

The minimally invasive “revolution” of the early 1990s did not include thoracic surgery. Whereas the shift from open to laparoscopic cholecystectomy happened almost overnight, without strong scientific evidence to support the change, in the early 2000s only 15% of thoracic procedures were done using a video-assisted technique—and most of these were minor diagnostic and therapeutic surgeries (drainage of pleural effusion, treatment of pneumothorax, wedge resections) (1). One study that evaluated the prevalence of video-assisted thoracic surgery (VATS) lobectomy in the United States, using the Nationwide Inpatient Sample database, found that, among 13,619 patients undergoing lobectomy at nonfederal facilities between 2004 and 2006, only 6% (n=759) underwent a VATS approach (2). Even among specialized thoracic surgeons, the new technology took a long time to be embraced, especially for anatomic resections. In the Society of Thoracic Surgeons General Thoracic Surgery Database, the rate of VATS lobectomy increased from 10% in 2002 to only 29% in 2007 (3). There has been no lack of evidence—although most of it is retrospective—that minimally invasive thoracic surgery is associated with faster recovery, lower complication rates, and equivalent oncologic outcomes, compared with open surgery (4). One randomized trial recently conducted in Denmark found decreased postoperative pain and enhanced quality of life after VATS lobectomy (5). Hopefully, these data will help convince the skeptics that still remain.

What has been holding us back? An interesting survey of the European Society of Thoracic Surgeons in 2007 suggested that the main reasons for the low utilization of VATS were the technical difficulty of the operation, the lack of specific training, and a steep learning curve to become competent (6). To overcome some of the limitations of video-assisted surgery, many thoracic surgeons have turned to the robot. Robotic surgery offers some clear advantages: tridimensional view, motion control, and wristed instrumentation, which approximates the movement of the human hand. The learning curve for robotic surgery has also been shown to be more rapid than that for VATS (7), and this might have pushed some traditional-minded surgeons to embrace a minimally invasive approach. It seems that robotic surgery is closing the gap for thoracic surgeons who want to embrace a minimally invasive approach, and its utilization is increasing fast.

The book *Robotic Thoracic Surgery: Ruijin Hospital Experience*, therefore, comes at a prime time for the discipline, and it will likely become a useful guide for thoracic surgeons in China and internationally. Unfortunately, not all that glitters is gold, and the Achilles’ heel of robotic surgery is cost. Hopefully, multidisciplinary use of the system, postoperative fast-tracking of patients, and development of competitive alternate robotic platforms will drive costs down and increase availability.

As an optimist, I believe that patients’ outcomes and satisfaction are what motivate us. There is no doubt that minimally invasive surgery is a better option than open thoracotomy for our patients, and it is time for surgeons to fully embrace it.

References

1. Paul S, Sedrakyan A, Chiu YL, et al. Outcomes after lobectomy using thoracoscopy vs thoracotomy: a comparative effectiveness analysis utilizing the Nationwide Inpatient Sample database. *Eur J Cardiothorac Surg* 2013;43:813-7.
2. Gopaldas RR, Bakaeen FG, Dao TK, et al. Video-assisted thoracoscopic versus open thoracotomy lobectomy in a cohort of 13,619 patients. *Ann Thorac Surg* 2010;89:1563-70.
3. Boffa DJ, Allen MS, Grab JD, et al. Data from The Society of Thoracic Surgeons General Thoracic Surgery database: the surgical management of primary lung tumors. *J Thorac Cardiovasc Surg* 2008;135:247-54.
4. Cao C, Manganas C, Ang SC, et al. Video-assisted thoracic surgery versus open thoracotomy for non-small cell lung cancer: a meta-analysis of propensity score-matched patients. *Interact Cardiovasc Thorac Surg* 2013;16:244-9.
5. Bendixen M, Jorgensen OD, Kronborg C, et al. Postoperative pain and quality of life after lobectomy via video-assisted thoracoscopic surgery or anterolateral thoracotomy for early stage lung cancer: a randomised controlled trial. *Lancet Oncol* 2016;17:836-44.

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6. Rocco G, Internullo E, Cassivi SD, et al. The variability of practice in minimally invasive thoracic surgery for pulmonary resections. *Thorac Surg Clin* 2008;18:235-47.
7. Veronesi G. Robotic surgery for the treatment of early-stage lung cancer. *Curr Opin Oncol* 2013;25:107-14.

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