Commentary

VATS surgery for anatomical lung resection: a different approach for every surgeon

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Video assisted thoracic surgery (VATS) is becoming the standard of practice in the surgical treatment of lung cancer (1). French *et al.* made an important contribution having reported an interesting experience of transition from multiple ports to single port VATS for anatomic pulmonary resection (2), and they conclude that patient safety and oncologic quality are preserved during the transition period.

The so-called single port (uniportal) VATS was used to perform major lung resections and a single skin incision, ranging from 3 to 5 cm. The question then arises as to why the term uniportal (single-port) VATS may create confusion. Although an attempt to give a definition of each VATS techniques was published in 2000 (3), nowadays giving the technique a proper definition seems to be more complicated than before. What is uniportal VATS? The *Table 1* shows pragmatically the different tentative given by Dr Gonzales-Rivas to accurately identify the type of VATS he is using to perform anatomical lung resection (4-6).

Recently, I with a group of international colleagues tried to resolve the uncertainty existing between "Single Incision VATS" (SI-VATS) and "uniportal (single-port) VATS" (U-VATS) (1,7). Moreover it is important to note at this point that an incision of 6 cm has been reported by some Authors as a minithoracotomy (8). In short a major lung resection performed through a 6 cm incision with the use of an optic should probably be considered an open procedure even if there is no rib spreading. I personally would prefer the term Si- VATS if the length of incision is less than 6 cm, otherwise the term video assisted mini-thoracotomy should probably better explain the technique being used. Certainly, the term uniportal (single port) VATS should be used only when a flexible port (trocar) is utilized (1,7). It is evident that there is the necessity to "speak the same language" and therefore a consensus conference between members of major thoracic societies such as ESTS, EACTS, STS, AATS and ASCVTS will be probably necessary to make international nomenclature uniform (7).

The authors marked "we agree with the argument that keeping geometric plane of the scope as close as possible to the plane of the instruments produces a view of the surgical field that more closely resembles the open thoracotomy perspective". I think and act differently than the authors do, and I will explain the why. Having performed Uniportal VATS for many thoracic pathologies since 1998 (9-12) I have never used the geometrical (from the Ancient Greek: γεωμετρία; geo- "earth", -metron "measurement", a branch of mathematics) boundary of maintaining the triangulation through a small 20 mm diameter trocar (port). Although I understand that the concept of maintaining the triangulation may be considered by some to be ideal; on the other side, from personal experience as a practical standpoint it is easier to move "freely" inside the chest according to the necessity of the moment when dealing with the various pathologies.

Moreover the authors wrote that "consecutive anatomic lung resections performed from August 2014 to August 2015 using SI-VATS were retrospectively reviewed and compared to an equal number of multiple port VATS patients entered in a prospective database from December 2012 to May 2014". This mean in turn that the operating surgeon was already an expert thoracic VATS surgeon, and one point of discussion could be found in the fact that first 50 SI-VATS patients should have been compared to the first 50 VATS cases performed by the same surgeon, and

Table 1 Evidence table demonstrating the existing ambiguity in video-assisted thoracic surgery procedures

Title	Year of publication	Journal
Single-port video-assisted thoracoscopic left upper lobectomy	2011	*Inter Cardiovascular Thorac Surg* (4)
Single-incision video-assisted thoracoscopic lobectomy	2012	*J Thorac Cardiovasc Surg* (5)
Uniportal video-assisted thoracoscopic lobectomy	2013	*Ann Thorac Surg* (6)

not to an "equal number of multiple port VATS resection". In fact an expert surgeon in open surgery and in minor VATS procedures, who starts performing single incision VATS improves the oncologic quality after the initial 30 lobectomies, and became less selective with shorter operative time and lower conversion rate obtained after 90 lobectomies (13).

While surgeons are trying to be less invasive as possible and although propensity matched comparative analysis using SEER-Medicare database demonstrated that VATS is probably better than open surgery (14); the question "Is VATS superior to the open approach to treat lung cancer?" remains unresolved (15-17), and therefore the question why should single port VATS be preferred to standard VATS seems to add no value at the existing unresolved questions. In the real world, at this moment, there is certainly the lack of persuasive level data displaying patient benefit when compared to conventional VATS surgery, but in the era of minimally invasiveness, single incision VATS surgery for lung resection deserves a 360° evaluation in a randomized trial versus the other type of VATS approaches and open lung resection. Pragmatically, the fact that single incision VATS did not demonstrate a longer survival, improved pain score than multi-portal VATS and the number and range of retrieved lymph nodes is similar between the available VATS technique, makes it hard to justify single incision VATS as the preferred method to perform major lung resection for lung cancer (18-22).

Even if the operative steps to remove the lobe via single port VATS could be different compared with the standard VATS, the final aim is the same, and consists in the removal of the lobe with lymphadenectomy. Therefore it is evident, although yet not scientifically proved, not to expect a different survival if the operation is the same. These are the main reasons why it would be necessary for the next generation of thoracic surgeons to receive formal training for all the available VATS techniques (single incision, multiple port and robotic assisted) (23). After the training, the surgeon will decide to operate according to the approach that suits him best.

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