation status is equally critical in patients with neurosurgical disorders as it can impact carbon dioxide removal and, subsequently, intracranial blood flow and pressure. Although end-tidal carbon dioxide monitoring can provide information regarding ventilation, it has disadvantages of technical difficulty and a high error rate in patients receiving HFNC oxygenation [2]; the recent technology of transcutaneous carbon dioxide monitoring might be an alternative in the future [3]. Sedation with propofol and remifentanyl can lead to severe hypoventilation and even airway compromise, particularly in patients with OSA. The authors managed to perform intraoperative sedation well with targeted bi-spectral index values. Nonetheless, airway collapse is common with the drugs used, i.e., propofol and remifentanyl infusion after midazolam premedication. Patients with obesity and OSA often require high pressure to prevent upper airway collapse as their pharyngeal critical closing pressure (Pcrit) is higher [4]. While HFNC oxygenation exerts a continuous positive airway pressure-like effect, it is flow-dependent. In such a scenario, the flow of 15–30 L/min applied by the authors might not be sufficient to overcome the Pcrit. Therefore, the methods used for the assessment of ventilation and prevention of hypoventilation should be outlined.

Airway management is crucial during awake craniotomy, as is sedation. HFNC oxygenation plays a role in preventing hypoxemia [1,5]. We congratulate the authors for their compelling case and highlighting the role of ORI in early detection of impending desaturation during HFNC oxygenation. However, we feel that dexmedetomidine, known to provide sedation and analgesia without causing respiratory depression, would be a better agent in patients with OSA and welcome additional thoughts and opinions to guide decision-making.

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