Reviewer’s report

Title: Role of tube size and intranasal compression of the nasotracheal tube in respiratory pressure loss during nasotracheal intubation: a laboratory study

Version: 8 Date: 24 Aug 2017

Reviewer: Kiyoyuki Miyasaka

Reviewer's report:

I am a new reviewer entering at revision number 8.

This work identifies the components of resistance in the endotracheal tube, and presents convincing physical and computational (fluid dynamics) models supported by actual clinical measurements of tube compression during nasotracheal intubation. The sequence and context in which this information is presented was confusing to me, and would likely confuse the average reader as well. I feel this must be satisfactorily addressed before publication of this work.

While the study appears to have originated from a specific interest in how nasotracheal intubation differs from orotracheal intubation, the resulting findings are applicable to any form of endotracheal intubation and should be systematically presented as such. In the background section, I suggest beginning with a general description of factors affecting pressure loss in the endotracheal tube, as is done by the paragraph on page 17 (lines 23-46) before proceeding to discuss factors specific to nasotracheal intubation such as the differences between orotracheal and nasotracheal tubes (such as the paragraph on page 17 line 49-).

It seems the clinical question motivating this study is what size nasotrachal tube to select - whether one should use a smaller nasotrachal tube to avoid tube compression (which may increase resistance as well as cause trauma), or select a larger tube (to minimize work of breathing) in spite of some compression. Each section should address how it contributes to answering this question.

In the methods section, the parameters of each model and what they aimed to achieve should be outlined. The methods section currently begins with a description of clinical measurements conducted on patients - it was initially unclear that this was not the study itself, but a clinical measurement done in order to construct the subsequent physical and computational models that comprise the study.

It may help to present the computational model first - present the theoretical factors affecting pressure loss, compare them to the physical model, explain how some critical measurements were obtained (via clinical measurement) then address any limitations and discrepancies.
On page 8 (line 13-21), please consistently use 'compression force' rather than 'compression pressure' to avoid confusion with gas pressure.

**Are the methods appropriate and well described?**
If not, please specify what is required in your comments to the authors.

Yes

**Does the work include the necessary controls?**
If not, please specify which controls are required in your comments to the authors.

Unable to assess

**Are the conclusions drawn adequately supported by the data shown?**
If not, please explain in your comments to the authors.

Yes

**Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?**
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

**Quality of written English**
Please indicate the quality of language in the manuscript:

Acceptable

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