

The authors reported no conflicts of interest.

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REPLY: THE IMPORTANCE OF APPROPRIATE SELECTION FOR SEGMENTECTOMY



Reply to the Editor:

We appreciate the response to our commentary by Liu and colleagues¹ regarding the study by Razi and colleagues² evaluating segmentectomy versus lobectomy for cT1 N0 M0 non-small cell lung cancer who were discovered to have “unsuspected” pathologic N1 or N2 disease. We largely agree with the key points raised by Liu and colleagues. Appropriate selection of patients for segmentectomy is critical. In general, segmentectomy can be a reasonable choice for small, peripheral tumors that are ≤ 2 cm in diameter when a segmental margin that is greater than or equal to the tumor diameter is achievable, particularly in patients with advanced age, who are frailer and have reduced cardiopulmonary reserve. There are 2 ongoing randomized controlled trials—the results of which are eagerly anticipated—designed to further improve our understanding of patient selection for limited resection for cT1a (peripheral tumors < 2 cm) N0 M0 non-small cell lung cancer: CALGB 140503³ and JCOG0802/WJOG4607L.⁴

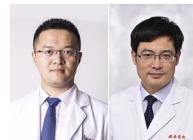
In the era of lung cancer screening and increased identification of small, peripheral tumors, the uncommon scenario of unsuspected N1 and N2 disease during a segmentectomy will likely become more frequent. It will be important to continue evaluating questions regarding the extent of parenchymal resection in the setting of N1 and unsuspected N2 disease in well-designed multicenter studies that have granular data that include details about N1 and N2 lymph nodes and that have data regarding pulmonary function.

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ROBOTIC SEGMENTECTOMY: WE ARE STILL ON THE WAY



To the Editor:

In their Commentary, Song and Flores¹ propose several thoughtful questions and describe certain limitations of robotic segmentectomy. We cannot agree with them more. However, we are still willing to clarify the question inherent to their Commentary.

Our study² indicated that robot-assisted thoracic surgery (RATS) demonstrated improved N1 node retrieval as a potential benefit; however, nodal upstaging did not achieve a significant difference between the 2 groups. We only observed 2 cT1b N0 adenocarcinomas in the RATS group upstaged to pT1b N2 after propensity score-matched analysis.² The possible reasons for this low rate of nodal upstaging in our study were the careful determination of clinical stage with positron-emission tomography, computed tomography, and other methods as well as strict selection of slowly growing ground glass opacity (GGO) nodules for segmentectomy procedures in both cohorts. It seems that difference in nodal upstaging between these 2 techniques is still controversial. Wilson and colleagues³ reported that the rate of nodal upstaging for robotic anatomical resection, including lobectomy and segmentectomy, appeared to be superior to video-assisted thoracoscopic surgery (VATS) and similar to thoracotomy for stage I non-small cell lung cancer. Further, a recent

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study by Hennon and colleagues⁴ indicated that RATS was not superior to VATS with respect to lymph node upstaging for lobectomy. Therefore, nodal upstaging is yet to be confirmed as a potential benefit of RATS in further studies.

We reported similar operative times in our study, and will clarify that operative times mentioned in both groups were calculated from skin to skin. As Song and Flores¹ mention, positioning and docking of the robotic equipment undoubtedly contribute to nonoperative anesthesia time, and this is why we have dedicated skilled assistants who are capable of completing it within 5 minutes. In addition, the operative time in the VATS group also contains the connection and disconnection to instruments and screens. The reason we chose this calculation of total time was to truly compare the operative time, including team cooperation time required, between the 2 surgical approaches.

The main argument against RATS compared with VATS is its increased cost. This is also the major problem that we face with robotic surgery in China. Another limitation is the limited availability of robotic systems because only about 140 hospitals in China are equipped with robotic systems, and most have only 1 or 2 systems that are shared by multiple surgical departments.

Finally, Song and Flores¹ mention the inability to directly palpate the tumor, especially GGO tumors, during the robotic approach, suggesting a need to have information regarding GGO versus solid components. We believe that palpation of GGO tumors is a common problem in minimally invasive surgery. It is difficult to directly palpate GGO tumors not only in robotic surgery, but also in VATS. For these patients, hook-wire localization and 3-dimensional images using computed tomography angiography and bronchography were selectively used in some difficult and/or atypical segmentectomies in both cohorts.

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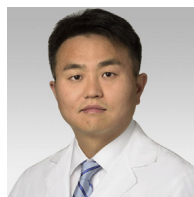
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REPLY: VIDEO-ASSISTED THORACOSCOPIC SURGERY VERSUS ROBOTIC ASSISTED SURGERY: CAN THEY BOTH CO-EXIST?



Reply to the Editor:

More than ever, driven by advancements in the technology, thoracic surgeons are using a robotic platform to perform anatomical pulmonary resection. There is an intense debate whether robotic-assisted surgery (RAS) offers any advantage over the video-assisted thoracoscopic surgery (VATS) technique. Several retrospective institutional studies and large database studies reported, for the most part, equivalent short-term safety profiles but greater costs associated with RAS.^{1,2} The article by Zhang and colleagues³ similarly shows VATS and robotic segmentectomy have an equivalent short-term clinical outcome with increased direct cost. RAS showed improved ability to perform lymphadenectomy, yet the oncologic benefit is less than clear. One may then wonder what is the utility of the robotic approach when the RAS costs more without clear clinical benefits?

The debate over medical robotics is nothing new; it has challenged and, in certain fields, shifted the treatment paradigm. This change was the most notable in the urology field, where RAS is now the most common approach for radical prostatectomy in the United States. Yet, in early-phase adoption, the cost effectiveness of robotic surgery over laparoscopic surgery and open surgery was often questioned and debated. It was found that the robotic surgery was associated with greater cost compared with laparoscopic surgery without significant clinical benefit.⁴ More contemporary studies have shown, however, that robotic surgery is either comparable or costs less compared with laparoscopic and open prostatectomy.⁵

It can be surmised that as the experience and data regarding robotic anatomic pulmonary resection matures,