Author’s response to reviews

Title: A data review of airway management in patients with oral cavity or oropharyngeal cancer: A single-institution experiences

Authors:

Gang Zheng (gzheng@mdanderson.org)
Lei Feng (leifeng@mdanderson.org)
Carol M Lewis (cdmlewis@mdanderson.org)

Version: 1 Date: 21 Mar 2019

Author’s response to reviews:

March 14, 2019

Point to point response to the reviewers’ comments for the manuscript of BANE-D-19-00007 “Airway management in patients with oral cavity or oropharyngeal cancer: A single-institution retrospective study”.

BMC Anesthesiology

Dear Editor and Reviewers,

Thank you for the opportunity to revise the manuscript of “Airway management in patients with oral cavity or oropharyngeal cancer: A single-institution retrospective study”. We appreciate the editors/reviewers’ comments and incorporated the edits to improve the quality of the manuscript. The information below provides point-to-point responses to the comments and the corresponding changes in the text are marked with Red Ink. Please let us know if there is any additional information we can provide. Thank you for your time and consideration.

Dr. Kenneth C. Cummings’s comments (Reviewer 1):

We thank Dr. Cummings’s thoughtful review and concerns regarding the scientific accuracy of the manuscript. In order to provide the point-to-point responses to reviewer’s concerns, we would like to briefly introduce the background of the study data. This study has limits in its study methods and design due to complex of patients’ data. One of the major limits in the study was
the exact matching method to create the control group. This method introduced extra statistical bias comparing to other case control methods. However, hand search all 4011 patients in the database to replace missing data was not practical, therefore, we could only define a HNRT group first and then match the controls to narrow the range of data search. Secondly, we could not include all the confounding factors into the study report due to complex and wide distribution of the data in this relatively small study population. In 472 patients, we found 28 cancer diagnoses and 83 anatomic descriptions in 8 basic cancer locations. In addition to the basic patients characteristics such as age, sex, BMI, OSA, etc. and the findings of bedside conventional airway assessment, the history of airway surgery, presenting airway mass effects including type/location and the airway effects of anticancer therapies play the major roles in airway management, which varied from person to person. Many of the confounding variables were only applied to one or a few patients so that to create a valid statistical comparison with all relevant confounding factors with such wide data distribution was not reasonable. The followings are the point-to-point responses to the concerns of reviewer 1:

1. Abstract-The hypothesis and how the groups were defined is unclear in the background and methods.

Response: The hypothesis is added to the background and the method of grouping is added to the section of methods in Red Ink.

2. OCC vs. OPC malignancy and the effects of treatment may not be the same. Is it fair to group them?

Response:

1) Although oral cavity and oropharynx are anatomically different, the cancer in one location often invades or grows into the adjacent area across an anatomic boundary. In addition, it is not uncommon that the cancer tissue reaction or inflammation extends the mass effects to the nearby regions. Therefore, the impacts of OCC and OPC may not be separated by the anatomic location. In this study, there was only 25% patients presented with a T1 stage tumor.

2) The impacts of HNRT to airway management is mixed. In addition to adverse effects of tissue edema or fibrosis, radiotherapy may also largely or totally eliminate the airway mass to facilitate airway management. Due to proximity of anatomic sites of oral cavity and oropharynx, the areas of local tissue reaction to radiotherapy (when applicable) in OCC and OPC are nearly identical. Therefore, we think grouping the study subjects with the history of HNRT rather with anatomic site is reasonable in this study.
To address this concern, we added a paragraph to the end of discussion section.

3. Why would some patients receive preoperative HNRT and others not? This could lead to confounding by indication. Please address. A propensity score method may an appropriate.

Response: In general, the primary treatment for OCC is surgery and for OPC is HNRT; however, the tumor metastasis, the staging, the histopathologic type and the outcomes of previous treatments, etc. are also influence the treatment plan; these data were not found in our database.

4. The author matched patients on age, sex and BMI. What about other issues that could affect airway management such as tumor type/location, obstructive sleep apnea, history of difficult intubation, etc.?

Response: Basic demographics such as age, sex and BMI are readily available for matching in every study subject. The other confounding factors are all the important variables to the study, however, due to above mentioned reasons in the first paragraph, we did not include these in the study.

5. What about the time from HNRT to surgery? Would that an effect on the development of fibrosis, etc.?

Response: The average duration of the time interval between completion of HNRT and surgery was 330 ± 474.5 days (Mean ± sd) and median duration was 134 days. The time interval from HNRT to surgery was not associated with the difficult tracheal intubation (P = 0.9363). The findings were added to the section of Radiation status and airway management characteristics

6. My largest concern is that all methods of intubation are not created equal. Saying an intubation was difficult because direct laryngoscopy was difficult is very different from saying intubation was difficult because fiberoptic intubation was challenging. I do not think it is a fair comparison to lump all methods of intubation together and compare whether they were “difficult”. At lease, one should look at DL +/- videolaryngoscopy separate from fiberoptic techniques.

Response: This is a valid question. The performance and the difficult level of direct laryngoscopy (DL) to expose the glottic opening (Cormack and Lehane grading) have been used as a standard endpoint of evaluating the efforts of tracheal intubation. Many anesthesia providers would also like to attempt DL in a patient with potential difficult airway to obtain an idea of the level of difficult DL for documentation and for future reference. Indeed, for a patient with normal airway anatomy, DL has been a standard intubation method. Given a scenario of tumor
airway, the selection of primary intubation tool is fully depending on the patient’s airway condition and performers’ preference. But advanced airway tools are often the primary selection, especially a flex bronchoscope due to its flexibility and less traumatic features. The patients whose airways were intubated by DL were hence, highly selected and ensured safe for DL. In this study, 57.8% of airways was intubated with DL and rest of them was managed by somewhat advanced techniques without DL information. The outcomes of tracheal intubation by DL in this study do not reflect the reality of airway condition of entire study population. Therefore, we decided to use the outcome-based evaluation (whether or not difficult tracheal intubation) to truthfully reflect our data rather to use technique-based report (DL vs. an advanced technique). Strictly speaking, all the patients in this study have abnormal airway anatomy. The airway management concept and techniques may vary significantly from the others. We have, therefore, changed the report title to “Airway management in patients with oral cavity or oropharyngeal cancer: A single-institution experiences” in order to avoid the confusion.

Dr. Johann Knotzer (Reviewer 2):

Subjectively, I believe that there might be a difference in the incidence of difficult tracheal intubation between patients with oral cavity cancer and patients with oropharyngeal cancer. Would it be very difficult or possible to include these two kinds of cancer in the matching strategy? I can even imagine that the anatomic site of cancer has an influence on the broadly used flexible endoscopy in these patients. Probably you have the opportunity to provide the reader with these data.

Response: We thank Dr. Knotzer’s thoughtful comment. Indeed, successfully matching the patients with cancer locations will be accurately reflecting the patient specific conditions and may thus, generate an accurate report. However, due to the complex of data as we mentioned above, we found 28 cancer diagnoses and 83 anatomic descriptions in 8 basic cancer locations from the 472 patients in the raw report. The data pool (n = 4011) was too small to generate an adequate sample size with more added matching factors. Although, a propensity score study might further provide an effective method to answer the question, due to the regional or local invasion of the primary malignancy, the overall impacts of OCC and OPC to the airway management may not be separated by the primary anatomic locations. In our practice, 75% of the cancer patients were advanced or reoccurrence, therefore, the tumor margin is often ill defined at airway management. We thus added a paragraph to the end of the section of “Discussion” to address Dr. Knotzer’s concern. In addition, study title is changed to “Airway management in patients with oral cavity or oropharyngeal cancer: A single-institution experiences” to reflect our practice culture.