

Early stage thymoma: is VATS the new standard of care?

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Submitted May 07, 2016. Accepted for publication May 17, 2016.

doi: 10.21037/jtd.2016.05.35

View this article at: <http://dx.doi.org/10.21037/jtd.2016.05.35>

VATS has become the standard of care in early stage lung cancer over the last decade. Improvement in technology in terms of energy devices, staplers and visualization has enabled thoracic surgeons to perform the most complex procedures using VATS approach.

However the adoption of VATS thymectomy for thymic malignancies has progressed slowly, mainly due to the limitations and concerns related with the disease itself and its anatomic location. Open resection of early stage thymoma results in excellent long term survival (90%) and very low rate (<5%) of recurrence (1). The technical difficulty of the VATS approach for anterior mediastinum, especially in the presence of a fragile mass, stimulated thoracic surgeons for varieties such as bilateral VATS and additional subxiphoid and/or cervical incisions. Conversion rates of VATS for thymic tumors is in single digit numbers (3–8%) (1-5).

The current study is a multi-institutional collection of patients spanning a period of almost two decades [1994–2012] and is comparing the results of open and VATS approaches in clinically early stage (Masaoka-Koga I and II) thymomas (6). The number of patients collected is substantial (n=1,117) for this rare thoracic malignancy and the authors should be congratulated for undertaking such a difficult task. Straightforward comparison of 241 VATS cases with 876 open cases shows that VATS results in a higher percentage of total thymectomy, complete resection rate and less recurrence, but with an identical long-term survival rate (92% at 5 years). Is this result enough to recommend VATS thymectomy as a standard technique for early stage thymomas?

When we carefully look at the data presented in the paper, there are data supporting a “YES” and a “NO” answer.

- (I) A total of 1,098 of 1,117 patients (98%) were operated on after 2000 and 233 of 241 (96%) VATS thymectomy patients were operated on after 2009. This certainly leads to a time and experience related bias. The surgeons gained significant experience in terms of patient evaluation and selection using contemporary tools during this time and also technical expertise with open procedures before shifting to VATS. Thus a comparison of patients operated either with VATS or open technique after 2009 would be interesting to see if these findings persist or not.
- (II) The current study does not detail the VATS technique. Most typical approach is from the right side, but there are bilateral approaches as well and in some cases additional cervical and/or subxiphoid incisions. Whether the technique of VATS affects the operation time, complete resection and recurrence rates is to be investigated.
- (III) The whole cohort shows that, open surgery group had higher number of males, less associated myasthenia gravis, significantly larger tumors (7.17 vs. 4.65 cm), more clinical stage 2 tumors. Pathologic stage was 3 and 4 in 264 (30%) patients in open surgery group, whereas only in 6 patients (2.5%) in VATS group. As a result there was a 7.7% R2 resection rate in the open surgery group. This data obviously reflects a very significant selection bias in favor of VATS group. As expected, multivariate analysis reveals that it is not the surgical technique, but Masaoka and WHO classification, and adjuvant therapy are of prognostic importance.
- (IV) And finally when techniques (VATS n=229

Table 1 Some of the studies published in literature comparing VATS and open technique in thymic malignancies

Author, year and country	Type of study	N (VATS/open)	Morbidity and mortality	Blood loss	Hospital stay	Recurrence rate	Survival
Friedant, 2016, USA (1)	Systematic review and meta-analysis	1,355/683	No difference	No difference	Shorter in VATS	No difference	No difference
Xie, 2015, Australia (2)	Systematic review	540/521	Less pneumonia, no difference in mortality	Less in VATS	Shorter in VATS	No difference	No difference
Manoly, 2014, UK (3)	Retrospective case series	17/22	Less pneumonia, no difference in mortality	Less need for transfusion in VATS	Shorter in VATS	No difference	No difference
Sakamaki, 2014, Japan (4)	Retrospective case series	71/11	No difference	No difference	NS	No difference	Lower in open group
Jurado, 2012, USA (5)	Retrospective case series	77/186	No difference	Less in VATS	Shorter in VATS	No difference	No difference

NS, not stated.

and open n=610) were compared according to pathologic stage (Masaoka-Koga stage I and II), there was no difference in terms of 5-year survival (89.4% vs. 96.7% respectively) and recurrence rate (3.3% vs. 4.7% respectively).

Some of the series comparing VATS and open approaches in thymic malignancies are presented in *Table 1* (1-5). The typical improvements that are gained with a VATS approach are shorter hospital stay and reduced blood loss, whereas overall and recurrence-free survival are same in almost all series.

So if we finally answer the question raised above, based on current large multi-institutional study and available literature data, a VATS approach for early stage thymic tumors in experienced centers is as safe as an open approach. It will most likely result in less intraoperative blood loss, less pneumonia and reduced hospital stay without having any impact on long term survival. However surgeons with limited experience in the evaluation and selection of these patients, should not be tempted with the lure of VATS, but rather play on the safe side.

My answer is a “conditional” YES.

Acknowledgements

None.

Footnote

Provenance: This is an invited Editorial commissioned by the Guest Editor Wentao Fang (Department of Thoracic Surgery, Shanghai Chest Hospital, Shanghai Jiao Tong University, Shanghai, China).

Conflicts of Interest: The author has no conflicts of interest to declare.

Comment on: Wang H, Gu Z, Ding J, *et al.* Perioperative outcomes and long-term survival in clinically early-stage thymic malignancies: video-assisted thoracoscopic thymectomy versus open approaches. *J Thorac Dis* 2016;8:673-9.

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Cite this article as: Batirel HF. Early stage thymoma: is VATS the new standard of care? *J Thorac Dis* 2016;8(7):1431-1433. doi: 10.21037/jtd.2016.05.35