

Peer Review File

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Reviewer A

Masterful dissection, nice video, very nice picture of 3D-CTBA reconstruction, I wish my institution had that software to facilitate lung segmentectomy planning.

I would change a few sentences that I think are not grammatically correct. I would also change sentence in abstract about how to perform segmentectomy with minimal invasive techniques remains to be elucidated for something like "several different techniques have been described", you are basically just describing your technique, there is really not a right or wrong way to do it.

Sentence about no recurrence is not grammatically correct.

First sentence in introduction is redundant: most severe = ranking 1st. A few other sentences in the manuscript are not grammatically correct, however I can understand message.

Overall, I enjoyed reading your paper, however I do not think that your technique is very novel. How much different is your technique from traditional 3-port VATS? I am not sure that having 2 of the ports 5mm instead of 1cm would have a significant impact on pain scores or even cosmetic appearance. I do see a benefit in publishing your technique so readers can ultimately decide which technique they prefer to implement in their practice: yours vs single port vs traditional 3-port vs robotic.

Reply 1: We're sorry for the poor writing. We have looked through the manuscript and revised according to the valuable comments.

Changes in the text: In the ABSTRACT section, "whereas how to perform such procedure with minimal invasiveness and effectiveness remains to be elucidated" has been replaced by "and several different techniques have been described"; the first sentence in INSTRUCTION section has been revised to be more concise; other minor revisions can be tracked in the revision of the manuscript.

Reply 2: For the concern of novelty, we believed two micro-portal VATS have some unique features. As reiterated in the manuscript and our previous work (Tong L, Zheng X, Duan H, et al. *Journal of Thoracic Disease*, 2018, 10(10):5898-5903), the two micro-portal VATS would be more accessible for surgeons who are already familiar with the single-direction VATS, making the learning curve smoother than that of uniport thoracoscopy. In addition, unlike the uniport thoracoscopy, specific instruments are not necessarily required for better operating direction. Moreover, the similar minimal invasiveness and less pain as uniport VATS could be achieved by the two micro-portal VATS.

Meanwhile, the present manuscript aimed to elucidate details of the two micro-portal VATS for the First International Lung Surgery Competition (2019 Masters of Lung Surgery), and it's an honour for us to introduce an alternative for proceeding minimally invasive surgery in lung cancer. As commented by the reviewer, it's the preference of the surgeon to perform a specific technique in the clinical settings.

Thank you for the constructive suggestions!

Reviewer B

Thank you for giving me the opportunity to review this manuscript. The manuscript introduces their 3-ports including 2 micro-ports VATS technique of right S8 segmentectomy and lymph node dissection. I think this procedure already employed in daily practice for various pulmonary resections. I cannot understand why they select segmentectomy for this invasive adenocarcinoma. Therefore, I cannot find their proposal benefits from this manuscript.

Reply: Thank you for the critical comment. We believe the two micro-portal VATS is different from the traditional 3-port single-direction thoracoscopy for the similarity of minimal invasiveness and less pain as uniport VATS, as well as it's much easier for beginners of VATS. In addition, we aimed to illustrate details of our experience for the First International Lung Surgery Competition (2019 Masters of Lung Surgery) and provide another option for the daily practice in thoracic surgery. After all, which

technique to perform depends on the surgeon's preference.

Segmentectomy may be a rationale for the patient described in the manuscript. On one hand, the presented case was with multiple nodules. Considering the possibilities of surgeries in the future, we decided to resect the lesion completely as well as maximize the reservation of residual lung tissues. On the other hand, as to whether segmentectomy is suitable for invasive adenocarcinoma (mainly LPA) remains controversial, the procedure would be an attempt to prove the rationality, while the patient was without progression in the 6-month follow-up.

Reviewer C

Well written but it adds nothing new to the well-known minimally invasive surgical techniques. In my opinion, it is a 3 ports vats segmentectomy with two very small incisions and one utility incision. Segmentectomy can easily be done by either two or one incision.

Reply: Thank you for the comment. First, this manuscript was meant to manifest the awarded surgical video in the First International Lung Surgery Competition (2019 Masters of Lung Surgery), and we were pleased to get the opportunity to introduce the experience of our institute. Second, apart from the reiteration of unique features of the two micro-portal VATS in the manuscript, our previous work has shown such technique could enhance comfort post-surgery when compared to the conventional three-port VATS (Tong L, Zheng X, Duan H, et al. *Journal of Thoracic Disease*, 2018, 10(10):5898-5903). Third, after the ensuring of complete resection, choosing the specific technique partly depends on the surgeon's preferences; we just provide another feasible and efficient choice.

Reviewer D

It was my pleasure to read your paper as a reviewer. However, I have some comments regarding your work:

- Could the authors describe the novelty of their approach, as well as possible advantages, on respect of totally endoscopic technique (e.g. Described by Gossot et Al.) or micro-lobectomy technique (e.g. Described by Dunning et Al.)?
- The author should declare the software they used to produce 3D-CTBA reconstructions.
- The manuscript presents several inconsistencies concerning port dimension (2 cm vs. 2.5 cm IV IS incision; 4 cm vs 3 cm total incisions length).
- The sentence “Having been exposed (Figure 6f), the B8 was cut and suture with a 6.0 cm purple stapler (Covidien, Mansfield, MA, USA). The lung was reventilated with pure oxygen and after 5 minutes, a clear inflation-deflation boundary was formed between the still inflated S8 and the collapsed S6, S7, and S9-10 (Figure 6g) and marked by electrocautery.” Is not very clear. Could the authors reformulate it?
- The sentence “In this case, the plug-in multi-side cutting method (Figure 7l) could [...]” included an incorrect figure references).
- Could the authors illustrate why they used 2 chest tubes?

In conclusion, the novelty of the Case Report is not clear. The technique is similar to a VATS segmentectomy performed with the Gossot technique or “Microlobectomy” technique. The possible advantage in respect of classic three-port VATS segmentectomy is difficult to imagine. The manuscript presents several inconsistencies.

Response: Thank you very much for your hard work on our paper. We have studied the comments carefully and have revised accordingly. Details are as followed:

Comment 1: Could the authors describe the novelty of their approach, as well as possible advantages, on respect of totally endoscopic technique (e.g. Described by Gossot et Al.) or micro-lobectomy technique (e.g. Described by Dunning et Al.)?

Reply 1: Thanks for the constructive suggestion. We have revised the COMMENTS section to make the unique features of the two micro-portal VATS clearer in the manuscript.

Comment 2: The author should declare the software they used to produce 3D-CTBA reconstructions.

Reply 2: We have added the software we used in the OPERATIVE TECHNIQUES section. Thank you for your advice!

Comment 3: The manuscript presents several inconsistencies concerning port dimension (2 cm vs. 2.5 cm IV IS incision; 4 cm vs 3 cm total incisions length).

Reply 3: We greatly appreciate the reviewer's constructive suggestion. We have revised the Figure 9 legend with the main operation incision length of 2 cm and the total incision length of 3cm.

Comment 4: The sentence "Having been exposed (Figure 6f), the B8 was cut and suture with a 6.0 cm purple stapler (Covidien, Mansfield, MA, USA). The lung was reventilated with pure oxygen and after 5 minutes, a clear inflation-deflation boundary was formed between the still inflated S8 and the collapsed S6, S7, and S9-10 (Figure 6g) and marked by electrocautery." Is not very clear. Could the authors reformulate it?

Reply 4: We have reformulated the statement according to the constructive comment.

Comment 5: - The sentence "In this case, the plug-in multi-side cutting method (Figure 7l) could [...]" included an incorrect figure references).

Reply 5: We greatly appreciate the reviewer's careful reading of our manuscript. We have corrected the figure references to be "Figure 6l".

Comment 6: - Could the authors illustrate why they used 2 chest tubes?

Reply 6: We are used to placing at least 2 tubes after lung surgery. The one at the top of the chest cavity is for minimizing the injury of the potential air leakage, especially for patients with COPD; the lower tube is for the drainage of the pleural effusion.

Thanks again for the sincere comments!

Reviewer E

This is a video article about S8 removal. From the title, the author's innovation is 2 tiny incisions + 1 main incision. The diameter of the 2 tiny holes is 5mm. However, now single-port or single-port thoracoscopic surgery can also perform this type of surgery well, so this video is not innovative enough.

For invasive adenocarcinoma, segmentectomy is in the clinical research stage and has not yet become a standard surgical procedure. The guidelines still recommend lobectomy as its standard surgical procedure. There is no qualified indication for segmental resection in the article.

The surgical process, video production, and 3D markings during the preoperative and intraoperative operations were not beautiful enough, and the processing and anatomy of the segmental structure was not clear enough.

Reply: Thank you for the valuable comments. We aimed to manifest more technical details for the awarded surgical video in the First International Lung Surgery Competition (2019 Masters of Lung Surgery) and we were pleased to get the opportunity to introduce the two micro-portal VATS of our institute. This technique might be similar with conventional three-port VATS; however, it has been shown to be less surgical trauma and postoperative pain when compared to conventional three-port VATS (Tong L, Zheng X, Duan H, et al. *Journal of Thoracic Disease*, 2018, 10(10):5898-5903). Therefore, our study could provide an alternative for the minimally invasive thoracoscopic surgery apart from conventional three-port VATS and uniport VATS.

Since whether segmentectomy is suitable for invasive adenocarcinoma (mainly LPA) remains unknown, the present procedure would be an attempt to deal with the controversy. In addition, considering multiple nodules of the presented patient and the possibilities of surgeries in the future, it's reasonable to perform segmentectomy not only resect the lesion completely but also maximize the reservation of residual lung tissues, and such decision seems to be safe and effective for the patient with no progression in the 6-month follow-up.