

Peer Review File

Article information: <http://dx.doi.org/10.21037/aoe-20-65>

Reviewer A

1) Refer to TNM8 staging or other staging when initially describing T4b in the introduction as opposed to methods. Write cT4b with airway involvement as opposed to clinical T4b Airway.

Reply: We have corrected the text to include this information.

2) STROBE spelt incorrectly in methods.

Reply: STROBE is now correctly spelt

3) Please elaborate further on complications. This is a small series and therefore should go in detail regarding complications including definitions for pneumonia. Authors should really describe the complications according to the ECG guidelines and these details should be extracted if possible.

Reply: We agree with the reviewer that it is important to employ a standardized reporting of complications. Since 2003 we have used the Clavien-Dindo classification of post-operative complications. In 2010 we switched to a validated thoracic surgery specific complication reporting system adapted from the original Clavien Dindo system. This system (see below) has been reported to be superior to NSQIP and is largely similar to the ECG reported by Don Low.

| Grade | Definition |
|---------------------|--|
| Complication | Any deviation from the normal postoperative course. |
| Minor | |
| Grade I | Any complication without the need for pharmacologic treatment or other intervention. |
| Grade II | Requiring requires pharmacological treatment or minor intervention only. |
| Major | |
| Grade III | Requiring surgical, radiological, endoscopic intervention, or multitherapy. |
| Grade IIIa | Intervention does not require general anesthesia. |
| Grade IIIb | Intervention requires general anesthesia. |
| Grade IV | Requiring intensive care unit management and life support. |
| Grade IVa | Single organ dysfunction. |
| Grade IVb | Multiorgan dysfunction. |
| Mortality | |
| Grade V | Death of a patient. |

4) In terms of demographic data, do the authors have ASA/performance status scores, exact

N staging and smoking status. This information would be relevant.

Reply: This information is included in an additional table 1

5) Intra-operative parameters: do the authors have intraop blood loss, operative time etc.

Reply: This information is included in revised Table 2

6) Postoperative parameters: number of LNs excised, LN positivity, circumferential and longitudinal margin positivity. This information is included in table 4. Only one patient had

Reply: a positive margin (circumferential), and this is detailed in table 4 and in the results on page 10)

7) Long discussion. Authors should make more concise and focused on the aims of the study (outcomes of the cohort).

Reply: We have significantly reduced the discussion by approximately 1 page to focus on the key pertinent findings of the study.

Reviewer B

The authors report their experience with combined esophagectomy and airway resection for management of cT4b (airway involvement confirmed or suspected at diagnosis or found at operation). This is, I believe, the largest such series, and will be an important contribution to the literature. I have the following comments and questions that might facilitate revision and enhance the manuscript.

1) The authors would likely agree that definition of cT4b is difficult. It is made more difficult by the fact that there are suspected and confirmed cases, which the authors note are at different ends of the spectrum. Would the authors agree that T4b not suspected but found at surgery is likely different than the two prior cohorts, and should also be tabulated separately? Ultimately, is there any difference pathologically in terms of depth of invasion?

Reply: We agree that the definition of cT4b is quite difficult and variable. However in the current manuscript we elected to concentrate on patients with airway resection irrespective of definition. In our experience, the cT4b definition is rather liberal (extrinsic compression or bulged of the membranous airway), and has a greater risk of over staging rather than under staging. We have highlighted this pointy in the discussion – page 12 (reference 14).

2) Could the authors clarify what buttressing techniques were used for the airway reconstructions in patients not undergoing pec major flaps? Almost any airway reconstruction is made more secure by buttressing with vascularized tissue and the reader would benefit from understanding this issue.

Reply: In general, the bovine pericardial patches, all applied trans-thoracically, were buttressed with the omentum accompanying the gastric conduit in the chest. As accurately mentioned by the reviewer. For the pectoralis major muscle flaps, all cervical defects, no additional buttress was employed. This information was added to the methods section on page 7.

3) The two patients who died after failure of the tracheobronchial repair could be more completely described. What operation (? I-L, PLE, etc), what reconstruction, etc. More importantly, what attempts at repair or palliation were attempted and how did they exactly

succumb to anastomotic failure (e.g. multi-organ dysfunction, need for mechanical ventilation).

Reply: We agree. This information has been added to the results section on page 9

4) I personally would have found it very useful to have a complete table showing each patient and all of the relevant individual clinical and outcomes. Although the numbers are small, perhaps patterns and trends would be revealing.

Reply: We have added an additional table (Table 4) attempting to add as much information whilst at the same time be not overwhelming.

5) Is disease free survival easily determined? It would be interesting to understand if recurrence locally, regionally, or distantly (I suspect it is the latter) that is most problematic for this population.

Reply: We agree with the reviewer that DFS would have improved the manuscript, however this data was not available in our surgical database. Although overall survival data (particularly date of death) is readily available from province wide databases, identifying the precise date of recurrence was challenged by the fact that several patients were followed post resection at outside institutions.

6) The COSMOS trial is a useful reference study. Please note any other studies that describe experience with esophagectomy resection. I could not find any easily in my brief review of the literature.

Reply: We agree, the COSMOS trial published results are the most complete on this topic. The lack of defined literature on the surgical management of cT4B airway was precisely the motivation driving our pursuit in publishing our results.

7) There are some grammatical and style issues requiring revision.

Reply: We have carefully reviewed and corrected all the grammatical errors that we could find.

Reviewer C

1) It is a good idea to classify T4b into suspected and confirmed. Was there a difference in surgical procedure and prognosis between the two groups?

Reply: We agree that this information would be helpful. However, given the small numbers, not much can be gleaned from the data other than the liberal use of the pectoralis major muscle flap to reconstruct very large posterior tracheal defects after resection in patients with confirmed cT4b. This data has been provided in an additional table 4.

2) Is the pectoralis major muscle flap used in cases of extended tracheal resection? Since there are only 14 cases, it would be easier to understand if each case is shown in a table.

Reply: Indeed, we used the pectoralis major muscle flap in precisely such cases. As discussed above, we have added this data in a new table 4.

3. It might be better to consider the combined resection of the airway for thoracic esophageal cancer separately from cases with laryngectomy. Combined laryngectomy for cervical esophageal cancer is an established procedure. Extended tracheal resection and mediastinal tracheostomy are considered separate categories of surgery.

Reply: We agree that it would be cleaner to separate these two procedures, and we have included a new table detailing the specific operations and reconstruction approaches for each

patient. However, we don't believe that we have enough patients to analyze these patients further separately to yield any meaningful findings.

4. Discussion is a bit redundant. It is better to summarize the issues and shorten them

Reply: We agree, therefore the discussion has been reduced by over 1 page.