The impact of insight on post-lobectomy complications

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Provenance: This is an invited Editorial commissioned by the Section Editor Laura Chiara Guglielmetti (Cantonal Hospital Winterthur, Kantonsspital Winterthur, Winterthur, Switzerland).

Comment on: Kawaguchi Y, Hanaoka J, Ohshio Y, *et al*. A risk score to predict postoperative complications after lobectomy in elderly lung cancer patients. Gen Thorac Cardiovasc Surg 2018;66:537-42.

A library of publications evaluating the association of age with surgical morbidity from pulmonary lobectomy are available to support a surgeon's decision to offer, or not to offer surgery to the elderly. Some investigators have demonstrated higher surgical morbidity in the elderly, and others have shown no difference in complications between younger and older patients. A number of these articles are appropriately referenced in the article by Kawaguchi *et al.* Most surgeons have also met the octogenarian who appears younger than their biological age in the clinic preoperatively, and whom later appear older, than their biological age in their postoperative hospital bed.

The countenance of the postoperative elderly patient is not easy to predict. Thus, a clinician-friendly and prospectively-validated algorithm for accurate forecasting post-operative morbidity would be highly valuable to the thoracic surgical community. Such a high-performing algorithm would be particularly useful in the elderly, where the detrimental effects of a minor complication have a higher chance of being amplified by frailty. In their manuscript, Kawaguchi and colleagues derived a risk score for complications following lobectomy for non-small cell lung cancer (NSCLC) in 199 patients aged 75 or older. The authors' 6 element score was based upon factors independently associated with surgical morbidity and included male sex, performance status, history of coronary artery disease, history of cerebrovascular accidents, restrictive ventilator impairment, and "interstitial pneumonia". In the same study population of 199 patients that was used to derive the score, it is not surprising that

the authors demonstrated an association of this score with an increasing probability of surgical complications. More interestingly, the authors demonstrated that a higher-risk score was associated with decreased overall survival. The occurrence of post-operative complications following lung cancer surgery has previously been associated with both reduced long-term disease-free and overall survival (1,2), highlighting the physiologic and immunologic impact of complications and showcasing the importance of patient fitness and selection for lobectomy.

Kawaguchi and colleagues have addressed a significant gap in the surgical treatment of elderly patients with NSCLC through the generation and testing of a risk prediction algorithm. Validation of such a system has potential for optimization of the selection of elderly NSCLC patients for surgery so that patients with acceptable risk receive lobectomy, the current standard-of-care for individuals with stage I NSCLC (3), with minimal chance of complications and their associated oncologic and survival disadvantages. Patients determined to be high risk for lobectomy using this algorithm may potentially be allocated to sublobar resections (segmental preferred to wedge resection) for which this scoring system should also be tested and validated. Further, patients with risk preclusive of any resection might be identified and considered for stereotactic radiotherapy. The authors should consider comparing the test properties of their scoring system to those of other published scoring systems (4-7) and should ultimately validate their model prospectively. Such prospective evaluation would minimize the selection bias

present in their current retrospective study of a purely surgical population, will provide an additional validation cohort that is separate from the test cohort in which the score was derived, and would advance their model to the echelons of the highest available level of evidence for lung cancer surgery risk prediction.

Acknowledgements

Footnote

References

1. Wang S, Li X, Li Y, et al. The long-term impact of postoperative pulmonary complications after video-assisted thoracic surgery lobectomy for lung cancer. J Thorac Dis 2017;9:5143-52.
2. Fernandez FG, Kosinski AS, Furnary AP, et al. Differential effects of operative complications on survival after surgery for primary lung cancer. J Thorac Cardiovasc Surg 2018;155:1254-1264.e1.
3. Schneider BJ, Daly ME, Kennedy EB, et al. Stereotactic Body Radiotherapy for Early-Stage Non-Small-Cell Lung Cancer: American Society of Clinical Oncology Endorsement of the American Society for Radiation Oncology Evidence-Based Guideline. J Clin Oncol 2018;36:710-9.
4. Yutaka Y, Sonobe M, Kawaguchi A, et al. Prognostic impact of preoperative comorbidities in geriatric patients with early-stage lung cancer: Significance of sublobar resection as a compromise procedure. Lung Cancer 2018;125:192-7.
5. Zhang R, Kyriss T, Dippon J, et al. American Society of Anesthesiologists physical status facilitates risk stratification of elderly patients undergoing thoracoscopic lobectomy. Eur J Cardiothorac Surg 2018;53:973-9.
6. Husain ZA, Kim AW, Yu JB, et al. Defining the High-Risk Population for Mortality After Resection of Early Stage NSCLC. Clin Lung Cancer 2015;16:e183-7.
7. Gulack BC, Yang CJ, Speicher PJ, et al. A Risk Score to Assist Selecting Lobectomy Versus Sublobar Resection for Early Stage Non-Small Cell Lung Cancer. Ann Thorac Surg 2016;102:1814-20.