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See Article page 1363.





# Commentary: Video-assisted thoracoscopic surgery versus robotic assisted surgery: Are we asking the right question?

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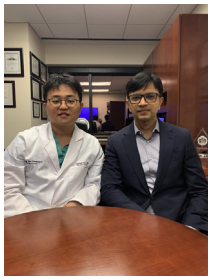

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**CENTRAL MESSAGE**

Both video-assisted thoracoscopic and robotic segmentectomy are effective and safe in the hands of expert surgeons in treating early lung cancer.

Minimally invasive surgical approaches are steadily replacing thoracotomy in early lung cancer. Video-assisted thoracoscopic surgery (VATS) is safe and oncologically equivalent to open surgery,[1-3] demonstrating less postoperative pain, shorter hospital stay, and decreased blood loss.[4-6] However, technical challenges, such as dissection of small yet variable segmental bronchovascular structures and the intersegmental plane, result in a steep learning curve that may hinder the adoption of VATS for segmentectomy. In contrast, robotic-assisted surgery (RAS) has gained a more rapid adoption potentially due to improved optics and small-wristed instruments that facilitate complex operative movements. Nevertheless, most studies demonstrate equivalent short-term safety profiles but higher costs associated with RAS.[7,8] The article by Zhang and colleagues[9] similarly, aims to compare short-term outcomes and cost between the VATS and robotic segmentectomy. Using a large cohort and propensity matching, this retrospective study from multiple institutions demonstrates equivalent perioperative outcomes but increased indirect costs associated with the RAS approach. The study also demonstrates improved dissection of N1 nodes with the RAS approach that may have a potential long-term oncological benefit, although no significant difference in upstaging was demonstrated in this study.

The study has a few limitations. First, although patients were propensity matched, a retrospective review of cases performed by a handful of surgeons could be prone to selection bias. Second, whereas the authors should be commended for the large volumes, generalizability of the study to thoracic surgeons who may lack similar clinical volume is limited. It is also unclear from the study whether the outcome during the learning curve of the surgeons was accounted for in the analyses. Finally, the interinstitution variability of the pathologist reviewing the cases could have introduced difference and bias in nodal station and number, thus affecting the outcome. Despite these limitations, the article provides

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useful data demonstrating safety and efficacy of both VATS and RAS in complex pulmonary resection.

Segmentectomy remains a relatively uncommon procedure at several training programs and the Accreditation Council for Graduate Medical Education does not mandate a specific volume threshold. Consequently, the graduating thoracic surgery resident physicians may not be proficient in the conduct of these procedures. Hence, a more important question is which of the approaches provides a more efficient learning curve for early-career thoracic surgeons or experienced thoracic surgeons seeking to gain expertise in segmentectomy. Additionally, is 1 approach better for patient safety and oncological treatment during the stipulated learning curve? Given the evident lack of superiority of 1 technique over the other, the answer to this question might improve decision making in the adoption of the appropriate approach. The authors of this editorial (SK and AB) preferentially use RAS and VATS, respectively, for segmentectomy. In comparing our outcomes, we have noted no significant difference in either short- and long-term outcomes, similar to the published literature. We propose that VATS and RAS should be viewed as complementary, and not competing, approaches. The decision to adopt 1 over the other should be guided by practice patterns, institutional resources, and individual surgeon experience.

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