

Robotic-assisted versus VATS Lobectomies: Propensity Matched Comparison of Outcomes from High Volume Surgeons Utilizing the Premier Perspective Database

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In the last five years many studies have been published evaluating robotic-assisted lobectomy, but most of those studies are limited by a small sample size and potentially included a mix of early adopters and experienced surgeons. There are limited reports evaluating the surgical outcomes of proficient surgeons. In this study, the authors focused on evaluating the comparative effectiveness of robotic-assisted and video-assisted thoracoscopic lobectomy performed by high-volume surgeons in a national database.

Patients who received an elective lobectomy from high-volume surgeons (>20 lobectomies per year by robotic-assisted or VATS approach) from January 2011 through September 2015 were identified from the Premier Healthcare database. ICD-9 codes were used to identify these cases.

1:1 propensity-score matching using age, gender, race, Elixhauser comorbidity score, and type of malignancy identified 1166 comparable cohorts for analysis.

Data

Propensity Score-Matched Comparisons of Peri-operative Clinical Outcomes from High-Volume (>20 lobectomies/year) Surgeons

	Robotic-assisted Surgery (N=1166)	VATS (N=1166)	p Value
Age, mean ± SD	67.62 ± 10.20	67.94 ± 10	0.6008
Elixhauser Comorbidity Score, mean ± SD	3.45 ± 1.78	3.53 ± 1.79	0.2793
OR time, mean ± SD	244.50 ± 81.61	220.74 ± 77.23	< 0.0001
Conversion to open, N (%)	55 (4.717)	90 (7.719)	0.0035
Postoperative complications,* N (%)	346 (29.674)	409 (35.077)	0.0061
30-day complication rate, N (%)	380 (32.590)	448 (38.422)	0.0037
Index hospital postoperative bleeding, N (%)	23 (1.973)	71 (6.089)	< 0.0001
Blood transfusion,* N (%)	48 (4.117)	52 (4.460)	0.7591
Length of stay, days (median)	5	5	0.7662
30-day mortality rate, N (%)	13 (1.115)	12 (1.029)	0.8406

Statistical significance set at $p < 0.05$

*Through discharge

Results

Compared to VATS, robotic-assisted lobectomies were associated with:

- Fewer conversions to open surgery[†]
- Lower 30-day complication rates
- Lower postoperative bleeding
- Comparable transfusion rates, length of stay, and 30-day mortality rate
- ~24 minutes longer operative time

[†] Additional studies reported comparable conversion rates.¹⁻⁹

Key takeaway

When limiting surgical outcomes to only high-volume surgeons, although the mean operative time was slightly longer by about 24 minutes, the robotic-assisted approach appears to offer the benefits of a lower conversion to open rate, a lower 30-day complication rate, and lower postoperative bleeding when compared to VATS.

Study limitations

- Data comes from an administrative database, with no data available on long-term outcomes and pathology/staging information.
- As anticipated in any large administrative database, there is potential for coding errors in the data.

PUBLICATION SUMMARY

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FINANCIAL DISCLOSURE

Dr. Reddy and Dr. Oh have received compensation from Intuitive Surgical for consulting and/or educational services. Authors Gorepati and Mehendale disclose a financial relationship with Intuitive Surgical.

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