

Peer Review File

Article information: <https://dx.doi.org/10.21037/amj-23-143>

Reviewer A

Major Criticisms:

Comment 1: The historical review between lines 36 and 47 reads more as the occasional essay rather than a portion of a scientific paper. I would suggest deleting 90% of this section and perhaps using the word count to bolster the scientific content as suggested below.

Reply 1: The historical review was placed into its own section and has been truncated to focus more on the more landmark events to allow the reader a quicker historical perspective of both general tracheostomy as well as percutaneous tracheostomy. We believe leaving the section under the introduction to tracheostomy allows the average reader to better understand the terminology used in the field.

Comment 2: Benefits: I think the benefits of tracheostomy for head and neck cancers are undeniable, otherwise the benefits from an intensive care perspective are skimmed over, Diehl Work of Breathing 1999, AJRCCM,

Combes 2007, Long terms survival improvement, improved secretion clearance, comfort

Reply 2: We appreciate the two cited sources and agree that providing a more expansive benefit portion may help the reader appreciate not only indications but anticipated benefits. Therefore a short discussion of work of breathing, improved hygiene and patient comfort was added.

Comment 3: Contraindications: “Concerning anatomy in the form of short necks”. Obesity.

I think this needs improvement, see below a slide and references from Shiley-Covidian-Medtronic

Reply 3: We agree that the risks specific to the obese that present themselves if an appropriately sized tube is not considered deserve discussion and have been added.

Comment 4: Line 76: Should this mean “deviation” from current settings

Reply 4: The correction has been made.

Comment 5: I would be very critical of lines 79-81. This paper is very USA centric, I think the NAP4 study deserves mention. While I appreciate the authors refer to obesity on placement of the tracheostomy, I would say that it is a major risk factor after placement where an inappropriately short tracheostomy or standard-length tracheostomy is placed into someone who is very hyperinflated or obese (Mallick).

Reply 5: We agree that the risks specific to the obese that present themselves if an appropriately sized tube is not considered deserve discussion and have been added.

Comment 6: Timing: I would disagree that there is “prevailing lack of consensus” regarding the optimal timing. I would argue that outside of the head and neck cancer areas, where Intensive care Indications are concerned are concerned, early tracheostomy i.e. placing a tracheostomy before 7 days of ICU is rarely indicated and should really be discouraged.

Reply 6: We thank the reviewer for their concern of the wording in this section. We believe that

we are ultimately meaning to convey the same message that a tracheostomy within the first few days in the ICU is not supported by evidence, and may lead to tracheostomy in patients who otherwise may have been able to wean successfully in a timely manner. We have subsequently added “evidence is lacking to support a mortality benefit in placing a tracheostomy prior to 7 days of ventilator support.”

Comment 7: I think the Tracman trial is an important trial, a very important finding of TRACMAN was that only 45% of the group randomized to receive a late tracheostomy did not have a tracheostomy. This to me highlights the importance of waiting and avoiding early tracheostomy. I think this point deserves mention in the paper.

Reply 7: We agree that this is an important criticism of the study and has been added to the manuscript.

Comment 8: Lines 120-121: As stated in the previous three studies there was no mortality benefit. The authors should rephrase these lines.

Reply 8: The correction has been made to the manuscript.

Comment 9: I have read the paper in reference 23, frankly, I think there are quality issues with this paper. Reference 24 is too old by far, I would imagine in those days a significant number of tubes had high pressure cuffs, second many tubes were of the red rubber variety, finally I think very little credence was given to the continuous monitoring of cuff pressures, and finally I would imagine that the biocompatibility of our tracheal tubes today should be significantly improved therefore any findings from this study should be met with significant skepticism

Reply 9: To address the reviewers concerns with the references cited they were replaced with two more contemporary papers that support the same statement.

Comment 10: Surgical versus Percutaneous: Reasonable discussion of the literature

Reply 10: We appreciate the reviewer’s time taken to review this section.

Comment 11: I think the paper needs two sections

(1) Selection of the correct tracheostomy tube:

I think this is really important, too short and the patient risks accidental decannulation

Tracheostomies Tubes today all have inner cannulas.

- I think people need to consider using tubes with subglottic suction ports,
 - o Reducing VAP and facilitating above cuff vocalisation.

The slide below demonstrates 4 size “8” inner cannulas, the point is here that size 8 range in length from 75-105mm and 6.5mm to 8mm. An incorrect tube will subject the patient to a myriad of issues not least of which are flow, resistance and risks of decannulation.

Tracheostomy insertion in COVID-19: insertion practice and factors leading to unplanned tube exchange

<https://www.hse.ie/eng/about/who/cspd/ncps/critical-care/resources/guidance-for-the-care-of-the-adult-patient-with-a-tracheostomy.pdf>

Nomenclature of tracheostomy sizes

Jackson/Shiley versus ISO size

(2) Complications

Bleeding, displacement, obstruction

Reply 11: A section regarding complications and their relation to timing has been added to the manuscript. In regards to a section for selection of the correct tracheostomy tube, we had considered this originally when formulating the manuscript but decided to omit to the topic due to total length already. We feel a detailed discussion of the nuances of tracheostomy sizing that the reviewer brings up is better suited for an article dedicated to tracheostomy features. As the critical aspects of length/size were addressed when discussing obese patients and the need for increased distance in the proximal portion we hope that it is acceptable to maintain the current formatting.

Comment 12: Decannulation Section: I think this section is too simplistic, please reference REDECAP study. Tracheal occlusion for up to “5 minutes” - I think that the authors should discuss tracheostomy, weaning, speech valves, capping as a prerequisite to decannulation

Reply 12: We appreciate the reviewer's suggestion of including more detail regarding speech valves, capping, and further literature inclusion with the REDECAP study. Changes were made to include these recommendations.

Comment 13: Line 269: I am not convinced the percutaneous approach is safer, patients are preselected for the percutaneous approach, certainly in my institution about 5% patients who require a tracheostomy for non-head and neck cancer reasons are surgical. Point is that the difficult ones are done by surgery, but today with bronchoscopy and ultrasound and the availability of bespoke kits for placing extralong tracheostomies, that safety is increased.

Reply 13: We thank the reviewer for their comment on the safety of the percutaneous method. The safety data that was referenced was done not to insinuate that it is more safe than its surgical counterpart, but rather on par in patients who are deemed acceptable candidates.

Minor Criticism:

Comment 14: Line 58: Ciaglia spelling

Reply 14: This has been corrected.

Comment 15: Lines 64, 65 & 66: semicolon use

Reply 15: This has been corrected.

Comment 16: Line 67: One notable caveat involves..... needle cricothyrotomy with pressure regulated device. I am a bit confused on this, are the authors referring to ventilating through a fine bore cannula with a Sanders injector or the insertion of a fine bore jet ventilator cannula.

Reply 16: We have reviewed the comments and agree it can be confusing. We have simplified the sentence to reference only cricothyrotomy and surgical tracheostomy as those are the two most commonly referenced in the literature that we came across.

Comment 17: Line 70: This circumstance notably excludes a percutaneous approach

I am not sure I agree here, I have possibly done perhaps 1000 tracheostomies through my career and if my memory serves one emergency cricothyrotomy with minitrach (Portex) percutaneously

(of note my registrar successfully intubated the patient about 3 minutes later). Anyway bottom line I don't think emergency percutaneous access through the cricothyoid membrane is entirely within the realm of the surgeon

Reply 17: We appreciate the reviewer's comment as it brings about a point of clarity. The circumstance that was meant to be explicitly stated as being excluded was the conventional percutaneous tracheostomy that is referenced throughout the rest of the paper. We acknowledge there are emergency cricothyrotomy percutaneous approaches but that was not what was being referred to. In order to provide clarity to the reader the sentences has been modified to better articulate this.

Comment 18: Line 140: In summation, change to "in summary"-

Reply 18: This has been changed

Comment 19: Line 146: Once the decision to pursue – perhaps change to "to perform"-

Reply 19: This has been changed.

Comment 20: Pre-Procedure: It might be worth mentioning, also to check the patients imaging to examine for a high riding aorta, or ectatic innominate or aberrant thyroidal vessels.

Reply 20: We agree that evaluating available imaging has the potential to help avoid complications and have thus added the reviewer's suggestion to the manuscript.

Comment 21: Line 188: I think although paralysis is commonly employed

In the tracheostomies I have done, and changes I have made through the years, this is the one aspect of the procedure that I will never change, I want a very profoundly degree of paralysis as I do the procedure, I think it very dangerous to perform this procedure without paralysis, The authors of the study below have quoted a 2004 figure of 1%

Treatment of Tracheobronchial Injuries A Contemporary Review

Harpreet Singh Grewal, MD; Neha S. Dangayach, MD; Usman Ahmad, MD; Subha Ghosh, MD; Thomas Gildea, MD; and Atul C. Mehta, MD, FCCP

During percutaneous dilatational tracheostomy (PDT) tracheobronchial injury occurs in approximately 1% of cases in the form of posterior tracheal wall perforation.

Reply 21: We can appreciate the reviewer's concern that the mention of paralysis being commonly performed may lead the reader to assume it may have a similar safety profile as if there is no paralysis. While we believe that it is not an absolute, we are agreeable to remove this statement.

Comment 22A: Procedural Steps: I think a note regarding ultrasound of the neck, it is simple, non-invasive and worth doing particularly where ultrasound scanners have become so popular within the ICU. In my practice, I count the rings with the bronchoscope from the cricoid cartilage and ensure the tracheal puncture is (1) at 12:00 – or close and (2) between the 1st and 2nd, 2nd and 3rd or 3rd and 4th, but not through cricotracheal ligament (risk of cricoid cartilage fracture or injury) or below 4th (increased risk of tracheoinnominate injury)

I think up to the authors should reference the Lunar Study B McGrath UK, I do think anybody can put in a tracheostomy, but selection of the correct size and length is perhaps the most important

aspect.

Reply 22: Ultrasound examination has been included into procedural step 1.

Comment 23: I also think a link to a freely available video of percutaneous trach might be of interest to the reader <https://mmcts.org/tutorial/1819>. Reference 15 is excellent, but people need to subscribe to get access, regardless it is very good.

Reply 23: We agree that videos in general may offer further insight into the procedure for the provider who may not be familiar with the procedure but we have concerns about putting in a link to resources that are produced by a third party. We believe that readers who have interest in viewing a video resource will find them easily accessible through a quick search.

Comment 24: Line 231: I would say always (not usually) undertaken with a cuffed tracheostomy, there is frequently some ooze for a short period after placement so I would say a cuffed tube is absolutely essential.

Reply 24: “Usually” has been removed. It now reads “initial placement of a percutaneous tracheostomy tube is undertaken with a cuffed device.”

Comment 25: Line 233: I’m not sure there are any low volume high pressure cuffs out there anymore, one point is that the pressure of any cuff will be as high as the person inflating.

Reply 25: The mention of low volume high pressure cuffs has been removed.

Reviewer B:

Comment 1: Line 98. Please delete the word duration, which has been used twice: in terms of duration of mechanical ventilation and overall mortality.

Response 1: The correction has been made.

Comment 2. Lines 106-112. Please delete the whole paragraph. It has been written twice (98-105).

Response 2: The correction has been made

Comment 3. Line 200. Please provide the whole term of the abbreviation ETT.

Response 3. The correction has been made.

Reviewer C:

Comment: In the first instance, I wish to extend my congratulations to the authors for their article and the pertinent data it presents. The study approaches an extremely relevant topic, especially in light of the escalating prevalence of tracheostomy procedures, notably percutaneous tracheostomy. On the whole, the review article successfully fulfills its primary purpose by collating the most salient information pertaining to the subject matter, thereby situating the reader within the contemporary landscape and aligning with the authors' viewpoints. This has resulted in a text that is both lucid and exact. Therefore, I recommend its publication.

Response: We appreciate reviewer C for taking their time to evaluate our paper. No further

corrections needed.