Reviewer's report

Title: Rationale and study design of PROVAR - A randomized controlled trial on the effects of variable versus conventional lung protective mechanical ventilation during open abdominal surgery

Version: 1 Date: 16 January 2014

Reviewer: Dirk Schadler

Reviewer's report:

In this manuscript Spieth et al. describe the rationale and the study design of a RCT investigating the effects of variable ventilation on pulmonary lung function and inflammation. The PROVAR study is well designed, uses a large body of examination technologies and is of high clinical interest. However, some points need to be clarified.

Major Compulsory Revisions

1. Please describe the hypothesis and the methodology regarding the spatial distribution of ventilation using f-EIT. Which measuring device will be used?
2. Please add the information that variable ventilation will be applied to passive patients without spontaneous breathing activity into the introduction section (leading to a further derecruitment of the lungs).
3. Will you use the auto-flow-option of the ventilator or will you use constant inspiratory flow? If you use constant flow, how will you set-up inspiratory flow?
4. What peak airway pressure alarm setting will be used?
5. As you use a FiO2 of 0.35 and a PEEP of 5 cm H2O in all patients, what will happen if oxygenation of a patient deteriorates? Please clarify.

Minor Essential Revisions

6. Please add into the abstract that spatial distribution of ventilation will be assessed using f-EIT.
7. Could you please provide a list of AEs and SAEs?
8. Why do you exclude patients classified ASA 1?
9. Page 5 line 8: I suggest that you will use 6 ml/kg predicted body weight. Please add this information into the manuscript.
10. Page 5 line 14 “considerable number”. Could you clarify this information?

Level of interest: An article of outstanding merit and interest in its field

Quality of written English: Needs some language corrections before being published
Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I have received lecture fees and consulting honoraria from Dräger Medical. I received lecture fees from Hamilton medical. My institution receives restricted research grants from Dräger Medical and from the German ministry of Research and Education.