



A solution for fissure-less fissure-last both upper and lower video-assisted thoracic surgery lobectomies?

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Comment on: Liao H, Liu C, Mei J, *et al.* Single-direction thoracoscopic lobectomy: right side. *J Thorac Dis* 2018;10:5935-8.

Submitted Dec 03, 2018. Accepted for publication Dec 07, 2018.

doi: 10.21037/jtd.2018.12.41

View this article at: <http://dx.doi.org/10.21037/jtd.2018.12.41>

Even before the introduction of video-assisted thoracic surgery (VATS) lobectomy in the early 1990s as an alternative to the traditional thoracotomy (1,2), the controversy has been remained about the best way to approach pulmonary structures during surgery in order to facilitate the operation and improve its results. In the past two decades, thoracoscopic surgery has begun to gain immense popularity for its potential advantages and benefits for the patients, such less pain compared to the traditional open thoracotomy, fast recovery, as well as less surgical complications. Several techniques and variations of VATS approaches have been proposed and developed, that differ from each other by the number of incisions (triportal, biportal and uniportal VATS) (3-5) and the location of the incisions (anterior *vs.* posterior) (3-6). It has become well acknowledged that trans-fissure approach in case of complete pulmonary fissure is an essential cause of prolonged air-leakage after lung resections, and it can have a significant impact on early-term outcomes after VATS lobectomy, especially in upper lobectomies (7,8). Recently, Stamenovic *et al.* stated that “fissure-less fissure-last” VATS lobectomy is the better technique in reducing post-operative air-leakage, reducing complications and hospital stay (9).

The novelty in the “single-direction” VATS lobectomy proposed by Liao *et al.* (10) lies in the possibility of

efficiently performing the fissure-less technique in all lobectomies, either upper and lower ones. The incisions of triportal approach are made convenient for the placement of instruments in order to better grasp the lobe, then the hilum is approached first (single site), and a single direction is followed, from superficial to deep structures, without a repeatedly turnover of the lung back and front.

In particular, during the right upper lobe and middle lobe resection, the proceeding direction of dissecting and dividing the lung structures is from ventrum to dorsum, while in the lower lobe resection from caudal to cranial. Moreover, the authors proposed the useful technique of “suction-assisted electrocautery sharp dissection,” which enabled precise dissection and clear operating field during all procedure as they already expressed in a previous paper (11). With the development of social media and the improvement of audio and video technology, it became ubiquitous among surgeons to post and publish the technical details of their operations on web. And certainly, that has opened the doors in an unprecedented way to an easy reception and learning of information, facilitating comparison between one technique and another. When talking about the optimum approach for performing a lung lobectomy, there are several important issues to consider: first safety, the best methods are the safest. Second, the

easiness of technique, the easier the technology, the greater the rate of its adoption and application. Thirdly, usefulness, it is not logical to learn a technique that is not useful. Finally, the time factor, any new technique may lose much of its value if it is time-consuming. Single-direction thoracoscopic technique, published by Liu and his colleagues in 2010, is theoretically interesting. However, it may be very similar to other techniques. The way how right upper lobectomy is performed, as described in the article, is pretty much comparable to the fissure-less technique published for the first time by Temes and his colleagues in the late 1990s (12). They hypothesized that this technique would reduce morbidity by reducing the air-leakage and effusion production, with a consequent early tube removal. For middle lobectomy, the theory of “single direction” does not seem very convincing to be the standard in all cases. Indeed, in some cases, it is preferable and safer to start by dividing the middle lobe artery first which can be approached through the fissure with minimal dissection. We believe that this approach may facilitate the operation, especially in the presence of big lymph nodes along the artery, which is “not uncommon.”

For lower lobectomies, the single-direction technique can be adopted when the fissure is fused and not well developed, otherwise (if the fissure is complete), starting the surgery by dividing the artery may considerably facilitate the operation and reduce the risk of harm. Besides, dissecting the hilum from both anterior and posterior aspects may seldom be needed to complete bronchial isolation, as well as a partial division of the fissure before approaching the bronchus may significantly improve its visualization. While dissecting the artery, the surgeon must be careful not to scarify the posterior ascending branch (A2). It is always evident that profound knowledge of anatomy can remarkably enhance the safety and the quality of any technique. In parallel with the development of operative techniques, equipment and tools also evolved. The evolution of the robotic surgery and its exact movements, the development and increasing efficiency of energy devices and the evolution of staplers have helped to get the surgery safer and with fewer complications, with no doubt. Finally, we believe that the mature thoracic surgeon must be pragmatic during any surgery, without being biased to a particular method rather than other. He should always find a way that may simplify the operation and make it faster and safer. This can be achieved by assessing the situation well and making appropriate decisions in each surgery.

Acknowledgements

None.

Footnote

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

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Cite this article as: Abu Akar F, Nachira D, Meacci E, Abu Asbeh Y, Shaqqura BH, Margaritora S. A solution for fissure-less fissure-last both upper and lower video-assisted thoracic surgery lobectomies? *J Thorac Dis* 2019;11(1):50-52. doi: 10.21037/jtd.2018.12.41