
REFERENCES

To the Editor:

We read with great interest the recent contribution by Schreiber et al.1 Their meta-analysis of various pulmonary ventilation strategies during cardiopulmonary bypass (CPB) indicated a rather limited impact on postoperative outcomes. However, we believe that the absence of concomitant alveolar perfusion in the reviewed clinical trials severely limits their utility. Pulmonary atelectasis is but 1 modifiable component of pulmonary dysfunction after CPB. Alveolar ischemia and ischemia-reperfusion injury after CPB is another.

Diversion of systemic venous return from the pulmonary circulation significantly decreases alveolar nutrient flow, rendering it dependent on central aortic pressure-dependent bronchial arterial circulation, normally only 10% of total alveolar perfusion. Reviewed in more detail elsewhere,2,3 alveolar perfusion, concomitant with ventilation, may prove to be the key to pulmonary protection.3 Preliminary results of our ongoing clinical trial have indicated significantly improved clinical outcomes and shortened duration of postoperative mechanical ventilation in patients supported with simultaneous pulmonary perfusion and ventilation during CPB.4,5 Importantly, the proposed technique4,6,7 of simultaneous pulmonary ventilation and pulmonary artery perfusion with arterial blood from the aortic cannula also permits continuous monitoring of alveolar gas exchange using the side-stream capnography of end-tidal carbon dioxide.

Most surgeons are not trained in lung perfusion, and most would believe that, for short CPB runs, the results are good enough without “cumbersome” modification of the bypass circuit and annoying tidal movements of the lungs. Pulmonary perfusion may lead to blood in the operative field, decreasing surgical precision. However, preservation of end-organ function has become ever more important because the increasingly more complex cardiac interventions are being offered to progressively older and sicker patients. We believe that the adoption of perfusion/ventilation during CPB (and the beating-heart technique) may lead to a substantial decrease in postoperative cardiac and pulmonary dysfunction.

Tomas A. Salerno, MD* Francisco Igor B. Macedo, MD* Edward Gologorsky, MD, FASE†
*Division of Cardiothoracic Surgery †Department of Anesthesiology University of Miami Miller School of Medicine Jackson Memorial Hospital Miami, FL

To the Editor:

We read with great interest the recent contribution by Schreiber et al. Their meta-analysis of various pulmonary ventilation strategies during cardiopulmonary bypass (CPB) indicated a rather limited impact on postoperative outcomes. However, we believe that the absence of concomitant alveolar perfusion in the reviewed clinical trials severely limits their utility. Pulmonary atelectasis is but 1 modifiable component of pulmonary dysfunction after CPB. Alveolar ischemia and ischemia-reperfusion injury after CPB is another.

Diversion of systemic venous return from the pulmonary circulation significantly decreases alveolar nutrient flow, rendering it dependent on central aortic pressure-dependent bronchial arterial circulation, normally only 10% of total alveolar perfusion. Reviewed in more detail elsewhere, alveolar perfusion, concomitant with ventilation, may prove to be the key to pulmonary protection. Preliminary results of our ongoing clinical trial have indicated significantly improved clinical outcomes and shortened duration of postoperative mechanical ventilation in patients supported with simultaneous pulmonary perfusion and ventilation during CPB. Importantly, the proposed technique of simultaneous pulmonary ventilation and pulmonary artery perfusion with arterial blood from the aortic cannula also permits continuous monitoring of alveolar gas exchange using the side-stream capnography of end-tidal carbon dioxide.

Most surgeons are not trained in lung perfusion, and most would believe that, for short CPB runs, the results are good enough without “cumbersome” modification of the bypass circuit and annoying tidal movements of the lungs. Pulmonary perfusion may lead to blood in the operative field, decreasing surgical precision. However, preservation of end-organ function has become ever more important because the increasingly more complex cardiac interventions are being offered to progressively older and sicker patients. We believe that the adoption of perfusion/ventilation during CPB (and the beating-heart technique) may lead to a substantial decrease in postoperative cardiac and pulmonary dysfunction.

Tomas A. Salerno, MD* Francisco Igor B. Macedo, MD* Edward Gologorsky, MD, FASE†
*Division of Cardiothoracic Surgery †Department of Anesthesiology University of Miami Miller School of Medicine Jackson Memorial Hospital Miami, FL

REFERENCES