When the sum of the parts is greater than the whole

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Limited pulmonary resection serves several purposes: to optimize long-term pulmonary function, to allow patients at higher risk to benefit from surgical resection, and to allow patients at standard risk to benefit from future surgical resections of metachronous primary tumors. With regard to long-term pulmonary function, more than 25 years ago the Lung Cancer Study Group concluded that there were no significant differences in late pulmonary function after lobectomy versus limited resection.¹ The wall was then built—albeit briefly—for advances in parenchymal-sparing surgery for early lung cancer. Although pulmonary function is important, the primary concern has always been that of oncologic compromise. In the past 2 decades, we have seen the thoracic surgical innovators and fans of the sublobar resection forge ahead and demonstrate that lesser resection does not necessarily reduce cancer-related survival in patients with early stage disease.^{2,3} Aside from survival, however, quality-of-life and parenchymal preservation are possible and may have a long-term “functional benefit.”⁴ A lung-sparing approach is no longer just a trend, and Asian and North American clinical trials are open.^{5,6} Accuracy in reporting long-term functional status and precise definition of what constitutes a segmentectomy are therefore important.

In this issue of the *Journal*, Nomori and colleagues⁷ demonstrate that not all segmentectomies are equivalent. Specifically, with regard to the extent of lung resection, the left upper division (LUD) segmentectomy (also known as the *lingular-sparing trisegmentectomy*) should not be placed in the general segmentectomy basket.⁷ Why not? When Nomori and colleagues⁷ looked at regional lung perfusion with single-photon emission computed tomography and measured pulmonary function tests, they found that the LUD segmentectomy was equivalent to a left upper lobectomy with regard to what they deemed lobar and systemic function. They theorized that the remaining lingula did not pull its weight after being spared and that, not surprisingly, resection of the large LUD or trisegments functionally spares little parenchyma.

This article contributes to the literature because there are no previous comparisons of pulmonary function tests and lung perfusion after segmentectomies. The results thus

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Central Message

Pulmonary function after an upper division trisegmentectomy is equivalent to that after upper lobectomy. When assessing functional outcomes after segmentectomies, exclude the upper division resection.

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will have research and clinical utility. This finding will be important for designing new clinical trials of sublobar resections and for analyzing the results of the current ones including Cancer and Leukemia Group B 140503 and Japan Clinical Oncology Group 0802/West Japan Oncology Group 4607L, in which pulmonary function is also a clinical end point.⁸ In addition, as the segmentectomy become an established option in the algorithm for deciding extent of resection of ground glass opacities,⁹ the results of Nomori and colleagues⁷ would support relegating the LUD to the left upper lobe category. It has been shown, first by Macke and associates⁴ and now by Nomori and colleagues,⁷ that a segmentectomy is not a segment by any other name, and we should use categories of segments resected (1-2, 3-5) when reporting and making clinical decisions. For the case of the LUD, with its 3 segments, the article of Nomori and colleagues⁷ shows that resection of the LUD does not play by the rules and probably should not be classified into either of these segmentectomy categories. In this case, the sum of the 3 segments equals 5.

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