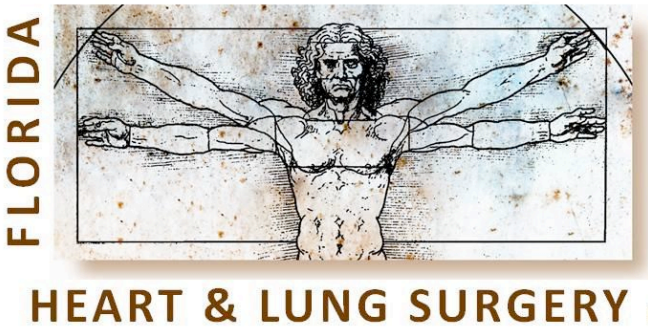
Review of Thoracic Surgical Oncology



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Esophageal cancer

Surgeon volume is the most important predictor of outcome in esophagecomy

J Clin Oncol. 2013 Feb 10;31(5):551-7. Hospital and surgeon volume in relation to survival after esophageal cancer surgery in a population-based study.Derogar M, Sadr-Azodi O, Johar A, Lagergren P, Lagergren J. Unit of Upper Gastrointestinal Research, Karolinska Institutet, NS 67, Level 2, SE-171 76 Stockholm, Sweden. maryam.derogar@ki.se PURPOSE: The influence of hospital and surgeon volume on survival after esophageal cancer surgery deserves clarification, particularly the prognosis after the early postoperative period. The interaction between hospital and surgeon volume, and the influence of known prognostic factors need to be taken into account. METHODS: A nationwide Swedish population-based cohort study of 1,335 patients with esophageal cancer who underwent esophageal resection in 1987 to 2005, with follow-up for survival until February 2011, was conducted. The associations between annual hospital volume, annual surgeon volume, and cumulative surgeon volume and risk of mortality were calculated with multivariable parametric survival analysis, providing hazard ratios (HRs) with 95% CIs. HRs were mutually adjusted for the surgery volume variables and further adjusted for the prognostic factors age, sex, comorbidity, calendar period, tumor stage, tumor histology, and neoadjuvant therapy. RESULTS: There was no independent association between annual hospital volume and overall survival, and hospital volume was not associated with short-term mortality after adjustment for hospital clustering effects. A combination of higher annual and cumulative surgeon volume reduced the mortality occurring at least 3 months after surgery (P trend < .01); the HR was 0.78 (95% CI, 0.65 to 0.92) comparing surgeons with both annual and cumulative volume above the median with those below the median. These results remained when hospital and surgeon clustering were taken into account. CONCLUSION: Because surgeon volume rather than hospital volume independently influences the prognosis after esophageal cancer surgery, centralization of this surgery to fewer surgeons seems warranted.

Editor's commentary: this is a provocative study of outcomes following esophagectomy from a nationwide registry in Sweden. After controlling for most of the important known prognostic features, the authors show that it is surgeon experience (whether total experience or yearly volume) that has the most impact on outcomes. It is intuitive to assume that surgeon volume is roughly predictive of outcomes for surgical procedures, but this is not always the case. CABG surgery is the most studied surgical procedure and it is now accepted that hospital volume is the most important predictor of outcome following CABG, and not surgeon volume. Esophagectomy is a rare procedure relative to CABG, and it is easier to believe that fewer surgeons obtain the experience necessary to become proficient. Having performed both procedures during the course of my career, I can attest to the observation that esophagectomy is a procedure that requires **both** technical expertise, as well as, clinical acumen to recognize and manage the various complications that can be expected following resection of the esophagus.

Esophageal cancer

Surgeon specialty affects outcomes in esophagectomy

Ann Thorac Surg. 2013 Mar;95(3):1064-9. Impact of surgeon demographics and technique on outcomes after esophageal resections: a nationwide study. Gopaldas RR, Bhamidipati CM, Dao TK, Markley JG. Division of Cardiothoracic Surgery, Department of Surgery, University of Missouri-Columbia School of Medicine, Columbia, Missouri. Electronic address: gopaldasr@health.missouri.edu. BACKGROUND: Thoracic, cardiac, and general surgeons perform esophageal resections in the United States. This article examines the impact of surgeon subspecialty on outcomes after esophagectomy. METHODS: Esophagectomies performed between 1998 and 2008 were identified in the Nationwide Inpatient Sample. Surgeons were classified as thoracic, cardiac, or general surgeons if greater than 65% of their operative case mix was representative of their specialty. Surgeons with less than 65% of a specialty-specific case mix served as controls. Regression equations calculated the independent effect of surgeon specialty, surgeon volume, and operative approach (transhiatal versus transthoracic) on outcomes. RESULTS: Of the 40,589 patients who underwent esophagectomies, surgeon identifiers were available for 23,529 patients. Based on case mix, thoracic, cardiac, and general surgeons performed 3,027 (12.9%), 688 (2.9%), and 4,086 (17.4%) esophagectomies, respectively. Operative technique did not independently affect risk-adjusted outcomes-mortality, morbidity, and failure to rescue (defined as death after a complication). Surgeon volume independently lowered mortality and failure to rescue by 4% ($p \leq 0.002$ for both), but not complications ($p = 0.6$). High-volume hospitals (>12 procedures/year) independently lowered mortality (adjusted odds ratio [AOR], 0.67, 95% confidence interval [CI], 0.46-0.96), and failure to rescue (AOR, 0.64; 95% CI, 0.44-0.94). Esophageal resections performed by general surgeons were associated with higher mortality (AOR, 1.87; 95% CI 1.02-3.45) and failure to rescue (AOR, 1.95; 95% CI, 1.06-3.61) but not complications (AOR, 0.97; 95% CI, 0.64-1.49). CONCLUSIONS: General surgeons perform the major proportion of esophagectomies in the United States. Surgeon subspecialty is not associated with the risk of complications developing but instead is associated with mortality and failure to rescue from complications. Surgeon subspecialty case mix is an important determinant of outcomes for patients undergoing esophagectomy.

Editor's commentary: This is the kind of article that dedicated thoracic surgical oncologists, like me, love to see: we do it better than everyone else. This is a retrospective review of the Nationwide Inpatient Sample that looked at the specialty of surgeon in esophagectomy relative to outcome. Unfortunately, the information pertaining to specialty of the operating surgeon was not available in a huge proportion of the sample and pretty much eats up the study's credibility. Nevertheless, it is fascinating to learn that general surgeons do the majority of esophagectomies in this country, but are not as proficient in "rescue" from complications. This rings true in my experience since I have been called upon in many instances in my career to bail out general surgeons who do not have the experience, skill or training to deal with some of the particularly difficult complications following esophagectomy.

Lung cancer screening

Lung cancer screening can be made more accurate by compiling more pretest information…

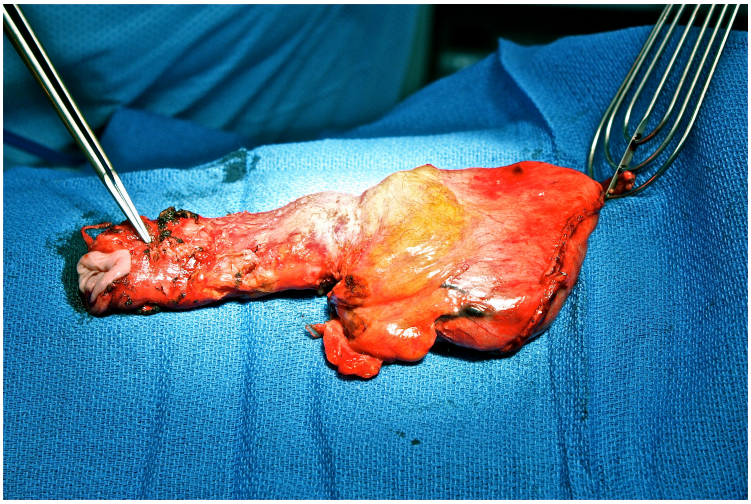
N Engl J Med. 2013 Feb 21;368(8):728-36. Selection criteria for lung-cancer screening. Tammemägi MC, Katki HA, Hocking WG, Church TR, Caporaso N, Kvale PA, Chaturvedi AK, Silvestri GA, Riley TL, Commins J, Berg CD. Department of Community Health Sciences, Brock University, St. Catharines, ON, Canada. martin.tammemagi@brocku.ca BACKGROUND: The National Lung Screening Trial (NLST) used risk factors for lung cancer (e.g., ≥30 pack-years of smoking and <15 years since quitting) as selection criteria for lung-cancer screening. Use of an accurate model that incorporates additional risk factors to select persons for screening may identify more persons who have lung cancer or in whom lung cancer will develop. METHODS: We modified the 2011 lung-cancer risk-prediction model from our Prostate, Lung, Colorectal, and Ovarian (PLCO) Cancer Screening Trial to ensure applicability to NLST data; risk was the probability of a diagnosis of lung cancer during the 6-year study period. We developed and validated the model (PLCO(M2012)) with data from the 80,375 persons in the PLCO control and intervention groups who had ever smoked. Discrimination (area under the receiver-operating-characteristic curve [AUC]) and calibration were assessed. In the validation data set, 14,144 of 37,332 persons (37.9%) met NLST criteria. For comparison, 14,144 highest-risk persons were considered positive (eligible for screening) according to PLCO(M2012) criteria. We compared the accuracy of PLCO(M2012) criteria with NLST criteria to detect lung cancer. Cox models were used to evaluate whether the reduction in mortality among 53,202 persons undergoing low-dose computed tomographic screening in the NLST differed according to risk. RESULTS: The AUC was 0.803 in the development data set and 0.797 in the validation data set. As compared with NLST criteria, PLCO(M2012) criteria had improved sensitivity (83.0% vs. 71.1%, P<0.001) and positive predictive value (4.0% vs. 3.4%, P=0.01), without loss of specificity (62.9% and. 62.7%, respectively; P=0.54); 41.3% fewer lung cancers were missed. The NLST screening effect did not vary according to PLCO(M2012) risk (P=0.61 for interaction). CONCLUSIONS: The use of the PLCO(M2012) model was more sensitive than the NLST criteria for lung-cancer detection.

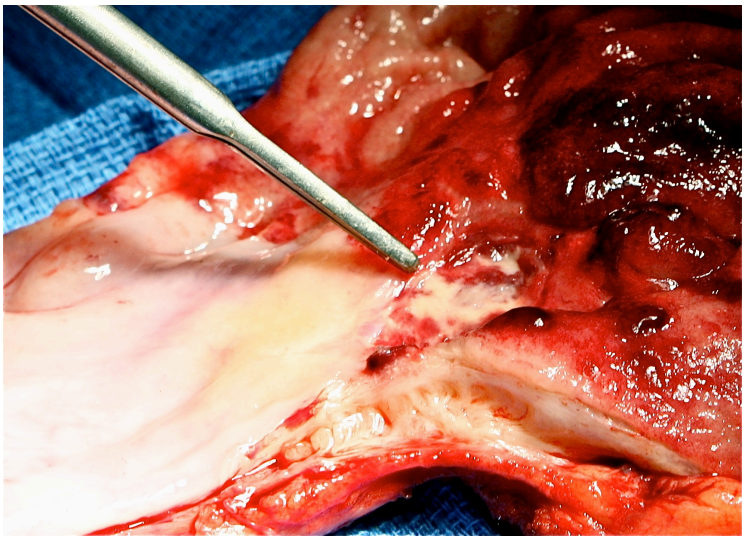
Editor's commentary: I enjoyed this article mainly because it was virtually impossible to read or to understand. The authors proved that if you spent more time to identify additional risk factors to improve the pretest probability of lung cancer, then you will find more lung cancers after LDCT scanning. However, what lung cancer screening needs are modifications that **improve** efficiency, not add further time, effort, and cost.

Interesting case presentation: salvage esophagectomy

Introduction This month's review features a case of salvage esophagectomy to illustrate the potential utility of this procedure. Over the last several months there have been several publications in the thoracic surgical oncology literature that have proven the benefits of salvage esophagectomy in selected patients. Salvage esophagectomy is considered in patients definitively treated with chemoradiation who either (1) recur following endoscopic and PET complete response or (2) in patients whose disease persists after treatment. The patients need to be able to withstand the procedure medically, and have no evidence of disease elsewhere. Each of these reports have emphasized that this is a procedure to be performed only in experienced centers.

A 72 year old WM patient was referred three months after definitive chemoradiation for a T3N0 distal esophageal adenocarcinoma. He achieved a complete response by PET scanning but surveillance EGD identified recurrent disease at the GE junction which was biopsied and proven to be adenocarcinoma.





He was referred for consideration for salvage esophagectomy. He was deemed an acceptable candidate and underwent Ivor-Lewis esophagectomy.

The gross specimen is seen at left and demonstrates an esophagogastrectomy specimen with the transected proximal esophageal margin to the left and the stapled gastric margin to the right. The en bloc celiac lymphadenectomy can be seen as the yellow mass of tissue in the middle of the lower margin of the specimen.

The lower photo shows the specimen opened and shows the area of the recurrent tumor at the GE junction. The smooth glistening surface to the left is the distal esophagus while the rugae of the stomach are visible to the right. The forceps demonstrate the recurrent tumor at the GE junction. Extensive treatment effect can be seen as well in the wall of the GE junction. Final pathology showed a focus of adenocarcinoma within a background of fibrosis and treatment effect. Margins were negative, as were 11 lymph nodes. The patient's post-operative course was remarkable for atrial fibrillation, and the patient was discharged home on POD#10. He is swallowing normally and was progressed to a regular, several small meals diet.

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