Editorial Commentary

Long-term survival following thoracoscopic versus open lobectomy for stage I non-small cell lung cancer

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It was always an aphorism and advise not to change a winning horse. But who looks in depth in history will realize that no horse is winning forever and that every time frame has its own winners as there is no place for the myth of winning all the time. Thoracic surgery is a role model in changing the winning horse several times during the last 2 decades. Moving from standard posterolateral thoracotomy to a less invasive muscle sparing thoracotomy, multiport VATS, uniportal VATS and robotic surgery are all races against time and against each other to get a better surgical experience for both patient and surgeon. Trying to go from the level of safety and feasibility of the technique, crude benefits, quantifiable benefit to reach treatment efficacy evidence and finally sustainability in front of the upcoming techniques. In the journey of VATS lobectomy for lung cancer to proven its efficacy, a comprehensive study by Yang *et al.* from Duke University try to investigate the long-term survival following thoracoscopic versus open lobectomy for stage I non-small cell lung cancer (1). This study is considered the first reported national wide analysis for the long-term results of thoracoscopic lobectomy for early stage NSCLC in United States. From 7,114 lobectomies (5,566 open and 1,548 VATS), propensity score matching resulted in 1,464 open and 1,464 VATS patients who were well-matched by 14 common prognostic covariates including tumor size and comorbidities. VATS lobectomy was associated with shorter length of stay and noninferior long-term survival when compared with open lobectomy.

This study was preceded by several studies than proven the superiority of VATS lobectomy on early outcomes in terms of shortened hospital stay, less postoperative pulmonary complications (2,3). Similar studies from Europe tried to enlighten the long-term outcomes of VATS lobectomy by Pages *et al.* to give similar results in terms of occurrence of complication and disease-free survivals. They also subdivided the study group into high and low risk patients and they failed to report benefit on the high risk group operated via VATS (4).

Despite the previous results, there were a still going debate recently on the less frequent nodal upstaging in VATS comparing to open approach. This concern was highlighted in Yang *et al.* analysis where there were no significant different comparing VATS with the open approach regarding nodal upstaging (11.2% *vs.* 12.5%, P=0.46) this was associated with no significant differences in 5-year survival between the VATS and open groups (66.3% *vs.* 65.8%, P=0.92) which argued previous reports which showed less frequent nodal upstaging of VATS lobectomy group compare to open but unlike Yang *et al.*, those 3 reports fail to provide long-term outcomes for those patients (5-7). This might be attributed to the fact that Yang *et al.* analysis was done on patients operated in 2010 and this is more recent than the previous reports with much more increase interest between surgeons to operate using VATS

and a second point is that the size of tumor in this analysis was nearly the same for both groups unlike other reports which tend to have tumors of larger size operated open instead of VATS with subsequent increase the possibility of nodal involvement on those cases.

Unfortunately, Yang *et al.* did not emphasis the level of experience for surgeons who operate using VATS and whether those cases were during the learning curve or it is a consultant-based cases. They only mention that patients receiving surgery at an academic/research center were more likely to receive VATS. This is particularly important as the reported conversion rate in this report was 21% which is higher than expected even at that time, 2010, authors explain that this is "the real world" away from the academic centers as database contain cases from tertiary centers as well as research and academic centers.

With this relatively high conversion rate, Yang *et al.* did not analyze the long-term outcome for cases underwent conversion and whether this conversion affects the overall survival of those patient. This was reported by Jones *et al.*, in 2008 where they investigated 30 cases that underwent conversion in a series of 286 patient. They measured the short- and long-term outcome and concluded that conversion during attempted VATS resection does not prejudice short-term or long-term surgical outcomes (8).

As Yang *et al.* report was based on cases operated in 2010, there was no uniportal VATS practice and of course no subxiphoid approach. They exclude patient who get surgery other than lobectomy. As for the time being those approaches are nearly becoming the standard in some centers and anatomical segmentectomy for early stage lung cancer is being used more frequent, we believe that Yang *et al.* is a very important landmark in consolidation of the long term outcome of minimal invasive surgery for early stage lung cancer and it should be followed up with more recent reports that contain new approaches with special emphasis on different VATS approaches, patient who get a conversion and patient who receive anatomical segmentectomies.

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Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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