

Peer Review File

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Reviewer A

I commend the authors on a well-written and interesting study that investigates the feasibility and efficacy of percutaneous dilatational tracheostomy (PDT) in Korean patients. They present important work comparing patients undergoing PDT either via ultrasound-guided flexible bronchoscopy and microcatheter puncture (modified PDT) and conventional PDT with Ciaglia Blue Rhino. The results indicate modified PDT has higher success rates in the initial tracheal puncture, longer total surgical time, and lower frequency of bleeding complications compared to the conventional PDT group. The authors expand on existing literature and conclude that PDT using Ciaglia Blue Rhino, ultrasound guidance, flexible bronchoscopy and 4.0-Fr microcatheter puncture may be an effective and safer option, even in patients with short stature.

Several questions and comments for the authors' response:

1. What time point were the lab values in Table 1 gathered?
2. Were there any systematic differences in the postoperative care between the two groups?
3. This study spans over a decade. What changes in the medical center's protocols, equipment, or personnel occurred during this time, particularly considering variations in patient populations and healthcare practices?
4. Given the COVID-19 coronavirus pandemic, what is the breakdown of enrollment of patients in the two years pre- and post-2020?
5. I recommend modifying the length of the research paper.
 - 5a. The abstract, introduction and discussion are excessively long. The introduction goes into much detail of existing literature in ways that are more appropriate for a discussion section. All of the statistics presented in Table 1 do not need to be fully restated in the Results section if the table is referenced. The historical presentation of facts surrounding tracheostomy use thousands of years ago is irrelevant. The authors have completed a very interesting and useful study, and the findings and relevance are lost in the superfluous text.
 - 5b. Table 1 can be separated into multiple tables that make it easier for the reader to follow. Recommend separate tables for demographics (age, sex, body weight, height, BMI, obesity classification), adverse events and hospital stay outcomes (survival, ICU, vent weaning etc.), and underlying conditions/disease and medications. If separate tables are not possible, at minimum please reorganize the information presented into the above categories and provide those categories as subheadings in the table.

1. What time point were the lab values in Table 1 gathered?

-Answer to comment:

We concur with the reviewer on this matter and express our gratitude for their thoughtful consideration. The laboratory values included in Table 1 were obtained on the day of percutaneous dilatational tracheostomy. Furthermore, the SOFA score and SAPS II were determined upon admission to the intensive care unit.

2. Were there any systematic differences in the postoperative care between the two groups?

-Answer to comment:

We concur with the reviewer on this matter and express our gratitude for their thoughtful consideration. We maintained uniformity in postoperative treatment procedures, thereby ensuring there were no systematic differences in postoperative care between the two groups.

3. This study spans over a decade. What changes in the medical center's protocols, equipment, or personnel occurred during this time, particularly considering variations in patient populations and healthcare practices?

-Answer to comment:

We concur with the reviewer on this matter and express our gratitude for their thoughtful consideration. Over the past decade, we have maintained consistent adherence to the protocols established by our medical center, and have consistently conducted surgical interventions utilizing the Ciaglia Blue Rhino (Cook Critical Care, Bloomington, IN, USA), flexible bronchoscopy (BF-F260, Olympus Optical Co., Tokyo, Japan), ultrasound (Aplio400, Canon Medical, Inc., Otawara, Tochigi, Japan) and using 4.0-French diameter microcatheters.

While a more precise statistical analysis and approach may be warranted, there appears to be a noticeable increase in elderly patients in recent times.

To be candid, we are presently engaged in comparing the Ciaglia Blue Rhino with a newly introduced device, the TRACOE experec PDT set (TRACOE medical GmbH, Germany). This comparison will serve as the focus of our upcoming publication endeavors.

4. Given the COVID-19 coronavirus pandemic, what is the breakdown of enrollment of patients in the two years pre- and post-2020?

-Answer to comment:

We concur with the reviewer on this matter and express our gratitude for their thoughtful consideration. Throughout the COVID-19 pandemic, a significant number of patients, including my family and myself, were affected by the virus, necessitating hospital treatment for many. In our country, protocols were established to allocate patient care based on the severity of COVID-19. The most critical cases, requiring interventions such as mechanical ventilation and ECMO, were referred to specialized centers overseen by national authorities. Our facility primarily focused on treating mild cases, and thankfully, none of our patients required intubation or tracheostomy.

5. I recommend modifying the length of the research paper.

-Answer to comment:

We concur with the reviewer on this matter and express our gratitude for their thoughtful consideration. We exerted efforts to reduce the length of the research manuscript.

5a. The abstract, introduction and discussion are excessively long. The introduction goes into much detail of existing literature in ways that are more appropriate for a discussion section. All of the statistics presented in Table 1 do not need to be fully restated in the Results section if the table is referenced. The historical presentation of facts surrounding tracheostomy use thousands of years ago is irrelevant. The authors have completed a very interesting and useful study, and the findings and relevance are lost in the superfluous text.

-Answer to comment:

We concur with the reviewer on this matter and express our gratitude for their thoughtful consideration. We exerted efforts to reduce the length of the research manuscript.

5b. Table 1 can be separated into multiple tables that make it easier for the reader to follow. Recommend separate tables for demographics (age, sex, body weight, height, BMI, obesity classification), adverse events and hospital stay outcomes (survival, ICU, vent weaning etc.), and underlying conditions/disease and medications. If separate tables are not possible, at minimum please reorganize the information presented into the above categories and provide those categories as subheadings in the table.

-Answer to comment:

We concur with the reviewer on this matter and express our gratitude for their thoughtful consideration. As per the reviewer's advice, we have segmented and reorganized the tables into three distinct sections. We have corrected the sentence in the revised manuscript as the reviewer pointed out as follows:
(page 44, lines 1022, to page 50, lines 1137)

Reviewer B

I would like to commend the authors on conducting this well executed study and presenting their results. The utility of percutaneous tracheostomy is well established and continues to be a subject of study. While this study does describe a percutaneous dilational tracheostomy technique as well as a modified percutaneous technique which involves ultrasound, bronchoscopy, and a microcatheter kit, the utility of these modifications is widely accepted as safe and beneficial.

Comments:

1. With respect to the introduction, it does a great job of summarizing the history of dilational tracheostomy, but it would be helpful to the reader if it more clearly addressed the procedure that this manuscript describes. It would also be helpful to provide some context as to the use of ultrasound and bronchoscopy in this setting as this is the foundation of the modified procedure done in the study.

-Answer to comment:

We concur with the reviewer on this matter and express our gratitude for their thoughtful consideration. We have corrected the sentence in the revised manuscript as the reviewer pointed out as follows:
(page 13, lines 275, to page 13, lines 280)

They stressed the importance of meticulous inspection and palpation to identify both the thyroid cartilage and the cricoid. This process entailed making a vertical incision, delicately manipulating the tissues with a mosquito clamp, inserting a fine needle through the space, placing a flexible guide wire, and sequentially dilating the trachea using a series of increasingly larger dilators over the guide wire to gradually enlarge the tracheal opening.

We have provided detailed information regarding the use of ultrasound and bronchoscopy in the methods section, and this information is also illustrated in the figure section.

2. In the methods, the author describes the modified percutaneous tracheostomy. It would be helpful to the reader to specifically describe the differences between the standard PDT (the control procedure) and the modified procedure.

-Answer to comment:

We concur with the reviewer on this matter and express our gratitude for their thoughtful consideration.

We have corrected the sentence in the revised manuscript as the reviewer pointed out as follows:

(page 18, lines 414, to page 19, lines 418)

In the modified PDT groups, all surgical procedures were diligently executed, whereas in the conventional PDT groups, the identification of the tracheal puncture site guided by pre-operative ultrasound (surgical procedure #3) and the preliminary puncture through the trachea using 4.0-French diameter microcatheters (surgical procedure #4) were omitted. Additionally, bronchoscopy was employed sparingly.

We maintained consistency in preoperative preparation and postoperative treatment protocols, thereby ensuring the absence of systematic disparities in postoperative care between the two groups

3. In the methods section, please describe your method for selecting patients who underwent the modified PDT and standard PDT. It is unclear as to how this was decided, and if it would bias the results of the study.

-Answer to comment:

We concur with the reviewer on this matter and express our gratitude for their thoughtful consideration.

Our study adopts a retrospective study design, which began in January 2010, employing the standard Ciaglia Blue Rhino technique. As experience grew and new devices such as ultrasound and microcatheters became available over time, the authors transitioned to the modified procedure. We ensured consistency in preoperative preparation, surgical procedures, and postoperative treatment protocols, thereby mitigating systematic disparities in postoperative care between the two groups. Consequently, we believe that bias in the results of this study was minimized

4. The survival was higher in the conventional PDT group compared to the modified procedure. Was there any statistical analysis done as to what factors may be influencing this result? Or do you think this was influenced by the procedure?

-Answer to comment:

We concur with the reviewer on this matter and express our gratitude for their thoughtful consideration.

As per the reviewer's suggestion, the survival rate was markedly higher in the conventional PDT group, demonstrating a statistically significant difference between the modified and conventional PDT cohorts (41/133 [30.8%] vs. 26/50 [52.0%]), $P=0.013$).

We attempted to identify independent factors associated with patient survival or death. Therefore, we utilized univariate and multivariate stepwise logistic regression models, followed by multiple logistic regression analysis employing backward stepwise regression. Unfortunately, we did not find any statistically significant parameters affecting survival between the modified and conventional PDT groups. In our investigation, no cases of direct tracheostomy-related mortality were observed. However, a significantly higher overall mortality rate was noted within the modified group. We attribute this outcome to several significant factors, notably the severity of illness among patients admitted to intensive care units, as indicated by the Sequential Organ Failure Assessment (SOFA) (6.7 ± 2.3 vs. 6.1 ± 2.3 , $P=0.319$) and the Simplified Acute Physiology Score II (SAPS II) (46.7 ± 9.0 vs. 44.0 ± 9.1 , $P=0.082$), despite the lack of statistical significance.

5. In the conclusion, it is stated that the data for the modified PDT highlights several advantages. Please support this with data from the study, specifically when it is stated that “No definite statistically significant difference was observed between the modified and conventional PDT groups in surgical time, major bleeding, minor bleeding, wound infection, and stromal inflammation.”

-Answer to comment:

We concur with the reviewer on this matter and express our gratitude for their thoughtful consideration.

We have corrected the sentence in the revised manuscript as the reviewer pointed out as follows:

(page 23, lines 518 to page 23, lines 530)

No definite statistically significant difference was observed between the modified and conventional PDT groups in surgical time, major bleeding, wound infection, and stromal inflammation (Table 1). Minor bleeding was lower in the modified PDT group than in the conventional PDT group (2 [1.5%] vs. 7 [14.0%], $P=0.002$). Furthermore, the total surgical time was longer in the modified PDT group, and the success rate of the first tracheal puncture was higher in the modified PDT group, both of which showed a statistically significant difference between the modified and conventional PDT groups (25.6 ± 7.5 vs. 19.9 ± 6.5 , $P < 0.001$; 133 [100.0%] vs. 46 [92.0%], $P=0.006$, respectively). In both groups, there were no cases of conversion to surgical tracheostomy, failure of tracheal puncture, mortality during PDT, cardiac arrest during PDT, atelectasis after PDT, or the need for accompanying extracorporeal membrane oxygenation (ECMO) and continuous renal replacement therapy (CRRT) (Table 1). Intra-OP bleeding was only observed in the conventional PDT group (0 [0.0%] vs. 3 [6.0%], $P=0.028$).

6. The survival was higher in the conventional PDT group compared to the modified procedure. Was there any statistical analysis done as to what factors may be influencing this result? Or do you think this was influenced by the procedure?

-Answer to comment:

We concur with the reviewer on this matter and express our gratitude for their thoughtful consideration.

As per the reviewer's suggestion, the survival rate was markedly higher in the conventional PDT group, demonstrating a statistically significant difference between the modified and conventional PDT cohorts (41/133 [30.8%] vs. 26/50 [52.0%]), $P=0.013$).

In our investigation, no cases of direct tracheostomy-related mortality were observed. However, a significantly higher overall mortality rate was noted within the modified group. We attribute this outcome to several significant factors, notably the severity of illness among patients admitted to intensive care units, as indicated by the Sequential Organ Failure Assessment (SOFA) (6.7 ± 2.3 vs. 6.1 ± 2.3 , $P=0.319$) and the Simplified Acute Physiology Score II (SAPS II) (46.7 ± 9.0 vs. 44.0 ± 9.1 , $P=0.082$), despite the lack of statistical significance.

The SOFA score, developed through a consensus conference organized by the European Society of Intensive Care and Emergency Medicine, evaluates dysfunction across six organ systems: respiratory, coagulation, liver, cardiovascular, central nervous system, and renal. Dysfunction within each system is graded at four distinct levels. Elevated SOFA scores are associated with heightened morbidity and mortality rates in the intensive care unit (ICU), necessitating substantial resource allocation for effective management. Similarly, the Simplified Acute Physiology Score II (SAPS II) was created to assess illness severity in ICU-admitted patients aged over 15 years. This scoring system employs twelve routine physiological measurements taken within the first 24 hours of admission, alongside pertinent health status information. The resultant cumulative score offers a predictive estimate of mortality risk.

Reviewer C

Congratulations for this detailed study.

I have a few small suggestions and questions needed to clarify.

1- Please describe The SOFA and SAPS II scores?

-Answer to comment:

We concur with the reviewer on this matter and express our gratitude for their thoughtful consideration.

The detailed information regarding the SOFA and SAPS II score was described in the abstract results section (page 8, lines 189 to 191), in the results section (page 22, lines 503 to 504), and presented in Table 2.

The fundamental descriptions of the SOFA and SAPS II scores were not included in this manuscript. Instead, we intend to move forward with the following content.

The SOFA score, developed through a consensus conference organized by the European Society of Intensive Care and Emergency Medicine, evaluates dysfunction across six organ systems: respiratory, coagulation, liver, cardiovascular, central nervous system, and renal. Dysfunction within each system is graded at four distinct levels. Elevated SOFA scores are associated with heightened morbidity and mortality rates in the intensive care unit (ICU), necessitating substantial resource allocation for effective management. Similarly, the Simplified Acute Physiology Score II (SAPS II) was created to assess illness severity in ICU-admitted patients aged over 15 years. This scoring system employs twelve routine physiological measurements taken within the first 24 hours of admission, alongside pertinent health status information. The resultant cumulative score offers a predictive estimate of mortality risk.

2- Please describe what it means a Korean body shape. Does this mean smaller only; Please describe the neck differences if there is any?

-Answer to comment:

We concur with the reviewer on this matter and express our gratitude for their thoughtful consideration.

Our study aimed to investigate the feasibility and efficacy of the percutaneous tracheostomy devices in clinical practice, specifically using Ciaglia Blue Rhino guided by ultrasound screening, flexible bronchoscopy, and preliminary tracheal puncture with 4.0-French diameter microcatheters in Korean patients with short stature. Because, most of devices and techniques for percutaneous dilatational tracheostomy have been designed for Western patients who tend to be larger stature than Korean patients, therefore, application of the aforementioned device occasionally may prove challenging in patients of smaller stature. Indeed, the BMI measured in this study was notably lower compared to the average BMI of the United States population.

(24.2 ± 4.2 vs 28 to 29)

Unfortunately, neck thickness was not measured in our study. Instead, our focus was primarily on visualizing the cricoid cartilage and tracheal cartilages in the longitudinal plane, resembling a 'string of beads', as depicted in Figure 2.

3- What is the most common tracheostomy cannula used and size?

-Answer to comment:

We concur with the reviewer on this matter and express our gratitude for their thoughtful consideration.

We used only one type of tracheostomy tube, which was a size 7.0 Portex (Smiths Medical Inc., Plymouth, MN, USA) cuffed tracheostomy tube, in all cases.

We have corrected the sentence in the revised manuscript as the reviewer pointed out as follows:

(page 18, lines 411 to 414)

(10) Removal of the dilator, ensuring accurate placement of the tracheostomy tube with a size 7.0 Portex (Smiths Medical Inc., Plymouth, MN, USA) cuffed tracheostomy tube, cuff inflation, connection to ventilator tubing, fixation, endoscopic verification, and dressing confirmation.

4- Do you have modifications of the Cuff pressure right after Tracheostomy?

-Answer to comment:

We concur with the reviewer on this matter and express our gratitude for their thoughtful consideration.

In the postoperative period, we routinely check the tracheostomy tube cuff pressure using a pressure manometer. It is imperative to consistently monitor and make adjustments to the tracheostomy tube cuff pressure as necessary, with the goal of maintaining it around 20-25 cm H₂O.

We have corrected the sentence in the revised manuscript as the reviewer pointed out as follows:

(page 19, lines 440 to page 20, lines 441)

(8) Assessment of tracheostomy tube cuff pressure using a pressure manometer: Maintaining the cuff pressure of the tracheostomy tube at approximately 20-25 cm H₂O.

5-Please describe the patients with Blood thinners, especially, Plavix, elaquise and coumadin.

Please describe the patients with coagulopathy problems. What is the lowest threshold for Plt count and what are the limits for APTT and PTT and INR. How do you manage those patients with ECMO or hemodialysis. Please define your criteria.

-Answer to comment:

We concur with the reviewer on this matter and express our gratitude for their thoughtful consideration.

Acknowledging the inherent subjectivity and reliance on individual circumstances, as elaborated in the main text, our aim is to minimize disruption to essential medications, including antiplatelets (such as aspirin, clopidogrel, cilostazol, etc.) and anticoagulants (such as heparin, low molecular weight heparin, nafamostat, warfarin, non-vitamin K antagonist oral anticoagulants, etc.). In the case of LMWH, we abstain from its administration only on the day of the tracheostomy, while Heparin is halted four to six hours before the procedure and promptly reinstated thereafter, barring specific bleeding concerns. Warfarin administration continues if the INR remains below 2.0 without the need for vitamin K or similar agents for neutralization. These principles are uniformly adhered to in the management of ECMO and CRRT. Given its notably brief half-life, we sustain the administration of nafamostat without significant procedural repercussions.

Please discuss the potential injury to membranous part, apparently you did not have any. But mediastinal emphysema and membranous injury are common problems.

-Answer to comment:

We concur with the reviewer on this matter and express our gratitude for their thoughtful consideration.

Fortunately, our study did not encounter any significant instances of injury to the membranous part, which typically present as mediastinal emphysema, pneumothorax, and subcutaneous emphysema.

We have corrected the sentence in the revised manuscript as the reviewer pointed out as follows:

(page 7, lines 180 to 181) and (page 9, lines 213 to 214)

Reviewer D

This article describes a retrospective study that appears to compare a protocolized method of percutaneous tracheostomy preparation and performance including use of ultrasound, bronchoscopy, and micropuncture technique to "usual care" percutaneous tracheostomy. My suggestions are as follows:

1. Line 32 - The abstract describes patients as being "randomly assigned." From the Materials and Methods section this does not appear to be the case as this is a retrospective chart review study. I would be clear in the abstract that this is a retrospective study.

-Answer to comment:

We concur with the reviewer on this matter and express our gratitude for their thoughtful consideration. Our study adopts a retrospective study design, which began in January 2010, employing the standard Ciaglia Blue Rhino technique. As experience grew and new devices such as ultrasound and microcatheters became available over time, the authors transitioned to the modified procedure. We ensured consistency in preoperative preparation, surgical procedures, and postoperative treatment protocols, thereby mitigating systematic disparities in postoperative care between the two groups. Consequently, we believe that bias in the results of this study was minimized.

We have corrected the sentence in the revised manuscript as the reviewer pointed out as follows:

(page 7, lines 176 to page 8, lines 179)

(page 14, lines 299)

A retrospective study design was employed to investigate the PDT program. Patients were assigned to two groups: (1) those undergoing PDT using ultrasound-guided flexible bronchoscopy and microcatheter puncture (modified PDT group, n = 133) and (2) those undergoing conventional PDT with Ciaglia Blue Rhino alone (conventional PDT group, n = 50).

2. Line 105 - "coming turning points to" is an awkward phrase; in context "in order to" maybe a reasonable replacement.

-Answer to comment:

We concur with the reviewer on this matter and express our gratitude for their thoughtful consideration.

We have corrected the sentence in the revised manuscript as the reviewer pointed out as follows:

(page 12, lines 271)

In 1985, in order to overcome these difficulties in tracheostomy, Ciaglia et al. (8), a thoracic surgeon with 48 years of experience at St. Elizabeth's Hospital in Utica, NY, introduced a significant advancement to overcome the challenges associated with tracheostomy.

3. Lines 111-113 - The text here seems to suggest that the single tapered dilator and use of bronchoscopy were part of Dr. Ciaglia's original technique when these were instead later modifications.

-Answer to comment:

We concur with the reviewer on this matter and express our gratitude for their thoughtful consideration.

I concur entirely with the reviewer's assessment. According to the original paper titled "Elective Percutaneous Dilatational Tracheostomy: A New Simple Bedside Procedure" by Ciaglia et al., they indeed utilized a flexible guide wire and proceeded to dilate the trachea sequentially using a series of progressively larger dilators over the guide wire to gradually enlarge the tracheal opening.

We have corrected the sentence in the revised manuscript as the reviewer pointed out as follows:

(page 13, lines 275, to page 13, lines 280)

They stressed the importance of meticulous inspection and palpation to identify both the thyroid cartilage and the cricoid. This process entailed making a vertical incision, delicately manipulating the tissues with a mosquito clamp, inserting a fine needle through the space, placing a flexible guide wire, and sequentially dilating the trachea using a series of increasingly larger dilators over the guide wire to gradually enlarge the tracheal opening.

4. Line 192 - This section needs to include a description of what procedures would be defined as "conventional PDT" and what procedures would be defined as "modified PDT." The protocol presented here seems to only define the modified group.

-Answer to comment:

We concur with the reviewer on this matter and express our gratitude for their thoughtful consideration.

We have corrected the sentence in the revised manuscript as the reviewer pointed out as follows:

(page 18, lines 414, to page 19, lines 418)

In the modified PDT groups, all surgical procedures were diligently executed, whereas in the conventional PDT groups, the identification of the tracheal puncture site guided by pre-operative ultrasound (surgical procedure #3) and the preliminary puncture through the trachea using 4.0-French diameter microcatheters (surgical procedure #4) were omitted. Additionally, bronchoscopy was employed sparingly.

We maintained consistency in preoperative preparation and postoperative treatment protocols, thereby ensuring the absence of systematic disparities in postoperative care between the two groups

5. Lines 351-409 - The first paragraph in the discussion are quite long and not well-focused. For example, the first paragraph, in sequence, describes history of tracheostomy, importance of tracheostomy, description of surgical tracheostomy, history of percutaneous tracheostomy, comparison of percutaneous tracheostomy techniques, and then back to surgical tracheostomy. I would consider moving lines 404-409 up to line 368. I would also make each of these topics its own paragraph.

-Answer to comment:

We concur with the reviewer on this matter and express our gratitude for their thoughtful consideration.

As per the reviewer's suggestion, we made a revision.

We have corrected the sentence in the revised manuscript as the reviewer pointed out as follows:

(page 25, lines 580 to 585)

Tracheostomy, whether performed as a form of bedside ICU percutaneous dilatation tracheostomy or surgical tracheostomy in the operating room, serves as a critical procedure (10). Surgical tracheostomy in the operating room requires anesthesia, skin incision, tracheal ring cutting, and direct placement of the tracheostomy tube. It may lead to early complications, including cuff leak, tracheal obstruction, bleeding, and fistula (11).

6. Lines 410-438 - This paragraph is also quite long and contains some redundancies with the previous paragraph. The main point of this paragraph seems to be reviewing studies of the safety of percutaneous tracheostomy versus surgical tracheostomy, but there are also statements describing specific techniques. These statements seem redundant and could probably be removed. The paragraph concludes with statements regarding the importance of ultrasound in percutaneous tracheostomy, which would probably be better moved to the next paragraph where this is the focus.

-Answer to comment:

We concur with the reviewer on this matter and express our gratitude for their thoughtful consideration. As per the reviewer's suggestion, most of this paragraph was removed.

We have corrected the sentence in the revised manuscript as the reviewer pointed out as follows:

(page 27, lines 622 to page 28, lines 635)

Recent advances in technology have led to the evolution of different techniques for PDT, promoting minimally invasive procedures. The duration of ventilation and the length of ICU stay after percutaneous dilatation tracheostomy are significantly reduced (28). Worldwide, percutaneous dilatation tracheostomy has gained widespread acceptance as the preferred method for tracheostomy in critically ill patients (29, 30). Delaney, et al. have suggested that PDT reduces the incidence of wound infection, clinically relevant bleeding, and mortality compared to surgical tracheostomy (31). Another study by Youssef, et al. has revealed the safety and effectiveness of PDT, with low incidence of post-operative complications, comparable to classical surgical tracheostomy (32). Several types of PDT techniques have been described, often performed with fiberoptic bronchoscopy guidance for precision and safety. The single dilation technique, particularly in the Ciaglia and Griggs procedures from the 1980s and 1990s, has been widely used. Recent evidence supports the notion that the single dilation technique enhances safety and achieves higher success rates compared to the guidewire dilator forceps tracheostomy technique (33, 34).

7. Lines 484-490 - I would include as a weakness that the only complications that were significantly reduced by the modified technique were minor complications. This gives a signal that the technique may be safer but does highlight the need for higher-power studies to evaluate for reduction in major complications.

-Answer to comment:

We concur with the reviewer on this matter and express our gratitude for their thoughtful consideration. As per the reviewer's suggestion, we made a more description.

We have corrected the sentence in the revised manuscript as the reviewer pointed out as follows:

(page 30, lines 684 to 687)

Another limitation is that only minor complications were significantly reduced by the modified technique, and this suggests potential safety improvements but underscores the necessity for larger-scale studies to assess the reduction in major complications.