

# Community for thoracoscopic surgery

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*Contributions:* (I) Conception and design: All authors; (II) Administrative support: All authors; (III) Provision of study materials or patients: S Jheon; (IV) Collection and assembly of data: E Yi; (V) Data analysis and interpretation: All authors; (VI) Manuscript writing: All authors; (VII) Final approval of manuscript: All authors.

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**Abstract:** Video-assisted thoracoscopic surgery (VATS) is a real game changer in thoracic surgery. Surgical environment for thoracic surgeon have become complicated more and more as the techniques and technology have been advanced. No single surgeon can stand alone in this rapid changing circumstance. Surgeons need to meet, talk together, and discuss what they have done. There may be no perfect answers, however, surgeon will get to know which way is better. Although the chosen one could be different from each of them, surgeons can debates and conclude the consensus. Societies for thoracic surgeons could provide the platforms for discussion, arguing, sharing experiences, educations, and therefore achievement another innovations comparable to VATS.

**Keywords:** Video-assisted thoracoscopic surgery (VATS); community; objectives

Received: 21 January 2017; Accepted: 01 February 2017; Published: 31 March 2017.

doi: 10.21037/jovs.2017.03.13

**View this article at:** <http://dx.doi.org/10.21037/jovs.2017.03.13>

## Introduction

Maybe there is no thoracic surgeon who disagree with that video-assisted thoracoscopic surgery (VATS) is the most outstanding landmark in thoracic surgery over the past half century. Revolutionary influences have changed the traditional surgical platform, as well as the patients' experiences, which were based on the conventional methods. Smaller incisions accompanied with less pain make hospital stay shorter, functional recovery earlier, and consequently improve quality of life (1).

Since the first appearance in early 1990', VATS has been rapidly spread, evolved and become the mainstream of thoracic surgery. Over the past 30 years, numerous evidences supporting the superiority of VATS have been published. Various surgical methods modifying VATS have argued their advantages (2). Obviously today is the time of prosperity for VATS (3-5).

However, there still exists substantial concern for the

equivalent treatment efficacy. Despite the evidences that the conventional VATS could be applied in various diseases, VATS approach as a standard treatment is confined to stage I non-small cell lung cancer currently (1). Feasibility and safety of various modified VATS techniques including uniportal, non-intubated VATS, or robotic surgery has been still in ongoing discussions (6-8).

Overwhelming information and diverse methodology provoke the necessity of communication. Young surgeons as beginners may want to learn which way are proper for themselves. Experts may want their peers to evaluate their accomplishment, or feel fear for leaving behind in this rapidly changing surgical environment. Traditional society of thoracic surgeons have performed essential role for achievement in thoracic surgery, representatively in North America, also in European continent. As a latecomer, a surgical society of Asia is actively communicating for the development of VATS.

In this chapter, we discussed how the VATS, representative

of minimally invasive surgery has been evolved with the Society of Thoracic Surgeons (STS), through North America, Europe and Asia.

### **The initiation of VATS community**

The concept of thoracoscopic surgery is not a new one. Thoracoscopic adhesiolysis had been performed in early 20<sup>th</sup> century, with modified cystoscopy and a candle light by H. C. Jacobaeus, a professor of internal medicine (9). The clinical results had been presented at a regular meeting of the Royal Society of Medicine in London. It would be the first record about thoracoscopy that reported in the medical community. They were published in international journal such as the “*Proceedings of the Royal Society of Medicine*” and the *American Review of Tuberculosis* simultaneously (10).

The response in medical society was explosive. Through North America and Europe, numerous experiences had been reported, instruments improved and techniques innovated. However, it last only a few decades. After a short and enthusiastic prosperity, this technique had been considered as an impressive but troublesome practice, with potentially formidable complications for a long and dark era of neglect. It was not until the last decade of 20<sup>th</sup> century, that this forgotten craft was emerged in clinical fields again (10).

During the forgotten periods, thoracoscopy had been thought to be an old surgical technique with remaining indications for medical diseases requiring biopsy, or preoperative examinations (11). However, certain European surgeons continued to use thoracoscopy for therapeutic purpose in some areas, such as empyema. Thoracoscopic technique for empyema was developed at St. Thomas’ Hospital in London initially, for the purpose of reduce operative incision and therefore hospital stay (12). Then it was modified by Rosenfeldt and his colleagues, who adopted a Jacobs-Palmers laparoscope longer and with an offset eyepiece unlike the former thoracoscopy (13).

There were two of important international conferences before the renaissance of thoracoscopy; one is Symposium on Thoracoscopy of 1980, held in Marseille, organized by Boutin. The other was Thoracoscopic Symposium in Berlin, organized by Loddenkemper in 1987. A brief historic review, demonstration of methods, and clinical applications for thoracic diseases such as pneumothorax, cancer and pleural disease were discussed. However, most of the contents were confined to medical thoracoscopy, focused on the pleurodesis without complications (14).

The earnest age of surgical thoracoscopy begun in the last decade of 20<sup>th</sup> century. The reboot of thoracoscopy was supported by the advances of technology and communication. New technology could be accepted more easily by both clinicians and patients, suppliers and consumers of healthcare services. Published successful experiences of laparoscopic surgery had led the demands for thoracoscopy (15). Advanced technology could empowered the thoracoscopy with video-assisted imaging system, wide range of operational instruments and stapling systems (10).

The VATS, as the present form we know, had been performed sporadically until mid-1990’. There had been emerged needs to collect and interpret data appropriately, and share the successful as well as failed experiences. Based on this environment, the Video-Assisted Thoracic Surgery Study Group was suggested as a concept in late 1991 among the American thoracic surgeons. Soon it was organized declare clear goals; deriving basic information for conduct of the surgical procedures, complications, short-term outcomes (15). The first reports from this group was presented at STS Annual Meeting in San Antonio on January 26, 1993 (16). In conjunction with this meeting, the First International Symposium on Thoracoscopic surgery was held in January 22 to 23 (17). Subsequently, the VATS techniques have spread through the major centers in North America, Asia, Europe, Australia and South America rapidly (18). With the accumulation of data and experiences, VATS surgeries as established form currently used, have been mainstreams of thoracic surgery.

### **Role of community for VATS**

#### *North America*

In the beginning of the second era of enthusiasm, VATS study group had played important role in spreading this technique. Generally major medical advances tend to progress the following process; technical development, sporadic successful application, academic presentation, widespread application, detection of limitation, refinement and definition of indication (15). Widespread means broad acceptance by clinicians in various area, and at the same time extending indications. The application of VATS techniques had cultivated by meeting presentations, written reports, media interviews, and patients demand.

Initially the VATS technique had been used only sporadically until mid-1991. The organization of VATS study group facilitated the process of widespread by

monitoring the procedures, notification of feasible techniques or limitations, exploring extending indications and development of new technologies. This group had derived basic information regarding VATS; such as a surgeon's learning curve, conduction of surgical procedures, benefit and limitations compared with conventional open surgery, complications, and surgical outcomes. These data was presented at STS Annual Meeting in San Antonio on January 26, 1993 (16).

Traditional societies in thoracic surgery recognized this new wave. The Councils of The American Association for Thoracic Surgery (AATS) and STS have organized a Joint Committee on Thoracoscopy and Video Assisted Thoracic Surgery, and published guidelines in 1992 (19). The joint committee suggested that the qualification of thoracic surgeons and establishment of appropriated instruction programs for VATS surgeons should be performed and therefore, for ensuring optimal patient care. In North America, the application of VATS and other innovative techniques have been supplied and qualified safely and efficiently under the infrastructure and services provided within the community of Thoracic surgeons (20).

### *Europe*

European surgeons has been acquaint with thoracoscopic surgery, even in the periods of Neglect (10), however, there had been no communities for thoracic surgeons until mid-1970. Dr. Abbey Smith and Francisco Paris organized the Coventry Conference and the first meeting of European thoracic surgeons in Valencia, on 12 and 13 March 1976, and led to the first meeting of European Thoracic Surgery Club in 1979. The expanding need for more than a Club of thoracic surgery have made the foundation of the European Association for Cardio-Thoracic Surgery (EACTS) in 1986 (21).

With the refinement of surgical technology, some thoracic surgeons agreed with the necessity for increasing role of thoracic surgeons and differentiation of non-cardiac surgery. Dr. Ingolf Vogt-Moykopf suggested the foundation of European society for thoracic surgeons, and a European Consensus Meeting—Foundation Session was held in Heidelberg in conjunction with the 2nd Annual Meeting of the German Society of Thoracic Surgery on 18th of November 1993; it was the first European Conference on General Thoracic Surgery (21).

Over the past 20 years, ESTS has become the leading society in thoracic surgery worldwide. However, the

contents of thoracic surgery itself have been evolved rapidly, owing to the development of technology applied to surgical techniques; now we have robotic systems, highly refined surgical instruments for minimally invasive surgeries, 3-dimensional video-assisted imaging systems, and extracorporeal Membrane Oxygen Support devices.

However, there has been great discrepancy VATS practice among the European Countries. Between the 2010 and 2012, VATS procedures occupied 18.8% in lung resection, and the rates of VATS lobectomy was 11.3% across the Europe (7). Denmark showed the highest VATS resection rates (55%) in 2011, and the Copenhagen group had the largest VATS experiences among the European countries (8), while Surgeons in Great Britain and Ireland reported 14% at the same year (7). Moreover, the training and certification systems still considerably vary across the European Continent (20).

Because there has been no universal definition for the quality of training center, ESTS created a task force to revise the structural, procedural and qualification characteristics of a European general thoracic surgery unit (22). In those guidelines, ESTS defined a shortlist criterion for training and education of general thoracic surgery based on the principles of the European Union of Medical Specialists (UEMS) board of thoracic surgery (20).

ESTS has tried to offer the competitive education programs for trainees as well as the expert surgeons. Adoption of VATS has brought revolutionary changes in thoracic surgery, ESTS organized animal lab courses as an event of the European School of Thoracic Surgery in Elancourt, France, October 2007, and a theoretical session were held in Antalya, Turkey on November 2008 (22). The ESTS School held another educational course in Elancourt in 2009. It was an updating hands on session focused on emerging techniques such as transcervical extended mediastinal lymphadenectomy (TEMLA) and VATS for grown up surgeons (20).

ESTS continuously prove its endeavor to ensuring the quality of thoracic surgery, by harmonizing different systems among European countries, follow updated surgical techniques and offering appropriate educational platform. Currently as the largest scientific organization, this community had exclusively dedicated to the general thoracic surgery.

### *Asia*

Among the three continents, Asia would be the last area

where the VATS had been arrived. However, maybe the thoracic surgeons are the most active clinicians who have accepted this technique. There was a report demonstrating the technical feasibility in three centers of Asia; the Prince of Wales Hospital, Queen Elizabeth Hospital, Hong Kong and the Chang Gung Memorial Hospital, Taipei, Taiwan (18). Although China is one of the latest countries which accept modern surgical technology, the volume of VATS experiences is expanding as amazing as its economic growth.

There are two representative thoracic community in Asia; the Asian Society for Cardiovascular and Thoracic Surgery (ASCVTS) and the Association of Thoracic and Cardiovascular Surgeons of Asia. Both have failed to satisfy the growing interests of thoracic surgeon, especially for minimally invasive surgery. The former is larger and older society, however, it was originally started as the Asian Chapter of International Society for Cardiovascular Surgery (ISCVS) in 1973, had been society for only cardiovascular surgeons as the Asian Society for Cardiovascular Surgery (ASCVS). It was 2008 that the thoracic surgery part was added and became ASCVTS (<http://www.ascvts.org/society/history.html>).

There have been increasing needs for leading society for thoracic surgeons in correspondence with the revolutionary changing surgical environment. Several eminent thoracic surgeons mainly from Taiwan, Japan and South Korea organized the Asian Thoracic Surgical Club (ATSC) in mid-2000 and have held annual meetings. During the 4<sup>th</sup> annual meeting of ATSC in Busan on September 2011, there was an active discussion about the necessity of thoracic surgery education programs, especially for the training of minimally invasive surgical techniques. Asia encompasses a vast number of diverse countries with different socioeconomic status, and there exists a huge discrepancy in surgical practice. The surgical performance has been qualified comparable with those of North America or Europe in some of Asian countries, most of Asian thoracic centers has just begun to adopt the advanced technology.

As the increasing scientific evidences related with minimally invasive surgical techniques has been published, and announced through the public media, the demands for the advanced technology has been increasing both from the medical suppliers and customers in Asia. However, there were no standardized surgical protocols neither qualified training programs.

Being derived from those desires, the official inaugural meeting of founding members for Asian Thoracic Education Programs (ATEP) was held in Seoul, South Korea on 27

November 2011. Attended members of Asian thoracic surgeons were from China, Japan, India, Singapore, Taiwan, Thailand and South Korea. They agreed on the mission statement that the ATEP (I) contributes to the advancement of thoracic surgery in Asia and to the rest of world; (II) implement and educate Thoracoscopic surgery procedures to surgeons in Asia; (III) promote safe surgeries, patient's safety and best clinical outcome for thoracic surgeons; and (IV) promote and encourage sharing of Thoracoscopic surgery techniques among members.

The first ATEP workshop was held in Shanghai, China on 15 and 16 March 2012. It was a 2-day program and consisted of animal lab and theoretical lectures, similar with the ESTS schools. Currently, the ATEP has held 8 times of workshops and 2 times of international symposiums. There have been numerous collaboration with other major societies including ASCVTS or Asia-Pacific Congress of Endoscopic and Laparoscopic Surgery (ELSA).

Recently, a group of expert authority in Asian thoracic society has concluded that the establishment of thoracic society for the collaboration amongst Asian thoracic surgeons. From the First and Second Consultative Meetings on Asian Collaboration in Thoracic Surgery, which held on April and September in 2016, they suggested and consolidated the concept of Asian thoracic organization and consolidated (<http://jovs.amegroups.com/announcement/view/254>).

On July 30, just the day before 2<sup>nd</sup> consultative meeting, the first Pan-Asian Forum on Cooperation in Thoracic Surgery was held, and the attending experts agreed to the establishment of Asian Society of Thoracic Surgeons (ASTS). The panel members of the First and Second Consultative Meetings on Asian Collaboration in Thoracic Surgery have been nominated to form the inaugural Executive Committee of the ASTS, and Dr. Jie He, the President of Cancer Hospital Chinese Academy of Medical Sciences and Director of National Cancer Center of China was elected as the first President.

The objectives of ASTS include the setting up of Asian guideline setting up of Asian Guidelines for clinical practice in Thoracic Surgery and facilitating exchange programs for trainees to gain clinical and academic experiences in different countries across Asia, enhancement of research through databases and working groups and facilitation of cooperation between members and also with other international societies. The establishment of academic organization unitizing various Asian thoracic community is necessary for harmonizing the different range of clinical

practices and research efforts amongst the Asian countries.

## Conclusions

All thoracic communities share common goals; meeting together, exchanging experiences, learning something from each other, preparing education programs for juniors, and discussing what they have done, furthermore, what they will do. Building consensus is important, because all participants come from different countries, diverse cultures, use different languages and had different training course but with common concern for thoracic surgery.

With the rapidly changing technical environment, the role of communities for thoracic surgeons has been imperative. Diverse innovative surgical techniques, instrument have been emerged especially in the fields minimally invasive thoracic surgery. As an individual, a thoracic surgeon cannot fully understand all of these changes and novel technologies. Experts group in thoracic communities could conclude specialized opinions, making standardized criteria, or provide qualified platform for research and training. With appropriate financial support, communities can lead the less affluent countries to participate in collaboration of thoracic societies.

From every direction over the world, young and talented thoracic surgeons are training themselves, developing novel techniques. Let those hundreds flowers bloom. Let the hundreds schools of thoracic thought contend. From those constant moving, we can find the wisdom for future perspective.

## Acknowledgements

None.

## Footnote

*Conflicts of Interest:* The authors have no conflicts of interest to declare.

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doi: 10.21037/jovs.2017.03.13

**Cite this article as:** Yi E, Jheon S. Community for thoracoscopic surgery. *J Vis Surg* 2017;3:38.