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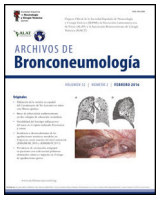

Editorial

Implementing a VATS Lobectomy Program in Spain. The Wet Lab, a Necessary Tool☆

¿Cómo implementar un programa de lobectomía VATS en España? El laboratorio experimental (Wet Lab) es una herramienta necesaria

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Video-assisted anatomical lung resections should become standard treatment in most patients with early-stage lung cancer. No studies have yet produced quality evidence, but a large number of publications have shown that video-assisted thoracic surgery (VATS) has a number of advantages over thoracotomy,[1,2] and it seems reasonable that patients should be offered this minimally invasive approach.

According to the 2015 European Society of Thoracic Surgeons database report, only 21% of lung resections performed in Europe used this approach, while in Spain the percentage was as low as 15%.[3]

To address this inconsistency, we need to develop continuous and complementary training strategies in an experimental setting to provide the training that will ensure that these procedures are being safely performed in our patients. We believe that these methodologies should be shared, as this approach has enabled our group to prepare all the surgeons of our unit to perform this surgery safely.

The implementation of new surgical techniques, such as video-assisted anatomical lung resections, requires continuous training. At the moment, most of this takes place directly on patients during routine hospital activity, and attendance at practical teaching courses in experimental labs is exceptional.

It has been estimated that around 50 video-assisted lobectomy procedures are needed to overcome the learning curve[4] over a recommended training period of up to 1 year,[5] and to maintain a good performance level, each surgeon must perform at least 25 interventions a year.

There is a clear need to think beyond the "learn on patients" model, in order to reduce errors and increase patient safety. Simulation with tissue models in a wet lab is the most useful tool for this purpose.[5,6] Training directly on patients clashes with our commitment to offer them safe treatment and to avoid urgent conversions to thoracotomy due to intraoperative accidents.[7] The preparation of resident doctors is a major challenge, and sufficient training must be offered in a safe environment that has the necessary caseload. In Spain, very few thoracic surgery units achieve the recommended number of procedures/surgeon/year.

In the Thoracic Surgery Department of Salamanca, we have developed a training program in minimally invasive surgery which also includes changes in the surgical environment to allow the more general application of these procedures, practice in high-volume hospitals, and practice in an experimental wet lab that uses prepared porcine heart–lung blocks for simulating VATS resections, principally left upper lobectomy.[8] This model has demonstrated high fidelity and is perhaps the most widely studied and validated for teaching VATS lobectomy.[6,9] The left lung of the porcine heart–lung block model is not anatomically identical to human anatomy, but the tissues and advanced dissection techniques are reproducible and can be objectively evaluated by expert surgeons.[6] It is also very inexpensive, although it must be used in facilities equipped with a video-assisted thoracoscopy machine.

As Tong et al. mention, the utility of a task-based simulator depends on its fidelity and validity. Fidelity, also known as face validity, refers to how real the trainee feels the experience with the simulator to be. Content validity evaluates if the steps taken with the simulator are exactly those taken in the real procedure. Construct validity evaluates the ability of the simulator to discriminate between students with different levels of experience.[6]

The few virtual simulators available, apart from being very expensive, are in the early stages of development and have not shown advantages over the porcine heart–lung model.[7]

In all probability, the future will reveal that both platforms (virtual simulators and porcine heart–lung block) have advantages at different stages of VATS lobectomy training. The virtual reality platform may be used as often as required, and would be a good starting point for surgeons who are new to VATS lobectomy. As Carrott el al. state, the porcine model can then be used once surgeons gain some operative experience and will facilitate the development of fine dissection skills and gain a "feel" for tissue strength with sharp and blunt dissection of hilar vessels.[10]

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In the Hospital Universitario de Salamanca, we have been able to implement both training strategies to help generalize the use of VATS, which currently accounts for more than 80% of protocolized lung resection. To improve the training of the whole team, all procedures performed since the start of the program have been recorded for discussion in regular training meetings or "debriefings" and to evaluate times and skills.

In Spain, the surgical volume in many hospitals is low, and the specific training period is correspondingly short. For this reason, simulation is essential for properly teaching resident thoracic surgeons in such a short time. No universally accepted simulation strategy exists, and few centers have access to virtual or tissue simulators. A more uniform and accessible simulation strategy is needed for teaching and acquiring the skills required to perform VATS lobectomy.

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