

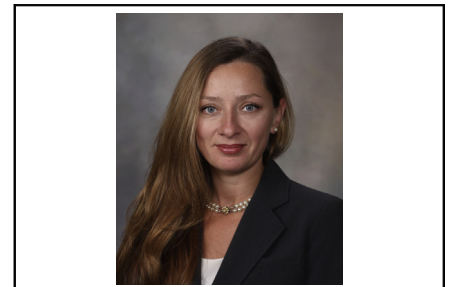
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See Article page 1112.



Commentary: To PEEP, or not to PEEP, that is no longer a question

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CENTRAL MESSAGE

The application of positive end-expiratory pressure and recruitment maneuvers during one-lung ventilation is associated with greater PaO₂, pulmonary compliance, and reduced dead space.

Intraoperative one-lung ventilation (OLV) is in demand more than ever since it was first introduced to clinical practice in November 1949.¹ Double-lumen endotracheal tubes for lung isolation are now frequently used not only for conventional thoracic surgical procedures but also for minimally invasive cardiac operations, including robotic mitral valve repairs² and novel transcatheter electrophysiological interventions such as convergent maze procedure.³ Thus, it is important to revisit the basics of the OLV and make sure that no harm is done to the patient while the proceduralist is getting better exposure.

In this issue of the *Journal*, Peel and colleagues⁴ present the results of a systematic review and meta-analysis of the effect of lung recruitment and positive end-expiratory pressure (PEEP) on ventilation and oxygenation during OLV. The authors performed an extensive search of existing literature only to discover that despite a vast, worldwide use of OLV, there is a paucity of studies focused on clinical rather than surrogate outcomes of the efficacy of lung-protective ventilation strategy. Meta-analysis revealed that recruitment maneuvers and PEEP have physiologic advantages during OLV. Recruitment maneuvers increased arterial oxygen tension (PaO₂) and reduced dead space, whereas PEEP was associated with improved compliance and increased

PaO₂. However, the high risk of bias related to a small sample size and heterogeneity was identified in the majority of studies. Also, not all the potential components of lung-protective ventilation strategy for OLV were amenable for the meta-analysis. Thus, the impact of tidal volume, approach to nondependent lung ventilation/PEEP application, shunt fraction, and inspiration to expiration ratio were not assessed. Most importantly, it remains unknown if “good numbers” (greater PaO₂, better compliance) were translated into better clinical outcomes (faster extubation, shorter hospital stay).

The current study was focused on the thoracic surgical population and excluded those patients who underwent cardiopulmonary bypass. However, as the lung isolation becomes more common for a broader spectrum of interventions, future studies should not omit these patients. Their number is growing, and more evidence-based

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knowledge is required to safely get them through the procedure, immediate postoperative recovery, and rehabilitation.

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