New insights about the oncologic value of VATS lobectomy from big data

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Boffa *et al.* report an extensive analysis from the General Thoracic Surgery Database concerning patients undergoing VATS lobectomy for NSCLC (1). The information obtained has been cross-linked to the Center of Medicare and Medical Services (CMS) database, which provides insight about longitudinal follow up of medicare beneficiaries in the united states who are >65 years old. By doing so, critical data about the surgical course are linked to survival data, providing an invaluable tool for survival analysis. In particular, this crossed analysis of two datasets allowed the authors to compare the long-term efficacy (in oncological terms) of thoracoscopic versus open lobectomy. In order to balance preoperative variables and extent of clinical staging, a propensity score matching for clinical stage I patients was developed, providing 2,901 clinical stage I and 2,414 pathological stage I pairs of VATS versus thoracotomy patients. Here lies the main finding, when preoperative variables are balanced, survival analysis showed a substantial equivalence of VATS when confronted with thoracotomy in terms of 4-years survival both for clinical and pathological stage I patients. Interestingly, when evaluating the use of adjuvant therapy, it was used more frequently after thoracotomy (16.3% *vs.* 13.8%, P<0.001), due to a decrease of nodal upstaging in VATS patients. What is more, VATs patients who eventually would need adjuvant chemotherapy started their treatment in a shorter time. The importance of this study relies in the new methodological approach, which enables the authors to mitigate many confounders usually meddling with large scale analysis from institutional databases. In particular, they concentrate on results from board-certified thoracic surgeons avoiding a "surgical training bias". On the other hand, they provide a new method of crosslinking data from two datasets that could be a groundbreaking approach for further evaluations.

The authors maintain that minimally invasive approach results in a long term (overall) survival that is not inferior to thoracotomy. The main concern regarding VATS lobectomy has long been the possibility of missed lymph node metastases due to a suboptimal lymphadenectomy (2,3). As clearly stated by the authors themselves, they are unable to roll out the efficacy of lymphadenectomy by VATS, and the possible difference in terms of upstaging could be too subtle to emerge from the present evaluation in terms of survival time. Again, their results are based on overall survival and not cancer specific survival, and bias from competing mortality risks are possible. Finally, the cohort is limited to patients older than 65 years, preventing a generalization to younger patients.

These points of concern should provide a guidance for further research in this field, in the wake of recent technological breakthroughs related to robotics and augmented reality (4).

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