

Peer Review File

Article information: <https://dx.doi.org/10.21037/jovs-21-28>

Reviewer A

Thank you for giving me the opportunity to review the manuscript.

This manuscript is well written, and describes details of any type of pulmonary segmentectomy which can give the readers tips of it.

Moreover, the surgical videos are very useful for surgeons who will try these challenging operations.

Response: We thank the reviewer for his comment.

I have some recommendations to make this manuscript more sophisticated.

1. Did the author experience “air-embolization” during CT-guided hook-wire localization? Air-embolization is one of the biggest problems in CT-guided hook-wire localization. Please add the mention about it in the section of “Nodule localization”.

Response: This is a good point. This complication has been rarely reported. We had published our data and we never experienced this complication in our series of 199 patients. We added a sentence in the manuscript: ‘Minor complications were observed with pneumothorax in 38%, but only 2.8% required chest tube insertion. No hemothorax or pulmonary air embolism were reported’ (page 6, line 140-141).

2. The author described “extended segmentectomy” in the section of “Resection margins”. Several authors performed additional sub-segmentectomy to achieve safe surgical margin. Please add the mention about it.

Response: actually this is a good point which is currently under investigation. We don't have experience. We added a sentence and a reference: ‘Sub-segmentectomy would be an alternative to standard wedge resection or combined segmentectomy, but reports are under investigation’. (Single-port video-assisted thoracoscopic surgery subsegmentectomy: The learning curve and initial outcome. Chao-Chun ChangYi-Ting YenChia-Ying LinYing-Yuan ChenWei-Li HuangYau-Lin Tseng. Asian J Surg 2020 May;43(5):625-632. (page 6; line 153-154).

3. It might be better that “Division of the segmental artery” is placed right after “Division of the vein”.

Response: Thank you for your comment, we have changed the manuscript according to your suggestion (page 9, lines 228-232).

4. How was V9 treated in S9 segmentectomy?

Response: This is good point, actually the vein is missing in our manuscript. The vein is generally dissected and cut after division of the bronchus. We added: ‘The V9 is then localized behind the bronchus and can be encircled and stapled’ (page 15, line 362)’.

5. Did the author use PV as landmarks when a stapler was inserted to divide the intersegmental plane between S10 and other segments during S10 segmentectomy using ligamentum-based approach?

Response: Indeed, as mentioned in the text, we maintain the bronchial stump above the stapler in the targeted segment. But, the other landmark is the stapler which is above the intersegmental vein. We added: ‘Care is taken to insert the stapler above the intersegmental vein to avoid accidental transection of the remnant segmental veins’ (page 15, line 376).

Reviewer B

The authors reported their experience of uniportal VATS segmentectomy and relevant tips and tricks for the detailed surgical procedure. They should be commended on the efforts contributing to the field of uniportal VATS segmentectomy.

Response: Thank you for your supportive comments.

I have some comments for the authors as below.

First, I agree with the viewpoint of the authors that less benefit of 3D reconstruction of preoperative CT scan for performing a segmentectomy. However, the slice thickness of high-resolution CT should be mentioned based on your imaging protocol.

Educational and detailed introduction of indication, ...etc

Response: We thank the reviewer for his comment. Actually, we use a single breath thin slice (1-mm) injected CT-scan. We added it in the text (Page 5, line 119).

Second, identification of intersegmental plane via the air jet method has been noted to have devastating complication such as air embolism and even stroke event. In addition to the ICG method you proposed, the another common technique using inflation-deflation method may be a more cost-effective way and exhibit high successful rate, reported by Liang Chen (Title: Thoracoscopic pulmonary segmentectomy with collateral ventilation method. *Ann Thorac Surg.* 2021 Jan 4:S0003-4975(21)00010-2. doi: 10.1016/j.athoracsur.2020.12.020). Thus I recommend you to include the above-mentioned literature in the references.

Response: We thank the reviewer for his suggestion. We added your comment and reference. 'Recently, a simple technique described the use of collateral ventilation with insufflation of 100% of oxygen. About 15-20 minutes after single-lung ventilation, with the targeted segment inflated and the other segments collapsed, a defined line was developed that permitted to localize the intersegmental plane in 96.6%' (page 7, line 175-176).

Third, I did not believe that 3-cm incision can be applied to each patient undergoing uniportal VATS anatomic resection. Take patient factors such as the body size, thick thoracic wall, or obesity into considerations, a range of incision length (ex: 3~5 cm) may be more appropriate for young surgeons and readers to follow.

Response: we totally agree with your suggestions and adapted the text (page 7, line 180).

Fourth, regarding your preferred usage of hook monopolar cautery in the delicate dissection, what is the power setting of the cautery? Moreover, do you use harmonic scalpel or other energy devices to divide and seal the small pulmonary arteries or veins during dissection? I think that more convincing evidence appeared in recent years using the energy devices for vessel sealing. I also recommend you to comment on this issue.

Response: We thank the reviewer for his comment. Well, we normally use hook monopolar cautery for dissection, because we feel comfortable and had previous large experience with training when performing visceral surgery 10 to 15 years ago. It is difficult to generalize the power setting because it is mainly dependent on the machine, reason why we preferred not to propose any recommendation. We also agree that small branches can be routinely transected by bipolar energy devices and safety has been largely reported by other authors. However, we always feel safer by using staplers, unfortunately, sometimes traditions are difficult to change.

We added a sentence as follows: 'Some authors have reported safety with transection of small branches with bipolar devices, but we feel more comfortable with staplers'. (page 8, line 202-203).

At last, what is the greatest value your concerned/gained by adopting an uniportal approach compared to multiportal in VATS segmentectomy? Most people pointed that pain reduction or cosmesis is the chief concern. Recently, one paper mentioned less immunochemokine disturbance in uniportal VATS. Do you have your own rationale?

Response:

*We feel that UVATS potential advantages include less pain from fewer intercostal space incisions, better cosmetic aspect, reduced morbidity, lesser immunochemokine disturbance and accelerated functional recovery when compared to conventional MVATS. Despite the publication of retrospective studies comparing UVATS and MVATS, high level evidence, particularly in the form of randomized trials, is lacking. We added a sentence in the manuscript: 'UVATS has been associated with potential several advantages including less pain from fewer intercostal space incisions, better cosmetic aspect, reduced morbidity, lesser immunochemokine disturbance and accelerated functional recovery when compared to conventional MVATS'. (Uniportal video-assisted thoracic surgery for major lung resection is associated with less immunochemokine disturbances than multiportal approach. Peter S Y Yu 1, Kin Wai Chan 2, Rainbow W H Lau 1, Innes Y P Wan 1, George G Chen 3 4, Calvin S H Ng 5. *Scientific reports* 2021). However, high level*

evidence, particularly in terms of randomized trials is lacking and the launch of such demanding technique should be gradually and safely introduced (page 4, line 87-88).

Reviewer C

This manuscript summarizes the surgical tips and tricks of segmentectomy by uniportal VATS(U-VATS) in detail.

The content of this manuscript is valuable and appropriate in publication. However, I have some minor comments as follows below.

1. The author performs U-VATS at the 4th or 5th intercostal space (for upper and lower segmentectomies, respectively) between the tip of the scapula and the breast in the anterior axillary line. Are all segmentectomies performed at the 4th or 5th intercostal space (for upper and lower segmentectomies, respectively) between the tip of the scapula and the breast in the anterior axillary line?

Response: Yes, all segmentectomies are managed by the same incision. We do not use posterior incision.

2. The author describes on the ligamentum-based approach and fissure-based approach in the tips of S10 and S9+10 segmentectomy. In our institute, S10 segmentectomy is performed at 6th or 7th intercostal space in the middle axillary line and at looking-up field of view. The author should also comment on the possibility of approach from lower intercostal level in case of segmentectomy for lower lobe.

Response: We agree with your comment and confirm that other approaches are feasible. However, as the aim of the manuscript was to describe our approach, we exclusively explained our technique.

3. Complex segmentectomies are sometimes difficult to perform because of bronco-vascular anomaly even in thoracotomy or multiportal VATS. U-VATS has some difficulties for reason of restriction of stapler use and thoracoscopic field of view limitation. In comments, it is advisable that the author gives surgeons some attentions on anatomical anomaly in doing U-VATS complex segmentectomy.

Response: We thank the reviewers for this comment. We totally agree that complex segmentectomies are sometimes difficult. This point has been largely discussed for the preparation of the operation. Pre-op localization, broncho-vascular anatomy with CT-scan, etc. We added a sentence: 'The study of the CT-scan should be particularly relevant when planning complex segmentectomies due to anatomical variations in these segmentectomies' (page 5, line 121-122).