Editorial

Video-assisted thoracic surgery (VATS) lobectomy: a matter of competence

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Endoscopic major pulmonary resections are surely the greatest revolution in the world of thoracic surgery since Eric Carlens introduced his "flexible double lumen catheter" for isolated lung ventilation (1). Such innovative surgical technique deemed to be superior to open thoracic surgery in several aspects: less respiratory as well as cardiologic postoperative complications, shorter length of hospital stay and increased efficacy for treatment of patients with poor pulmonary function.

The first pulmonary lobectomy performed by video-assisted thoracic surgery (VATS) took place in Milan in the early 1990's (2). Since then, despite the mentioned potential advantages, VATS lobectomy has slowly spread in industrialized countries without achieving the extensive acceptance realized by other minimally invasive procedures, such as cholecystectomy or hiatal hernia surgery.

Several reasons had been advocated to explain this delay; namely, randomized controlled trials demonstrating the superiority of VATS lobectomy are lacking, consequently, safety and oncological efficacy have not been properly established. In addition, a discrete economical investment is necessary to start a VATS lobectomy program *ex novo*. Another reason behind slow adoption could be the "careful reticence" that senior surgeons have when facing new and potentially dangerous techniques. Last but not list, VATS procedures require adequate competence and training.

Recently, Katrine Jensen published an interesting article on *Surgical Endoscopy* entitled "A novel assessment tool for evaluating competence in video-assisted thoracoscopic surgery lobectomy" (3). The paper focuses on the trainees' surgical skills evaluation, a crucial issue in a modern residency program. Actually, the American Board of Thoracic Surgery requires current trainees to spend at least 20 hours with technique-based simulations and to perform 25 VATS lobectomies. In Europe, the trainees' case requirements are neither specific nor homogeneous; the thoracic surgical training is accessible in various university or non-academic hospitals with differences in length and quality of training, in working time and in academic platforms.

As a residency program director, I should provide a structured educational program to my residents, along with supervision and technical skills while ensuring safe and correct care for patients. The progress of technical abilities should be concomitant with the acquisition of case-management capability and anatomical knowledge. Finally, I have to evaluate the residents' knowledge and ability to practice autonomously the major thoracic surgical operations including VATS lobectomy.

If teaching academic knowledge is pretty simple, surgical coaching raises some concerns especially in the VATS setting where a wrong maneuver could cause a serious damage to the patients. In this framework, surgical simulators allow a trainee to practice exercises

for developing camera navigation, adhesiolysis, clipping, cutting and suturing. Advanced simulators include also programs for entire surgical procedures. Virtual-reality simulators are adequate tools to introduce trainees in the VATS word, as the efficacy of this simulator-based training has been properly validated (4).

An intermediate step, before a trainee faces a real patient, is the "tissue simulator" proposed by the Duke University Medical Center (5). Such simulator is intended to exercise the VATS upper left lobectomy on porcine heart-lung tissue blocks, which are prepared injecting approximately 60 cc of a perfusate into the left pulmonary artery. Although some differences exist between human and porcine tissue structures (tougher tissue plane, pleural reflection and peribronchial tissue) the model is effective, cheap, and easy to be prepared. This tissue simulator model had been properly validated by the authors involving trainees with different level of expertise (6).

Once a trainee has successfully passed the two previous steps, undertaking a VATS lobectomy in a real clinical setting, under the guidance of a tutor, will certainly be easier for the learner and safe for the patient. A structured program to teach VATS lobectomy in a clinical setting has been well described by Duke University Medical Center; this program can be usefully completed by the evaluation proposed by Katrine Jensen (3,7).

In conclusion, a three-step program (consisting in virtual, pre-clinical and clinical training) with objective evaluation of surgical skills is now available as well as advisable. The new generation of thoracic surgeons requires this effort to build and test its crucial competence in endoscopic major pulmonary resections.

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Footnote

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References

1. Carlens E. A new flexible double-lumen catheter for bronchospirometry. J Thorac Surg 1949;18:742-6.
2. Roviaro GC, Rebuffat C, Varoli F, et al. Major videothoracoscopic pulmonary resections. Endosc Surg Allied Technol 1993;1:288-93.
3. Jensen K, Petersen RH, Hansen HJ, et al. A novel assessment tool for evaluating competence in video-assisted thoracoscopic surgery lobectomy. Surg Endosc 2018. [Epub ahead of print].
4. Jensen K, Bjerrum F, Hansen HJ, et al. Using virtual reality simulation to assess competence in video-assisted thoracoscopic surgery (VATS) lobectomy. Surg Endosc 2017;31:2520-8.
5. Meyerson SL, LoCascio F, Balderson SS, et al. An inexpensive, reproducible tissue simulator for teaching thoracoscopic lobectomy. Ann Thorac Surg 2010;89:594-7.
6. Tong BC, Gustafson MR, Balderson SS, et al. Validation of a thoracoscopic lobectomy simulator. Eur J Cardiothorac Surg 2012;42:364-9; discussion 369.
7. Zwischenberger BA, D'Amico TA, Tong BC, et al. How I Teach a Thoracoscopic Lobectomy. Ann Thorac Surg 2016;101:846-9.

