

LETTER

High-frequency oscillatory ventilation after cardiac surgery: a treatment for all ages

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See related research by Bojan *et al.*, <http://ccforum.com/content/15/5/R259>

In a recent issue of *Critical Care*, Bojan and colleagues [1] reported their experience with early initiation of high-frequency oscillatory ventilation (HFOV) in pediatric cardiac surgery that demonstrated shorter mechanical ventilation times and intensive care stays. Acute lung injury is common in adult patients undergoing surgery, yet there is scant reporting of the intraoperative utility of HFOV [2].

We initiated HFOV in a 49-year-old morbidly obese (body mass index of 69 kg/m²) man who had aortic stenosis, pulmonary hypertension, and decompensated congestive heart failure and who was undergoing aortic valve replacement. Separation from cardiopulmonary bypass (CPB) with inverse-ratio pressure-control ventilation – fraction of inspired oxygen (FiO₂) of 1.0 and positive end-expiratory pressure (PEEP) of 18 cm H₂O – failed because of hypoxia, defined as an arterial partial pressure of oxygen (PaO₂) of 64 mm Hg. HFOV was initiated (mean pressure airway of 33 cm H₂O and FiO₂ of 1.0), yielding a PaO₂ of 74 mm Hg and allowing CPB separation. The patient was transitioned to conventional ventilation on postoperative day 3 and was extubated on postoperative day 5.

This adult patient benefited from HFOV, as did the pediatric population of Bojan and colleagues. Continuous positive intrathoracic pressure is a concern as it may impede venous return and thereby limit cardiac output (CO) [3]. However, the transition from ventilation with PEEP to HFOV usually results in significant changes in oxygenation/ventilation but not in CO [4]. In patients with pulmonary hypertension, HFOV has been demonstrated to increase CO and decrease pulmonary vascular

resistance [5]. For our patient, HFOV allowed improved oxygenation without affecting hemodynamics.

HFOV may be a safe and effective therapy to improve oxygenation/ventilation in patients undergoing cardiac surgery and possibly is underused because of unfounded hemodynamic concerns. HFOV needs exploration as a rescue tool after CPB for patients with hypoxia.

Abbreviations

CO, cardiac output; CPB, cardiopulmonary bypass; FiO₂, fraction of inspired oxygen; HFOV, high-frequency oscillatory ventilation; PaO₂, arterial partial pressure of oxygen; PEEP, positive end-expiratory pressure.

Competing interests

The authors declare that they have no competing interests.

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