Commentary: Minimally invasive lobectomy for lung cancer: Safely finishing what you started

Andrew R. Brownlee, MD, FACS, and Harmik J. Soukiasian, MD, FACS

The adoption of minimally invasive platforms has increased significantly over the last several years. In the Society of Thoracic Surgeons database from 2013 to 2019, video-assisted thoracoscopic surgery (VATS) lobectomy rates increased 82% whereas robotic lobectomy rates increased 328%. Minimally invasive lobectomy now accounts for 82% of all cases in the database.1 Now more than ever, as the volume and complexity of minimally invasive lobectomy continues to increase, it is important to critically examine the strengths and limitations of different platforms. Conversion to open lobectomy has been associated with increased complications, mortality, length of stay, and cost compared with those completed without conversion.2 Therefore, conversion rates are a metric of interest when evaluating efficacy of minimally invasive platforms.

The authors present their results of the Pulmonary Open, Robotic and Thoracoscopic Lobectomy (PORTaL) consortium, which comprised surgeons from 21 US centers.3 Data were collected retrospectively from all consecutive lobectomies performed for clinical stage IA-IIIA lung cancer from January 2013 to June 2019. The authors report one of the largest multi-institutional series of lobectomy for lung cancer, including more than 5800 patients undergoing VATS or robotic lobectomy. The authors found that robotic lobectomy had a lower overall conversion rate compared with VATS, with the conversion rate of VATS nearly 4-fold greater than the robotic approach (3.6% vs 12.9%; P < .0001). The causes for conversion were more commonly anatomic reasons in the VATS cases (66.6% vs 45.6%, P = .0002) and more commonly for vascular reasons in the robotic cases (24.8 vs 14%, P = .01). In addition, the conversion rate increased in the VATS group more than the robotic group as the disease stage advanced. There was no significant difference in the rate of emergent conversions between the 2 groups. Cases that were converted to open had worse outcomes than those completed minimally invasive or started as an open lobectomy (longer length of stay, more transfusion, and more postoperative complications). In multivariate analysis, significant predictors of conversion were tumor size, induction therapy, and VATS approach.

This is a retrospective study with surgeon-specific practices, for which it is difficult to control. One such factor is learning curve. As such, the authors selected institutions that had surgeons with at least 50 cases of experience with the selected approach. The threshold for converting to open will vary among surgeons. That being said, VATS had a significantly greater overall conversion rate. It is difficult to elucidate the reasons behind this; however, it may in part be explained by the benefits of the robotic platform, including improved dexterity and visualization with scaled movement. As always, it is best
to be safest and convert when required. However, we must not forget that this and previous studies have demonstrated that conversion to open may result in worse patient outcomes.

The continued progression and innovation of minimally invasive approaches in lung resection will help surgeons to deliver safe and effective care while ever pushing the boundaries of who can benefit from a minimally invasive operation, whether it be by VATS or robotics. Either way, the patient is the beneficiary.

References