



PROTECTIVE VENTILATION DURING ONE LUNG VENTILATION

Mert Şentürk
Istanbul, Turkey

One-lung ventilation (OLV) has two major challenges: oxygenation and lung protection. The former is mainly because the ventilation of one lung is stopped while the perfusion continues; the latter is mainly because the whole ventilation is applied to only one lung. The “earlier” guidelines have focused almost solely to oxygenation, but the recommendations for maintaining the oxygenation and methods of lung protection can contradict each other (such as high vs. low inspiratory oxygen fraction (FiO₂), high vs. low tidal volume (TV), etc.).

“Protective” ventilation concept has started in ICU settings; but now we know that it has to be understood and applied also for the “healthy”(?) lungs undergoing mechanical ventilation for surgery.

This presentation will focus on several questions:

1. Do we have to protect the lung during OLV? We can answer this question with a clear “yes”; some studies will be shown.
2. How can we protect? There are studies showing the effects of a possible decrease in FiO₂, lower tidal volume (TV), positive end-expiratory pressure (PEEP) to the dependent lung, continuous positive airway pressure (CPAP) to the non-dependent lung and recruitment manoeuvres (RM). Low TV, PEEP, and RM can be considered as a “bundle” of protective ventilation. There are (not so many) studies showing the benefits of this strategy. But this will lead inevitably to further questions:
3. Can we really protect? How low the TV? (Obviously, “the lower, the better” is not smart and correct. How much PEEP? (high-low-or individualized?) Is RM beneficial in every patient?
4. Do different ventilatory modes have different effects on oxygenation and protection?
5. Is it just the ventilation? Other applications such as anesthetic choice, and fluid management can affect the success of ventilatory strategy.

Recent suggestions are based on studies with a low level of evidence; however, a general approach can be formulized as:

- FiO₂: only as high as the patient requires (do not switch automatically to 1.0 , when OLV starts)
- Do not apply the TV of two lungs only to one lung. (even a “low” TV for two lungs can be high for only one lung)

- PEEP: Atelectasis is bad (pro-PEEP), but overinflation is maybe even worse (con-PEEP). Find the best value: bu the individualization needs experience and time
- RM: not every lung has to be recruited. One has to decide, whether the patient requires a RM, or not.