Editorial

Is robotic surgery for NSCLC innovative enough?

Marcello Migliore

Thoracic Surgery, Department of Surgery and Medical Specialities, Policlinico University Hospital, University of Catania, Catania, Italy

Correspondence to: Marcello Migliore. Thoracic Surgery, Department of Surgery and Medical Specialities, Policlinico University Hospital, Via Passo Gravina 78, Catania 95124, Italy. Email: mmiglior@unict.it.

Provenance: This is an invited Editorial commissioned by Section Editor of *JTD*, Jianfei Shen, MD (Department of Cardiothoracic Surgery, Taizhou Hospital of Zhejiang Province, Wenzhou Medical University, Taizhou, China).

Comment on: Du H, Yang S, Guo W, *et al*. Robotic-assisted right upper lobectomy. AME Med J 2017;2:6.

Submitted Jul 30, 2017. Accepted for publication Jul 31, 2017.

doi: 10.21037/jtd.2017.08.37

View this article at: http://dx.doi.org/10.21037/jtd.2017.08.37

I read with interest the article of Dr. Du *et al.* describing their personal technique of robotic assisted (RATS) right upper lobectomy to treat early lung cancer (1). The authors after an explanation of their technique conclude that RATS is a feasible and reliable surgical approach for non-small cell lung cancer. Hence, this is another paper which confirms that RATS is as good as the other available minimally invasive techniques to perform lung resection and lymphadenectomy to treat lung cancer. While seeing the images in the paper and other videos, I note with interest that one of the most attractive advantage of RATS is the flexibility of the robotic arms which allow the surgeon to move instruments freely inside the chest according to the intraoperative necessity, and without the imposed schemes of geometry (2,3). Robotic assisted thoracic surgery is a beautiful medical example to confirm the Hippocrates aphorisms that *surgery is of all the arts the most noble*.

Although in the medical market since 20 years, it is reductive to still consider RATS an innovative approach. Robotic Assisted Thoracic Surgery is a technique, an excellent technique, but it is not "the sole and best technique" to treat lung cancer. At this moment, RATS should be considered a more sophisticated and costly VATS technique (4). Unfortunately, only in rich economies, hospital management could spend the bulk of their income on services such as RATS, and this behavior contributes to cause a tremendous delay in the widespread use of RATS.

Nevertheless, because literature is full of trustworthy editorials and comments on RATS lobectomy, it could be more interesting to look RATS from a different view.

Do we need randomized controlled studies to compare VATS and RATS?

I read often that it is necessary to perform a randomized controlled study to show what is the best minimally invasive technique to treat lung cancer. From my point of view, there is no urgent rationale to support a randomized controlled study between all available minimally invasive techniques for at least one main reason: irrespective to the VATS or RATS technique, surgeons perform the same operation, and therefore long-term survival is expected to be similar (3,4). Instead, there is the strong necessity to definitively confirm that patients with NSCLC operated using minimally invasive techniques have similar, if not better, long term survival than those operated by open surgery to consign to history "large thoracotomies" to treat lung cancer.

RATS for surgical university schools

Optimistically, RATS lobectomy should be taught to all residents in (cardio) thoracic surgery, not because RATS is a better technique but because all residents should learn all the available minimally invasive techniques to understand what is the technique that suits her/him best. Therefore, it could be wise that all worldwide schools of surgery include RATS in their core curriculum, and the manufacturers should help university medical schools in less fortunate regions to buy it.

Teaching RATS (and VATS)

I would like to bring to your attention, from what it is achievable to understand in the medical literature, that many authored surgeons who are performing RATS (and VATS) are not junior but senior experienced surgeons (5-7). Most of them initiated their career performing open surgery, but now they are excellent RATS or VATS surgeons, and all of them have the capabilities to quickly control bleeding. In the nineties, at the beginning of my surgical career as thoracic surgeon in Bristol and Leuven, in case of difficult fissure or an extended tumor I recall that finger dissection of the main PA was the first step that have been taught to me to control the lung when vascular troubles could be expected. Nowadays open thoracic surgery is becoming very rare, and it is therefore very rare that we can teach junior surgeons to perform finger dissection of the main pulmonary artery and veins. Moreover, some studies have shown an higher incidence of vascular problems during RATS (8,9), and it is known that it could be a disaster if the surgeon has no experience in open surgery to control very quickly the main PA.

Animal lab "for open surgery" to train excellent RATS and VATS surgeons

One question inexorably arises: what can be done to teach residents to react correctly when something goes wrong, and profuse bleeding from the pulmonary artery appears during RATS (or VATS)? My personal view is that residents should operate in the animal lab and in transplant surgery to gain self-confidence to work with large vessels under emergency. Moreover, I could foresee an animal lab "for open surgery" to train VATS surgeons.

The future

The uniportal or multiportal RATS should not be still considered innovative but it is undoubtedly a reality of the contemporary operating room. Truthfully thoracic and oncologic surgery community instead to invest time to show if RATS is better of uniportal, biportal or multiportal VATS (or vice versa), should look ahead to find other operative multimodality treatment options to achieve longer survival to patients with lung cancer.

Cite this article as: Migliore M. Is robotic surgery for NSCLC innovative enough? J Thorac Dis 2017;9(8):2326-2327. doi: 10.21037/jtd.2017.08.37

Acknowledgements

None.

Footnote

Conflicts of Interest: The author has no conflicts of interest to declare.

References

1. Du H, Yang S, Guo W, et al. Robotic-assisted right upper lobectomy. AME Med J 2017;2:6.
2. Migliore M, Calvo D, Criscione A, et al. Uniportal video assisted thoracic surgery: summary of experience, mini-review and perspectives. J Thorac Dis 2015;7:E378-80.
3. Migliore M. VATS surgery for anatomical lung resection: a different approach for every surgeon. Video-assist Thorac Surg 2016;1:31.
4. Migliore M. Video-assisted thoracic surgery techniques for lung cancer: which is better? Future Oncol 2016;12:1-4.
5. Melfi FM, Menconi GF, Mariani AM, et al. Early experience with robotic technology for thoracoscopic surgery. Eur J Cardiothorac Surg 2002;21:864-8.
6. Veronesi G, Galetta D, Maisonneuve P, et al. Four-arm robotic lobectomy for the treatment of early-stage lung cancer. J Thorac Cardiovasc Surg 2010;140:19-25.
7. Cerfolio RJ, Bryant AS, Skylizard L, et al. Initial consecutive experience of completely portal robotic pulmonary resection with 4 arms. J Thorac Cardiovasc Surg 2011;142:740-6.
8. Migliore M. Robotic assisted lung resection needs further evidence. J Thorac Dis 2016;8:E1274-8.
9. Park SY, Suh JW, Narm KS, et al. Feasibility of four-arm robotic lobectomy as solo surgery in patients with clinical stage I lung cancer. J Thorac Dis 2017;9:1607-14.

