Reviewer A

The authors analyzed clinical data of 123 patients who underwent uniportal video-assisted thoracoscopic anatomic segmentectomy at a single institution from January 2019 to April 2020 who underwent a procedure that used the method called "No-waiting segmentectomy". This technique is to divide the targeted segmental artery first. After blocking the targeted segment pulmonary circulation, the affected lobes were inflated with atmospheric air until completely expended. Then, ventilation was switched to the contralateral side of the lung, and the target segment bronchus was transected with a stapler. the segments to be preserved collapse and lung parenchyma turns dark purple, while the target segment collapses but remains pink. A demarcation line appears between the target segment and the lung that is to be preserved; this represents the anatomic intersegmental plane.

However, this method reported on by the authors has been routinely practiced in Japan for the last 20 years since Tsubota et al. reported a method of lung segment resection [1]. Therefore, I consider this report to be less novel than the authors may believe.

Reply: Sure, this is not a novel approach. We just optimize the procedure of inflation-deflation method. In the conventional inflation-deflation and modified inflation-deflation method, the surgeon needs to pause the operation until the demarcation line appears. We advanced the period of dissecting hilum and bronchus. That is to say, we are dissecting hilum and bronchus when the preserved segments collapse. We have replaced "novel" with "optimized procedure" (Page 1, Line11-12).

1) The name "No-waiting segmentectom" is impressive, but it is difficult to get the exact meaning. It should be corrected to an accurate expression. In addition, the outline of the concrete method should be shown in the abstract.

Reply: According to your recommendation, we have added the outline of the concrete method in the abstract. (Page 1, Line 18-20)

2) Their method is video-assisted thoracoscopic surgery, which causes the problem of

shrinking work space when ventilating the lungs with air, but they do not mention it.

Reply: Sure, the work space is shrinking at the fist a couple of minutes after ventilating the lungs with air. But it does not affect the field of view and surgical operation. We mentioned it on the Page 8, Line 150-152, the second paragraph of discussion section.

3) The author emphasizes only the change in color between areas of the lung surface. However, the original purpose of segmental resection is to secure a sufficient margin from the lesion and to ensure curability from malignant disease. There is no mention of the quality of segmental resection.

Reply: Intersegmental veins are the anatomical marks of lung segments. In the no-waiting methods, the intersegmental veins can be revealed between the pink and purple part when we divide the demarcation lines with ultrasonic knife, which indicated the intersegmental planes are accurate. We have provided another video (Video 2) to present it. We have added it in the fifth paragraph of discussion section (Page8-9, Line 169-175).

4) The disease targeted for segmental resection is unknown. For segmental resection for lung cancer, it is necessary to provide a resection margin.

Reply: In order to get sufficient margins, joint segments or joint subsegments resection will be performed if the lesions are near the intersegmental planes. We can decide it through 3D construction before the operation. We have added it in the fifth paragraph of discussion section (Page8-9, Line 169-175).

5) The cited reference (8,9,10) is a Japanese paper called "Kyobu Geka". These references are a small number of examples, and since readers can only access abstracts when referring to cited references, they are not suitable as citations for articles submitted to this journal, and all of them need to be changed.

Reply: Thanks. We have changed these citations (Page 13, Line 242-251).

[1] Tsubota N , Ayabe K , Doi O, Mori T, Namikawa S, Taki T, Watanabe Y. Ongoing prospective   study of segmentectomy for small lung tumors. Study Group of Extended Segmentectomy for Small   Lung Tumor. Ann Thorac Surg, 1998, 66(5):1787-1790.

Reviewer B

1. Your video shows a good demarcation line, but does a demarcation line appear clearly in all cases? Sometimes a demarcation line does not appear even if ICG or jet ventilation is used.

Reply: Emphysema can affect lung collapse. ICG is an optimal alternative method in this situation. The target segmental arteries may not be accurately severed if the demarcation line does not appear clearly. We haven't tried jet ventilation.

2. I am concerned the mechanism of your method as you mentioned. I have an additional idea. In your video, you tied pulmonary artery before inflation. When the target segment expands, blood from pulmonary vein may inflow the target segment by back flow. Target segment has more oxygenated blood and it may make contrast stronger. What do you think the possibility?

Reply: The mechanism I mentioned in the paper was cited from the following reference. Iwata, H. Shirahashi, K. Mizuno, Y. Surgical technique of lung segmental resection with two intersegmental planes. Interact Cardiovasc Thorac Surg 2013, 16(4): 423-5

Thank you for your question. We will perform an animal experiment to answer this question.

Reviewer C

The best way to identify an intersegmental plane appropriately during pulmonary segmentectomy is still controversial. As the author insisted, several procedures including inflation-deflation technique, inflation of target segment by jet-ventilation, VAL-MAPPING, or usage of ICG.

Based on findings of the surgical video, the technique is similar to inflation-deflation technique.

Reply: The technique we described in the paper is inflation-deflation technique, exactly. We just optimized the procedure so as to shorten the operation time.

The pink colored target segment involved air while the purple colored segment was

completely collapsed. I considered that the difference of the color depended on the degree of air the segment involved although it was different from the thesis the author insisted.

Reply: Just as you considered, the difference of the color depended on the degree of air the segment involved. Iwata, H inflated the lung with pure oxygen and described the mechanism we mentioned in the paper (Page 9, Line177-184). We repeated the method and get the same results. Then, we tried inflating the lung with air and get good intersegmental plane. In the last, we tried opening the distal stump of the target segmental bronchus and get good intersegmental plane either. Intersegmental veins locate between the pink and purple lung tissues. So far, there is no convictive thesis to describe the appearance of the intersegmental plane. Animal experiment should be performed to identify this hypothesis.

Actually, I could not understand the thesis the author insisted about the identification of the intersegmental plane in this study.

In addition, how to evaluate the method was not sufficient. I recommend that the author should evaluate other factors including the surgical margin or the accuracy of the identification.

Reply: The mechanism I mentioned in the paper was cited from the reference 11. The focus of this paper is to describe no-waiting segmentectomy reduce surgery time and do not increase the complications, compared with modified inflation–deflation segmentectomy. So, we did not spend a large amount of words to explain the mechanism.

Thank you for your recommendation. We have added a paragraph to evaluate the surgical margin (Page 8-9, Line169-175, paragraph 5, discussion section). We performed 3D reconstruction before the operation. Joint segments or joint subsegments resection will be performed if the lesions are near the intersegmental planes. So, all of the surgical margins were more than 2cm.

Reviewer D

Authors have developed a novel method, called no-waiting segmentectomy, to identify the intersegmental plane during pulmonary segmentectomy and they compared this

method with the modified inflation–deflation method.

The manuscript is well-written and easy to read in describing their experiences of an optimized approach to identify the intersegmental plane for patients undergoing segmentectomy for early-stage lung cancer.

I can suggest just a few points to improve this paper.

Major concerns:

1. I would like you to add the figures of the two procedures and the video of the modified inflation-deflation segmentectomy.

Reply: Thank you for your recommendation. We have added another video to describe the intersegmental plane and the margin (Video 2). As for the modified inflation-deflation segmentectomy, we can get the figures from the reference 3 and 11.

Minor comments:

1. (line 61, 159)

VS ---> vs.; vs ---> vs.

2. (line 78)

There are two types of methods (1-10).

---> Please add the following patper.

J Thorac Dis. 2019 Mar;11(3):624-627. doi: 10.21037/jtd.2019.02.78.

3. (line 80, 83)

segmental bronchus1 ---> segmental bronchus (1); inflation–deflation approach3 ---> inflation–deflation approach (3)

4. (line 82)

Professor Chen Liang --> Chen Liang

5. (line 101, 114)

UVATS ---> uniportal video-assisted thoracoscopic surgery (UVATS)

uniportal video-assisted thoracoscopic surgery (UVATS) ---> UVATS

6. (line 105)

The baseline characteristics of the patients are shown in Table 1 --> remove

7. (line 107)

procedure times(minutes) --> procedure times

8. (line 242, 246, 248, 250) References

Example)

Optional: Translation of article title (MEDLINE/PubMed practice):

Ellingsen AE, Wilhelmsen I. [Disease anxiety among medical students and law students]. Tidsskr Nor Laegeforen. 2002 Mar 20;122(8):785-7. Norwegian.

9. (line 268)

ligating the proximal stump ligating --> ligating the proximal stump

Reply: Thank you for your correction. We have modified all the mistakes you mentioned.

Reviewer E

Pulmonary segmentectomy is a common surgical procedure nowadays, and making the intersegmental planes is an important point of this operation. To clarify the intersegmental planes, intravenous injection of indocyanine green or the inflation–deflation method is commonly used. The inflation–deflation method is useful because that method does not require special equipment or

materials. However, it requires a waiting period of 10-20 min after inflation, necessitating a pause in the surgery.

To solve this problem, the authors developed an optimized approach called no-waiting segmentectomy. They claimed that the technique does not require special equipment and materials or a waiting period.

The purpose, methods, and results of their study were clear. Considering that pulmonary segmentectomy is a widely accepted procedure, this report would be of great interest to the readers. However, several concerns were raised in my mind.

My comments for the authors are as follows.

1. Seeing is believing: the most important part of your manuscript is Video 1. You successfully showed a clear intersegmental plane during a right S6 segmentectomy. However, for me and my colleagues, the S6 seemed to be still containing air and the intersegmental plane was shown as the inflation–deflation line. You mentioned that in your method, a closure of the target bronchus plays no roles. If so, you should show a video without cutting the target bronchus, to highlight your hypothesis.

Reply: Thank you for your comments. According to your recommendation, we have provided another video without cutting the target bronchus (Video 2).

2. To explain physiological mechanism of this method is indispensable. Your conjecture (p.6, l. 205-12) is somewhat difficult to agree. Especially, the phrase 'the alveoli cannot absorb oxygen' etc. should be reconsidered.

Reply: The mechanism I mentioned in the paper was cited from the following reference. We have added this reference as reference 11.

Iwata, H. Shirahashi, K. Mizuno, Y. Surgical technique of lung segmental resection with two intersegmental planes. Interact Cardiovasc Thorac Surg 2013, 16(4): 423-5