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: 13 Aug 2017

Reviewer: Yasuko Nagasaka

Reviewer's report:

Comments:

Comment #1:

The authors have moved the last two paragraphs of the Introduction to Method section. Now the Method section is too long and redundant. Below two paragraphs in the Methods should be moved to Discussion. If you wish to inform these also in the Method section, then please make sure to write a brief description, in a summarized form.

Page 9, line 20:

To measure pressure loss through the tracheal tube, two kinds of measurements have been used in previous reports: measurement of the difference in pressure between the proximal end of the tracheal tube and the tip of the tube in the trachea [17-20], and measurement of the difference in pressure between the proximal end of the tracheal tube and the tip of the tracheal tube open to the atmosphere [8, 21-23]. Although the former measurement has been applied in tracheal models and clinical measurements, it is influenced by pressure changes due to a sudden increase in fluid flow at the tip of the tracheal tube in the trachea [17, 24]. In this study, the latter measurement method was applied to measure pressure loss through the NTT to eliminate the influence of a sudden increase in fluid flow.

Page 11, line 39:

Although Bernoulli’s equation states that the sum of the kinetic, potential, and flow energies of a fluid particle is constant when compressibility and viscosity are negligible and flow is steady or laminar, there is still energy loss due to the friction in any pipe system. In a long straight section of a round pipe, the Darcy-Weisbach equation is able to calculate the energy loss due to friction (major loss) for both laminar and turbulent flows. The pressure loss from flow separation and mixing due to a bend in the pipe, sudden expansion or contraction of the pipe, or a different pipe fitting is considered a minor loss [24, 25]. The total pressure loss through the pipe consists of the sum of major and minor losses. In this study, the major losses in the tubular part of the NTT
were calculated using the Darcy-Weisbach equation, and minor losses in the components, namely, the slip joint, the bend in the NTT, and the compressed part, were estimated by measurement or calculation.

Comment #2: Figure Titles and Legends

According to the Journal regulation, Figure Legends should be included in the main text, rather than being part of the figure file (see below Instructions to the Authors):

"Figure legends

The legends should be included in the main manuscript text file at the end of the document, rather than being a part of the figure file. For each figure, the following information should be provided: Figure number (in sequence, using Arabic numerals - i.e. Figure 1, 2, 3 etc); short title of figure (maximum 15 words); detailed legend, up to 300 words."

Please remove your figure titles from each figure and re-organize them at the end of your manuscript where it should belong.

Comment #3: some Figure Legends need to be revised.

Figure 1:

Please move below sentence in the Figure Legend to Methods (or just remove if redundant)

"The apparatus was set up at a temperature of 37°C and relative humidity of 20% in the environmental test chamber. The minor axis of the compressed tube (a) and compression force are recorded simultaneously"

Figure 3:

Please change "in the" to "by"

Current: "predicted compression force (right) of 7.0- and 7.5-mm ID tubes in the nasal cavity in the physical simulation."

New: "predicted compression force (right) of 7.0- and 7.5-mm ID tubes in the nasal cavity by physical simulation."
Figure 4 Figure Legends: please send in your revised Figure 4 Legends, according to above Comment #2. Please make sure to clarify in the beginning of each legend, to let the readers know whether your figures/results are from the actual measurements, or by calculation/prediction.

Comment #4: X axes of Figure 4

X axes of 4(a) and 4(e) are of .5 mm increment.

X axes of 4 (b), (c) and (d) are of 1 mm increment.

Please follow one style and standardize.

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.

Yes

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

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Please indicate the quality of language in the manuscript:

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