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*In reply:*—Dr. Kopman proposes several additional valid measures to decrease the likelihood of venous air embolism during central vein cannulation. In answer to Dr. Kopman's first question, the tip of a 5/4-inch catheter placed in the internal jugular vein will lie in the thorax; this long catheter should not be considered ordinary. As mentioned in our report,<sup>1</sup> an introducer was used in anticipation of placing a pulmonary artery (PA) catheter for cardiac output determinations in the immediate post-bypass and postoperative period. Insertion of an introducer under the surgical drapes would severely compromise sterile technique; thus, we placed the introducer preoperatively. The PA catheter was not positioned at that time for reasons already mentioned.<sup>1</sup>

Second, the introducer employed (Desilet-Hoffman®, Cook Inc., Bloomington, Iowa) was used because of the larger bore side port, which is not available on the Cordis® introducer<sup>2</sup> (Cordis Corp., Miami, Florida). Introducers with both automatic occlusive diaphragms and large bore side ports are now available (Arrow International, Inc., Reading, Pennsylvania).

Third, we cannulated the vein prior to anesthesia and positive pressure ventilation to measure hemodynamic changes resulting from induction and to provide an optimal route for drug administration during induction, both prudent measures in this compromised patient.<sup>3</sup> Positive pressure ventilation does not preclude air entry. The exhalation mechanism of some anesthesia ventilators can generate negative pressures in the airway and thorax. Exposure of a cannula to atmosphere during that phase of the respiratory cycle will entrain air.

Thus, while Dr. Kopman's suggestions and the measures we cite<sup>1</sup> provide additional protection from massive air embolism, we agree with Conahan's conclusion.<sup>4</sup> He

attributes the low incidence of clinical air embolism to proper attention to the patient's respiratory activity. No device or maneuver can replace a vigilant anesthetist, especially in a dyspneic patient who may be unable to follow commands to alter the respiratory pattern.

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#### REFERENCES

1. Horrow JC, Laucks SO: Coronary air embolism during venous cannulation. *ANESTHESIOLOGY* 56:212-214, 1982
2. Andersen HW, Benumof JL, Trousdale FR, Ozaki GT: Increasing the functional gauge of the side port of large catheter sheath introducers. *ANESTHESIOLOGY* 56:57-59, 1982
3. Kaplan JA: Hemodynamic Monitoring, Cardiac Anesthesia. Edited by Kaplan JA. New York, Grune & Stratton, 1979, pp 71-115
4. Conahan TJ: Air embolization during percutaneous Swan-Ganz catheter placement. *ANESTHESIOLOGY* 50:360-361, 1979

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#### ADDENDUM

The safety of automatic occlusive ("self-sealing") introducers is reported recently by Doblár DD, Hinkle JC, Fay ML, and Condon BF: Air embolism associated with pulmonary artery catheter introducer kit. (*ANESTHESIOLOGY* 56:307-309, 1982)