

Dear Colleague:

As you all know, surgical techniques have greatly evolved over the last 15 years, trending toward less invasive procedures, in an attempt to diminish surgical injury and trauma, and reduce acute inflammatory response cascades. This has forced professionals to continuously update their knowledge and skills to keep abreast in this rapidly changing field.

Following the pioneering work of our gynecology and general surgery colleagues in the terrain of laparoscopic surgery, minimally invasive surgery has also come to the cardiothoracic surgery stage. In the field of cardiac surgery, off pump (“beating heart”) and small-port access coronary artery bypass and valve surgery have developed in the last 15 years. The veins are now harvested using endoscopic equipment through a small incision. These procedures, however, are technically demanding and require a new set of surgical skills. Only 20 % of the cardiac surgery programs across the country perform “beating heart” surgery.

In thoracic surgery, minimally invasive surgery through small-port access has been evolving for the past 20 years. The procedure is called **video-assisted thoracoscopic surgery (VATS)**. During a VATS, the patient is anesthetized and placed on his/her side. The anesthesiologist uses a double-lumen endotracheal tube to be able to isolate both lungs. The operated lung is collapsed and the anesthesiologist maintains gas exchange through the healthy lung. Small incisions (two to four) are made on the chest. A video-camera connected to a thoracoscope is inserted inside the chest for light source and vision, and different instruments can be used for the particular procedure (see figure 1).

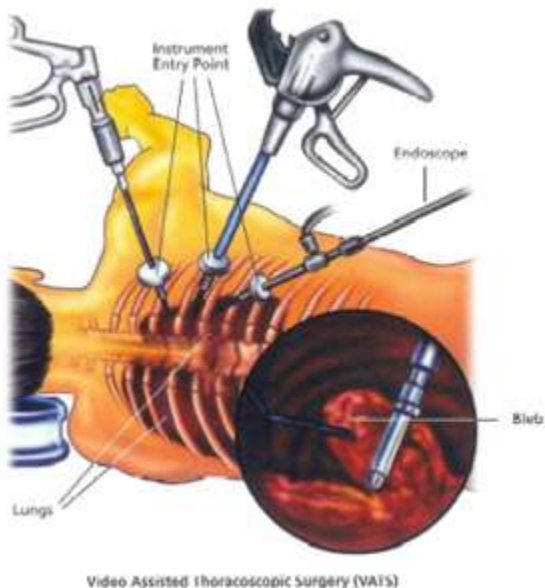


Figure 1

The surgeons performing the procedure follow the action on a video-screen (Figure 2).



Figure 2

The spectrum of pulmonary diseases and complexity of surgical procedures that can be treated with this small-port access surgery has greatly increased over the last few years. It includes pleurectomy and bleb resections for spontaneous pneumothoraces, lung decortication for empyema, mediastinal mass and lung mass biopsies, cervical sympathectomy, thymectomy, lung wedge resections for undetermined lung nodules and early lung cancer with poor lung functions. Palliative procedures for lung cancer can also be performed.

The standard operation for lung cancer in early stages and if the lung functions are appropriate, is a lobectomy, or more rarely, a pneumonectomy. In a lobectomy, an anatomical dissection of the lobe where the tumor is located is performed after isolating and dividing the pulmonary artery branches, the pulmonary vein branches and the bronchus (Figure 3). In addition, a complete lymph node dissection of all lymphatic basins is performed to correctly stage the cancer.

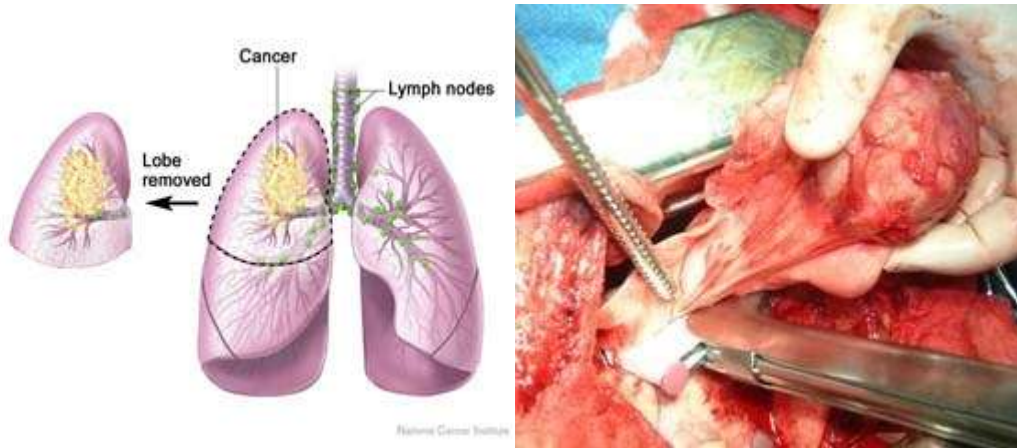


Figure 3.

The standard lobectomy requires a thoracotomy, an 8 to 10-inch incision with muscle cutting and rib resection or spreading (Figure 4).



Figure 4.

In contrast, VATS is performed through 3 to 4 half- inch incisions, virtually without rib spreading or rib cutting. The advantages are markedly diminished postoperative pain, which allows the patient to be mobilized sooner and to take deeper breaths preventing postoperative atelectasis and pneumonia. In addition, studies suggest less postoperative cardiac complications, atrial fibrillation, duration of chest tube drainage and requirements for transfusions. The hospital stay, recovery time and time to return to normal activities are also decreased.

We have been performing VATS procedures for the past 12 years. Since joining the Searcy Medical Center, we have operated on over 400 thoracic surgery cases, over 200 of which have been VATS. In August of this year, we performed the first VATS lobectomy at White County Medical Center. The patient, a nice 71 year-old gentleman with a history of hypertension and a heavy smoker, presented with unexplained weight loss to his primary care physician. The weight loss was attributed to newly diagnosed diabetes, but the chest X-ray was abnormal. The chest CT showed a 1.5 cm spiculated right upper lobe nodule. PET scan demonstrated high uptake there. His pulmonary function tests were adequate for the planned lung resection. In the Operating Room, access inside the right chest was gained through three half-inch incisions. A scope connected to a video-camera and two instruments allowed us to locate the spiculated right upper lobe lesion, which was wedged out. Intra-operative pathology sections confirmed the presence of a non-small cell carcinoma. An additional 2.5 inch incision was made to facilitate the dissection of vascular structures in the hilum. Figure 5 depicts a detail of the dissection and the final incisions as seen 6 weeks after surgery.



Figure 5

Lung Cancer continues to be a devastating disease. It represents the 2<sup>nd</sup> most common cancer in men (after prostate cancer) and in women (after breast cancer). It accounts for 15% of all newly diagnosed cancer cases, and in 2009 a calculated 219,440 new cases (116,050 in men, 103,350 in women) will occur. The average age at presentation is 71 years, 60% presenting after age 65 and less than 3% under age 45. Lung cancer represents the leading cause of cancer death in men and women, with 159,000 deaths caused in 2009. According to the TNM classification, the 5-year survival by stages is 56% for stage I, 34% for stage II, 10% for stage III and 2% for stage IV, slightly better for prefix “a” than “b”. The risk factors include first and second hand smoking, exposure to Radon, Thoracic radiation, exposure to Asbestos and family history. Diagnosis based on symptoms is invariably too late. There is no ideal “screening” test, and the obvious candidates (CXR, sputum cytology, bronchoscopy) have not shown to impact survival. There are some promising data on the early use of spiral chest CT as a screening tool in high risk patients.

Unfortunately, in our practice we continue to encounter a large number of cases that present in late stages beyond surgical cure. For that reason, we are going to start a dedicated clinic for lung cancer in an effort to discover cases early. In close collaboration with our medical oncology and radiotherapy colleagues, using the latest and least invasive surgical techniques, we hope to continue to offer the best care to our community and your patients. This “Lung Nodule” clinic will start on Monday afternoons for Dr Patrick, and Wednesday afternoons for Dr Aguinaga, and we will be glad to see any of your patients with abnormal CXR or Chest CT, as well as high risk patients for screening. Please contact us if you have any questions.

Sincerely,

Miguel Aguinaga, M.D., F.A.C.S.

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