Commentary

VATS lobectomy, a standardised approach?

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The article by French and colleagues (1) published in *Annals of Cardiothoracic Surgery* has the merit of being the first published article on the transition from multiple port video-assisted thoracic surgery (VATS) to single port surgery (S-VATS) in minimally invasive anatomic pulmonary resections. The authors have carefully designed and conducted a comparative study to evaluate the safety and feasibility of this transition and to assess its impact on intraoperative and early postoperative outcomes. They add to the existing literature a series of 50 consecutive S-VATS anatomical lung resections which were compared to an equal, historical and prospective cohort of multiple port VATS cases; all of them were performed at the same institution and by the same surgeon. Its main clinical message is that the transition from multiple port VATS to S-VATS lung resection is safe, efficient and with good surgical quality. However they failed in their attempt to find differences in perioperative outcomes between approaches, specifically in patient reported pain in favor of S-VATS.

Although the percentage of cases performed through these approaches in Europe is still low (25.2% as a proportion of all lung resections) (2), there is no doubt looking the current literature that VATS lung resections are now well established and performed all around the world and S-VATS approach has also been widely adopted.

The authors demonstrated that the transition to S-VATS is feasible and safe when the surgeon has experience in multiple port VATS anatomical resections. However, Anile *et al.* (3) found that uniportal VATS lobectomy was also safe and technically feasible when the operating surgeon and his team moved straightforward from open surgery to the uniportal approach, without progressively reducing the number of incisions. They concluded that the learning curve could be a little longer, however, if the uniportal approach had been previously considered and used for minor procedures and lesser resections (sympathectomy, surgery for pneumothorax, wedge resections) the learning curve could be certainly shorter.

French *et al.* (1) reached the conclusion that S-VATS can be accomplished while preserving intraoperative patient safety, oncologic quality and operating room resource utilization. Several authors agree that in terms of accuracy, efficacy and safety the uniportal approach is certainly comparable to the standard multiple port VATS. On the other hand, other authors have expressed their concern about this approach that may be associated with longer operative duration and may compromise safety and therapeutic efficacy of the surgery. However, there was a paucity of long-term clinical data and equivalent oncologic efficacy cannot be ascertained based on the existing literature.

The most controversial topic considered in the article is about the impact of S-VATS on intraoperative and early postoperative outcomes. In the last years, potential benefits of single port technique over other endoscopic techniques have been discussed. French and colleagues (1) pointed out this subject in their paper and they adopted the S-VATS approach with the intuition of better postoperative outcomes compared to multiportal VATS, but they found that the postoperative outcomes provided by uniportal VATS anatomical lung resections were similar in terms of chest tube duration, postoperative length of stay, pain control and complications. Not surprisingly, applying the same patient selection criteria and perioperative management for S-VATS and VATS cases, the authors achieved similar results.

Nowadays, there is a clear lack of evidence in the literature about the benefits of one of this thoracic approach

methods over another and clinical outcomes of uniportal versus multiportal VATS remain uncertain. Several authors have tried to demonstrate the superiority of uniportal VATS over multiportal VATS, specifically in terms of reduction of postoperative pain (4), paresthesia (5) and patient satisfaction (6). A systematic review and meta-analysis (7) has been recently published with the aim of metaanalyzing clinical outcomes of uniportal VATS versus multiportal VATS in the treatment of lung cancer. Results suggest that uniportal VATS was associated with a statistically significant reduction in the duration of chest tube drainage, in-hospital stay and overall morbidity, but these improvements may only be minor in the clinical setting. On the other hand, a previous observational study by McElnay *et al.* (8) confirmed once again the feasibility of the procedure, but they did not find differences in terms of pain or recovery between S-VATS and VATS. Furthermore, more recently, a prospective, randomized study was carried out by Perna *et al.* (9) on patients undergoing lung cancer surgery with the aim of determining if uniportal VATS lobectomy has 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 than other VATS lobectomy techniques. Up to date, this is the first prospective, randomized study that directly compares the uniportal with other VATS lobectomy approaches and it confirmed the results described by McElnay *et al.* (8) eliminating all factors of major bias.

We consider that future studies comparing uniportal VATS with multiple ports VATS are necessary to confirm these results, but nevertheless the above observations are also made to highlight the need for not only a greater quantity of clinical evidence in this debate but also a greater quality of evidence (10). To achieve these goals, studies should meet these criteria: (I) well-designed trials (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.

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