Reviewer’s report

Title: Is tracheostomy a better choice than translaryngeal intubation for critically ill patients requiring mechanical ventilation for more than 14 days? A comparison of short-term outcomes

Version: 0 Date: 25 Sep 2015

Reviewer: Aaron Joffe

Reviewer’s report:

Thank you for allowing me to read your manuscript. If I am interpreting the aim/hypothesis of your study correctly, you believe that tracheostomy, in essence, decreases ICU/hospital morbidity/mortality AND that using the methods you describe, you aim to show that. In general, the manuscript is clearly written with only minor English line editing required. I do have some concerns as listed below.

Background:

In laying out your case for the "advantages" of tracheostomy, please be specific with relation to published studies. For example, lines 5-7 you state, generally, "They consume a substantial amount of healthcare resources and most have poor outcomes" and in lines 17-19, "reduced risk of developing ventilator-associated complications." Be more specific with what is cited in the literature.

Please define what "early" and "late" tracheostomy means earlier in the introduction and go discuss the literature from there.

Most importantly, you have not set out a specific primary aim or hypothesis. "to evaluate the effect of tracheostomy on the outcome of patients receiving PMV (≥ 14 days) in our medical-surgical ICU" is nebulous and non-specific Please be explicit in stating what you are trying to do/hypothesize. The remainder of this paragraph should be part of the methods section.

Methods:

I fell like some of this could be in a supplement, particularly a table for which variables were collected. This would then also allow for each to be specifically defined, if needed, without unduly interrupting the flow and length of the manuscript.

I am also a bit confused about how the methodology was chosen. It would seem to me that if you have the time and data to do a case-control study, then that just do that and tell us that that is what you are going to do. If, on the other hand, you set out, a prior to do a propensity-matched analysis, then do that. Why do everything and report it as such. It is really confusing and give the impression that the authors started with one, then moved to another when they did not get the
results they desired or supported their hypothesis. I think this can be clarified and the methods appropriately trimmed with the remaining portion to be placed in an ESM.

Results:

Please consider a CONSORT type flow diagram representing the original data set to what was ultimately analyzed.

Again, the results and tables are onerous and a bit confusing without a specific aim and methodology to match. If the authors wish to report the results of a univariate analysis, then mutivariate analysis, I feel like there is too much here. Please clarify what it is that you want to do and then simply report that only.

The HR for tracheostomy and mortality is 0.26! Do you mean to tell me that simply the act of placing the trach reduced the chance of death by 74% on average? (see below).

Discussion:

The authors speak glowingly of the results, but have provided no proposed plausible explanation for the astounding reduction in risk of death. Should we interpret the fact that in unadjusted analyses, the resource utilization was lower in the translaryngeal group, but mortality was higher to mean that they died earlier so they consumed less resources? If so, wouldn't that indicate that perhaps that is sicker cohort despite, on average, the APACHE scores being similar? None of this is addressed in the discussion, which makes the results difficult to interpret and place in proper context.

Lastly, and in general, a number of statements suggest causality, which cannot be established by this type of study. For example, the beginning of the introduction and again in the "key messages." Sure, the simple comparison of proportions are different, but that was not what you are reporting. Rather, you are reporting the hazard of (or risk) and thus one thing can only be associated with a reduced hazard. This is an important distinction. I suggest softening the language to make it in line with your analysis.

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

Unable to assess

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.

No

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 recommend additional statistical review

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

Needs some language corrections before being published

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