



The length of skin incision and the ability of surgeon

Alfonso Fiorelli, Mario Santini

Thoracic Surgery Unit, Seconda Università degli Studi di Napoli, Naples, Italy

Correspondence to: Alfonso Fiorelli, MD, PhD. Thoracic Surgery Unit, Second University of Naples, Piazza Miraglia, 2 I-80138 Naples, Italy.

Email: alfonso.fiorelli@unina2.it.

Comment on: French DG, Thompson C, Gilbert S. Transition from multiple port to single port video-assisted thoracoscopic anatomic pulmonary resection: early experience and comparison of perioperative outcomes. *Ann Cardiothorac Surg* 2016;5:92-9.

Received: 30 August 2016; Accepted: 21 September 2016; Published: 10 October 2016.

doi: 10.21037/vats.2016.09.01

View this article at: <http://dx.doi.org/10.21037/vats.2016.09.01>

Thoracotomy is one of the most painful incision and an non adequate control of post-thoracotomy pain increases the morbidity and mortality (1,2). Despite post-thoracotomy pain has different sources, reducing skin and chest wall incision with minimally invasive approaches could decrease the pain stimuli and improve the postoperative outcome. In the last two decades, video-assisted thoracoscopic surgery (VATS) has emerged as alternative strategy to standard open thoracotomy in the management of lung, chest wall, mediastinal and pleural diseases (3-10). Benefits of VATS over thoracotomy include less postoperative pain, shorter hospital stay, less morbidity and mortality, better cosmetic results and similar oncological outcome. Thus, VATS has become the treatment of choice in elderly patients with severe comorbidity and/or in young patient with poor clinical conditions that cannot tolerate the surgical trauma of thoracotomy (11-14).

In the last decade, VATS has evolved by multi-port incisions to uniportal incision. The results of the first prospective trial reporting the method to perform several thoracic procedures through a uniportal VATS technique was published in 2000, 2001 and 2003 (15-17). However, Rocco *et al.* in 2004 popularized the approach, utilizing a uniportal approach for minor procedures such as pneumothorax and wedge resections and reported it in several publications in the early 2000s (18,19). Following, Gonzales-Rivas *et al.* developed this strategy for lobectomy and increasingly complex thoracic procedures as segmentectomy, bronchial sleeve, vascular reconstructions or carinal resections (20-23). In line with this experience, an increasing number of papers have been published in the last years reporting different types of thoracic surgical procedures performed using the

uniportal VATS technique (24-26). Significant reduction in postoperative pain and paresthesia, and the better cosmetic results due to the limited number of incisions are the main advantages of uniportal over traditional VATS (27-30). In a recent metanalysis, Harris *et al.* (31) compared the clinical outcomes of uniportal versus multiportal VATS lobectomy for lung cancer treatment. 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. There were no significant differences between the two treatment groups in regard to mortality, operative time, perioperative blood loss and rate of conversion to open thoracotomy.

In line with this attitude, French *et al.* (32) in the present paper reported their experience on transition from multiple port to single port VATS anatomic pulmonary resection. They retrospectively compared patients undergoing anatomical lung resection through standard multi-port VATS (n=50) versus uniportal VATS (n=50). The two groups were well matched regarding demographic, clinical, and pathological data. In all cases a R0 resection was obtained with an equivalent resection of lymph nodes. No significant intergroup difference in conversion rate, morbidity and mortality, length of stay, and 24-hour post-operative pain were found, demonstrating that the transition from multiple ports VATS to uniportal VATS lung resection was safety and efficiency. Interestingly, the authors found a significantly lower VAS scores at 1 hour in the uniportal VATS group compared to control group. The approach “per se” and/or the successful local anesthesia of a single interspace were suggested by the authors as possible

explanation. However the results of the present paper (32), as stated by the same authors, should be confirmed by other future experience and prospective studies before drawing any conclusions. As all retrospective studies, the present analysis is affected by patients selection bias due to non-random allocation of treatment and no propensity-matched analysis was performed to improve the matching of patients. For example, two chest tubes were routinely used in the standard VATS group while only one chest tube was used in the uniportal VATS group. This difference could affect the results considering the injury of intercostal space caused by chest drainage is one of the main factors of post-operative pain.

Despite new device and instruments are actually available to facilitate the uniportal VATS procedures (33-35), previous experience in open and in standard VATS resections, and a strong selection of patients are the paramount importance before starting a uniportal VATS program. In addition, conversion to thoracotomy at the correct time during learning curve indicated prudence not failure. Despite it is against the actual wind, I always have in mind an anecdotal equation that my chief, Prof. Vincenzo Pastore, usually said me during my training when we had to treat complex and challenging surgical situations: “big incision = big surgeon”.

Acknowledgments

Funding: None.

Footnote

Provenance and Peer Review: This article was commissioned by the editorial office, *Video-Assisted Thoracic Surgery*. The article did not undergo external peer review.

Conflicts of Interest: Both authors have completed the ICMJE uniform disclosure form (available at <http://dx.doi.org/10.21037/vats.2016.09.01>). 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.

Open Access Statement: This is an Open Access article distributed in accordance with the Creative Commons

Attribution-NonCommercial-NoDerivs 4.0 International License (CC BY-NC-ND 4.0), which permits the non-commercial replication and distribution of the article with the strict proviso that no changes or edits are made and the original work is properly cited (including links to both the formal publication through the relevant DOI and the license). See: <https://creativecommons.org/licenses/by-nc-nd/4.0/>.

References

1. Fiorelli A, Mazzella A, Passavanti B, et al. Is pre-emptive administration of ketamine a significant adjunction to intravenous morphine analgesia for controlling postoperative pain? A randomized, double-blind, placebo-controlled clinical trial. *Interact Cardiovasc Thorac Surg* 2015;21:284-90.
2. Fiorelli A, Izzo AC, Frongillo EM, et al. Efficacy of wound analgesia for controlling post-thoracotomy pain: a randomized double-blind study†. *Eur J Cardiothorac Surg* 2016;49:339-47.
3. McKenna RJ Jr, Houck W, Fuller CB. Video-assisted thoracic surgery lobectomy: experience with 1,100 cases. *Ann Thorac Surg* 2006;81:421-5; discussion 425-6.
4. Swanson SJ, Herndon JE 2nd, D'Amico TA, et al. Video-assisted thoracic surgery lobectomy: report of CALGB 39802--a prospective, multi-institution feasibility study. *J Clin Oncol* 2007;25:4993-7.
5. Caronia FP, Fiorelli A, Ruffini E, et al. A comparative analysis of Pancoast tumour resection performed via video-assisted thoracic surgery versus standard open approaches. *Interact Cardiovasc Thorac Surg* 2014;19:426-35.
6. Fiorelli A, Vicidomini G, Laperuta P, et al. Pre-emptive local analgesia in video-assisted thoracic surgery sympathectomy. *Eur J Cardiothorac Surg* 2010;37:588-93.
7. Fiorelli A, Mazzella A, Cascone R, et al. Bilateral thoracoscopic extended thymectomy versus sternotomy. *Asian Cardiovasc Thorac Ann* 2016;24:555-61.
8. Caronia F, Fiorelli A, Monte AL. Bilateral thoracoscopic thymectomy using a novel positioning system. *Asian Cardiovasc Thorac Ann* 2014;22:1135-7.
9. Wang BY, Liu CC, Shih CS. Short-term results of thoracoscopic lobectomy and segmentectomy for lung cancer in koo foundation sun yat-sen cancer center. *J Thorac Dis* 2010;2:64-70.
10. Santini M, Fiorelli A, Vicidomini G, et al. Pulmonary hernia secondary to limited access for mitral valve surgery and repaired by video thoracoscopic surgery. *Interact*

- Cardiovasc Thorac Surg 2009;8:111-3.
11. Fiorelli A, Sagan D, Mackiewicz L, et al. Incidence, Risk Factors, and Analysis of Survival of Unexpected N2 Disease in Stage I Non-Small Cell Lung Cancer. *Thorac Cardiovasc Surg* 2015;63:558-67.
 12. Fiorelli A, Vicidomini G, Mazzella A, et al. The influence of body mass index and weight loss on outcome of elderly patients undergoing lung cancer resection. *Thorac Cardiovasc Surg* 2014;62:578-87.
 13. Fiorelli A, Santini M. In lung cancer patients where a malignant pleural effusion is found at operation could resection ever still be justified? *Interact Cardiovasc Thorac Surg* 2013;17:407-12.
 14. Fiorelli A, Caronia FP, Daddi N, et al. Sublobar resection versus lobectomy for stage I non-small cell lung cancer: an appropriate choice in elderly patients? *Surg Today* 2016. [Epub ahead of print].
 15. Migliore M, Giuliano R, Deodato G. Video assisted thoracic surgery through a single port. *Thoracic Surgery and Interdisciplinary Symposium on the threshold of the Third Millennium. An International Continuing Medical Education Programme. Naples, Italy. 2000:29-30.* Available online: <http://xoomer.virgilio.it/naples2000/index1.html>
 16. Migliore M, Deodato G. A single-trocar technique for minimally-invasive surgery of the chest. *Surg Endosc* 2001;15:899-901.
 17. Migliore M, Giuliano R, Aziz T, et al. Four-step local anesthesia and sedation for thoracoscopic diagnosis and management of pleural diseases. *Chest* 2002;121:2032-5.
 18. Rocco G, Martin-Ucar A, Passera E. Uniportal VATS wedge pulmonary resections. *Ann Thorac Surg* 2004;77:726-8.
 19. Rocco G, Martucci N, La Manna C, et al. Ten-year experience on 644 patients undergoing single-port (uniportal) video-assisted thoracoscopic surgery. *Ann Thorac Surg* 2013;96:434-8.
 20. Gonzalez D, Paradela M, Garcia J, et al. Single-port video-assisted thoracoscopic lobectomy. *Interact Cardiovasc Thorac Surg* 2011;12:514-5.
 21. Gonzalez-Rivas D, Fernandez R, Fieira E, et al. Uniportal video-assisted thoracoscopic bronchial sleeve lobectomy: first report. *J Thorac Cardiovasc Surg* 2013;145:1676-7.
 22. Gonzalez-Rivas D, Delgado M, Fieira E, et al. Single-port video-assisted thoracoscopic lobectomy with pulmonary artery reconstruction. *Interact Cardiovasc Thorac Surg* 2013;17:889-91.
 23. Gonzalez-Rivas D, Fieira E, de la Torre M, et al. Bronchovascular right upper lobe reconstruction by uniportal video-assisted thoracoscopic surgery. *J Thorac Dis* 2014;6:861-3.
 24. Chung JH, Choi YS, Cho JH, et al. Uniportal video-assisted thoracoscopic lobectomy: an alternative to conventional thoracoscopic lobectomy in lung cancer surgery? *Interact Cardiovasc Thorac Surg* 2015;20:813-9.
 25. Caronia FP, Fiorelli A, Santini M, et al. Uniportal bilateral video-assisted thoracoscopic extended thymectomy for myasthenia gravis: A case report. *J Thorac Cardiovasc Surg* 2015;150:e1-3.
 26. Santini M, Fiorelli A, Santagata M, et al. Resection of costal exostosis using piezosurgery associated with uniportal video-assisted thoracoscopy. *Ann Thorac Surg* 2015;99:1080-2.
 27. 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.
 28. 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.
 29. Zhu Y, Liang M, Wu W, et al. Preliminary results of single-port versus triple-port complete thoracoscopic lobectomy for non-small cell lung cancer. *Ann Transl Med* 2015;3:92.
 30. Akter F, Routledge T, Toufektzian L, et al. In minor and major thoracic procedures is uniport superior to multiport video-assisted thoracoscopic surgery? *Interact Cardiovasc Thorac Surg* 2015;20:550-5.
 31. 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.
 32. French DG, Thompson C, Gilbert S. Transition from multiple port to single port video-assisted thoracoscopic anatomic pulmonary resection: early experience and comparison of perioperative outcomes. *Ann Cardiothorac Surg* 2016;5:92-9.
 33. Fiorelli A, Accardo M, Carelli E, et al. Harmonic technology versus neodymium-doped yttrium aluminium garnet laser and electrocautery for lung metastasectomy: an experimental study. *Interact Cardiovasc Thorac Surg* 2016;23:47-56.
 34. Santini M, Fiorelli A, Vicidomini G, et al. The use of

LigaSure for preservation of a previous coronary artery bypass graft by using the left internal thoracic artery in a left upper lobectomy. *J Thorac Cardiovasc Surg* 2008;136:222-3.

35. Cheng K, Zheng B, Zhang S, et al. Feasibility and learning curve of uniportal video-assisted thoracoscopic segmentectomy. *J Thorac Dis* 2016;8:S229-34.

doi: 10.21037/vats.2016.09.01

Cite this article as: Fiorelli A, Santini M. The length of skin incision and the ability of surgeon. *Video-assist Thorac Surg* 2016;1:25.