

# A complete video-atlas of five robotic-assisted lobectomies

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## Editor's Key Points

1. These narrated videos are extremely valuable materials demonstrating the detailed surgical techniques of each of the five robotic-assisted lobectomies
2. Dr Park described an approach based on a video-assisted thoracoscopic surgery (VATS) lobectomy incision strategy, which could be reproducible for VATS surgeons
3. For those used to the conventional open technique, the very intuitive and user-friendly robotic interface may be easier to master than the different set of hand-eye skills demanded by VATS, hence, the robotic system may provide the non-VATS surgeons an excellent route into the world of minimally invasive thoracic surgery
4. Promising results have been reported by a small number of specialist centers with particular experience using the robotic systems

--T.D.Y.



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Advances in technology have allowed minimally invasive approaches for pulmonary lobectomy to be utilized increasingly over traditional thoracotomy for the purported benefits of decreased surgical trauma resulting in shorter hospital stay, quicker recovery, less pain and decreased morbidity. While video-assisted thoracic surgery (VATS) lobectomy was initially developed in the early 1990s, it has taken two decades for VATS lobectomy to become a more widely available and reproducible technique. This is in part because of the training required to teach and learn a different approach to handle hilar dissection in a closed chest. It may also be because of the limitations of VATS technology and instrumentation.

Telerobotic surgical technology with a binocular visual system and wristed instrumentation was developed in order to overcome the limitations in the established minimally invasive technology. While initially developed and first reported for closed chest coronary revascularization, robotics has enabled rapid and nearly uniform adoption of a minimally invasive approach for pelvic procedures,

such as prostatectomy and hysterectomy, where vision and maneuverability are limited. The capital costs of these systems and the question of whether clear-cut benefits exist, aside from those to the operating surgeon, are important and unresolved issues.

In the arena of general thoracic surgical procedures, the development of robotic approaches has been slowly increasing, as more emphasis is placed on minimally invasive surgery. However, much like the early experiences with VATS lobectomy there only a few centers of excellence in robotic thoracic surgery exist worldwide. Teaching materials, training courses and opportunities for mentoring are sparse.

These narrated videos represent an effort to demonstrate one approach in utilizing robotic technology to perform minimally invasive lobectomy. *Video 1* reviews the docking process. *Videos 2 to 6* demonstrate the technical aspects of right upper lobectomy (*video 2*), right middle lobectomy (*video 3*), right lower lobectomy (*video 3*), left upper lobectomy (*video 5*) and left lower lobectomy (*video 6*),

respectively. The approach is based on a VATS lobectomy incision strategy consistent with the CALGB 39802 registry study. In this regard, it is a reproducible technique for those individuals who already have some advanced VATS experience. In many ways the two-dimensional video clips cannot adequately represent the three-dimensional nature of the robotic dissection, but the viewer should focus on how the robotic system is implemented to achieve a precise bimanual hilar dissection.

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