Invited commentary

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INVITED COMMENTARY

Several observational studies have already stressed the importance of procedural risk factors such as intraoperative ventilation with large tidal volume, excessive fluid hydration, blood transfusion, absence of epidural thoracic analgesia, and the extent of lung resection [1].

In the current study, Blank and colleagues [2] found a significant association between the occurrence of major respiratory complications and intraoperative administration of homologous blood transfusion (packed red blood cell, fresh frozen plasma) and large amounts of crystalloids. Not surprisingly, these adverse events were associated with prolonged hospital length of stay.

Limitations to this study are not only the small number of patients with respiratory failure (13% in a cohort of 129 pneumonectomies) but also the wide time window that was examined (12 years) and the lack of standardized care bundles. The multivariate logistic model (adjusted for confounding factors) is a valuable hypothesis-generating tool and, therefore, randomized clinical trials should be designed to question the impact of goal-directed therapy with blood components, crystalloids and colloids aimed to prevent anemia, coagulation disturbances, and hypo/hypervolemia.

The rationale for implementing a "restrictive" transfusion strategy (targeting a hematocrit of 24% instead of 30%), is supported by many studies that have shown a lack of benefit as well as increased adverse effects and costs associated with packed red blood cell transfusion [3]. Likewise, the administration of fresh frozen plasma is known to be ineffective in reducing the amount of blood loss and is even associated with an increased risk of infection [3, 4].

Currently, a variety of noninvasive hemodynamic monitor (eg, transesophageal Doppler, pulse contour analysis of the arterial pressure wave, tissue oximetry) and "point of care" devices for monitoring coagulation (eg, thromboelastometry/graphy) are available for clinical application in the operating room, the postanesthesia care unit and the intensive care unit. Importantly, the effectiveness of goal-directed approach using blood flow monitors has been demonstrated in decreasing morbidity and mortality in high-risk surgical patients [5]. Unfortunately, none of these studies has involved any patients undergoing lung resection although the use of semi-invasive hemodynamic monitoring devices has been validated during one-lung ventilation [6]. Likewise, bedside application of thromboelastography is better than conventional coagulation assays to monitor perioperative coagulopathy and to predict transfusion requirements [7].

The authors deserve merit and recognition for drawing our attention to preventable adverse events. Future efforts are needed to test "protective" interventions and to devise an integrated bundle of care to manage the high-risk thoracic patients efficiently and safely.

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