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## Case #1

### History Present Illness:

A 75 year old male presents to the emergency department with back pain. To rule out renal stones, a CT of the abdomen is performed which shows a left lower lobe cavitory lesion. The patient has a 1 ppd history of smoking for 60 years. There is no other past medical or surgical history.

### Pre-operative Work-up:

The CT of the lower lung fields reveals a 4.7 x 7.4 x 5.4 cm cavitory mass in the left lower lobe. This abuts the left lateral pleural surface and hemidiaphragm.

The PET/CT shows a left lower lobe uptake SUV 17.6.

The transbronchial biopsy is definitive for squamous cell carcinoma.

PFTs: FEV1 2.54L, DLCO/VA 41%

Pre-operative Stage IIB: T3 (7.4cm diameter of lesion), N0, M0

### Treatment/Outcome:

A robotic left lower lobectomy with thoracic mediastinal lymphadenectomy was performed. The operation was uneventful with only 50 ml of blood loss. Postoperatively, the patient was admitted to the stepdown unit. The chest tube was removed during post operative day 2, and the patient was discharged on POD 3. The patient reported minimal pain and experienced excellent exercise tolerance.

Final pathology is Stage IIA: T2b (6.5 cm diameter of lesion), N0, M0

## Case #2

### History Present Illness:

A 71 year old male presents with a right lung cavitory lesion with one year of evolution. The patient underwent bronchoscopy and CT guided biopsies which were negative. PET and CT scans were done within the last year which showed stability on the diameter of the lesion. Due to the suspicious appearance of the lesion, a surgical evaluation was requested.

### Past Medical History:

Diabetes, tobacco abuse, COPD

### Past Surgical History:

Orthopaedics interventions

### Pre-operative Work-up:

CT chest 1/26/12: RLL 2.6 cm, 4R lymph node 1.6 cm

PET 5/2011: RLL 2.6 cm, mediastinum and RLL lesion 3.0 SUV

PFTs: FEV1 2.89L, DLCO/VA 68%

### Operative Course:

Outpatient mediastinoscopy was negative for malignancy.

VATS wedge biopsy showed malignancy; therefore robotic lobectomy with mediastinal lymphadenectomy was performed during the same anesthesia time.

### Treatment/Outcome:

A robotic right lower lobectomy with thoracic mediastinal lymphadenectomy was performed. The operation was uneventful with 150 ml of blood loss. Postoperatively, the patient was admitted to the stepdown unit. He developed atrial fibrillation during postoperative day 3. His chest tube was removed during post operative day 3, and the patient was discharged on POD 5. The patient's additional time in the hospital was related to the development of atrial fibrillation.

Final pathology is Stage IA: T1b (2.5 cm diameter of lesion), N0, M0

### Discussion:

Approximately 30% of the newly diagnosed lung cancer can be treated surgically. Thoracotomy is the most common surgical approach used by thoracic surgeons. This approach results in severe pain as well as longer recovery time. Minimally invasive approaches have been developed including VATS and robotic pulmonary lobectomy. VATS pulmonary lobectomy has been shown to be safe and effective with benefits related to reduced postoperative pain and length of hospital stay. However, video-assisted thoracic surgery (VATS) has limited maneuverability and unsatisfactory ergonomic characteristics of the instruments. Additionally, there is limitation regarding the two-dimensional surgical view which can have controversial oncologic efficacy.

The da Vinci System has now made it possible to overcome many of these disadvantages without compromising oncologic efficacy or patient safety. The da Vinci pulmonary lobectomy is a minimally invasive approach for surgical removal of primary malignant, metastatic, and benign lesions of the peripheral and central lung.

There are numerous advantages for the patient and surgeon during robotic surgery. Patient benefits include: minimal pain due to an approach using ports only, less blood loss, low risk of wound infections, shorter hospital length of stay and lower complication rates.

For the surgeon, benefits include: excellent ergonomics, autonomous control of the camera and instruments, dynamic exposure and retraction of tissues by utilizing all da Vinci instrument arms, which furthermore increases reproducibility and teachability, may potentially further reduce the likelihood for local recurrence as a result of the improved visibility and dexterity, may minimize pain and debility, complete and simple resection of all mediastinal (N2) and hilar (N1) lymph nodes in the aortopulmonary window, hilar, subcarinal, and paratracheal area, may reduce conversions and simplify minimally invasive thoracic surgery.

The da Vinci lobectomy maintains the oncologic principles of open lobectomy while also providing the benefits of a minimally invasive approach. The da Vinci lobectomy enables precise anatomical resection along with complete mediastinal lymph node dissection, which is the gold standard treatment for non-small cell lung cancer (NSCLC).