

Peer Review File

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First Round Peer Review

Reviewer A

Comment 1: First of all, I could not understand what the purpose of this study is. For example, they showed that table 1 showed the frequency of RUL is significantly more frequent than that of RLL, and that of LUL is significantly more frequent than that of LLL. But I have no idea what this statistical difference means. Statistical analysis is meaningless if the significance of the analysis is not clear. Moreover, Table 2 showed the difference of frequency of PEA resection in each lobe, compared to that in RLL as control, but I could not understand why the authors selected the RLL as the control. It seems meaningless.

Reply: We agree that the comparison to PEA RLL resection was not clear. We have sought to clarify this. RLL PEA resection was the highest percentage, so this lobe was used as the standard against which all other lobes were compared. We added some text in the discussion to clarify.

Changes in the text: Pages 12-14, lines 259-306

Comment 2: Besides, 10 Lingula segmentectomy cases were also included in this study. They should be excluded from this study.

Reply: We agree with this comment but ICD-10 convention groups lingula in with lobectomy. We have added text to clarify this.

Changes in the text: page 6, line 122; pages 17-18, line 376-385

Reviewer B

This paper investigated the surgical outcome after lung cancer surgery according to the pulmonary lobes. I understood the concept of this paper.

Comment 3: However, the patients background, postoperative complications, and stage of the lung cancer are too scarce to lead the conclusion. I think the more detailed information and surgical outcome according to the pulmonary lobes.

Reply: We agree. Clinical data is missing from this database. However, our response is that there is still meaningful data to be found in this administrative database and conclusions that we are not aware of from prior studies. We have added text to address this.

Changes in the text: Pages 13-14, lines 259-290; pages 18-19, lines 401-412

Comment 4: Study schema is not unclear. Please should show the schema of this study.

Reply: The Methods have been modified to include an explicit description of the

schema.

Changes in the text: Pages 7-8, lines 150-166

Comment 5: Postoperative mortality is considered to depend on the pulmonary lobes. Mortality after discharge should be included.

Reply: The administrative database we searched does not track death after discharge, the only data pertaining to death it tracks is “expired” status at discharge. We mention this in the Methods. We have added text to reinforce this fact.

Changes in the text: Page 6, line 116-117; Page 8, line 154-6; pages 18-19, lines 403-9

Comment 6: Since the data of this study is established by multi-institutional data, LOS could be reflected by the policy of each institution.

Reply: The authors agree but we limited our conclusions based on LOS only to all-hospital outcomes for between anatomic lobes for resection only by the same type of surgical approach. We have added a comment about limitations of LOS.

Changes in the text: Page 16, lines 339-347; Page 19, lines 409-10

Comment 7: Lingula is a part of left upper lobe. A resection of lingual is not defined as a lobectomy.

Reply: We agree with this comment but ICD-10 convention groups lingula in with lobectomy. We have added text to clarify this.

Changes in the text: page 6, line 122; pages 17-18, line 376-385

Reviewer C

First of all I would like to congratulate you for thinking outside of the box and utilizing a dataset (ie ICD 10 codes) that usually, at least in Europe, is considered of more an impediment than an asset for our clinical practice.

Unfortunately, you are faced with several limitations, and are only capable of delivering a couple of interesting, albeit known facts:

Comment 8: You can present the relative frequency of different anatomical lobectomies (please do not consider the lingula a separate lobe), including the percentage of procedures performed via VATS. This has been addressed in several previous publications and doesn't add relevant new Knowledge to the field.

Reply: We have extensively searched the literature and have not found a reference clearly backed by data to document a difference in adoption rate of thoracoscopic lobectomy between anatomic lobes. For this reason we feel there is value to this study. We have added some text to clarify our position on this.

Changes in the text: Pages 12-14 lines 259-90

Comment 9: Then you can clearly show that LOS is reduced when a VATS-approach had been chosen. This may be due to a selection bias, as your overall VATS-rate is low, and more proficient surgeons familiar with the technique could have been more

inclined to do VATS, thus skewing the results.

Reply: We were very clear not to compare VATS versus open. We were very focused on only comparing open to open, VATS to VATS, or all (VATS + open) to all lobectomy in terms of the conclusions we formed and were only focused on comparing different anatomic lobes performed by the same surgical approach. The overall thoracoscopy rate, we agree, was low, but that did not seem to make the data un-usable. We added text to clarify both of these points.

Changes in the text: Page 8, line 163-3; pages 12-12, lines 264-270.

Comment 10: Further, I do not believe that your claim of "differential properties of the right vs left pleural space" is backed by your facts, as a large number of potential confounders cannot be addressed due to the nature of your data.

Reply: We agree that confounders cannot be excluded in the consideration of "differential properties of the right vs left pleural space" but they are consistent with our experience and they reflect statistically supported observations in the data. It is our experience that prolonged air leaks occur with greatest frequency after right upper lobe resection and the data for LOS and need for additional procedures support this. We are clear to state that no causality can be concluded based on the limited clinical data in the database. We have added text to this effect.

Changes in the text: Pages 16-17, lines 337-375; ; pages 18-19 lines 401-412.

Comment 11: I would like to encourage you to spend some time on elucidating the technical challenges of every lobe, as personally I do consider a right upper lobectomy the easiest VATS-lobectomy, with the left upper lobe being the most challenging. This would add to your discussion.

Reply: We have added text to address this.

Changes in the text: Pages 14-16, lines 291-336.

Second Round Peer Review

Reviewer A

The manuscript reported a research of using ICD-10 procedure codes may provide novel methodologic accessibility for pulmonary lobectomy studies as they classify lobectomy operations by specific anatomic lobe. The authors analysed surgical approach, additional procedures and diagnosis codes, length of hospital stay (LOS), and discharge status. They found LOS was longer for upper versus lower lobe resection as was need for transfer to additional inpatient facilities. LOS was longer and need for additional surgical or procedural interventions days after the primary procedure of lobectomy greater for right versus left upper lobe resection.

Specific comments are as follows:

Comment 1: The authors should use a table to show more information of the patients.

Reply: We have added a table of patient demographics.
Changes in the text: Table 1.

Comment 2. Though the author indicated that different procedures had effect on LOS and other index, but the technology of operation had advance rapidly. For example, the rate of open chest lobectomy is significant less than 2015-2017. Please explain the scientific sense of this research today.

Reply: We focused on 2015-2017 because this was the initial appearance of ICD-10 in the United States. We agree the data is not completely up-to-date but administrative databases, including the one we analyzed in this study, have lag times so that the most current data is always several years old. We agree with the reviewer that the technology of the operation has advanced but that is not the main limitation to adoption of VATS lobectomy in our state. VATS lobectomy was first described in the early 1990s and in our state the overall VATS lobectomy performance rate is still only 44%. There are still programs, including high volume programs, that perform low percentage or zero percent VATS lobectomy for their lobectomy operations. In our observation, this has more to do with the mind-set of the cardiothoracic surgeons performing lobectomy in our state than the technology. We do not have adequate data to address this fully in the current study, probably only a survey of program attitudes toward lung resection could address this, however, we have added text to try to make this a little clearer.

Changes in the text: Page 12, lines 252-4, Pages 13-14, lines 288-290.

Reviewer B

I thank you for giving me the opportunity to review the manuscript entitled “Lung Lobectomy Surgical Approach and Resource Utilization 1 Differ by Anatomic Lobe in a Statewide Discharge Registry” by DeArmond DT et al. The authors investigated anatomic lobe-specific differences with respect to pulmonary lobectomy using the Texas Inpatient Public Use Data File (TPUDF), maintained by the Texas Department of State Health Services (TDSHS). They showed that right and left upper versus lower lobe resections were more prevalent however minimally invasive surgery was less commonly performed for upper than right lower lobectomy. Moreover, irrespective of surgical approach, length of hospital stay was longer for upper versus lower lobe resection as was need for transfer to additional inpatient facilities.

In this study, the data from the large database showed a trend regarding pulmonary lobectomy in the Texas state higher volume centers, and it will be of interest to the readership of the journal. I have several comments for the authors.

Comment 1: A lot of data that was related to a broad range of topics was presented in the Results section, and it seems complicated to understand for readers. The results of

this study should be summarized and concisely described in the manuscript (e.g. in the first paragraph of the Discussion part).

Reply: We have inserted a brief summation of the statistically significant findings into the first paragraph of the discussion.

Changes in the text: Pages 12-13, lines 259-274

Comment 2: In the Discussion section, you described about your procedures and techniques of thoracoscopic pulmonary lobectomy in detail. I think that it may not reflect the result of the study that was obtained from the database consisting of the Texas state higher volume centers and seems excessive.

Reply: This text describing the procedures and techniques referred to in this comment was not present in the original manuscript. It was inserted into the revised manuscript to accommodate a comment from a first-round JTD reviewer of the original manuscript. This was the comment from the previous reviewer: "Reviewer C, Comment 11: I would like to encourage you to spend some time on elucidating the technical challenges of every lobe, as personally I do consider a right upper lobectomy the easiest VATS-lobectomy, with the left upper lobe being the most challenging. This would add to your discussion." The text describing procedures and techniques does have some relevance to the current study in that it speaks to why upper lobe resection may be more technically difficult by VATS than lower lobe. Also, considerable thought and effort went into this addition based on this previous JTD reviewer's comments. For this reason, we are very reluctant to remove this portion of the text for the re-submission. If the reviewers really want it removed, it's easily deleted but for now we would prefer to keep it.

Changes in the text: None.