

Review of Thoracic Surgical Oncology

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Edited by Dr. K. Eric Sommers, MD, FACS

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Editor's note: I am happy to introduce a new feature for the Review this month. "Interesting case presentations" will be presented occasionally to highlight some of the unusual and noteworthy cases seen at Florida Heart and Lung Surgery. I hope that readers will find these of interest and worthwhile.

Surgery for suspected lung cancer

“Benign” nodules removed at surgery for suspected lung cancer lead to treatment changes in the majority of cases

J Thorac Oncol. 2011 Oct;6(10):1720-5. Thoracic operations for pulmonary nodules are frequently not futile in patients with benign disease. Grogan EL, Weinstein JJ, Deppen SA, Putnam JB Jr, Nesbitt JC, Lambright ES, Walker RC, Dittus RS, Massion PP. Department of Thoracic Surgery, Vanderbilt-Ingram Cancer Center, Vanderbilt University Medical Center, Nashville, Tennessee, USA **INTRODUCTION:** Pulmonary nodules often require operative resection to obtain a diagnosis. However, 10 to 30% of operations result in a benign diagnosis. Our purpose was to determine whether negative thoracic operations are futile by describing the pathological diagnoses; determining new diagnoses and treatment changes initiated based on operative findings; and assessing morbidity, mortality, and cost of the procedure. **METHODS:** At our academic medical center, 278 thoracic operations were performed for known or suspected cancer between January 1, 2005, and April 1, 2009. We collected and summarized data pertaining to preoperative patient and nodule characteristics, pathologic diagnosis, postoperative treatment changes resulting from surgical resection, perioperative morbidity and mortality, and hospital charges for patients with benign pathology. **RESULTS:** Twenty-three percent (65/278) of patients who underwent surgical resection for a suspicious nodule had benign pathology. We report granulomatous disease in 57%, benign tumors in 15%, fibrosis in 12%, and autoimmune and vascular diseases in 9%. Definitive diagnosis or treatment changes occurred in 85% of cases. Surgical intervention led to a new diagnosis in 69%, treatment course changes in 68% of benign cases, medication changes in 38%, new consultation in 31%, definitive treatment in 9%, and underlying disease management in 34%. There was no intraoperative, in-hospital, or 30-day mortality. Postoperative in-hospital events occurred in seven patients. The mean total cost was \$25,515 with a mean cost per day of \$7618. **CONCLUSIONS:** Patients with a benign diagnosis after surgical resection for a pulmonary nodule received a new diagnosis or had a treatment course change in 85% of the cases.

Editor's commentary: This article shows that just because a nodule isn't lung cancer, doesn't necessarily mean that it is "benign." In this study, a majority of patients were given a new diagnosis, consultation, treatment, medication, or change in disease management on the basis of the nodule pathology. This information will become even more important in the era of widespread CT screening for lung cancer.

Elderly patients get comparably aggressive surgery

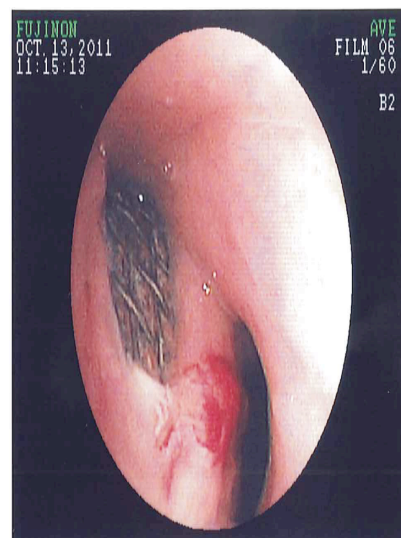
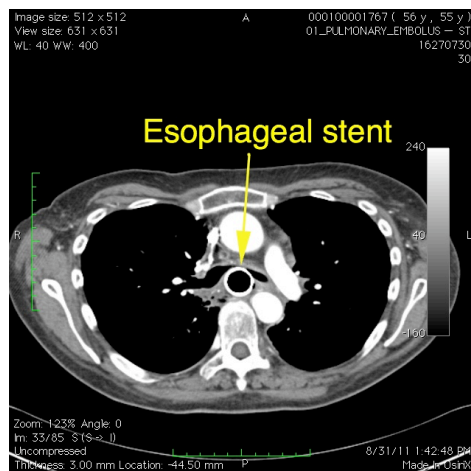
Chest. 2011 Oct;140(4):874-80. Surgical Management and Outcomes of Elderly Patients With Early Stage Non-small Cell Lung Cancer: A Nested Case-Control Study. Rivera C, Falcoz PE, Bernard A, Thomas PA, Dahan M. Thoracic Surgery, Haut Lévêque Hospital CHU Bordeaux, Ave de Magellan 33604 Pessac, Bordeaux, France: The number of oncogeriatric patients with non-small cell lung cancer (NSCLC) is expected to increase in the next decades. METHODS: We used the French Society of Thoracic and Cardiovascular Surgery database Epithor that includes information on > 140,000 procedures from 98 institutions. We prospectively collected data from January 2004 to December 2008 on 1,969 patients aged ≥ 70 years with NSCLC stage I or II and matched them with 1,969 control subjects aged < 70 years for sex, American Society of Anesthesia score, performance status, and FEV(1). Surgical treatment and postoperative outcomes were compared between the two age groups. RESULTS: The absence of radical lymphadenectomy was more frequent in the older patients (14%, $n = 269$) than in the younger patients (9%, $n = 170$) ($P < .0001$). There was no significant difference in type of resection between older and younger patients, respectively (pneumonectomy, 8% [$n = 164$] vs 11% [$n = 216$]; lobectomy, 79% [$n = 1,559$] vs 77% [$n = 1,521$]; bilobectomy, 4% [$n = 88$] vs 5% [$n = 97$]; sublobar resection, 7% [$n = 143$] vs 6% [$n = 118$]; $P = .08$). Differences in number ($P = .07$) and severity ($P = .69$) of complications were not significant. Postoperative mortality was higher in elderly patients at every end point (30-day mortality, 3.6% [$n = 70$] vs 2.2% [$n = 43$] [$P = .01$]; 60-day mortality, 4.1% [$n = 80$] vs 2.4% [$n = 47$] [$P = .003$]; 90-day mortality, 4.7% [$n = 93$] vs 2.5% [$n = 50$] [$P = .0002$]). CONCLUSIONS: Elderly patients with NSCLC should not be denied pulmonary resection on the basis of chronologic age alone. Among patients aged ≥ 70 years, 90-day mortality compared acceptably with mortality among younger matched patients. Additionally, the data show that for older patients, a 90-day mortality better represents their real mortality risk than 30- or 60-day figures. Our contemporary, multiinstitutional data importantly reveal that elderly patients, compared with their younger counterparts, do not have increased morbidity, incidence, or severity after pulmonary resection.

Editor's commentary: This report utilized a voluntary, prospectively collected French database to show that elderly (>70 yrs) patients received comparably aggressive resections when compared to younger patients with statistically equivalent results. (Note, however, that 70 would not really be considered "elderly" in Florida or the rest of the US). Of greater interest is the fact that mortality and morbidity in these older patients continues to rise after 30 days postop while it flattens off for the younger patients. This is familiar to anyone who cares for these patients: they take longer to recover, and get into more trouble after discharge home.

Interesting case presentation

A 60 yo WF was referred for evaluation for shortness of breath. She had previously undergone definitive chemoradiation for an esophageal cancer two years previously. She initially did well but developed coughing spasms with meals earlier in this year and was found to have a tracheo-esophageal fistula (TEF) at the level of the left mainstem bronchus. This was treated with the insertion of an esophageal stent with good results initially. She subsequently developed recurrent symptoms and a second stent was inserted with improvement. However, over the next several weeks and months she became progressively short of breath with activity, and then at rest. A CT scan was obtained which showed obstruction of the left mainstem bronchus by the stent (see below left). We performed bronchoscopy as part of her work-up which confirmed near complete obstruction by the stent of the left mainstem bronchus (shown below right). She was taken to the operating room where both stents were removed, and esophageal exclusion was performed with end cervical esophagostomy, and insertion of a G-tube and feeding jejunostomy. Her symptoms of shortness of breath resolved and she was discharged home. Reconstruction is planned with substernal colon interposition in the near future.

This case highlights the limitations of stenting in the treatment of acquired TEF. In my experience, palliation is limited and the complications from stenting tend to overwhelm the patients who have more than a nominal expected survival. Definitive surgical management is the only real hope for potential long term palliation for these desperately ill patients.



Prospective trial shows that EBUS equivalent to mediastinoscopy for node evaluation

J Thorac Cardiovasc Surg. 2011 Sep 30. A prospective controlled trial of endobronchial ultrasound-guided transbronchial needle aspiration compared with mediastinoscopy for mediastinal lymph node staging of lung cancer. Yasufuku K, Pierre A, Darling G, de Perrot M, Waddell T, Johnston M, da Cunha Santos G, Geddie W, Boerner S, Le LW, Keshavjee S. Division of Thoracic Surgery, Toronto General Hospital, University Health Network, University of Toronto, Toronto, Canada. **OBJECTIVE:** The study objective was to compare endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA) with mediastinoscopy for mediastinal lymph node staging of potentially resectable non-small cell lung cancer. **METHODS:** Patients with confirmed or suspected non-small cell lung cancer who required mediastinoscopy to determine suitability for lung cancer resection were entered into the trial. All patients underwent EBUS-TBNA followed by mediastinoscopy under general anesthesia. If both were negative for N2 or N3 disease, the patient underwent pulmonary resection and mediastinal lymphadenectomy. **RESULTS:** Between July 2006 and August 2010, 190 patients were registered in the study, 159 enrolled, and 153 were eligible for analysis. EBUS-TBNA and mediastinoscopy sampled an average of 3 and 4 lymph node stations per patient, respectively. The mean short axis of the lymph node biopsied by EBUS-TBNA was 6.9 ± 2.9 mm. The prevalence of N2/N3 disease was 35% (53/153). There was excellent agreement between EBUS-TBNA and mediastinoscopy for mediastinal staging in 136 patients (91%; Kappa, 0.8; 95% confidence interval, 0.7-0.9). Specificity and positive predictive value for both techniques were 100%. The sensitivity, negative predictive value, and diagnostic accuracy for mediastinal lymph node staging for EBUS-TBNA and mediastinoscopy were 81%, 91%, 93%, and 79%, 90%, 93%, respectively. No significant differences were found between EBUS-TBNA and mediastinoscopy in determining the true pathologic N stage (McNemar's test, $P = .78$). There were no complications from EBUS-TBNA. Minor complications from mediastinoscopy were observed in 4 patients (2.6%). **CONCLUSIONS:** EBUS-TBNA and mediastinoscopy achieve similar results for the mediastinal staging of lung cancer. As performed in this study, EBUS-TBNA can replace mediastinoscopy in patients with potentially resectable non-small cell lung cancer.

Editor's commentary: This trial from the highly regarded group at Toronto General Hospital shows almost exact concordance of mediastinoscopy with EBUS for the evaluation of mediastinal lymph nodes prior to resection. Not all trials comparing the two modalities have shown this equivalence it should be noted.

Lung cancer

Length of bronchial margin not relevant to long term survival in lung cancer resections

Eur J Cardiothorac Surg 2011;40:1151-1156. doi:10.1016/j.ejcts.2011.02.042 Bronchial resection margin length and clinical outcome in non-small cell lung cancer Sandra C. Tomaszeka,1, YeonSoo Kima,c,1, Stephen D. Cassivia, Matthew R. Jensenb, Keh-Hsien R. Shena, Francis C. Nicholasa, Claude Deschamps, Dennis A. Wigleaa,*a Division of General Thoracic Surgery, Mayo Clinic, 200 First Street SW, Rochester, Minnesota 55905, USA b Department of Biomedical Statistics and Informatics, Mayo Clinic, 200 First Street SW, Rochester, Minnesota 55905, USA c Department of Thoracic and Cardiovascular Surgery, Ilsan Paik Hospital, College of Medicine, Inje University; 2240 Daewha, Ilsansu, Goyang, Gyeonggi, 411-706, South Korea

Objective: Complete surgical resection with pathologic negative margin is associated with the best prognosis in early-stage non-small-cell lung cancer (NSCLC). However, the impact of the length of the bronchial margin remains unknown. This study aimed to determine whether an increased bronchial resection margin length is correlated with an improved disease-free and overall survival rate. **Methods:** A total of 3936 consecutive pulmonary resections were performed between 25 June 1992 and 31 December 2007 at Mayo Clinic Rochester. A subset consisting of 496 patients with completely resected lesions (R0-resection), and a documented bronchial margin length was analyzed retrospectively. **Results:** There were 340 men (68.5%) and 156 women (31.5%), with a mean age of 65.9 ± 10.6 years. All patients underwent anatomic lobectomy or larger resection. Final pathology confirmed complete resection without microscopic residual tumor (R0-resection) in all patients. Mean length of the bronchial resection margin was 23.3 ± 15.9 mm. Overall, 190 patients (38.3%) suffered from disease recurrence with local recurrence in 35 patients, distant recurrence in 101, and both local and distant recurrence in 54 patients. Overall 5-year and 10-year local recurrence-free survival was 72.5% (95% confidence interval (CI): 67.3–78.1) and 68.0% (95% CI: 62.1–74.4), distant recurrence free survival 61.0% (95% CI: 55.8–66.6) and 52.9% (95% CI: 46.7–60.1) and overall survival 50.0% (95% CI: 45.1–55.3) and 28.8% (95% CI: 23.8–34.7). Tumor size and N-stage were associated with a worse prognosis in terms of local and distant recurrence, as well as survival ($p < 0.05$). Histology was not significantly associated with local recurrence ($p = 0.28$), though adenocarcinoma relative to squamous cell carcinoma was associated with an increased risk of distant recurrence ($p < 0.01$). There was no significant association between type of surgical resection and local ($p = 0.37$) or distant recurrence ($p = 0.37$). Neither local ($p = 0.56$) or distant recurrence ($p = 0.46$), nor survival ($p = 0.54$) was associated with the bronchial margin length. In multivariate models including age, N-stage, and gender there were no significant overall associations of margin length (5, 6–10, 11–15, 16–20, >20 mm) and local recurrence ($p = 0.51$), distant recurrence ($p = 0.33$), or survival ($p = 0.75$). **Conclusions:** When complete surgical resection is achieved, the extent of the bronchial margin has no clinically relevant impact on disease-free and overall survival in NSCLC.

Editor's commentary: I am often asked by residents on our service what constitutes an "adequate" bronchial margin. My answer has always been: "Negative is negative." This report from Mayo confirms that extent of margin has no impact on survival in lung cancer operations.

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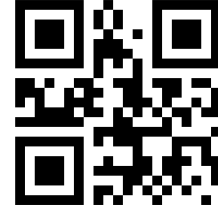
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