

**Peer review file**

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**Reviewer A**

In your manuscript, rare lung tumor histologies, primary lung sarcomas were analyzed with regard to survival. Large volume data on primary lung sarcomas were lacking, therefore, your manuscript will be helpful of pulmonologists to manage these disorders.

I have, however, a couple of questions on the manuscript.

**Comment 1:** Comparison of primary lung sarcomas with adenocarcinoma, a most major lung cancer histology, seems meaningful, but I think comparison to sarcomatoid carcinoma, one of the highly malignant carcinoma of lung, may be important. Several types of primary lung sarcomas seems difficult to distinguish histologically from sarcomatoid carcinoma of the lung and prognostic difference of these two entities is interesting.

**Reply 1:** Thank you for this feedback. We agree that this would be a valuable comparison for physicians managing these diseases, especially as they can be difficult to distinguish. We have captured all patients diagnosed with sarcomatoid carcinoma and generated a new Kaplan-Meier survival curve comparing primary lung sarcoma and sarcomatoid carcinoma (Supplemental Figure 4).

**Changes in text:**

Added Supplemental figure 4 – Sarcomatoid carcinoma versus PLS

Methods, Page 6, Lines 88-93

Results, Page 10, Lines 179-183

Discussion, Page 11, Lines 203-209

**Comment 2:** Although primary lung sarcomas are rare, leiomyosarcoma, malignant solitary fibrous tumor, and synovial sarcoma are relatively major and we can encounter more than one. About these 3 histologies, OS data should be shown on each histology.

**Reply 2:** We agree that examining survival data on the most common subtypes of primary lung sarcomas would be a useful comparison for readers. Using the dataset, we have generated a new Kaplan-Meier curve comparing the 5-year survival of each of these histologies (Supplemental figure 3).

**Changes in text:**

Added Supplemental figure 3

Results, Page 9, Lines 156-159

**Reviewer B**

Thank you for submitting a valuable manuscript for Journal of Thoracic disease. In this manuscript titled ‘Outcomes of Surgically Managed Primary Lung Sarcomas: A National Cancer Database (NCDB) Analysis’, authors have reported the clinical outcomes of primary lung sarcomas (PLS) using NCDB of recent 10 years. The number of patients enrolled in this study is enough to analyze comprehensively the current status of this rare disease entity, and well written in good English.

I do not believe the purpose of this study is to suggest effective treatment modality for lengthening the survival of PLS, or to compare the effectiveness of adjuvant chemo-radiation therapy in specific types of PLS. I congratulate that the authors have performed well to extract meaningful findings of rare PLS from the NCDB which has many weak points such as inappropriate reporting of pathologic or clinical status, and thank for giving a good insight through comparing data of PLS with that of lung adenocarcinoma.

**Comment 3:** So, I agree that this report is worth to be published to show the schemes of current treatment and outcomes of PLS. One thing I should point out is that the expression of ‘upfront surgery’ is confusing. In results section, there is description as ‘... upfront surgical resection (64.3%)...’, however, these patients are thought to be performed surgical treatment only. Usually upfront surgery means that surgery-first strategy in the patients needed a multimodality treatment, so I recommend ‘upfront surgery’ should be used only for the patients who underwent adjuvant chemo/radiation treatment.

**Reply 3:** Thank you for your kind feedback. We agree that the usage of the phrase ‘upfront surgery’ is confusing, as it can be misconstrued with patients who receive surgery, followed by another treatment. We have made the following changes to clarify this patient cohort.

**Changes in text:**

Abstract, Page 2, Line 18

Methods, Page 7, Line 104

Results, Page 8, Line 131-132

Discussion, Page 12, Line 221

Conclusion, Page 13, Line 256

**Reviewer C**

Major concerns:

**Comment 4:** The authors didn’t clarify the reason why they chose the adenocarcinomas as a control, instead of squamous cell carcinomas or NSCLC in general. Please add some explanations.

**Reply 4:** Thank you for this observation. We chose NSCLC adenocarcinoma as the comparator as it is the most common lung cancer histology. We restricted the comparator to adenocarcinoma only to avoid further heterogeneity that could be observed.

**Changes in text:**

Methods Page 6 Lines 88-90

**Comment 5:** In reference to the data in Table 2, they concluded that treatment with adjuvant chemotherapy was associated with improved survival. However, in fact, HR for Surgery and chemotherapy group was 1.41 (1.05-1.88) in Table 2, quite contrary to the description in the manuscript. It may be a critical error, which may totally devalue the paper.

**Reply 5:** We appreciate this astute observation and apologize for this error. Our adjusted data does in fact find that surgery with adjuvant chemotherapy is associated with worse survival than surgery alone. It is an interesting observation as a prior meta-analysis found these treatment modalities have similar outcomes. We theorize that the sample size combined with number of different PLS histologies and the heterogeneity in their outcomes may have contributed to this finding. We have made the appropriate changes in the text to reflect this correction.

**Changes in text:**

Abstract, Page 3, Lines 24-25.

Results, Page 10, Lines 169-170

Discussion, Page 12, Lines 221-229

**Comment 6:** As limitations of the study, the authors should describe the samples' heterogeneity composed of 37 different histologic subtypes, and retrospective cohort as a study design.

**Reply 6:** This is a valid concern which should be addressed. We have added additional discussion about the limitations of a retrospective database study and the heterogeneity in the study due to the number of different histologic subtypes.

**Changes in text:**

Discussion, Page 13, Lines 241-249

Minor concerns:

**Comment 7:** In line 62: What is STS? soft tissue sarcoma?

**Reply 7:** Thank you for this observation. It appears that there was an extraneous body of text which was hidden rather than deleted. This additional text has been deleted.

**Changes in text:**

Hidden text deleted

**Comment 8:** In line 64: his to- logic → histologic?

**Reply 8:** Please see response to minor concern #1.

**Changes in text:**

Hidden text deleted

**Comment 9:** In the Results section, they did not describe some of the results in the Table 1, like income, education, and insurance status. Please add concise descriptions in correspondence to the data in Tables.

**Reply 9:** We agree that the differences in the PLS and adenocarcinoma cohort is important to highlight, and we have included additional text covering these differences.

**Changes in text:**

Results, Page 8, Lines 132-133

**Comment 10:** Facility type is significantly different between PLS and NSCLC groups, which may reflect a referral bias. Please add some descriptions.

**Reply 10:** Thank you for this observation. It is important to highlight that PLS cases are more likely to be treated at an academic or research center, and we have made those changes in the text to reflect this possibility of referral bias.

**Changes in text:**

Discussion, Page 13, Lines 246-249