

The development of thoracoscopy has more than one hundred years of history. In 1910, the Swedish doctor Hans Christian Jacobaeus used a rigid cystoscope to perform pleural adhesiolysis, biopsy, and other procedures through naked eye observation, which may be regarded as the origin of thoracoscopic surgery. However, for more than half a century, thoracoscopic surgery was relegated to the diagnosis of pleural disease and the lysis of pleural adhesions in patients with tuberculous pleuritis. It was not until the 1990s with the development of better thoracoscopic cameras and the availability of endoscopic linear mechanical staplers, that video-assisted thoracic surgery (VATS) was born, marking a new era of modern VATS procedures. In 1992, Roviario and his colleagues were first to report an anatomic lobectomy in a completely thoracoscopic operation, which was revolutionary for modern thoracic surgery.

However, the road to success is always under construction., and every surgical innovation is accompanied by doubt and resistance. The first decade of modern thoracoscopic surgery witnessed many difficult moments. In 2003, a mere 4% of lobectomies in the United States were performed with VATS technique. In China, there were only several surgeons who were able to complete a thoracoscopic lobectomy. VATS is minimally invasive and allows rapid recovery, so why were only a small number of thoracic surgeons able to master it? Why was it so difficult to perform procedures such as lobectomy via the thoracoscopic technique? These have been persistent and unremitting issues that have lingered despite concerted efforts to solve them. As a thoracic surgeon, I am privileged to be born in the era when we may catch up with and contribute to the development of VATS.

The fundamental difference between VATS and traditional thoracotomy is the surgical approach. Therefore, the biggest challenge of VATS is not in achieving operative proficiency under the endoscope but rather in finding the unique surgical methods that match the various endoscopic procedures. To this end, we began to improve the surgical incisions and approaches to redesign the resection method. After repeated practice, we formally proposed the “single-direction VATS lobectomy” in 2006. The single-direction VATS lobectomy has a clear algorithm that is easy to learn and master, and has helped the rapid adoption of VATS lobectomy in China. Subsequently, we have improved mediastinal lymph node dissection and developed a series of solutions for complex surgical techniques—such as segmentectomy and bronchopulmonary angioplasty—and for accidental difficulties—such as major bleeding under the endoscope and difficult hilum; these innovations have further consummated the single-direction VATS procedures.

We may divide the development of modern VATS into two phases: the exploratory stage and the explosive growth stage. The latter occurred in the past decade, and we have been fortunate to participate in this wave of progress and contribute to the development of VATS in a “single-direction” manner. Today, VATS procedures have finally become the preferred, rather than the “alternative”, thoracic surgery approach in the mainstream guidelines.

This book brings together the literature on VATS procedures we have published in AME journals in recent years, covering all aspects of single-direction VATS lung procedures (especially for lung cancer). All the articles include detailed methodological descriptions, along with specific technical steps and video demonstrations. Notably, many top thoracic surgeons have also commented on these techniques, and we are honored to receive their perspectives. I hope the publication of this book will benefit our colleagues in China and abroad. Finally, we warmly welcome all readers' comments, criticisms, and/or corrections on any issues covered by the book.



**Lunxu Liu, MD**  
Department of Cardiovascular and Thoracic Surgery,  
West China Hospital, Sichuan University, Chengdu, China