Peer Review File

Article information: https://dx.doi.org/10.21037/jtd-23-1127

Reviewer A

This article is fascinating in highlighting the role of intraoperative adhesion in the risk factor of postoperative recurrence in the treatment of spontaneous pneumothorax.
Is the number of history of pneumothorax correct or not in the data? In Table 1, the number of history of pneumothorax is 186(126+60); however, the number of the same data name is 86 (45+41).

The number of absorbable oxidized cellulose also differs in both tables (121 and 118).

Please explain the difference in the data.
We changed Table 1.

Reviewer B

Motono et al present an interesting study evaluating risk factors for pneumothorax recurrence after surgery. This is a single-center retrospective cohort study. They evaluated 272 patients and found that young age and intraoperative adhesions were the biggest contributors to recurrence.

Overall, the authors provide a contemporary update on outcomes after pneumothorax surgery. However, the study has significant limitation and I have several recommendations to strengthen the findings of this study. As it stands, there is significant heterogeneity of data and the study runs the risk of multiplicity of data.

1) The authors should focus on PSP patients alone. The SSP group has multiple other variables that can affect outcomes and as a whole is a very heterogenous group with multiple confounders that will be difficult to sort out. For example: what were the pulmonary function tests, did they have apical predominant disease, were they primarily emphysema patients vs interstitial lung disease patients.
We re-analyzed for PSP patients in Table 1-3.

2) It's unclear why there is a separate table for looking at presence of adhesions or not. This should be captured as a variable. Table 1 should show the variables comparing patients who developed a recurrence vs those who did not for PSP patients. A separate one can be done for SSP patients; however, I would recommend removing this group altogether.
We changed Table 1, and removed SSP group.

3) The discussion session is lacking. The authors should spend more time discussing why certain risk factors identified may be associated with higher recurrence rates. Mechanisms of action and hypotheses regarding them should be discussed.
We revised the Discussion section.

4) Figure 3 and Figure 4 can be combined into one graph with two event curves.
We combined Figure 3 and Figure 4.

The authors find that patients having a PSP have a higher risk of a post op recurrence than those with SSP. This is a very different finding that most of the literature. The authors should spend substantial time discussing why this study has a finding that is discrepant from the literature. There have been multiple meta-analyses comparing different forms of pleurodesis and in general the recurrence risk has been listed to be between 1.5-5%.
This time, we excluded SSP, so we deleted this consideration.

Reviewer C

The authors analyzed risk factors for postoperative recurrence of spontaneous pneumothorax.
However, as seen in Table 1, primary and secondary spontaneous pneumothoraces are pretty different. Conducting risk factor analysis in two different cohorts could lead to biased results. It would be better to re-analyze risk factors only in patients with primary spontaneous pneumothorax.
We re-analyzed for PSP patients in Table 1-3.

In addition, Figures 3 and 4 could not be easily understood. Why did the authors show "postoperative recurrence-free survival," which is more commonly used? The authors should present "numbers at risk" as well.
We combined Figure 3 and 4, and added the number at risk.

Reviewer D

This article suggests interesting and good topics. I believe that your paper caries important lessons and messages for thoracic surgeons. However, your paper needs major revision in order to improve these messages. I have four questions.

1. PSP and SSP are different diseases. For homogeneity, I think the PSP and SSP groups should be separated to determine whether adhesion is a risk factor for recurrence.
We re-analyzed for only PSP.

2. What is the definition of adhesion? In the PSP group, intraoperative adhesions accounted for about 30%. What is the definition of adhesion on images and intraoperative adhesion? Is there any difference in the degree of adhesion?

Adhesion on images means adhesion on computed tomography (CT) images.
There was no difference in the degree of adhesion.

3. What were the indications for pneumothorax surgery? Were all surgeries done with VATS? Is it single port surgery, how did you configure the port? Have there been no case which pleurodesis was performed?
We re-analyzed for only PSP and all cases were performed 3-port VATS. We added the sentence in Method section.
There was no case performed pleurodesis.

4. How is the drainage length after surgery? How many days after surgery is the patient discharged?
If there is no leak, the drain is removed the next day, and patients are often discharged from the hospital 3 days after surgery. We added the sentences in Method section.

Reviewer E

This paper reports the risk factors for postoperative recurrence in spontaneous pneumothorax patients who received surgery.
I think this paper has some problems as indicated below and the results are not well discussed.

1. About Table 3, What is [green or more] mean?
   We changed ‘green or more’ to ‘green or black’.
2. Is there any reason to use cut-off values to analyze continuous variables? if you have a reason, you should mention it in the methods
   Cut-off values for the continuous factors associated with postoperative recurrence were calculated using receiver operating characteristic (ROC) curve analyses and used to perform risk analyses. We added the sentence in Method statistical analysis section.

3. Observation period of each group is not mentioned.
   There will be an outpatient examination around 10 days after the surgery, and if there are no problems, the treatment will be completed. We added the sentence in Method section.

4. About discussion, there was no discussion about the relationship between recurrence and adhesion. How does it affect recurrence? This result is the new find of your research, you should discuss deeply more.
   Because history of pneumothorax may induce adhesion formation, adhesion may be a landmark for a trend toward recurrence. This result is the new findings for risk factor of recurrence of pneumothorax. We added the sentence in Discussion section.

5. About conclusion, you should avoid specific suggestions which were not analyzed

by your research.

We changed ‘thus it may be preferable to combine 50% glucose solution with absorbable oxidized cellulose’ to ‘thus the combination 50% glucose solution with absorbable oxidized cellulose might be effective’ in Discussion section

Reviewer F

This article is understandable on postoperative recurrence of PSP and SSP.
Absorbable oxidized cellulose with autologous blood and PGA sheet with saline solution were compared each other. I hope you to discuss the detailed differences of the combination. I hope you to discuss that the postoperative contralateral recurrence affected on the results.
We discussed the detailed differences of the combination in Discussion section. Contralateral recurrence was not significant risk factor of postoperative ipsilateral recurrence, showed in Table 3.

Reviewer G

The authors conducted an examination of the risk factors for postoperative recurrence of spontaneous pneumothorax, with a particular focus on adhesion as a significant risk factor for postoperative recurrence.
They included a heterogeneous group of patients, considering that primary and secondary pneumothorax have different etiologies and clinical outcomes. In light of this, I would like to recommend another analysis specially focusing on patients with primary spontaneous pneumothorax.
We re-analyzed for only primary spontaneous pneumothorax.

As the authors described, secondary spontaneous pneumothorax often has adhesion as authors describes (76.4%). They suggest in the discussion that adhesion might serve as an indicator of a potential trend towards recurrence, implying that recurrence could be followed by adhesion formation. However, the authors also noted that a history of pneumothorax might induce adhesion formation, making it a risk factor for adhesion. The question arised whether the occurrence of pneumothorax leads to adhesion or vice versa.
We consider that the occurrence of pneumothorax leads to adhesion.

As essential aspect that the authors didn’t discuss about the role of adhesion for the development of pneumothorax, which is a crucial point that needs to be addressed in this paper. This inclusion adds significant value to discussion and provide a more comprehensive understanding of the relationship between adhesion and the development of pneumothorax.
We added the discussion