

**Abstract :**

*Background:* The histologic and radiologic characteristics of lung metastases of sarcoma subtypes have not yet been well described, including their prognostic implications and their role in pulmonary metastasectomies.

*Objective:* To define radiologic and histologic features of pulmonary metastases from sarcoma and to understand implications of these features as related to intra-pulmonary recurrence, survival, and overall disease prognosis.

*Methods:* We conducted a retrospective chart review of patients diagnosed with sarcoma with pulmonary metastases at Massachusetts General Hospital (MGH) from January 1992 to May 2019. 471 thoracic resections involving sarcoma of the lung were identified, 85 of these cases were analyzed at the time this manuscript was written. 14 cases were excluded: 9 chest wall metastases, 1 pleural metastasis, 2 primary lung sarcomas and 2 needle biopsies. A total of 71 cases were ultimately included at the time of this study, representing 57 patients. Analysis was performed using Kaplan-Meier estimates of survival.

*Results:* At the time this manuscript is written, results are only preliminary and limited by small sample size. Overall 5-year survival was 44%. Median survival in those patients with visceral pleural involvement (VPI) was 22 months, Median survival in those without VPI was 36 months ( $p = 0.1299$ ). In the smaller subset of 21 patients, tumor size, number of metastases, and certain radiologic and histologic characteristics were examined. Although there were no significant results at this time given the small sample size, it was noted that 75% of leiomyosarcoma nodules had pleural abutment, while this was only present in 14.5% of the synovial cell sarcoma nodules. 100% of synovial cell sarcoma and liposarcoma nodules had a smooth surface, while this was only present 50% of leiomyosarcoma and 52% osteosarcoma pulmonary metastases. Calcification was present in 50% of osteosarcoma metastases and 11% of fibrosarcoma metastases. 6 of the 21 patients had a local recurrence, 3 were osteosarcoma, 2 fibrosarcoma, 1 synovial cell. Median survival in those with local recurrence was 32.5 mo, and 60.0 months in those without local recurrence ( $p = 0.5243$ ).

*Conclusion:* Although no results were significant due to the small sample size, our data does begin to show certain trends in local recurrence rate and sarcoma subtypes, as well as the implications of certain histologic and radiologic features such as pleural abutment, visceral pleural involvement, size of metastases in patient prognosis. Next steps will be to analyze the full subset of 471 resections for a more complete set of results.