Objective: En-bloc chest wall resection for locally advanced lung cancer is traditionally performed via an open approach. Limited case reports and small case series have reported the use of minimally invasive approaches to chest wall resection. The trends of use, safety and effectiveness of this approach nationally are not known.

Methods: We used the National Cancer Database to identify adult patients with locally advanced lung cancer requiring a chest wall resection, between 2010 and 2017. We stratified patients into those undergoing a minimally invasive resection (VATS/robotic) and those undergoing an open approach. To account for conversions, we analyze the data using both intention-to-treat and as-treated classifiers. The main outcomes of interest were length of stay, 90-day mortality, readmissions and overall survival. We used multivariable logistic regression, Kaplan Meier and Cox-Proportional hazards models to identify associations and estimate survival.

Results: Of 2,454 patients with locally advanced lung cancer requiring an en-bloc chest wall resection, 546 (22.3%) were started minimally invasively. There were 170 (31.1%) conversions to open. Year over year, the use of minimally invasive approaches increased from 7% in 2010 to 22.9% in 2017. Patients undergoing a minimally invasive operation were similar in terms of age 64.9+10.1 vs 65.5+10.7, sex, race and Charlson comorbidity score (all p>0.05), but had smaller cancers (5.1+2.8 cm vs 6.1+4.3 cm; p<0.001) compared to the open group. Patients in the minimally invasive group had shorter length of stay 7.9+5.7 days vs 10+9.4 days p<0.001) but similar 90-day mortality at 8.4% vs 8.2% p=0.889, and had similar readmission rates 4.8% vs 6.3%; p=0.271. Overall survival was equivalent between the two groups.

Conclusion: In this first national report on the use of minimally invasive approaches to en-bloc chest wall resection for locally advanced lung cancer, we found that the minimally invasive approach is being utilized more frequently. Although conversions to open are common, this approach is safe, and is associated with shorter hospital stays. Overall survival is equivalent to the open approach.

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