

Peer Review File

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Reviewer comments

Reviewer A

This manuscript is well-written and contains interesting content. I would like to make a few comments to improve the quality of this paper.

Comment 1: The size of the thoracotomy and the method of closure are considered to be particularly important causes of postoperative pulmonary hernia. Please describe this point scientifically in detail. Please specify the presence / absence and method of intercostal closure (type of strings, number, size, etc.), and the presence / absence and method of subcutaneous tissue suture. In particular, it is necessary to compare and consider the difference from cases that did not cause hernia.

Reply 1: We think that you are referring to the specimen extraction port. We basically do not have a utility incision, so we withdraw the specimen through the anterior inferior incision that is slightly enlarged according to the specimen size. Hence, we do not close the intercostal space (as fundamentally in thoracoscopy ribs are not spread). We only close soft tissues, the muscles, the subcutaneous layer, and the skin.

Changes in the text: Nothing added, answer on lines 113-115 and it is more described in our prior publication (2).

Comment 2: The length of the subcutaneous (intercostal) incision is considered to be more important than the length of the skin incision for the development of hernia. Please consider and consider this point as well.

Reply 2: You are right. In our series the intercostal orifice was enlarged related to the specimen size. As we did not measure the intercostal opening, we just represent it by the specimen volume. We have hernia even for small intercostal gap. It is worth noticing that there are some patients with anatomically large intercostal spaces. Here is our thought, whatever the incision dimension if this was tightly closed, there is unlikely going to occur a pulmonary hernia that is why the authors are emphasizing on the rigorous closure.

Changes in the text: we added a table; more details can be found on lines 104-114.

Comment 3: Please explain how the location and extent (amount) of the prolapsed lung and the size of the hernia hilum are associated with the severity of hernia-related symptoms and the frequency of adverse events.

Reply 3: We did not have this case in our series, but we think that this may eventually relates to the fact that this hernia is close to the hilum, a really root of the lung and any topographic swift is consequential

Changes in the text: we did not talk about

Comment 4: What findings and symptoms should we consider for reoperation? Please describe in a little more detail. Is there any treatment other than surgery?

Reply 4: There are a host of criteria for operating on a pulmonary hernia. We think that symptomatic patients should be operated on (substantially when the symptoms worsen), it is mostly about the pain and the bulge at the extraction scar incision. Bulge often inflated when the patient coughs. We operated on patients based on clinical features. The CT scan can mislead, it should be done under Valsalva maneuver.

The non-operated patients are followed-up.

Changes in the text: We add some accurate words on lines 81, 95, but for further answers, lines 32-33, 59-60, 68-73, 81, 95-96

Reviewer B

Comment: This Case Series were very interesting and good summarized. Please make a table of clinical features of four patients. And we think the size of incision of first operation were important, so if you could investigate that, please add the data.

Reply: The clinical features of the four patients were divided in demographic data, the underlying conditions, the pulmonary hernia symptoms. The incision size was represented by the specimen size, like we forementioned, we do not have the utility incision, so the extraction opening is enlarged related to the specimen dimension.

Changes in the text: the table has been added, demographic characteristics: 54, Patients underlying conditions: 56-58, 66-68 The pulmonary hernia symptoms: 68-70. Primary operation conditions: 113-120

Reviewer C

The author reported “pulmonary hernia after VATS”.

Major points:

Comment 1: It needs editing grammar and for improving clarity.

Reply 1: We are sorry that there are still some areas that need to be improved, the manuscript has been seen by 3 independent English native speakers with high education each.

Change in the text: some changes have been performed words have been deleted, switched or and added over the text (in color)

Comment 2: It is better to unify the terms, for example, “pulmonary hernia” and “lung hernia”.

Reply 2: We thank you for the remark

Change in the text: the word “lung” has been replaced by the “pulmonary” on lines 30, 31, 36, 41, 99, 109, 135

Comment 3: There are some inconsistent statements in the text, for example, line 43-44 vs. line 94-95.

Reply 3:

- a) The pulmonary hernia is a well-known condition. Several cases have been reported after open surgery.
 - b) Lung herniation commonly occurs after a trauma. It is also a rare complication of open surgery.
- The pulmonary hernia history dates back to the XVth century, it had been described for the first time in 1499, even though for some authors the true case was found out in 1641. The classification we are using today was coined in 1800s by Morel-Lavalée. That is why we quote: “a well-known condition” (with an older history than the thoracic surgery’ one)
However, “Several” cases less than 10 cases out of about 300 of pulmonary hernia ever diagnosed) that means “some”, it signifies “more than two but not very much” have been reported after open thoracic surgery.
 - About 50 % of pulmonary hernia are due to a trauma, that is why we testified that trauma is the common etiology. And we reiterated that are “rare” we meant “scarce”, “not occurring very often” cases after the open surgery, it “seldom occurs”

We don’t notice and any contradiction there.

Change in the text: None.

Comment 4: I cannot find novel knowledge in this manuscript compared with previous papers.

Reply 4:

- In this manuscript, we emphasize the diagnosis aspect of the pulmonary hernia, that is not a straightforward exercise, it is in our eyes even the most difficult part.
That is why these cases are underreported. If we still not be careful at the diagnostic phase of the pulmonary hernia, we will jeopardize even the essence of the minimally invasive surgery by letting patients hang out with long-lasting postoperative pain, that is often attributed the neurological component, mostly when the CT is normal.
- Our study is to our knowledge, the pulmonary hernia report subsequent to VATS with by far the longest surveillance with the most followed patient within 105 months.
- We reported 4 cases only after thoracoscopy for a lung resection, it is a large number of cases (as you may notice a substantial number of papers in this specific topic are made of 1 case).

Change in the text: None

Comment 5: Please write the References correctly.

Reply 5: We followed the journal' format, we are sorry that there are still some mistakes

Change in the text: The Vancouver system has been used with Zotero

Reviewer D

The authors reported four cases of lung hernia after minor or major thoracoscopic procedures. They presented clinical data of the patients and discuss clinical features and prevention of this embarrassing adverse effect of thoracoscopic surgery.

I have the following concerns.

Comment 1: The authors found 12 cases of pulmonary hernias in PubMed, but there are several other case reports in addition to these references (1-3...). Authors need to search more detailly.

(ref)

1. Haneda H, Okuda K, Nakanishi R. Case of intercostal lung hernia with hemospotum that developed after thoracoscopic lobectomy. Asian J Endosc Surg. 2019 Oct;12(4):449-451.

2. Santini M, Fiorello A, Vicidomini G, Busiello L. Pulmonary hernia secondary to limited access for mitral valve surgery and repaired by video thoracoscopic surgery. Interact Cardiovasc Thorac Surg. 2009 Jan;8(1):111-3.

3. Kouritas VK, George RS, Brunelli A, Kefaloyannis E. Lung herniation after uniportal video-assisted thoracic surgery lobectomy presenting with subcutaneous surgical emphysema. Eur J Cardiothorac Surg. 2016 Apr;49(4):1288.

4.

Reply 1: We do not list all the references from where we picked up all the cases, because most of them have a case (otherwise we would have at 23 list of references for a case report) hence we quoted them in comprehensive reference, "Pub Med from 1997-2018"

Change in the text: the number changed line 104

Comment 2: Please described the formula used in PubMed when searching the references.

Reply 2: We searched on advanced PubMed these following group of words: "pulmonary hernia after thoracoscopy", "pulmonary hernia", "thoracic herniation" we focused on the pulmonary hernia after thoracoscopy in general thoracic surgery. We intentionally sidestepped the pulmonary hernia subsequent to the cardiac, esophageal thoracoscopy.

Change in text: none

Reviewer E

This manuscript is interesting because the author presented four cases of lung hernia, which is a rare complication of video-assisted thoracoscopic surgery. The authors

discuss that lung hernia could occur regardless of the incision or the specimen size. I have some comments that could make this interesting manuscript better in quality and more comprehensible for readers.

Comment 1: Although the author discusses that lung hernia could occur regardless of the incision or the specimen size (discussion section line 112-114, page 6), the author should show and discuss the actual size of the four cases' incision to reinforce his hypothesis.

Reply 1: We thank you for the remark

Change in the text: A table has been added

Comment 2: The author should add a table regarding the four patient's characteristics including location of lung hernia (e.g., anterior axillary line of 5th intercostal space), size of incision, and specimen size.

Reply 2: The hernias were located anterior inferior in the 5th, 6th (2 cases) and 7th intercostal spaces. Other hernia's features are illustrated in the added table, and on lines 53-70.

Change in the text: the table has been added, a couple of words were added to specify to intercostal rib on lines 62.

Reviewer F

I would like to congratulate the authors of an interesting report on a series of four patients after VATS who developed a rare complication of pulmonary hernia.

The authors adhere to the CARE guidelines. They describe in detail the methodology and results, in the discussion they refer to the current literature. The article addresses the most important aspects in this area of thoracic surgery.

I have a few comments.

Comment 1: Line 57: there is "0,2", should be "0.2"

Reply 1: It is corrected, we thank you so kind

Change in the text: correction done, we just delete that: on line 53

Comment 2: Lines 81-82 describe treatment, lines 83-85 the diagnostic process; I suggest lines 83-85 ("The diagnostic was not often straightforward, there were times when clinicians thought at the chronic neurological post thoracoscopy pain, the pulmonary embolism was even evoked.") before lines 81-82.

Reply 2: You are right.

Change in the text: the ideas positions were switched

Comment 3: Line 87: details regarding manufacturer of the GoreTex mesh should be included: exact name of the mesh, manufacturer name, city, state and country of headquarters location (for example GORE-TEX Soft Tissue Patch, W. L. Gore & Associates, Newark, DE, USA)

Reply 3: We used 10.0 cm x 15.0 cm x 2.0 mm GORE-TEX Soft Tissue Patch, W.L. Gore & Associates. Inc, Newark, Delaware, USA
Change in the text: Details added on lines 89-90

Comment 4: Line 74: After the sentence “The diagnosis was confirmed by CT Scan (on 2 patients) that demonstrated lung parenchyma protruding through the intercostal space.” reference to the Figure 1 should be added: “...intercostal space (Figure 2).”

Reply 4: It was about the 6th intercostal space for the figure 1 and the 5th for the figure 2.

Change in the text: Was already added above lines 167 and 171

Comment 5: Figure 2 does not add any new information and could be removed.

Reply 5: we think that the figure 2 indicates that the hernia can take any size (even the small one)

Change in the text: none

Comment 6: Line 81: I am not sure if word “reintegrated” is optimal to describe the process of pushing back the lung into the thorax; in case of other hernias the phrase verb “to reduce” is most often used.

Reply 6: You are right.

Change in the text: The word reintegrated has been replaced line 87

Comment 7: Starting from line 86 – I suggest describing the surgical treatment in greater detail:

- a. Was a scar after previous surgery resected or did the patient have additional incision?
- b. Was it mini-thoracotomy (=was a rib spreader introduced) or not?
- c. Was it difficult to dissect the tissues (subcutaneous tissue, muscles) from the lung?
- d. Were there any adhesions inside the pleural cavity?

Reply 7: the technic description has been enriched

Change in the text: it is done on lines 83-91

Comment 8: Line 92: does the patient who was not operated have any symptoms of hernia?

Reply 8: The reason is found on the line 62, this can be noticed also on the added table. She has not been operated on because she is asymptomatic.

Change in the text: the table has been added, some accuracy has been added on line 95

Comment 9: Line 100-101: I suggest including the reference to the literature at the and of the sentence “VATS lobectomy and even after pleuroscopy (4, 6)”.

Reply 9: No reply

Change in the text: The reference is brought at the end. Line 105.

Comment 10: Line 109: round bracket should be used instead of the square bracket in the reference to the literature.

Reply 10: We thank you

Change in the text: round bracket put line 115

Comment 11: Line 119: reference to literature should be included.

Reply 11: No reply

Change in the text: the reference added reference 8, line 125

Comment 12: I suggest checking the literature carefully - there are a lot of minor errors.

Reply 12: We carefully followed the journal format

Change in the text: The Vancouver system has been used with Zotero

Comment 13: The manuscript could benefit from professional language editing.

Reply 13: It has been seen by a professional language editing

Change in the text: some words have been deleted, others have been shifted and there were some added words (on color) over the text.

In summary, the article is well written and may be of practical importance to thoracic surgeons.

I suggest accepting the article for publication in the AME Surgical Journal after major revision.

Reviewer G

The authors present a case series of four patients with lung herniation after thoracoscopic surgery.

Lung herniation after VATS is a seldom entity and the authors give a good overview. They transfer experiences of lung herniation after open surgery and show up similar risk factors, like obesity, postoperative subcutaneous emphysema und COPD.

The CARE checklist criteria are almost fulfilled.

I got some questions:

Comment 1: What were the indications for surgery and what kind of resection were performed?

Reply 1: The indication was the suspicion of non-small cell lung cancer, but one patient ended up with benign diagnostic. The kind of resection is represented in the added table

Change in the text: We add the table and some detail on lines 55-56

Comment 2: Two patients were operated by “full thoracoscopy”. What is the difference to the other patients? Was there a utility incision with 3-4 centimetres in all patients?

Reply 2: The term “full” thoracoscopy, is used twice in the material and methods (line 46) and in the discussion, line 114), we used it to emphasize that we don’t use the utility incision, we generally enlarge the anterior inferior orifice according to the specimen dimension.

Change in the text: None, more details are on lines 113-116

Comment 3: Was subcutaneous emphysema found at X-ray in all cases?

Reply 3: The subcutaneous emphysema was not at the same amount at all patients, some trace of air was found at all the patients at certain time of their immediate postoperative period

Change in the text: none

Comment 4: You should avoid the term “embarrassing” in the abstract.

Reply 4: You are right, we just wanted to transmit to any reader how we felt when we encountered a lingering parietal complication after a procedure touted as less invasive, bearing in mind that most of our patients (in thoracic surgery, who are generally asymptomatic before surgery) evaluate our work on their scar.

Change in the text: the word has been deleted, on line 34

In conclusion: You cover an interesting topic with good results and your discussion is well thought out

In summary I recommend the manuscript for publication in AME Surgical Journal after minor revisions.