

Uniportal Video-Assisted Thoracic Surgery: It's Time to Believe

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“Large incisions, great surgeons!” This was a famous phrase that most surgeons in the world used to say. This was a paradigm that was very difficult to change in surgery, but as years passed by, fortunately, these words became outdated and obsolete, especially as it was difficult to demonstrate with hard evidence.

Any revolution in the field of medicine must always go hand in hand by the evolution of technology. In 1988, Dr Hans Troidl in his presidential speech at the International Congress on Surgical Endoscopy said, “Incredibly, laparoscopy has been almost neglected by surgeons, except for pelviscopic, a highly perfected technique used effectively by gynaecologist. The degree of which we as surgeons ignore this sophisticated technology and refuse to test its suitability for surgical application is astonishing” [1].

Starting decades ago, evolution occurred with the use of videoscopic images during the early 1980s. It took almost the entire decade for this technology to pass from the criticism and ridicule to become an accepted and popularised procedure, and in October 1989, laparoscopic cholecystectomy was introduced in the exhibit hall of the American College of Surgeon’s annual meeting and the rest of the history is known to all surgeons on the planet.

Furthermore, thoracic surgery also did not escape the rigid thought, and those who attempt to change it receive heavy criticism even today. For almost a century, posterolateral thoracotomy (one of the most painful incisions in surgery) has been the preferred approach in our field [2]; thus, changing the convention was not easy. With the development of new instruments, high resolution image processing, and surgical staplers, the evolution of video-assisted thoracic surgery (VATS) began to occur. The VATS became a technique used worldwide; most publications were from the USA although less than 35% of surgeons actually performed VATS due to lack of evidence [3].

Over the next 20 years, thoracic surgeons generally used three ports to perform almost all thoracic procedures (multiportal VATS/MVATS) until 2010 when the development of Uniportal VATS (UVATS) began which involved attempting to place all instruments through the utility port [4]. This was an attempt to reduce trauma to the chest wall, reducing pain, need for hospitalisation, and improving cosmetic results as well. The UVATS is the progressive evolution of minimally invasive thoracic surgery from the classic 3-port, through the 2-port, to the latest uniportal approach.

However, even when surgeons were aware that VATS was useful at least compared to open surgery, it was difficult to demonstrate. It took more than 20 years until the presentation of the VIOLET study in which Lim and his research team found in a randomised trial that patients who received VATS had a significant reduction of overall in-hospital complications compared to patients who received open surgery, leading to less pain and shorter hospital stays [5].

Considering why uniportal surgery should be performed, many publications in the last decade attempted to show the benefits of this procedure. One major systematic review by Abouarab., *et al.* in 2017 reviewed 39 studies with 4635 patients and concluded that UVATS resulted in a reduction in postoperative pain, blood loss, hospitalisation, and chest tube duration. Similarly, with oncological resection, in terms of the number of lymph nodes, it was concluded that UVATS had superior postoperative outcome over MVATS in the treatment of multiple thoracic diseases [6].

Sihoe, *et al.* (2019) published a systematic review analysing 22 articles and concluded that the data suggest that UVATS might hold advantages over MVATS in some simple clinical outcomes (such as postoperative pain and length of stay) even though the quantity and quality of evidence so far is limited [7].

The number and multiplicity of thoracic procedures performed worldwide using UVATS is rapidly increasing; most of them are performed by young thoracic surgeons. Probably, the main reason for this is the number of cases necessary to achieve competence, especially in low-volume centres. A detailed work by Dr Paula Ugalde showed the learning curve with UVATS for lobectomy. It concluded that 60 UVATS lobectomies were needed to pass through the initial phase of the learning curve, and an additional 80 UVATS were required to master the technique [8]. This technique is not easy to learn; because of the change in the way of handling the instruments and the difference of view perspective inside the chest and less maneuverability, the relationship with other team members also change. This is probably the reason why some experienced surgeons are reluctant to leave their comfort zone and become rookies again.

However, developers and promoters of this technique such as Drs Gonzalez Rivas and D'Amico are not only showing the world that UVATS is a feasible and safe procedure but also that more complex procedures can be archived such as bronchial and vascular sleeves [9] and segmentectomies [10], demonstrating that the word "impossible" does not come to their minds and thereby winning more adherents among colleagues worldwide. This is achieved not only with publications but also with videos, masterclasses, courses and well-detailed explanations to reproduce the technique as well as by maintaining contact with the surgeons who want to learn, improve and share UVATS in a way never before seen in surgery.

The development of VATS occurred in Western countries such as the USA and Europe, but this revolutionary technique quickly moved to China, mainly to the Shanghai Pulmonary Hospital where last year, they performed more than 17000 procedures and most of them involved UVATS.

Probably, this change in global attention has made many Western centres feel intimidated by the large volume of Asian centres, such that the former is criticising the latter's work harshly; they probably believe that they are no longer the centre of the attention and are losing leadership.

Ultimately, the primary goal is to provide the best care for our patients by attempting to be better surgeons. It is my opinion that to perform UVATS we need patience, to generate a real change it necessary time, dedication and sharing information to take down the walls of prejudice, so "keep calm and think uniportal".

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