

Oxygen reserve index guided fraction of inspired oxygen titration to reduce hyperoxemia during laparoscopic gastrectomy: A randomized controlled trial

Ahn JH, Shim JG, Park J, Lee SH, Ryu KH, Cho EA. *Medicine* (Baltimore). 2022 Nov 18;101(46):e31592. doi: 10.1097/MD.00000000000031592.

**Background:** The usefulness of the oxygen reserve index (ORi) in reducing hyperoxemia remains unclear. We designed this study to investigate whether fraction of inspired oxygen (FiO<sub>2</sub>) adjustment under a combination of ORi and peripheral oxygen saturation (SpO<sub>2</sub>) guidance can reduce intraoperative hyperoxemia compared to SpO<sub>2</sub> alone.

**Methods:** In this prospective, double-blind, randomized controlled study, we allocated patients scheduled for laparoscopic gastrectomy to the SpO<sub>2</sub> group (FiO<sub>2</sub> adjusted to target SpO<sub>2</sub> ≥ 98%) or the ORi-SpO<sub>2</sub> group (FiO<sub>2</sub> adjusted to target 0 < ORi < .3 and SpO<sub>2</sub> ≥ 98%). The ORi, SpO<sub>2</sub>, FiO<sub>2</sub>, arterial partial pressure of oxygen (PaO<sub>2</sub>), and incidence of severe hyperoxemia (PaO<sub>2</sub> ≥ 200 mm Hg) were recorded before and 1, 2, and 3 hours after surgical incision. Data from 32 and 30 subjects in the SpO<sub>2</sub> and ORi-SpO<sub>2</sub> groups, respectively, were analyzed.

**Results:** PaO<sub>2</sub> was higher in the SpO<sub>2</sub> group (250.31 ± 57.39 mm Hg) than in the ORi-SpO<sub>2</sub> group (170.07 ± 49.39 mm Hg) 1 hour after incision (P < .001). PaO<sub>2</sub> was consistently higher in the SpO<sub>2</sub> group than in the ORi-SpO<sub>2</sub> group, over time (P = .045). The incidence of severe hyperoxemia was higher in the SpO<sub>2</sub> group (84.4%) than in the ORi-SpO<sub>2</sub> group (16.7%, P < .001) 1 hour after incision. Higher FiO<sub>2</sub> was administered to the SpO<sub>2</sub> group [52.5 (50-60)] than the ORi-SpO<sub>2</sub> group [40 (35-50), P < .001] 1 hour after incision. SpO<sub>2</sub> was not different between the 2 groups.

**Conclusion:** The combination of ORi and SpO<sub>2</sub> guided FiO<sub>2</sub> adjustment reduced hyperoxemia compared to SpO<sub>2</sub> alone during laparoscopic gastrectomy.