

# Review of Thoracic Surgical Oncology

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FLORIDA



## HEART & LUNG SURGERY

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### NSCLC

## *Review of SEER database finds results with segmentectomy superior to wedge for IA pts*

[\*J Thorac Oncol.\* 2013 Jan;8\(1\):73-8.](#) Survival after segmentectomy and wedge resection in stage I non-small-cell lung cancer. [Smith CB](#), [Swanson SJ](#), [Mhango G](#), [Wisnivesky JP](#). INTRODUCTION: Although lobectomy is considered the standard surgical treatment for stage IA non-small-cell lung cancer (NSCLC), wedge resection or segmentectomy are frequently performed on patients who are not lobectomy candidates. The objective of this study was to compare survival among patients with stage IA NSCLC, who are undergoing these procedures. METHODS: Using the Surveillance, Epidemiology and End Results registry, we identified 3525 patients. We used logistic regression to determine propensity scores for patients undergoing segmentectomy, based on the patient's preoperative characteristics. Overall and lung cancer-specific survival of patients treated with wedge resection versus segmentectomy was compared after adjusting, stratifying, or matching patients based on propensity score. RESULTS: Overall, 704 patients (20%) underwent segmentectomy. Analyses, adjusting for propensity scores, showed that segmentectomy was associated with significant improvement in overall (hazard ratio: 0.80, 95% confidence interval: 0.69-0.93) and lung cancer-specific survival (hazard ratio: 0.72, 95% confidence interval: 0.59-0.88) compared with wedge resection. Similar results were obtained when stratifying and matching by propensity score and when limiting analysis to patients with tumors sized less than or equal to 2 cm, or aged 70 years or younger. CONCLUSIONS: These results suggest that segmentectomy should be the preferred technique for limited resection of patients with stage IA NSCLC. The study findings should be confirmed in prospective studies

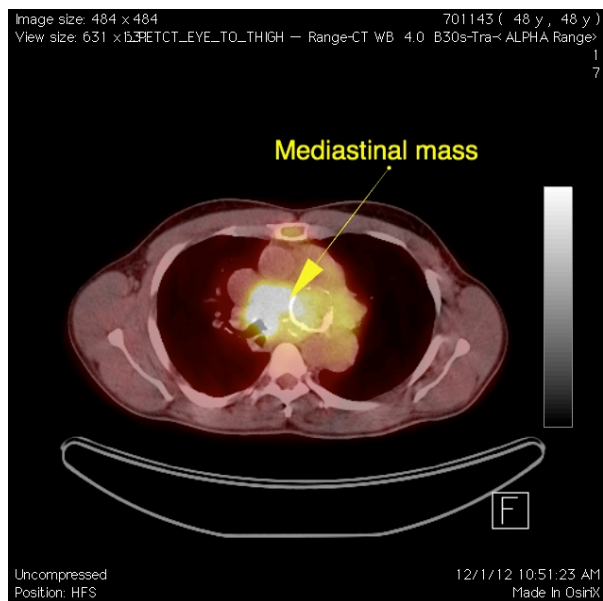
Editor's commentary: Here is another study showing that segmentectomy gives better results vs. wedge resection in patients with IA disease. I have long been an advocate of segmentectomy, particularly in patients with compromised lung function. It is particularly interesting to note that a sub-analysis of their data showed improved cancer specific survival in ELDERLY patients who received segmentectomy vs. wedge. This is Florida of course, so one has to be careful about the use of the term "elderly," but in general, I have used anatomic resection (lobectomy or segmentectomy) without restriction in patients up to 90. I am aware of a previous review of SEER data that suggest non-anatomic wedge is equivalent to lobectomy in patients over the age of 70, but it is hard to reconcile that one paper with the overwhelming body of data to suggest otherwise in virtually every other clinical scenario. I refuse to believe that patients over 70 do not live long enough to enjoy a survival benefit from anatomic resection given the aggressive nature of lung cancer. So in summary, I view segmentectomy as a useful option in patients with compromised lung function; older patients; and patients with metastatic disease with deeply seated lesions who would otherwise require lobectomy for resection.

## *Plasma biomarker panel for distinguishing NSCLC from benign nodules identified on LDCT screening*

J Thorac Oncol. 2013 Jan;8(1):31-6. Development and validation of a plasma biomarker panel for discerning clinical significance of indeterminate pulmonary nodules. Daly S, Rinewalt D, Fhied C, Basu S, Mahon B, Liptay MJ, Hong E, Chmielewski G, Yoder MA, Shah PN, Edell ES, Maldonado F, Bungum AO, Borgia JA. Department of Thoracic Surgery, Rush University Medical Center, Chicago, Illinois 60612, USA. **INTRODUCTION:** The recent findings of the National Lung Screening Trial showed 24.2% of individuals at high risk for lung cancer having one or more indeterminate nodules detected by low-dose computed tomography-based screening, 96.4% of which were eventually confirmed as false positives. These positive scans necessitate additional diagnostic procedures to establish a definitive diagnosis that adds cost and risk to the paradigm. A plasma test able to assign benign versus malignant pathology in high-risk patients would be an invaluable tool to complement low-dose computed tomography-based screening and promote its rapid implementation. **METHODS:** We evaluated 17 biomarkers, previously shown to have value in detecting lung cancer, against a discovery cohort, comprising benign ( $n = 67$ ) cases and lung cancer ( $n = 69$ ) cases. A Random Forest method based analysis was used to identify the optimal biomarker panel for assigning disease status, which was then validated against a cohort from the Mayo Clinic, comprising patients with benign ( $n = 61$ ) or malignant ( $n = 20$ ) indeterminate lung nodules. **RESULTS:** Our discovery efforts produced a seven-analyte plasma biomarker panel consisting of interleukin 6 (IL-6), IL-10, IL-1ra, sIL-2Ra, stromal cell-derived factor-1 $\alpha$ + $\beta$ , tumor necrosis factor  $\alpha$ , and macrophage inflammatory protein 1  $\alpha$ . The sensitivity and specificity of our panel in our validation cohort is 95.0% and 23.3%, respectively. The validated negative predictive value of our panel was 93.8%. **CONCLUSION:** We developed a seven-analyte plasma biomarker panel able to identify benign nodules, otherwise deemed indeterminate, with a high degree of accuracy. This panel may have clinical utility in risk-stratifying screen-detected lung nodules, decrease unnecessary follow-up imaging or invasive procedures, and potentially avoid unnecessary morbidity, mortality, and health care costs.

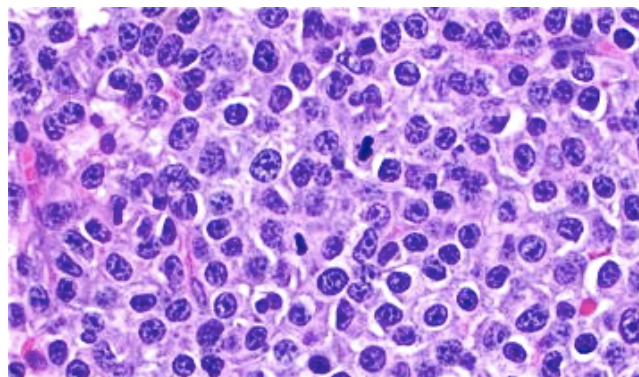
**Editor's commentary:** This report describes the identification of a 7 analyte panel used to distinguish benign from malignant lesions found on CT scans obtained for lung cancer screening. There is a race on to narrow the specificity of LDCT screening using serum panels, bio-impedance, and other techniques. In this report, the authors describe a small study (69 lung cancer patients and 67 non-malignant pts). Interestingly, most of the analytes selected are indicative of inflammation such as IL2R, IL10, TNF-alpha, MIP1-alpha. I note that the average size of the NON-biopsied, benign controls is 4mm, a size no one would seriously consider worrisome for malignancy. Unfortunately, there were too many false positives for the panel to be useful.

## 3 Interesting case presentations: a plethora of mediastinal masses



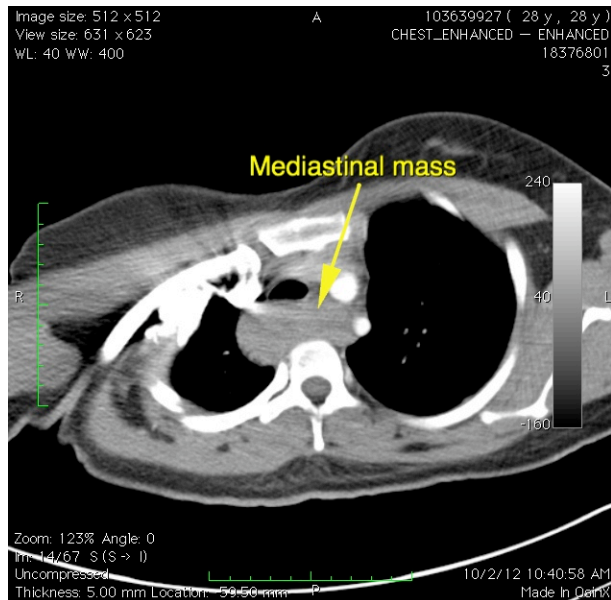
A 47 yo BM was referred with a large mediastinal mass. He initially came to attention because of an abnormal serum protein electrophoresis. Subsequent evaluation, including CT scanning of the chest, showed a large mediastinal mass deviating the trachea to the right and causing near complete occlusion by extrinsic compression of the left mainstem bronchus. He was urgently admitted for mediastinoscopy for tissue diagnosis.

Frozen section suggested plasmacytoma which was confirmed at final pathology. High power photomicrograph shown at right depicts



“clock face” chromatin pattern typical for plasmacytoma. (This and subsequent photomicrographs courtesy of Dr. Jon Finan, TGH). Treatment with XRT was initiated while in the hospital.

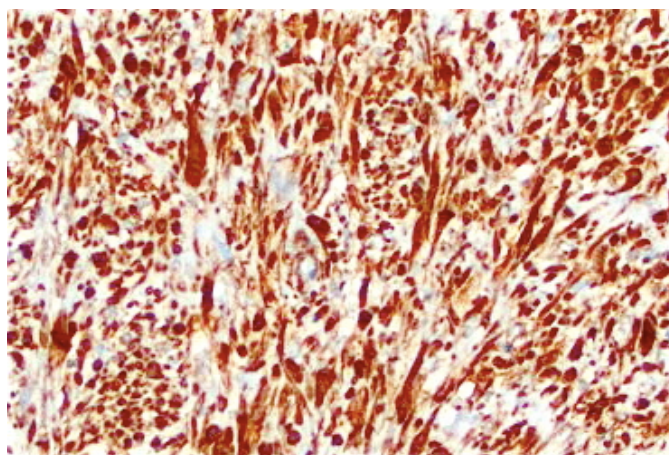




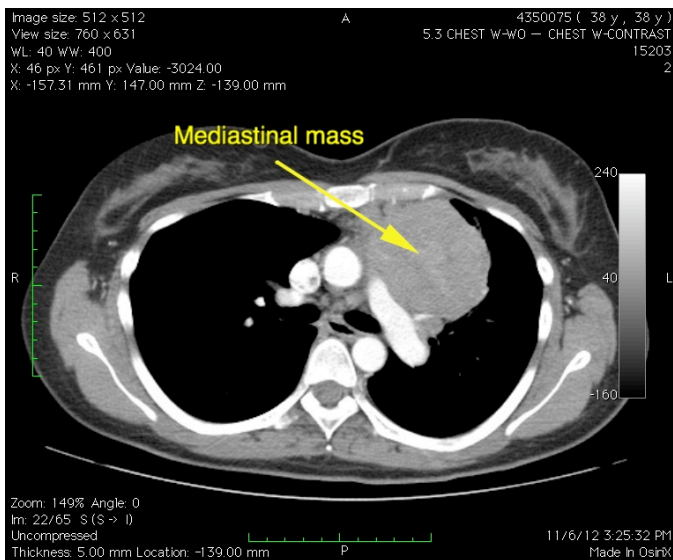
The next patient is a 28 yo hispanic female seen at an outside hospital with complaints of a non-productive cough. Subsequent work-up including CT scanning, MRI, and EGD with EUS suggested an esophageal leiomyoma. An EUS guided biopsy did not confirm the diagnosis.

She was taken to the operating room with the presumptive diagnosis of leiomyoma and underwent sub-mucosal resection of a large esophageal leiomyoma with reconstruction of a small mucosal defect. Final pathology confirmed the diagnosis. A photomicrograph showing desmin staining of the tumor is below.

Esophageal leiomyomas are uncommon tumors usually resected only if symptomatic. While dysphagia is the most common symptom, cough in this patient was caused by compression of the overlying trachea by

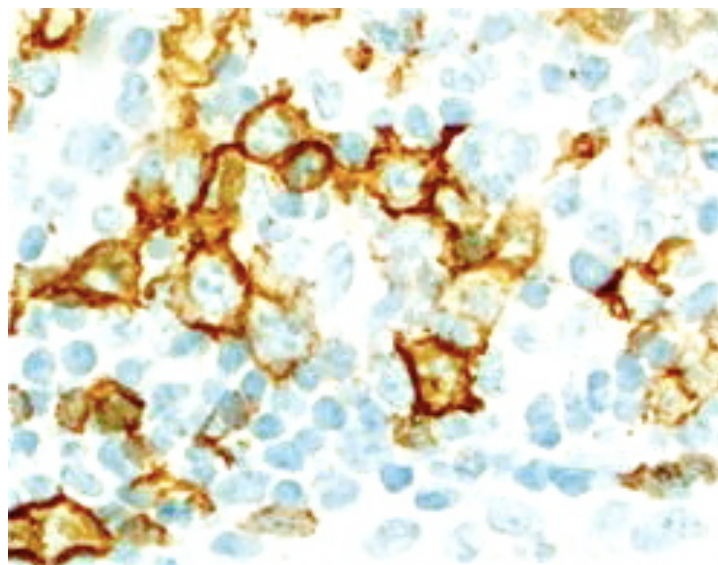


the tumor. These tumors are almost always intramural in location and careful dissection of the tumor from the underlying mucosa and the overlying muscular wall provides complete resection in nearly all cases. This patient returned to a regular diet after a 8 week period of soft mechanical diet.



The last patient is a 38 yo WF who presented with anterior left sided chest pain initially thought to be secondary to a fractured sternum. She denied fevers, chills, or weight loss. Subsequently, a CT scan showed a large anterior mediastinal mass projecting into the left hemithorax. Differential diagnosis included invasive thymoma, lymphoma, or NSCLC. PET scanning showed numerous positive lymph nodes throughout the mediastinum and a single cervical lymph node as well. An excisional biopsy of this cervical node was performed and diagnosis deferred at the time of operation.

Final pathology including flow cytometry described a B cell lymphoma: diffuse, large cell, non-germinal type. The photomicrograph at right shows staining of the tissue for CD 20, a B cell specific antigen. She was treated with CHOP/Rituxan chemotherapy with near complete CT and PET scan resolution of disease 8 weeks later.



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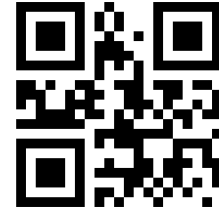
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