Editorial

A greater quality of clinical evidence is needed

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The article by Shen and colleagues (1) published in the European Journal of Cardio-Thoracic Surgery tries to resolve one of the most controversial questions in the thoracic surgical field nowadays: does single-port video-assisted thoracoscopic surgery (SP-VATS) offer any advantages over multiport video-assisted thoracoscopic surgery (MP-VATS) lobectomy? The authors compare these two approaches for lobectomy in non-small cell lung cancer (NSCLC) patients. To do that, they have carefully designed and conducted a case-control study with a propensity-matched analysis to evaluate safety and efficacy of SP-VATS lobectomy and compare the perioperative outcomes between SP and MP-VATS lobectomies for NSCLCs.

They add to the existing literature a series of 411 consecutive video-assisted thoracoscopic surgery (VATS) lobectomies for NSCLCs: 115 SP-VATS and 296 MP-VATS cases. After the matched process, they compared 100 pairs of SP and MP-VATS patients which were considered to be comparable in terms of age, sex, FEV1, tumour histology, tumour diameter, the completeness of the fissure and the extent of pleural adhesion. All of the cases were performed at the same institution and by the same team of senior consultant surgeons along one year. Its main clinical message is that SP VATS lobectomy showed better safety and efficacy in the surgical resection of NSCLC. However the results only showed a small difference in favor of SP in terms of time to perform the lobectomy, whereas lymphadenectomy was longer in the SP-VATS group. Mortality was nil, morbidity was similar in both groups and no differences were found in total operation duration, volume of estimated blood loss and length of postoperative hospital stay.

In the last few years, VATS for treatment of lung cancer has increased worldwide, MP-VATS lung resections are now well established and performed all around the world and SP approach has also been widely adopted. Since its beginning, many studies have provided strong evidence that this minimally invasive approach is safe and feasible; offering to patients several advantages over traditional thoracotomy particularly for early-stage disease (I and II) with similar oncological outcomes. Recently, some authors (2) advocate for VATS lobectomy as a feasible, safe, cost-effective and oncologically appropriate procedure and consider this approach as the standard of care for operable lung cancer patients. Nevertheless, the percentage of cases performed through VATS in Europe is still low (25.2% as a proportion of all lung resections, with no information about the proportion of SP-VATS and MP-VATS) (3). Furthermore, there remains a lack of evidence in the literature about the benefits of one of this thoracic approach methods over another and comparative information on the postoperative outcomes between these two techniques remain uncertain.

Shen *et al.* (1) concluded that in comparison with conventional VATS, SP VATS lobectomy showed better safety and efficacy in the surgical resection of NSCLCs. However, according with the results of the study, SP-VATS lobectomy is safe and confers similar conversion (1% *vs.* 2%) and complication rate (4% *vs.* 7%) without comprising oncologic effects (the average number of harvested lymph nodes was similar) compared with

conventional MP-VATS lobectomy. From our point of view, the authors do not demonstrate a clinical benefit in terms of safety and efficacy of SP-VATS over MP-VATS lobectomy for the treatment of NSCLCs.

In addition to the retrospective design and the relatively small sample size, we consider that this study has other limitations as the results are from one medical center and the comparison was made between SP-VATS and a three ports VATS lobectomy; however, the technique described by the Shen *et al.* (1) for the MP approach does not coincide with the most accepted MP surgical techniques employed by current surgical groups: the Duke approach and the Copenhagen approach. Although the matching analysis for confounding factors can made the results reliable, these issues can limit the generalization of the conclusion.

In the last years, potential benefits of single port technique over other endoscopic techniques have been discussed especially in terms of intraoperative and early postoperative outcomes. Nevertheless, up to date, there is a paucity of long-term clinical data and equivalent oncologic efficacy cannot be ascertained based on the existing literature. Some authors (4-6) have demonstrated that uniportal approach is certainly comparable to the standard multiple port VATS in terms of accuracy, efficacy and safety as well as the present study. One the other hand, other authors have argued on the disadvantages of SP approach that may be associated with longer operative duration and may compromise safety and therapeutic efficacy of the surgery. However, Shen *et al.* (1) showed that the total operation duration was similar between the two groups. Otherwise, Wang *et al.* (4) in a recent propensity-matched study found a shorter operative time and less blood loss in SP-VATS patients undergone both lobectomy and segmentectomy.

Recently, two retrospective studies with a propensity-matched comparative analysis have been published with the aim of compare perioperative and short-term outcomes between SP, two-port and three-port VATS in treating NSCLCs. In this way, Mu *et al.* (7) concluded that compared with three-port VATS, single-port and two-port were associated with shorter postoperative length of stay, shorter duration of chest tube, and decreased volume of drainage in patients undergone pulmonary resection including lobectomy, segmentectomy and wedge. Similarly, Dai *et al.* (8) concluded that compared with two-port VATS, SP-VATS has some advantages, including reduced blood loss, less postoperative pain and a higher satisfaction score in patients undergone lobectomy. These conclusions have been confirmed by a recently published systematic review and meta-analysis (9) aimed to compare clinical outcomes of uniportal and multiportal VATS lobectomy in the treatment of lung cancer. Eight relevant observational studies were included in the analysis and results demonstrated a statistically significant reduction in the overall rate of complications, length of hospital stay and duration of postoperative drainage for patients who underwent uniportal VATS lobectomy, but these improvements may only be minor in the clinical setting. There were no significant differences between the two treatment groups regarding mortality, operative time, perioperative blood loss and rate of conversion to open thoracotomy.

However, all the studies mentioned above are retrospective and observational, so their conclusions should be carefully take into consideration. Up to date, to the best of our knowledge there is only one prospective and randomized study conducted by Perna and colleagues (10) that directly compares the uniportal with other VATS lobectomy approaches on patients undergoing lung cancer surgery. The objective of this study was determining if uniportal VATS lobectomy had more favorable postoperative outcomes than other VATS lobectomy techniques (Duke approach and Copenhagen approach). They concluded that uniportal VATS lobectomy does not present better postoperative outcomes (postoperative pain, delay in removing the paravertebral catheter and the chest drain, the duration of postoperative hospital stay, postoperative complications and the operative or 30-day mortality) than other VATS lobectomy techniques. These conclusions confirm the results previously described by McElnay *et al.* (11) whose observational study demonstrated once again the feasibility of the procedure, but did not find differences in terms of pain or recovery between SP-VATS and VATS.

As we described in previous publications, a greater quality of clinical evidence is needed to confirm these results and change the standards (12). To achieve this scientific evidence, studies comparing uniportal VATS and MP-VATS pulmonary resection in the surgical treatment of lung cancer should meet these criteria: (I) well-designed trials (multicenter, prospective, randomized controlled studies without selection bias); (II) standardization of clinical outcomes using a clear definition of the endpoints; (III) thorough analysis of the collected data; and (IV) longer follow-up (13).

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Footnote

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

References

1. Shen Y, Wang H, Feng M, et al. Single- versus multiple-port thoracoscopic lobectomy for lung cancer: a propensity-matched study†. Eur J Cardiothorac Surg 2016;49 Suppl 1:i48-53.
2. Vannucci F, Gonzalez-Rivas D. Is VATS lobectomy standard of care for operable non-small cell lung cancer? Lung Cancer 2016;100:114-9.
3. Jiménez López M, Novoa Valentín NM. Implementing a VATS Lobectomy Program in Spain. The Wet Lab, a Necessary Tool. Arch Bronconeumol 2016;52:579-80.
4. Wang BY, Liu CY, Hsu PK, et al. Single-incision versus multiple-incision thoracoscopic lobectomy and segmentectomy: a propensity-matched analysis. Ann Surg 2015;261:793-9.
5. Liu CC, Shih CS, Pennarun N, et al. Transition from a multiport technique to a single-port technique for lung cancer surgery: is lymph node dissection inferior using the single-port technique?†. Eur J Cardiothorac Surg 2016;49 Suppl 1:i64-72.
6. Lin Y, Zheng W, Zhu Y, et al. Comparison of treatment outcomes between single-port video-assisted thoracoscopic anatomic segmentectomy and lobectomy for non-small cell lung cancer of early-stage: a retrospective observational study. J Thorac Dis 2016;8:1290-6.
7. Mu JW, Gao SG, Xue Q, et al. A propensity matched comparison of effects between video assisted thoracoscopic single-port, two-port and three-port pulmonary resection on lung cancer. J Thorac Dis 2016;8:1469-76.
8. Dai F, Meng S, Mei L, et al. Single-port video-assisted thoracic surgery in the treatment of non-small cell lung cancer: a propensity-matched comparative analysis. J Thorac Dis 2016;8:2872-8.
9. Harris CG, James RS, Tian DH, et al. Systematic review and meta-analysis of uniportal versus multiportal video-assisted thoracoscopic lobectomy for lung cancer. Ann Cardiothorac Surg 2016;5:76-84.
10. Perna V, Carvajal AF, Torrecilla JA, et al. Uniportal video-assisted thoracoscopic lobectomy versus other video-assisted thoracoscopic lobectomy techniques: a randomized study. Eur J Cardiothorac Surg 2016;50:411-5.
11. McElnay PJ, Molyneux M, Krishnadas R, et al. Pain and recovery are comparable after either uniportal or multiport video-assisted thoracoscopic lobectomy: an observation study. Eur J Cardiothorac Surg 2015;47:912-5.
12. Jimenez MF. Uniportal versus standard video-assisted thoracoscopic surgery for lung lobectomy: changing the standards requires scientific evidence. Eur J Cardiothorac Surg 2015;47:916.
13. Jimenez MF, Gomez-Hernandez MT. VATS lobectomy, a standardised approach? Video-assist Thorac Surg 2016;1:22.

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