

## Lobectomy

### What is it?

A lobectomy is an operation done under general anesthesia during which an entire lobe of the lung is removed.

The lungs are divided into lobes. The right lung has three lobes: upper, middle, and lower. The left lung has two lobes: the upper and lower. During a left upper lobectomy, the upper lobe of the left lung is removed.

### What is it used for?

A lobectomy is most commonly used to remove a lung cancer. However, other indications for lobectomy include fungal infections, infected cavities in the lung, localized bleeding from the lung, lung abscess, pulmonary infarction, and other more rare indications.

An entire lobe of the lung is usually removed when treating a relatively small lung cancer. The entire lobe is removed in order to remove not only the cancer itself, but also the surrounding lymph nodes. Lymph nodes are the body's filters, a line of defense, against the spread of the lung cancer. The lymph nodes will trap cancer cells that are attempting to spread from the cancer through the lymphatic system. Some cancer cells are killed by the lymph nodes, but some will survive and begin to grow and divide within the nodes. These lymph nodes are located distant from the cancer, usually along the airways (bronchi.) In order to cure the patient of lung cancer surgically, all the cancer cells in the lung must be removed. Therefore, both the cancer and the surrounding lung tissue containing the lymph nodes are removed.

### How is it done?

A lobectomy is performed using an operation called a thoracotomy. A thoracotomy is an operation used to gain access to the chest cavity in order to do larger, or more complex operations. The thoracotomy involves an incision approximately four to six inches long, located beneath the armpit, or behind the shoulder blade (scapula.) An opening is created between the ribs in order to allow the surgeon to see well inside the chest, and to use special instruments inside the chest.

The lobes of the lung are natural divisions. Each lobe has its own pulmonary artery (blood supply), pulmonary vein (blood drainage), bronchi (airways), and bronchial arteries (blood supply for the airways.) During surgery, the surgeon identifies the individual branches of each artery, vein, and bronchus to the respective lobe. Once these important structures are identified, they are ligated (tied off) and divided (cut.) The lobe containing the cancer is then dissected (cut) away from the other lobes, and is removed.

If performing the lobectomy for cancer, in addition to the lobectomy the surgeon removes lymph nodes from other areas inside the chest to assist in staging the lung cancer. The stage of the lung cancer is the extent of spread, and is important in determining the need for future chemotherapy or radiation therapy.

After the lobe is removed, there is some empty space inside the chest. That empty space is eliminated naturally by the body. The remaining lobes on that side expand slightly, the

diaphragm muscle moves upward, and the mediastinum (center of the chest) moves over to help fill the space. In addition, the surgeon will leave one or two chest tubes (drains) in the chest for several days. These drains assist in removing any extra air, and any extra fluid, that accumulates in the chest after the lobectomy. Chest X-rays are done daily for several days after surgery to monitor the condition of the remaining lung.

What are the risks?

Risks include the usual risks of surgery including bleeding, possible transfusion (rare), infection, pneumonia, prolonged use of mechanical ventilation (breathing machine), prolonged air leak, heart attack, and stroke. The risks of a lobectomy increase with age, with poor lung function, with poor oxygen diffusion, and with related diseases. Current smokers are at higher risk for pneumonia. Patients with heart disease, liver disease, kidney disease, and previous stroke are at higher risk.

What is the recovery?

Most patients spend one night in the intensive care unit. Then, the patient is transferred to a normal hospital room with cardiac monitoring. Most patients remain in the hospital for five to seven days. After discharge from the hospital, we ask that the patient walk around their house and the yard for the first week, around the block daily for the second week (equivalent of a quarter mile), and up to a mile a day by the end of the third week.

The most important factors in recovery are to use the incentive spirometer, and to get up and walk several times a day. The incentive spirometer helps prevent fever and pneumonia. The walking helps to completely open up the lungs, prevent pneumonia, and prevent blood clots in the legs.

Pain control is very important. If the patient does not have adequate pain control, he or she will not get up and walk as much as necessary. We encourage the patient to consent to placement of an epidural catheter for pain relief while in the hospital after surgery. We transition patients from the epidural to a PCA pump, which allows patients to administer their own pain medicine on demand.

At the time of discharge, the patient will have adequate pain control by use of pain pills.

What is the follow-up? When should the practice be called?

Our practice routinely sees the post-operative patient two to three weeks after surgery, depending upon the individual circumstances. The practice is available by telephone 24 hours a day for emergency needs. The patient or family should call our office for fever greater than 101.5 degrees fahrenheit, nausea and vomiting, redness around the wound, significant drainage from the wound, or other problems related to the surgery.