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Commentary: Toward precision surgery: Advances in defining sublobar resection candidacy

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In 1995, Ginsberg and Rubinstein¹ published a randomized trial demonstrating inferiority of sublobar resection in comparison to lobectomy for early non-small cell lung cancer (NSCLC). Since that time, lung cancer management has seen numerous advances from lung cancer screening to minimally invasive surgical techniques and breakthroughs in adjuvant systemic therapies. There has been a proliferation of observational studies contesting the conclusions of this early trial and several attempts to provide randomized controlled trial evidence in the modern era. We are now close to maturation of the Cancer and Leukemia Group B-140503² and Japan Clinical Oncology Group (JCOG)-0802 trials.³ The preliminary results of the latter trial were presented at a recent American Association for Thoracic Surgery Annual Meeting.⁴ These data indicate that whereas local recurrence is increased, patients undergoing sublobar resection benefit from improved overall survival.

As we anticipate the conclusions of these trials, this is a critical juncture to strengthen the evidence base for appropriate candidate selection for such operations. The consolidation/tumor (C/T) ratio as measured on high-resolution computed tomography (HRCT) was previously investigated in the JCOG-0201 study. They demonstrated that C/T ratios ≤ 0.25 and ≤ 0.5 were associated with a high likelihood of pathologic noninvasive NSCLC and

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CENTRAL MESSAGE

Although SUVmax does not improve the ability to select candidates for sublobar resection, high-resolution computed tomography demonstrates excellent specificity for pathologic noninvasive NSCLC.

improved long-term survival.⁵ Building on this, Muraoka and colleagues⁶ aim to define the additive role of positron-emission tomography (PET)/CT in predicting pathologic noninvasive NSCLC.⁶

The authors examined 926 patients with clinical stage IA suspected or confirmed NSCLC who had undergone PET/CT as part of their preoperative investigations. The major finding of this study was that, although maximum standardized uptake value had superior discrimination (area under the curve, 0.842) in comparison to C/T ratio alone (area under the curve, 0.733), models incorporating maximum standardized uptake value experienced decreased sensitivity and misclassification. In contrast, for lesions with a C/T ratio ≤ 0.5 measured on HRCT, specificity was 97%. Remarkably, among 125 patients, this resulted in only 1 patient with a C/T ratio ≤ 0.5 having invasive histology. This is an improvement on the results shown in the preceding JCOG-0201 study, perhaps reflecting interim advancements in imaging technology and expertise of interpreting radiologists.

Whereas these advancements likely contributed to the notable findings of this study, it also potentially limits generalizability. The same technology, technique, and experience may not be available globally. In terms of the conclusion that PET/CT does not improve prediction, this is not surprising given that low uptake is associated with infectious lesions

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and tumors of low invasiveness. However, the degree to which low or moderate metabolism represents an early malignancy versus an alternate granulomatous or infectious process will depend on a patient's pretest probability of having lung cancer and the endemicity of the region.⁷

Both of these issues could be addressed by replicating the study in other regions or as a multinational study. Given the preliminary findings of JCOG-0802 and the increasing recognition of tumor spread through air spaces as a risk factor for recurrence,⁸ reporting tumor spread through air spaces in any future study will be crucial. Well-designed prospective studies capturing these data could provide strong guidance for surgeons in need of criteria for determining appropriateness of sublobar approaches for their patients.

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Commentary: Maximum standardized uptake value is no crystal ball for candidate selection for sublobar resection: The future is cloudy (ground-glass)

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In this issue, Muraoka and colleagues¹ performed a retrospective study of 926 patients with clinical stage IA lung cancer. While JCOG 0201 reported a correlation between a consolidation/tumor (C/T) ratio <0.25 and noninvasive

The future is cloudy (ground-glass).

CENTRAL MESSAGE

This study suggests that maximum standardized uptake value does not improve selection for sublobar resection. However, we await results of randomized trials to further define the indications.

lung adenocarcinoma,² the authors evaluated whether adding maximum standardized uptake value (SUVmax) improved the ability to identify patients with no lymphatic invasion, vascular invasion, or lymph node metastasis. They

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