Author’s response to reviews

Title: Age-based prediction of uncuffed tracheal tube size in children to prevent inappropriately large tube selection: a retrospective analysis

Authors:

Hiroshi Hanamoto (hanamoto@dent.osaka-u.ac.jp)
Hiroharu Maegawa (maegawa@dent.osaka-u.ac.jp)
Mika Inoue (mika-ino@dent.osaka-u.ac.jp)
Aiko Oyamaguchi (a-ohyama@dent.osaka-u.ac.jp)
Chiho Kudo (ckudo@dent.osaka-u.ac.jp)
Hitoshi Niwa (niwa@dent.osaka-u.ac.jp)

Version: 1 Date: 20 Jul 2019

Author’s response to reviews:

Massimiliano Sorbello (Reviewer 1):

Response

We are grateful to Reviewer 1 for the critical comments and useful suggestions that have helped us improve our manuscript. As indicated in the responses that follow, we have considered all the comments and suggestions in the revised version of our manuscript.
Comment 1

Paper from Hanamoto and co-workers covers an interesting topic, including not only research issues but also interesting discussion about use of cuffed/uncuffed endotracheal tubes in children.

Tables are missing for appropriate comment and review.

English is fluent and readable; study design is methodologically correct and statistical approach well designed for the purpose.

Some of the limitations declared from Authors are consistent but, in my opinion, they do not affect study results and quality.

My proofs were missing tables, nevertheless I guess they do not include data conditioning my conclusions. I will be happy to review tables also if needed.

Response

I apologize for not uploading the complete tables. Please review the uploaded tables.

Some targeted remarks:

Comment 2

Page 4 line 65. Agree; I would also add a comment on risk/benefit ratio of exposing children to X-rays as a further reason to discourage routine radiography.

Response

I have added the following sentence “the risk/benefit ratio of exposing children to X-rays should be considered” (Page 4, Lines 65-66).
Comment 3

Page 4 line 70: I would expand reasons why Cole's formula could not be used.

Response

I have added the following phrase “(in such cases) that require TT smaller than 4.0 mm.” TT sizes of 3.0 mm or 3.5 mm cannot be calculated using Cole's formula \([\text{internal diameter (mm)} = 0.25 \times (\text{age in years}) + 4]\) (Page 4, Line 71).

Comment 4


Response

I have stated the above reference in the Discussion section (Page 13, Lines 227-228). I have also added another reference “Using middle finger length to determine the internal diameter of uncuffed tracheal tubes in paediatrics” by Ritchie-McLean S, et al. which was recently published, in the Discussion section (Page 10, Line 180).

Comment 5

As further observations, I was wandering if clinical data are available about sore throat or other minor adverse events in different clusters of chosen OD for the ET. It could add some "clinical" extra-value to study results, addressing for increased care in clinical practice.

Response

Thank you for the useful comment. Serious adverse events were comprehensively recorded in the anesthesia record and we have reported this in the Results section. Although data of minor adverse events are also important as mentioned by you, these data may not have been completely recorded in the anesthesia record. Therefore, we did not include the minor adverse events as study variables.
Comment 6

As a second point I would be interested in how many cases of tube exchange? How tube exchange was performed? (Tables not included in my proof) Was the patient simply re-intubated or any airway catheter used? I would add these data.

Response

Please review the uploaded tables. Although the information on the estimated (calculated) number of required tubes are available in these tables, the actual data for tube exchange was not available. Although using an airway catheter is one of the methods for tube exchange and prevention of laryngoscopy, it becomes difficult to judge the resistance during insertion of TT. Therefore, patients were usually re-intubated without using airway catheters at our institution. I have added this information in the Discussion section (Page 12, Lines 200-202).

Davide Cattano (Reviewer 2):

Response

We are grateful to Reviewer 2 for the critical comments and useful suggestions that have helped us improve our manuscript. As indicated in the responses that follow, we have considered all the comments and suggestions in the revised version of our manuscript.

I apologize for not uploading the complete tables. Please review the uploaded tables.

Comment 1

There is no clear novelty compared to previous studies.

Response

Although several studies have reported age-based selection in pediatric patients, to our knowledge, the concept of “safe selection” compared to the “average selection” has not been focused on and reported. This concept can serve as reference for anesthesiologist for the method of use of prediction formulas including the formula of our study.
Comment 2

Ultrasound meant to help improving assessment of OD

Response

I agree with your opinion. A high agreement rate using ultrasonography is mentioned in the Background and Discussion sections. Using ultrasonography in all cases is cumbersome. In young children, ultrasonography must be performed after induction of anesthesia, and therefore, mask ventilation is required for a longer time. An easy selection method such as the age-based formula may still be the most common method in clinical practice.

Comment 3

Previous criticism with tube diameter is the difficulty to assess the fit

Response

The fit of uncuffed tracheal tubes was discussed in the Discussion section (Page 10-11, Lines 179-187).

Comment 4

Please provide a diagram/picture of Et tube assessment tool/diameters check

Response

The outer diameter was not actually measured in each case. In the present study, we used the standard value of OD provided by the manufacturers. We have added this information in the Methods section (Page 8, Lines 135-136).
Comment 5

Please provide diagram of patient and cases selections/classification recruitment There is the assumption the airway is averagely same across patient as long as there are differences in growth (age). This as growth chart will presume a confidence interval. Make sure it is clear in the study and provide a picture/diagram for the reader to better understand.

Response

I have added the flow chart of patient selection in Figure 1. I have also added the scatterplot of age in relation to height and body weight in Figure 2. Therefore, Figure 1 and 2 in the previous version of our manuscript were combined as Figure 3.

Comment 6

List the study limitations

Response

I have already stated the limitations of our study in the Limitations section (Page 13-14, Lines 230-243).