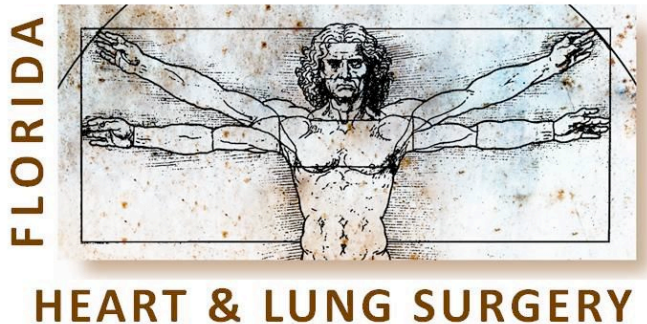


# Review of Thoracic Surgical Oncology

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## Carcinoid tumors

### *Sublobar resection has a role in lung carcinoids*

*Ann Thorac Surg.* 2011 Nov;92(5):1774-9. Is sublobar resection sufficient for carcinoid tumors? Yendamuri S, Gold D, Jayaprakash V, Dexter E, Nwogu C, Demmy T. Department of Thoracic Surgery, Roswell Park Cancer Institute, Buffalo, New York; Department of Surgery, State University of New York, Buffalo, New York. **BACKGROUND:** The existing guidelines for extent of resection of carcinoid tumors are based on other, more malignant non-small cell lung cancers. Because of the small number of patients in any single institution, we analyzed the Surveillance Epidemiology and End Results (SEER) database to study the effect of the extent of resection of these tumors on overall survival. **METHODS:** All patients with lung cancer in the SEER database from 1973 to 2006 with carcinoid tumors as their only cancer were included. Variables examined included age, race (white, black, others), gender, histologic type (atypical versus typical carcinoid), stage (localized, regional, and distant), extent of resection (sublobar resection, lobectomy, or more extensive) and survival. Univariate analyses (Kaplan-Meier method) were used to select variables for multivariate analysis (Cox regression analysis). Associations were considered significant with an alpha error < 5%. In addition, propensity score-matched Cox regression analysis was performed for patients with typical carcinoid disease. **RESULTS:** Most patients with carcinoid tumors did not acquire any other cancers (4,785/6,819; 70.2%). Of these, 797 patients had sublobar resection and 2,681 patients had lobectomy or more extensive resections. On univariate analysis, gender ( $p = 0.014$ ), race ( $p < 0.001$ ), stage ( $p < 0.001$ ), histologic type ( $p < 0.001$ ) and extent of resection ( $p = 0.04$ ) were associated with overall survival. Multivariate analysis demonstrated that age, gender, race, stage, and histologic type remain statistically associated with overall survival and disease-specific survival, whereas extent of resection is not. Propensity score-matched analysis demonstrates that for typical carcinoid, extent of resection is not associated with overall survival when adjusted for age, gender, race, and stage. **CONCLUSIONS:** Sublobar resection of carcinoid tumors did not compromise oncologic outcomes in a large population-based database. Lobectomy for typical carcinoid tumors is not mandatory as long as complete resection and adequate mediastinal staging are performed.

**Editor's commentary:** This report details results with over 6,000 carcinoid patients from the SEER database. "Sublobar resection" included both wedge resection and segmentectomy and results did not differentiate between the two. As expected, long term survival for typical carcinoid patients was excellent. Worse results were documented for the 2.9% of patients who had **atypical** histology, blacks, women and those with nodal metastases. I prefer formal resection, either lobectomy or segmentectomy, for good risk patients, and reserve wedge resection for high risk patients.

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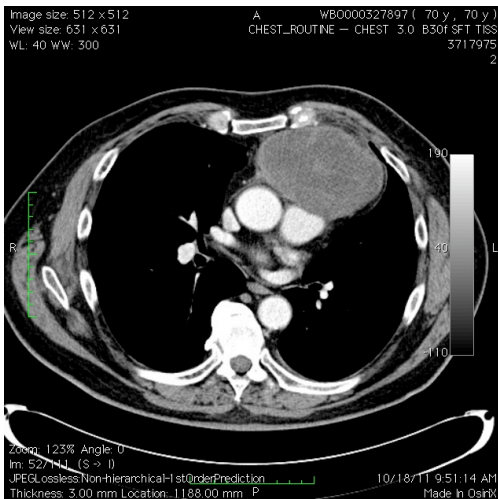


## Stage IA fibrosis patients have over 50% survival

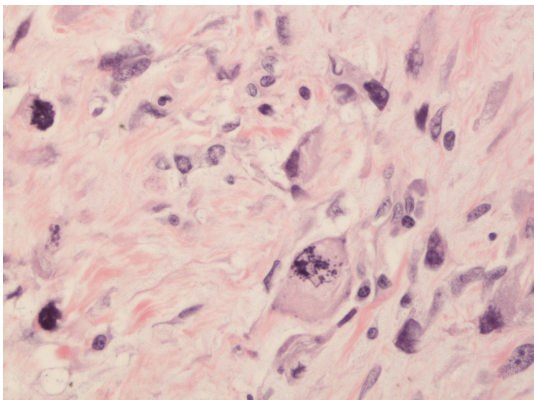
Ann Thorac Surg. 2011 Nov;92(5):1812-7. Survival After Surgery for Pathologic Stage IA Non-Small Cell Lung Cancer Associated With Idiopathic Pulmonary Fibrosis. Saito Y, Kawai Y, Takahashi N, Ikeya T, Murai K, Kawabata Y, Hoshi E. Department of Thoracic Surgery, Saitama Cardiovascular and Respiratory Center, Saitama, Japan. **BACKGROUND:** Many problems exist in regard to the treatment of lung cancer patients with idiopathic pulmonary fibrosis (IPF), but few reported studies have investigated the long-term prognosis after pulmonary resection in such patients. The purpose of the present study was to determine the postoperative survival of patients with pathologic stage IA non-small cell lung cancer (NSCLC) and IPF. **METHODS:** We retrospectively reviewed 350 patients with pathologic stage IA NSCLC who underwent pulmonary resections at our institution between September 1994 and December 2007. We analyzed and compared 28 of these patients, who had simultaneous lung cancer and IPF, with the remaining 322 lung cancer patients without IPF. **RESULTS:** The 5-year survival rates were 54.2% in pathologic stage IA lung cancer patients with IPF and 88.3% in those without IPF ( $p < 0.0001$ ). Univariate analyses showed that age, sex, Brinkman Index, limited resection, operation time, adenocarcinoma, and IPF were significant prognostic factors for survival ( $p < 0.10$ ). By multivariate analysis, however, only IPF was a significant prognostic factor for survival ( $p = 0.007$ ). Propensity score-matching analysis confirmed that only IPF was significant prognostic factor ( $p = 0.043$ ). **CONCLUSIONS:** The 5-year survival rate of patients with pathologic stage IA NSCLC and IPF is 54.2%. IPF has independent, adverse effects on survival of pathologic stage IA NSCLC patients treated with pulmonary resection.

Editor's commentary: Pulmonary fibrosis patients are at higher risk for developing lung cancer and have limited treatment options. This difficult subset of NSCLC patients can achieve long term survival if their IPF remains stable.

## Interesting case presentation



A 70 yo WM presented to FHLS with a biopsy proven spindle cell neoplasm of the anterior mediastinum. His tumor was found during the work up of a chronic, non-productive cough. He denied chest pain, but had lost 20lbs recently. His cough was notably positional, described as worse when recumbent. He was seen at Memorial-Sloan-Kettering where resection was advised but insurance coverage was denied by his carrier. He subsequently was resected at Tampa General Hospital. CT scan of the chest is shown at left. Photo at below right shows the completed resection with a 10 cm scale for comparison. Final pathology was consistent with pleomorphic sarcoma, moderately differentiated, completely resected with fibrous pseudocapsule. Photomicrograph at lower left shows pleomorphic spindle cell tumor (400x). He was advised postoperatively to seek an opinion from MSK regarding adjuvant chemotherapy.



## *Fused CT/PET superior to CT scan alone*

Ann Thorac Surg. 2011 Nov;92(5):1826-32. Positron emission tomography-computed tomography for postoperative surveillance in non-small cell lung cancer. Choi SH, Kim YT, Kim SK, Kang KW, Goo JM, Kang CH, Kim JH Department of Thoracic and Cardiovascular Surgery, Clinical Research Institute, Seoul National University Hospital, Seoul, Republic of Korea. **BACKGROUND:** The role of positron emission tomography-computed tomography (PET-CT) for the staging of non-small cell lung cancer (NSCLC) has been well documented, whereas its role for postoperative surveillance after the curative resection of this cancer has not. We prospectively implemented PET-CT in our surveillance protocol for recurrence of NSCLC and investigated its effectiveness as compared with that of conventional methods. **METHODS:** The cohort for our study of PET-CT in detecting recurrence of NSCLC consisted of 358 patients who had undergone complete resection of NSCLC between January 2005 and June 2008. After resection of their tumors, all of the patients were routinely examined at the thoracic surgical outpatient clinic at 3-month intervals for 2 years and after this at 6 month intervals for next 3 years. Careful patient interviews, physical examinations, chest roentgenography, and measurements of the serum carcinoembryonic antigen level were done at each visit. Contrast-enhanced chest CT was done at 6-month intervals, and PET-CT was done annually for 5 years after resection of NSCLC. **RESULTS:** Recurrences were detected in 111 patients (31%). In 60 of these patients, recurrence was detected with conventional methods, and in the remaining 51 patients recurrences were detected with simultaneous PET-CT and chest CT. Among these latter patients, recurrence was evident in both the chest CT and PET-CT scans of 26 patients (51.0%), and in the PET-CT scans alone of 19 patients (37.3%). Five lung lesions (2 small, 1 subpleural, 1 cavitary, and 1 nodule of ground-glass opacity) and 1 pancreatic metastasis were detected with chest CT only. **CONCLUSIONS:** When the two methods were used simultaneously, PET-CT seemed superior to chest CT for detecting recurrences of NSCLC. However, because PET-CT may fail to detect small or hypometabolic recurrences of NSCLC, we recommend that it be done on an annual basis along with low-dose chest CT.

Editor's commentary: There is considerable variation in protocols used to monitor NSCLC after definitive resection. PET/CT scanning has become commonplace in this role, although, the data supporting its use in this situation is thin. This paper adds more credence to what we all suspect: that PET/CT scanning will find recurrences earlier and more efficiently. This group performed yearly PET/CT but we typically advise PET/CT every six months and CT scans in the interval visits for the first two years.

### Surgery for NSCLC

## *Number of resected and involved lymph nodes prognostic in NSCLC*

J Thorac Oncol. 2011 Nov;6(11):1865-71. Prognostic impact of number of resected and involved lymph nodes at complete resection on survival in non-small cell lung cancer. Saji H, Tsuboi M, Yoshida K, Kato Y, Nomura M, Matsubayashi J, Nagao T, Kakihana M, Usuda J, Kajiwara N, Ohira T, Ikeda N. Division of Thoracic Surgery, Department of Surgery, Tokyo Medical University, Shinjuku-ku, Tokyo, Japan. [saji-q@ya2.so-net.ne.jp](mailto:saji-q@ya2.so-net.ne.jp) **BACKGROUND:** Lymph node (LN) status is a major determinant of stage and survival in patients with lung cancer. In the 7th edition of the TNM Classification of Malignant Tumors, the number of involved LNs is included in the definition of pN factors in breast, stomach, esophageal, and colorectal cancer, and the pN status significantly correlates with prognosis. **METHODS:** We retrospectively investigated the prognostic impact of the number of resected LNs (RLNs) and involved LNs in the context of other established clinical prognostic factors, in a series of 928 consecutive patients with non-small cell lung cancer (NSCLC) who underwent complete resection at our institution between 2000 and 2007. **RESULTS:** The mean number of RLNs was 15. There was a significant difference in the total number of RLNs categorized between less than 10 and  $\geq 10$  ( $p = 0.0129$ ). Although the incidence of LN involvement was statistically associated with poor prognosis, the largest statistically significant increase in overall survival was observed between 0 to 3 and  $\geq 4$  involved LNs (hazard ratio = 7.680; 95% confidence interval = 5.051-11.655,  $p < 0.0001$ ). On multivariate analysis, we used the ratio between the number of involved LNs and RLNs. The number of RLNs was found to be a strong independent prognostic factor for NSCLC (hazard ratio = 6.803; 95% confidence interval = 4.137-11.186,  $p < 0.0001$ ). **CONCLUSION:** Complete resection including 10 or more LNs influenced survival at complete NSCLC resection. Four involved LNs seemed to be a benchmark for NSCLC prognosis. The number of involved LNs is a strong independent prognostic factor in NSCLC, and the results of this study may provide new information for determining the N category in the next tumor, node, metastasis classification.

Editor's commentary: This controversial report tested the hypothesis that the number of resected and involved lymph nodes is a more accurate prognosticator than traditional anatomic designations. Since the number of resected and involved nodes has been shown to improve staging of other solid cancers, the authors speculated the same would prove true in lung cancer. They identified 4 or more involved lymph nodes as being a prominent cut off in prognosis, as well as total number of resected nodes in patients with known lymph node involvement. Intuitively, it makes sense to me that number of involved lymph nodes would prove prognostic. I disagree with reports that advocate surgical resection of lymph nodes for therapeutic benefit since this hypothesis has been shown not to be true in the past. ACSOG Z0030 has most recently demonstrated no survival benefit to radical lymphadenectomy for early stage NSCLC.

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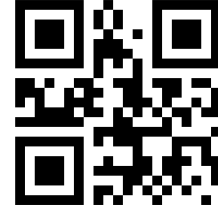
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