Author’s response to reviews

Title: THORACOSCOPIC SURGERY APPROACH TO MEDIASTINAL MATURE TERATOMAS: A SINGLE-CENTER EXPERIENCE

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Author’s response to reviews:

1. To reviewer #1
   The authors have studied and presented a topic of great interest. I want to thank them for their contributions. I have two issues that need to be address.
   Response: We thank the reviewer very much.

Comment #1. There are numerous language issues. For example, please see page 8 lines 217-221, and page 9, lines 222 to 230. The English is not correct. Also, I would recommend having a native English speaker review this.
   Response: The authors thank the reviewer for your comment and suggestion. The authors read throughout the manuscript and tried the best to edit it with a better version, particularly in page 8 lines 217-221, and in page 9, lines 222 to 230. As your suggestion, we have carefully proofreaded the english for the whole manuscript, with the support of an language expert for critical reading and checking to improve the manuscript.

Comment #2. Do the authors think the sample size is big enough to draw conclusions. The sample size seems small to me.
   Response: We thank the reviewer very much for your comment. We do acknowledge that the sample size in this study is quite small. However, we hope you could understand our circumstance that our study is a retrospective study, and we collected consecutively all patients...
with mediastinal mature teratomas who had been treated by thoracoscopic surgery at Viet Duc Hospital within nearly 11 years (January 2008 to August 2018), and there were only 28 patients who satisfied inclusion and exclusion criteria of this study. In fact, the number of the patients with mediastinal mature teratomas is usually not so big and the number of patients eligible for thoracoscopic surgery is even smaller. We have acknowledged this issue in our discussion (Line 237). Further studies on mediastinal teratomas thoracoscopy with bigger sample size are needed to draw more reliable conclusions.

2. To reviewer #2

Comment #1: The authors reported an interesting case series of surgical management of mediastinal teratomas thoracoscopically. I congratulate them for their operations and overall patients' management. The above case series might be of interest to readers because of their rarity.
Response: We thank the reviewer very much.

Comment #2: Although, I have a few concerns that the authors have to deal with. Their text is not well written. It has a few syntax errors. It would be preferable the text to be reviewed by a native English speaker.
Response: We thank the reviewer very much for your comment and suggestion. As the reviewer #1's suggestion, we have carefully proofread the english for the whole manuscript, especially its syntaxes checked. We also asked some language experts who have basic knowledge in medicine in general were employed to critically read and check the current version.

Comment #3: Also, I would appreciate if the authors could describe the differences between the two thoracoscopic techniques (closed and video-assisted). Generally, my opinion about this case report is positive.
Response: We thank the reviewer much for your comments. In our experience, there are several differences between closed thoracoscopic surgery (CTS) and video-assisted thoracoscopic surgery (VATS):

In term of incision/port placement, in CTS, we apply a method named “triangle target principle” which was first introduced detailedly by Sasaki in 2005 (*). As Sasaki had done, we also placed 3 trocars in an equilateral triangle: The first trocar placed in the 6th or 7th ICS on the posterior axillary line. The second one is into the 3th or 4th ICS on the same line as the first trocar. The target trocar is on the 3th mid-clavicular line or the 7th ICS on the anterior axillary line. In VATS, although we kept placing the first trocar to introduce a camera as in CTS, the 2 other trocars in CTS were replaced in VATS by a small incision which was about 2 to 4 cm in length (without spreading the ribs - in 5th ICS between linea axillaris anterior and linea axillaris posterior).

Regarding indications, as there was narrow working space for the surgeons in CTS and we could not look directly into the teratoma, we only used this technique if the teratomas is smaller than 6 cm in one of the both sizes, has fluid-filled cyst which can be easily removed after fluid suction, and draws clear boundary with surrounding organs. Otherwise, VATS technique was chosen if...
the tumor is bigger than 6cm in one of both sizes, do not have clear boundary with surrounding organs on CT-scan or tumors on the left side of the chest cavity. This is because in VATS, the surgeons could look through the incision and have a realistic view and larger working space for big and unclear boundary tumors. After surgery, the patients were less pain, less infection risk and smaller scar in CTS than in VATS. 


3. To reviewer #3
Comment #1: This study by Pham Huu Lu and colleagues is a retrospective analysis of 28 thoracoscopic resections of mediastinal mature teratomas comparing a VATS approach with access incision to a completely port-based approach. The experience, and in particular the extraction strategy is interesting. My comments are meant to be used to further improve the manuscript.
Response #1: The authors than k the reviewer very much.

Comment #2: - Can you elaborate more on the selection of VATS versus port base VATS technique in your experience?
Response: We thank the reviewer much for your comment. In our experience, the characteristics of the teratomas on CT-scan are decisive factor in selecting operation approach.
We only used CTS technique if the teratomas had both sizes smaller than 6 cm, contained fluid-filled cyst which could be easily removed after fluid suction, and drew clear boundary with surrounding organs. This was based on the fact that there was narrow working space for the surgeons and we could not look directly into the teratomas in CTS, because we applied a method named “triangle target principle” (TTP) which was first introduced detailledly by Sasaki in 2005 (*). As Sasaki had done, we also placed 3 trocars in an equilateral triangle according to his TTP type IV to approach the teratomas.

Otherwise, VATS technique was chosen if the tumor was bigger than 6cm in one of both sizes, did not have clear boundary with surrounding organs on CT-scan or tumors, or lied on the left side of the chest cavity (Figure 1a). This becawse in VATS, although we kept placing the first trocar to introduce a camera as in CTS, the 2 other trocars in CTS were replaced in VATS by a small incision which was about 2 to 4 cm in length (without spreading the ribs). This could help the surgeons look through the incision and have a realistic view and larger working space for big and unclear boundary tumors.

These contents were added in the Operation technique section.


Comment #3: Also, what factors would you use to select an open procedure in your practice?
Response: We decided to converse to minithoracotomy if during the surgery, the teratomas was found spreading and adhering to surrounding tissues, leading to bleeding that could not be stopped by either ultrasonic cutter or ligasure, then minithoracotomy was required to ensure the operation was performed safely.

Comment #4: Please define the use of preoperative biopsy to confirm the diagnoses.
Response: We thank the reviewer for your comment. In fact, we did not perform biopsy to make a definitive diagnosis for all patients. We diagnose whether a tumor was teratomas or not right on CT-scan images with these following characteristics: The teratomas had (1) germ cell origin; (2) clear wall; (3) fluid-filled cyst and (4) contained calcification inside.

Only 8 cases with unclear boundary tumors on CT-scan were performed preoperative CT-guided biopsy in order to creat differential diagnosis with lymphoma. No definite cytological or pathological diagnoses were made helping us to exclude lymphoma in all those 8 patients.

To distinguish between benign and malignant tumors, we elevated alpha-fetoprotein (alpha-FP) and beta-human chorionic gonadotropin (beta-HCG) levels. All 28 patients in this study had normal test results which allowed us to perform thoracoscopic surgery.

Comment #5: The resection of these large tumors is of interest. In addition to the size 1 and size 2 of the resected pieces, can you elaborate on the CT measurements of these lesions with regards to conversion and use of one versus the other VATS approach?
Response: We thank the reviewer much for your comments. To assess each teratoma’s sizes, we chose a slice on CT-scan where the tumor is biggest, and we measured its 2 longest sizes on that slice. If both of them were smaller than 6 cm, then CTS was chosen. Otherwise, we performed VATS.

However, the sizes of tumors on CT-scan were not the determinant of surgical appoach. We also based on the tumor boundary and cyst’s component on CT images. For example, if the tumor’s boundary is unclear (even the both sizes smaller than 6cm), we would perform VATS. On the other hand, if the cyst inside teratomas was fluid-filled (even one of the both sizes was bigger than 6cm) that, in our experience, could be sucted to be smaller in thorascopy, then we would use CTS approach.

Comment #6: While I appreciate the general overview of the epidemiology, diagnosis and surgical management of these lesions in your discussion, for this paper it would be more relevant to discuss the findings in the context of the literature, provide reference date, and describe similarities and differences to previous studies.
Response: We thank the reviewer much for poiting this out. The discussion was added with the literature related to our findings, as well as the comparison between our study and others ones.

Comment #7: The description of the operative approach is important. However, a simple figure outlining incision/port placement would be very helpful.
Response: Thank you very much for your comment and suggestion.

In CTS, we applied “basic principles” of Landreneau et al (**) and particularly “triangle target principle” (TTP) type IV of Masato Sasaki et al (*) which is used in cases of a target mainly in the medial segment of the middle lobe, a pericardial lesion and an anterior mediastinal lesion
The first trocar placed in the 6th or 7th ICS on the posterior axillary line. The second one is into the 3rd or 4th ICS on the same line as the first trocar. The target trocar is usually on the 3rd mid-clavicular line or the 7th ICS on the anterior axillary line.

In VATS, we kept placing the first trocar in the 6th or 7th ICS on the posterior axillary line as in CTS, but the 2 other trocars in CTS were replaced in VATS by a small incision which was about 2 to 4 cm in length (without spreading the ribs) in 5th ICS between linea axillaris anterior and linea axillaris posterior. This incision site was aimed to avoid scarring in anterior area and to hide the surgical scar by arm movements or bras (if patients were female), but still guaranteed it was the appropriate site to approach teratomas. (Figure 1).

These contents were added in the Operation technique section (Lines 81-93).

Figure 1. Placement of trocar and incision in VATS: The first trocar placed in the 6th or 7th ICS on the posterior axillary line; a small incision which was about 2 to 4 cm in length (without spreading the ribs) is in 5th ICS between linea axillaris anterior and linea axillaris posterior.


Comment #8: Please review the use and reporting of numbers in your manuscript. For single digit numbers under 10, there is no need for the leading 0. Please use digits and or spelling of numbers under 15 consistently. Please refrain from starting sentences with a number.
Response: We thank the reviewer much for pointing this out. Above errors were edited. Furtherly the english for the whole manuscript was carefully proofreaded.

Comment #9: Please review the comparison of length of stay. It seems odd that a difference of the mean length of stay of 0.5 days is statistically significant given the small number of patients. For continuous variables that are not normally distributed, please consider using non-parametric tests.
Response: We thank the reviewer much for pointing this out. The authors do think that the difference in mean length of stay is not really persuasive. We will study more on parametric tests and will use them in our following research for continuous variables.