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Reviewer A

My comments are as follows.

#1: In conclusion of Abstract, the statement "suggesting that early surgical treatment should be aggressively and carefully considered in secondary pneumothorax" is not based on your analysis.

Reply 1: Upon further scrutiny, we are inclined to agree and have revised the Conclusion sections of both abstract and main article accordingly.

Changes in the text:

In the abstract section:
In this setting, underlying lung disease of a non-COPD nature is a proven risk factor for postsurgical recurrence. There is also a tendency in some patients for multiple episodes of pneumothorax within short periods of time, especially in the absence of COPD. Underlying disease processes may thus merit consideration in treatment planning.

In the conclusion also :
During a median follow-up of 58.7 months, the postoperative recurrence rate in patients with SP was 18.75% (30/160), with an 8.7% (14/160) rate of ipsilateral recurrence. Underlying lung disease, especially in non-COPD categories (such as ILD, cystic lung disease, connective tissue disorders, or GVHD-related changes), proved to be the major risk factor for first recurrence after surgery. In addition, some of our patients experienced successive SP events, with index episodes. It is imperative to conduct indepth discussions with patients and their families, tailoring surgical intervention to each patient's clinical parameters and underlying disease aetiology. Long-term clinical follow-up may be beneficial in this setting, given the proclivity for recurrence and the constellation of predisposing lung pathology.

#2: In Figure 2, I don't understand meaning of the marks. Does "Last" mean censoring of follow-up? I recommend showing occurrence, surgery, recurrence (ipsilateral), censoring of follow-up. Please clarify the meaning in Methods.
Reply to 2: As some reviewers have advised, this figure is now designated Supplementary figure 1. We have also removed Figure 1A (non-recurrence group), because it was too imposing and offered little information of value. As suggested, the parameters specified (Pneumothorax [Lt], Pneumothorax [Rt], and Last) were renamed as Occurrence, Recurrence, and Censoring. Laterality is an essential surgical element (for those patients with contralateral postoperative occurrences), so we retained Surgery (Lt) and Surgery (Rt) designations.

Changes in the text: Please see Materials and Methods section, and Supplementary table 1.

Methods section:
In terms of follow-up, censoring indicated institutional acquisition of last available chest X-ray or simply loss of follow-up.

Supplementary figure legend
Supplementary figure 1. Patterns of pneumothorax episodes and operative procedures in patients with (A) ipsilateral recurrences, (B) contralateral recurrences, and (D) index episodes during follow-up. Occurrence signifies a pneumothorax episode, regardless of laterality. Recurrence denotes a postsurgical pneumothorax episode. Censoring indicates institutional acquisition of last available chest X-ray or simply loss of follow-up (last identified survival dates not included).

#3: I think all variables with P<0.10 in univariate analysis, as you defined in Methods, should be included in multivariate analysis, even though best fitted prediction model did not include all of them. The objective of this study would not be to make a prediction model, but to find risk factors. Especially, I recommend showing HR of Index episode in multivariate analysis that authors emphasized.
Reply to 3: In response to your comment, we have added a full multivariate model to Table 2, incorporating all variables with p-values <0.1. However, we did not delete results of the best-fit model, because some readers may ask "What is ultimately the most important issue?" Also, we added some remarks to the Results section, shown below.
Changes in the text: Changes below start at Line 280, and Table 5 has been changed.

Univariate and multivariate Cox PH analyses were conducted to identify risk factors for recurrence, using variables of significance (P <0.10) in univariate analysis for the full Cox PH model (Table 5). Each variable in the multivariate model met the assumption of PH, with P>0.05 in Schoenfeld residuals testing. Inverse relations with recurrence were shown for right-sided surgery (HR=0.304, 95% CI: 0.136-0.676) and presence of COPD (HR=0.104, 95% CI: 0.016-0.665) in the full model. Model selection was based on AIC to determine best fit of data. In the final model, underlying disease (especially presence/absence of COPD) was strongly associated with postsurgical recurrence (HR=0.188; P<0.001). Kaplan-Meir plots indicated significantly greater risk of recurrence in the presence of non-COPD underlying pulmonary disease (vs underlying COPD) (Figure 2).

#4: I don't understand the difference between Table 5 and Supplementary Table 2. In Supplementary Table 2, do you think the recurrence include occurrence of contralateral pneumothorax? Author needs to define the term "recurrence" in Methods.
Reply to 4:
. We suppose that a contralateral recurrence may be disputed as an actual recurrence; but this concept was upheld after thorough discussion, based on the definition in Shields' book ("Recurrence [ipsilateral or contralateral] is certainly the most frequent

complication of pneumothorax, and it is observed in up to 75% of patients at 5 years after the first episode not surgically treated." LoCicero, Joseph. Shields' General Thoracic Surgery. Available from: Wolters Kluwer, (8th Edition) Chapter 57, Page 716-) (https://wolterskluwer.vitalsource.com/reader/books/9781975102241/epubcfi/6/162%5B%3Bvnd.vst.idref%3Dc057%5D!/4/2/108/2%5Bfig57-7%5D/2%4052:56). A substantial number of patients had already developed contralateral pneumothoraces before surgery. By limiting the analysis to ipsilateral recurrences only, our sample size would've suffered greatly. For added information and to solidify the results, ipsilateral recurrences alone are presented separately in the Supplementary table. Still, the primary focus of this study was postsurgical pneumothorax per se, so we included both sides to present a complete picture. This is further detailed in the Materials and Methods section. We have decided that Supplementary table 2 is unnecessary, given the confusion it might create.

Changes in the text:

In the methods section (Line 123) We defined a recurrence as any pneumothorax episode confirmed by chest X-ray after first surgery, whether ipsilateral or contralateral to the operative site, according to Venuta et al. (6).

#5: Discussion is redundancy. Many parts are not based on the result of this study. Please rearrange them.

Reply to 5: Thank you for your input. I have rearranged, revised, and re-proofed the Discussion to make it more concise and cohesive.

#6: Conclusion is not based on the result of the analysis.

Reply to 6: I am in agreement and have changed key remarks as shown below.

Changes in the text:

In the abstract (Line 54-), In this setting, underlying lung disease of a non-COPD nature is a proven risk factor for postsurgical recurrence. There is also a tendency in some patients for multiple episodes of pneumothorax within short periods of time, especially in the absence of COPD. Underlying disease processes may thus merit consideration in treatment planning. Key findings box: □ Surgical intervention for SP may be beneficial in selected patients. Underlying disease aetiology should be considered when deciding treatment strategy. Conclusion:(Line 382-) During a median follow-up of 58.7 months, the postoperative recurrence rate in patients with SP was 18.75% (30/160), with an 8.7% (14/160) rate of ipsilateral recurrence. Underlying lung disease, especially in non-COPD categories (such as ILD, cystic lung disease, connective tissue disorders, or GVHD-related changes), proved to be the major risk factor for first recurrence after surgery. In addition, some

of our patients experienced successive SP events, with index episodes. It is imperative to conduct indepth discussions with patients and their families, tailoring surgical intervention to each patient's clinical parameters and underlying disease aetiology. Long-term clinical follow-up may be beneficial in this setting, given the proclivity for recurrence and the constellation of predisposing lung pathology.

Reviewer B

In this paper, the authors examined the postoperative outcome of surgery for secondary spontaneous pneumothorax. The authors concluded that surgical outcome was favorable in their patients. The authors also found that clusters of pneumothorax episode (index episode) were observed in some patients, suggesting the role of early surgery for patients who suffer recurrence of pneumothorax in a short term. Although this is an interesting study, some issues need to be addressed.

1. Indications of surgery should be described in the Materials and Methods part.
Reply to 1: We are of the opinion that you are right and have added the surgical indication to the method section.
Changes in the text : We have moved the following remarks from the Discussion to the Materials and Methods section, adding indications for surgery (Line 114 -).

At our institution, needle aspiration of SP is not routinely done. Depending on the severity of patient symptoms and X-ray findings, a chest tube is ordinarily inserted at initial presentation. The only exceptions are those patients proceeding directly to surgery on same or next days who tolerate not doing so. Once a chest tube is placed, the amount of air leaked and imaging features on chest X-rays and CT studies will determine the type of treatment undertaken. Surgery is usually pursued in the following instances: (1) persistent air leak for more than 5-7 days, (2) no or under re-expansion or lung collapse on follow-up radiographs for several days, (3) inadequate or no response to repeated bedside pleurodesis attempts, and (4) large localised bullae or surgically resectable disease on chest CT. Surgical method and scope are usually matters of surgeon preference.

2. Smoking pack-years was significantly different between non-recurrence group and recurrence group. It is unclear why smoking years, not pack-years, was used in the univariate analysis.
Reply to 2: We apologize for the confusion. There were missing values for pack-years smoked (17 patients). This parameter was sourced from anonymised data and cannot be tracked. In Table 1, a distinct group-wise difference in smoking pack-years is evident, but this only applied to subjects with this value (as now noted beneath table). We have also tested the model for pack-years of smoking, but the outcome becomes less reliable with missing data. Subsequently, exposure to smoke (rather than pack-years of smoking) served for Cox PH analysis.
Changes in the text : The following sentence has been added at the end of Table 1

‡ Missing values in 17 patients

3. It is unclear why index episode was excluded from the multivariate analysis.
Reply to 3: All variables of significance ($p<0.1$) in univariate analysis were tested in multivariate analysis. However, by invoking the AIC (Akaike Information Criterion) for best model fit, without violating the Cox PH assumption, index episode was no longer a significant variable. Those variables found in the table are from the final model. This has been commented upon in a Table 5 notation.
Changes in the text: The following sentence has been added at the end of Table 5.

† : Final multivariate model incorporates only variables optimised by AIC (Akaike Information Criterion) while satisfying Cox proportional hazards assumption

4. The authors mentioned that early surgery may be considered for secondary pneumothorax. However, it is not obvious from the data in this paper whether early surgery is associated with favorable outcomes. Although early surgery decreases the number of episodes of pneumothorax before surgery, it may be performed for patients who would not experience recurrence of pneumothorax without surgery. More discussion about merits and demerits of early surgery is required to assess the importance of this surgery. If further studies are needed for examine this issue, it should be described.
Reply to 4 : Our rationale for contemplating early surgery was that overall recurrence rates were lower than expected (18.75%), and that actively pursuing surgical treatment in medically fit patients is preferential, expending less time and resources on conservative measures for repeated SP episodes. We believe the above comments are valid, and although a randomized controlled trial is truly needed, it is not likely to be done. However, at least one prospective, well-designed study is warranted to demonstrate the benefit of surgery. We have modified the Discussion section accordingly and have changed our conclusion a bit, removing the recommendation for early surgical treatment of SP.
Changes in the text: We have revised the Conclusions of both abstract and main manuscript as below.

In the abstract (Line 55-), There is also a tendency in some patients for multiple episodes of pneumothorax within short periods of time, especially in the absence of COPD. Underlying disease processes may thus merit consideration in treatment planning. Key findings box: □ Surgical intervention for SP may be beneficial in selected patients. Underlying disease aetiology should be considered when deciding treatment strategy. Conclusion:(Line 382-) During a median follow-up of 58.7 months, the postoperative recurrence rate in patients with SP was 18.75% (30/160), with an 8.7% (14/160) rate of ipsilateral recurrence. Underlying lung disease, especially in non-COPD categories (such as

ILD, cystic lung disease, connective tissue disorders, or GVHD-related changes), proved to be the major risk factor for first recurrence after surgery. In addition, some of our patients experienced successive SP events, with index episodes. It is imperative to conduct indepth discussions with patients and their families, tailoring surgical intervention to each patient's clinical parameters and underlying disease aetiology. Long-term clinical follow-up may be beneficial in this setting, given the proclivity for recurrence and the constellation of predisposing lung pathology.

Reviewer C

I read with interest the paper titled "Long-term clinical outcomes after initial secondary pneumothorax surgery".
Although the study is well-structured and data are sufficiently reported, I could recommend some clarifications.

1) Referring to presenting symptoms, it is unusual for patients to give only one sign of the underlying SP. Please specify in the text if you described only the main presenting symptom, or please, if patients presented more than one symptom, update the data in Table 2 and the text.
Reply to 1: You are absolutely correct. An isolated symptom is highly unlikely, but we were limited by the anonymised CDM source and have no way to update this data. The severest symptom was presumed in most cases, despite encountering several symptoms for some. Even if records showed single symptoms, we could not exclude the possibility of others, with only the most important being acknowledged. Consequently, we settled for one main symptom, adding an explanation to the manuscript and a notation to Table 2.
Changes in the text: We added the following remarks to Material and Methods (Line 149) and a notation to Table 2.

Method section:
The present study lacks some elements of the EMR, because all variables originated from an anonymised clinical data management (CDM) database. For example, the likelihood of a patient with one symptom only is low. However, so few records listed multiple symptoms that we were forced to extract and analyse main symptoms only among those described (Table 2).

Table 2 :
Main symptoms only provided

2) You reported some information about pleurodesis, preoperative, intraoperative and postoperative.
Should you better explain when and how it was administered to patients? What has been the aim of choice for patient identification for pleurodesis? What kind of pleurodesis had been made?
Reply to 2: Thank you very much for this very interesting and important question.

Although generalisations on pleurodesis are difficult, owing to operator preferences, at least some things seemed constant throughout the study period. In fact, my colleagues and I can state with relative certainty that various precepts have endured throughout our research careers at this organization, spanning more than 18 years for myself (two with 18, one with 30). They are as follows: (1) Preoperative pleurodesis is primarily intended for high-risk surgical patients; (2) The timing is determined by waiting at least 48 hours (usually 5 days or more); (3) Ordinarily, talc is not the first-choice preoperative agent, there being many alternatives (reflecting surgeon's preference), particularly autologous blood, fibrin products, and doxycycline; (4) Intraoperative pleurodesis is performed when a second operation does not seem feasible; (5) Talc is the preferred intraoperative agent; and (6) Postoperative pleurodesis is an option to avoid reoperation, if air leakage persists after a sufficient wait (by surgeon) to determine timing. I have created a separate subsection summarising these principles, as shown below.

Changes in the text: A subsection on Preoperative, intraoperative, and postoperative pleurodesis procedures has been added to the Results (Lines 230 -) .

A total of 36 patients (recurrent group, 5; non-recurrent group, 31) had undergone preoperative pleurodesis procedures when reference pneumothoraces developed, with 28 patients (17.5%) submitting to more than one pleurodesis for prior episodes of pneumothorax. Twelve of these 36 patients had received some form of pleurodesis prior to reference events. Single preoperative pleurodesis procedures took place in 15 patients, with two performed in 14 patients, three in six patients, and six in one patient. Agents utilised were subject to surgeon preference, but autologous blood, fibrin products, and doxycycline were favoured over talc and were often applied in combination. Preoperative pleurodesis was usually reserved for patients deemed medically unfit for surgery or was done as a presurgical trial to address persistent air leakage after chest tube insertion. The timing of such trials was often surgeon-dependent, but for the most part, 5 days or more has elapsed after tube placement.

Intraoperative pleurodesis was generally an adjunct to main procedures, especially if future operations might be risky or fraught with technical difficulties. Talc was the preferred agent (15 patients), with some use of fibrin products (3 patients) or betadine (3 patients). Postoperative pleurodesis was indicated for persistent air leakage, again the timing and agent at surgeon’s discretion. The most commonly used agents were fibrin (4 patients), autologous blood (2 patients) and doxycycline (1 patient).

3) When you refer to COPD patients, we could consider implicitly embracing even patients with lung emphysema. Do you think giant bullae emphysema should be considered separate from microbubble or centralobular emphysema? Did you analyse the patients' CT scan emphysema ratio clusterized into the COPD group?

Reply to 3: This question is of utmost importance. From my own experience, I consider centrilobular (or microbullous) emphysema to be a risk factor for postoperative air leakage at staple lines. Please note that there is no corroborating literature or hard evidence in this regard. The impetus for surgery itself is usually giant bullous emphysema, which is distinctly more dangerous and should be treated more carefully,

if not separately. Unfortunately, there was no analysis of CT-based emphysema ratios in this study, but I think this should be a part of our next project.

Reviewer D

I am really curious about the treatment outcomes in the real world. The manuscript is well written and organized with the sufficient number of variables including patient demographics and treatment outcomes although it had retrospective nature in a single institution. Therefore, the manuscript will be attractive for many thoracic surgeons. However, I recommend revisions in several parts.

1. The study period was set from January 1, 2001 and January 31, 2021, which seemed too long. Such a long study period might cause bias in this manuscript.

Reply to 1: I appreciate your generous and encouraging complements, and I share your concern here. The reason for the prolonged study period is that we have many patients who are followed for lengthy intervals, and we wanted to see what changes had transpired. Still, I agree that there may be unavoidable bias due to evolving treatment methods, a variety of therapists, fluctuating patient groups, and more over the course of time. Because the anonymized CDM data did not reveal surgeon identities, we analyzed year of surgery as a surrogate marker for bias in the study period. As the R-analysis insert below (Figure 1) indicates, it did not show significance. Nonetheless, we do mention this particular bias in the Results section as a limitation.

```
> t.test(Year_op  ~ Group_recur, var.equal = TRUE)  # 등분산인 경우

        Two Sample t-test

data:  Year_op by Group_recur
t = 1.465, df = 158, p-value = 0.1449
alternative hypothesis: true difference in means between group No and g
roup Y is not equal to 0
95 percent confidence interval:
 -0.4017167  2.7094090
sample estimates:
mean in group No  mean in group Y
        2016.154         2015.000
```

Figure 1: Effect of year on recurrence, assessed by t-test (p=0.1449). Year_op signifies year operation performed and Group_recur reflects group-wise comparison (recurrence vs non-recurrence), showing no significant difference.

Changes in the text: Starting with discussion line 365, the content in the following box has been added.

Our aim was to observe the natural history of SP after surgery, so long-term follow-up was essential. However, patient populations are apt to vary, and trends in management, physician preference, or even surgical approach (eg, thoracoscopy vs thoracotomy) will invariably shift over time. We used year of surgery as a surrogate marker of time-related bias, owing to constraints of our CDM sourcing, but this

showed no statistical significance in either univariate or multivariate analysis. Nonetheless, it is our contention that some bias would be unavoidable. This issue may otherwise be addressed by a well-designed, prospective observational study.

2. The patients with malignancies and infectious disease as an underlying pulmonary disease were excluded in this study although those disease can cause secondary spontaneous pneumothorax. Please describe the reason why those disease were excluded.

Reply to 2: Admittedly, we disqualified patients with lung cancer (n=11) and infections (n=8), both representing major causes of SP. There were two main reasons for doing so. First, these patients had terminal primary or metastatic lung cancer, pneumocystis pneumonia, or intractably abscessed lung lesions that were virtually incurable. The possibility of SP resolution is highly unlikely under such circumstances. Furthermore, these patients failed to meet other inclusion criteria (ie, survival >6 months after surgery) critical for our analysis.

Changes in the text: The content below has been added to Materials and Methods, starting at Line 101.

The latter may potentially affect study results and interpretation, and there were two reasons why infectious or malignant causes of SP were stipulated. If the cause of SP is due to malignant tumors, these are largely incurable; and the infections encountered, typically due to immune compromise (ie, pneumocystis jiroveci pneumonia), are nearly incurable. Furthermore, none of such patients seem to survive for more than 6 months after surgery, which was mandatory for study inclusion.

3. The first paragraph of the results section (lines 111-115) should be moved to materials and methods section.

Reply to 3 : We agree and have moved lines 111-115 to the Materials and Methods section.

Changes in the text : It has moved to the Line 107 from the revised version.

4. The author decided “five working categories” to consolidate the diversity of underlying pulmonary disease. Please add the references.

Reply to 4: These five categories were empirically derived, based on statistical convenience and disease significance.

Changes in the text:

In an effort to consolidate the diversity of underlying pulmonary disease, only five working categories were adopted. For COPD, qualifying patients were already diagnosed and under medical therapy or newly diagnosed at time of pneumothorax. The ILD category encompassed pneumoconioses and various types of interstitial lung disease (ILD), including usual interstitial pneumonia (UIP) and idiopathic pulmonary fibrosis (IPF) (7). Patients with genetically linked conditions, such as Birt-Hogg-Dubé syndrome, or with radiographically and histologically confirmed lymphangioleiomyomatosis (LAM) were assigned to cystic lung disease (8). The immune-related category applied to those with existing connective tissue disorders

or with graft-versus-host disease (GVHD) (9-11). Catamenial pneumothorax and assorted outliers were classified as others (12).

5. Why did the author decide that the "index episode" meant ≧3 additional ipsilateral pneumothoraces occurred within 6 months? Did the author have the evidence of it?

Reply to 5: The concept of an index episode for sporadic occurrences of SP in clusters was arrived at by examining the clinical courses of patients. In other words, it was a term conceived through exploratory data analysis, having no other available reference. However, I have heard from university professors elsewhere that this is a phenomenon recognized by the Korean Pneumothorax Research Group, so I consider it viable. It is therefore a somewhat arbitrary research creation subject to future revision as more data is collected.

Changes in the text: For clarity, we changed the Line 219- like the below:

In reviewing our data, we noticed that some patients had recurrent ipsilateral episodes within relatively short periods of time for various reasons. As mentioned earlier in the text we defined the first of these as index episodes. There were ≥3 ipsilateral episodes less than 6 months apart in 15 members (11.5%) of the non-recurrence and in 8 members (30.0%) of the recurrence group (P=0.02) (Table 2).

6. Please describe the reason why "index episode" significantly contributed to the recurrence in the discussion section.

Reply to 6:

Changes in the text: We appreciate this request, which is addressed in the remarks shown below.

During our exploratory data review, an interesting phenomenon was noted, namely the clustering of pneumothorax episodes on occasion. We have observed three or more consecutive ipsilateral SP recurrences, occuring within 6-month periods, arbitrarily referencing the first incident as index episode while seeking to characterise related clinical features. The proportion of our patients with these index episodes was 15%, and some experienced cluster episodes long after first SP events. Underlying diseases were more likely non-COPD conditions, such to ILD, cystic lung disease, connective tissue disorders, or GVHD-related lung changes; and procedures other than bullae resections were involved, which may explain the observed series of ipsilateral postsurgical recurrences. We therefore tentatively assert that pneumothorax events may be clustered in some patients with non-COPD disease, calling for careful intervention (including surgery or other procedures) to reduce recurrences and necessitating longer follow-up monitoring. Of course, this requires large-scale studies to provide needed confirmation.

Reviewer E

This is a single center retrospective review of the cases of secondary pneumothorax who underwent surgical treatment. The authors stated that the primary goal was to document the post surgery trend in this group of patients and to also under the risk factors associated with recurrence after surgery.

This is a very data-poor area, and the lack of high-quality publications to guide practice is evident. As stated by the authors, the risks of surgery can be very high for patients with certain underlying lung conditions, and the long term survival outcome is more closely related to the underlying lung pathology. The finding that conditions other than COPD is associated with a much higher recurrence rate is noteworthy, although not entirely surprising.

Line 111

One big limitation of a retrospective study like this one is that we do not know the total number of cases of secondary pneumothorax that were referred for surgery but ended up not being offered surgery.

Following up on this is that- what is most useful for the clinician reader is how to select patients with SP for surgery at initial presentation.

Reply to 1: In Korea, chest tube insertion is almost exclusively the domain of thoracic surgeons, and the decision to proceed is also theirs. Seldom is there no referral issued. A majority of the time, a thoracic surgeon is consulted, if for no other reason than on medicolegal grounds. Thus, I do think it's possible to gauge the overall incidence of SP with at least 90% accuracy if needed. In this CDM-based study, we could not identify cases involving simple chest tube placements or O2 therapy without undue effort, so we don't know how many affected patients went on to surgery. However, our focus was not on determining SPs worthy of surgery at first presentations, but rather on events in the surgical aftermath. Of course, one of our goals was to use such data to guide the timing of surgery. Your comment is subsequently quite valuable. I will reserve this topic for the next phase of research, having included a summary in the Discussion section under limitations**.**

Changes in the text: From the line 372, we added the following sentences:

Finally, our focus in the present study was on postsurgical aftermath, as opposed to deciding which SPs merit surgery at first presentations. The latter pursuit was beyond our capacity but would still be most helpful for clinicians and clearly demands further investigation.

Line 215

This finding is useful for patient counseling during consent, but does this finding change the practice of the Korean group, eg become even more selective in offering surgery to this subset of patients, or to modify the surgical treatment?

Reply to 2: Thank you for this very interesting question. I have discussed the results of this study with several pertinent Korean researchers. Many of them have agreed that although SP recurs frequently, the prognosis is not as bad as one might think. Also, patient and family counselling is imperative, because SP often necessitates a long and complicated course of treatment. I have personally treated SPs conservatively in the past, for at least three episodes. However, I now intervene surgically at relatively early time points in non-COPD cases, after good relationships have been established in surgically fit candidates.

Changes in the text: None.

Figure 2
I feel like I am looking at the patient's charts and I find it very hard to get an improved understanding of what is happening from looking at these figures.
Maybe this data, if the authors wish to present it, is more suitable as supplemental data.
Reply to 3: We wanted to include a figure illustrating SP frequency (particularly when clustered) and documenting laterality. However, we both agree it is better as supplementary material. We have also removed Figure 1A (non-recurrence group), having felt it was too imposing and not very informative. Finally, the parameters specified (Pneumothorax [Lt], Pneumothorax [Rt], and Last) have been renamed as Occurrence, Recurrence, and Censoring. Because laterality is a key surgical element (for patients with contralateral postoperative occurrences), we retained Surgery (Lt) and Surgery (Rt) designations.
Changes in the text: We have made this figure supplementary and changed its legend as below.

Supplementary figure 1 Patterns of pneumothorax episodes and operative procedures in patients with (A) ipsilateral recurrences, (B) contralateral recurrences, and (D) index episodes during follow-up. Occurrence signifies a pneumothorax episode, regardless of laterality. Recurrence denotes a postsurgical pneumothorax episode. Censoring indicates institutional acquisition of last available chest X-ray or simply loss of follow-up (last identified survival dates not included).

Table 4
lobectomy and diaphragm resection are very uncommonly performed for pneumothorax. Can the authors comment on these cases?
Reply to 4: Four patients with catamenial pneumothoraces had diaphragmatic resections performed. These patients had defects (holes) of the diaphragm. In one case where lobectomy was required, the upper lobe was largely obliterated by severe emphysema. I have added this information to the manuscript as well.
Changes in the text: I added the following sentences in the manuscript, from line 254.

Diaphragmatic resection was performed in four patients with catamenial pneumothoraces and defects (perforations) of the diaphragm. In one unusual case requiring lobectomy, the patient’s upper lobe was severely emphysematous, leaving almost no residual healthy parenchyma

Reviewer F

It seems to me that your paper does not contain data that will affect clinical practice.
Reply to F:
This may be your perspective, but an important message conveyed is that the frequency of postoperative recurrences may vary, depending on whether or not the underlying lung disease is cystic, and shows a tendency to cluster at times. Indeed, secondary pneumothorax (SP) may be viewed differently at different centers and in different

countries, but surgical intervention is clearly warranted for cluster events, rather than awaiting third or fourth episodes. This is what we stress in the Discussion and Conclusion. What's more, there are no studies to date on long-term prognosis after these operations. Such findings reflect the real-world course of SP in our patients.

Reviewer G

This document needed to monitor factors associated with postsurgical SP during long - term follow-up. This is very important information for clinicians. The authors possibly made a lot of efforts to collect the clinical data. However, the results and conclusions have been already known to the medical clinicians. I could not recognize any kinds of novelty on this document. It is wonderful as general remarks on SP. English expression is excellent.
Reply to G: This may be your perspective, but an important message conveyed is that the frequency of postoperative recurrence may vary, depending on whether or not the underlying lung disease is cystic, and shows a tendency to cluster at times. Indeed, secondary pneumothorax (SP) may be viewed differently at different centers and in different countries, but surgical intervention is clearly warranted for cluster events, rather than awaiting third or fourth episodes. This is what we stress in the Discussion and Conclusion. What's more, there are no studies to date on long-term prognosis after these operations. Such findings reflect the real-world course of SP in our patients.

Reviewer H

Overall, we judge it to be well-written in a non sequential manner. I think the methods, materials, and discussion are excellent. Please proofread the English expression, as I am not able to peer review.
Reply to H: I have revised our initial manuscript to accommodate the feedback given and have proofread the final draft. Both the original and the final versions were also professionally edited by BioMed Proofreading LLC (see attached certificate).