resection with negative specimen margins. Furthermore, a considerable number of resections were performed for the more challenging segments (S9 and S10) without the need for conversion to lobectomy or open thoracotomy.

These results demonstrate the feasibility of the single-direction thoracoscopic basal segmentectomy with an excellent safety profile. That said, we should be reluctant to perform a basilar segmentectomy instead of lower lobectomy in patients with lung cancer with sufficient preoperative lung function if it means they will be more likely to develop locoregional recurrence or die of their disease. Identifying which patients truly benefit from basilar segmentectomy over lower lobectomy is a question not addressed by this study. Nonetheless, we believe this article by Liu and colleagues⁶ provides novel information and describes a useful surgical technique that will become more relevant as we are increasingly called to address smaller and potentially less aggressive cancers. We acknowledge the authors for the excellent visual contents

in the article, which are essential for the understanding of their technique.

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Commentary: Single-direction or multidirection basilar segmentectomy: Is there an easier way?

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CENTRAL MESSAGE

Standardization of techniques for complex anatomic sublobar resections is required to facilitate adoption by practicing surgeons and education of trainees.

With lung cancer screening and the seemingly ever-increasing number of diagnostic chest computed tomographic scans being performed, we should expect to detect more and more early-stage lung cancers. Although still the subject of debate, it is conceivable to expect that sublobar resection could achieve results equivalent to lobectomy in selected cases. In patients with

compromised pulmonary function, sublobar resection may be the only surgical option. Long-term results of large, prospective trials of lobar and sublobar resection are forthcoming (CALGB 140503, JCOG/WJOG 0802). From an oncologic standpoint, segmentectomy is more attractive than wedge resection, because it facilitates

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peritumoral (N1) lymph node sampling and may optimize parenchymal resection margins. Despite this, segmental resection appears significantly underused in analyses of large clinical and administrative databases. It is unknown whether technical factors have a role to play in the decision to proceed with segmentectomy. For instance, basilar segmentectomy presents technical challenges related to anatomic variation and identification of intersegmental planes.

The article in this issue of the *Journal* by Liu and colleagues¹ provides a detailed description of alternative approach to pulmonary segmentectomy where there is a deliberate attempt to minimize repeated manipulation of the lobe and unnecessary division of the lung parenchyma, especially in cases of hypoplastic or absent fissures. Liu and colleagues¹ claim that approaching basilar segmentectomy from the inferior pulmonary ligament improves exposure of segmental anatomy and facilitates dissection. It should be emphasized that preoperative 3-dimensional computed tomographic reconstruction appears to be an important determinant of success. This type of imaging requires dedicated steps during image acquisition and special processing, which are probably not routinely used by most radiologists and thoracic surgeons. As a result, there may be technological and educational hurdles to adoption of this approach.

Liu and colleagues¹ are to be congratulated for their innovative spirit and their meticulous attention to detail in developing a systematic approach to basilar segmentectomy, an

anatomically challenging operation even in patients with complete fissures. Others have described operative techniques for basal segmentectomies.²⁻⁴ In their article, Liu and colleagues¹ summarize a relatively large, single-center experience (n = 137) with minimally invasive basilar segmentectomy. The study has limitations in design, such as the absence of a comparison group and the inclusion of patients with multiple other resections. These limitations have been properly acknowledged by Liu and colleagues.¹ Nevertheless, the technique presented is of interest and may be of increasing relevance in the treatment of early-stage lung cancer.

The key to success appears to lie in accurate preoperative image processing and analysis to recognize and understand anatomic variations. In the hands of Liu and colleagues,¹ this translates to safe and more efficient parenchymal dissection. Although this is definitely a step in the right direction, there is a long way to go before we get to widespread adoption.

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