

# Commentary: Minimally-invasive thymectomy with minimal concerns



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In this issue of the *Journal*, in the article “A National Analysis of Open versus Minimally Invasive Thymectomy for Stage I-III Thymoma,” Yang and colleagues<sup>1</sup> address “concerns of thymoma capsule violation...leading to pleural seeding that compromises the oncological efficacy” of minimally-invasive surgery (MIS). They address this concern by comparing open with MIS thymectomy via a National Cancer Database analysis. As expected, the baseline characteristics between all patients who met inclusion criteria revealed significantly lower stage and smaller tumor size in the MIS group. Therefore, the authors performed a propensity-matching analysis to balance these differences and observed that the margin status, perioperative mortality, 30-day readmission rate, and overall survival were not compromised with MIS.

The authors acknowledge that the Japanese Association for Research on the Thymus (JART) by Agatsuma and colleagues<sup>2</sup> and the International Thymic Malignancy Interest Group (ITMIG) by Burt and colleagues<sup>3</sup> have addressed this question. These groups found that recurrence-free and overall survival and R0 resection rates were not different based on approach. Even though the previous reports are large and even international datasets, all are retrospective. Therefore, they are limited by selection bias, misinformation bias, and potential beta errors. Even the JART study, with propensity-matching and overall survival as an outcome, remains a retrospective report. A practical method to overcome these biases without prospective, randomized studies is the reproducibility of the results with different datasets that ask a similar question. Yang and colleagues should be commended for a well-performed analysis with propensity matching in which they have effectively used the National Cancer Database, which confirm these findings.

Given that pleural dissemination is a common recurrence pattern thymoma, I suspect that recurrent pleural disease was inappropriately attributed to surgical

### Central Message

Minimally-invasive thymectomy is an oncologically acceptable alternative to open thymectomy for the resection of thymoma. Multiple studies over nearly 3 decades do not support the concern of increased tumor dissemination.

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technique when this pattern represented the biology of patient’s disease. In support of the biology of pleural-only spread, patients with Masaoka stage IVA present with pleural dissemination without previous surgery. In addition, even though tumor violation may increase pleural seeding with tumor cells that are able to implant, capsule violation and tumor dissemination are rarely the difficult aspects of a MIS thymectomy for thymoma. Indeed, the authors note a slightly lower rate of negative margins of 69.7% in open versus 76.2% in MIS thymectomy, which suggests that capsule violation is not limited to MIS.

As Yang and colleagues cite, the first case report of video-assisted thoracoscopic surgery thymectomy was published 27 years ago. Multiple studies followed over 3 decades, and none support the concern of increased tumor dissemination. When do we state that a “concern” is eliminated or minimized? Based on all these reports, the approach does not significantly impact a patient’s outcome as long as the operation is performed well with minimal complications and complete resections. Therefore, the surgeon should perform a thymectomy based on the particular patient’s disease, anatomy, and performance status as well as the surgeon’s experience that best maximizes complete resection, whether open or MIS. Ideally, as molecular characterization of tumors and detection of serum biomarkers improves, these tools will enable prediction of recurrent

disease and detection of micrometastatic spread rather than surgical approach.

### References

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