



Lung Surgery

What to expect before, during, and after your surgery

This handout explains what will happen before, during, and after your surgery. It also includes information about taking care of yourself at home and following up with your doctor after surgery.

Before your surgery, you will be asked to sign a consent form. This is your agreement to have the surgery done.

Tests Before Surgery

You will have these tests before your surgery:

- Blood tests
- Electrocardiogram (ECG)

You may also have these tests before your surgery:

- Imaging tests of your chest, such as an X-ray
- Pulmonary function test (PFT), if you have not had this test already

Your Health Care Team

While you are in the hospital, you will meet the members of your health care team. This will occur either before or after your surgery. Your health care team may include:

- Your attending doctor
- An anesthesiologist, the doctor who will manage your pain during surgery
- Surgical residents, a group of doctors who will assist your surgeon in your care
- Nurses, who will provide nursing care and teaching, and will help with discharge planning
- Physician assistant
- Pulmonary (lung) doctor
- Dietitian
- Pharmacist
- Social worker
- Physical therapist
- Respiratory therapist

About Your Surgery

Your lungs are in your *thorax* (chest). Lung surgery may also be called *thoracic* surgery.

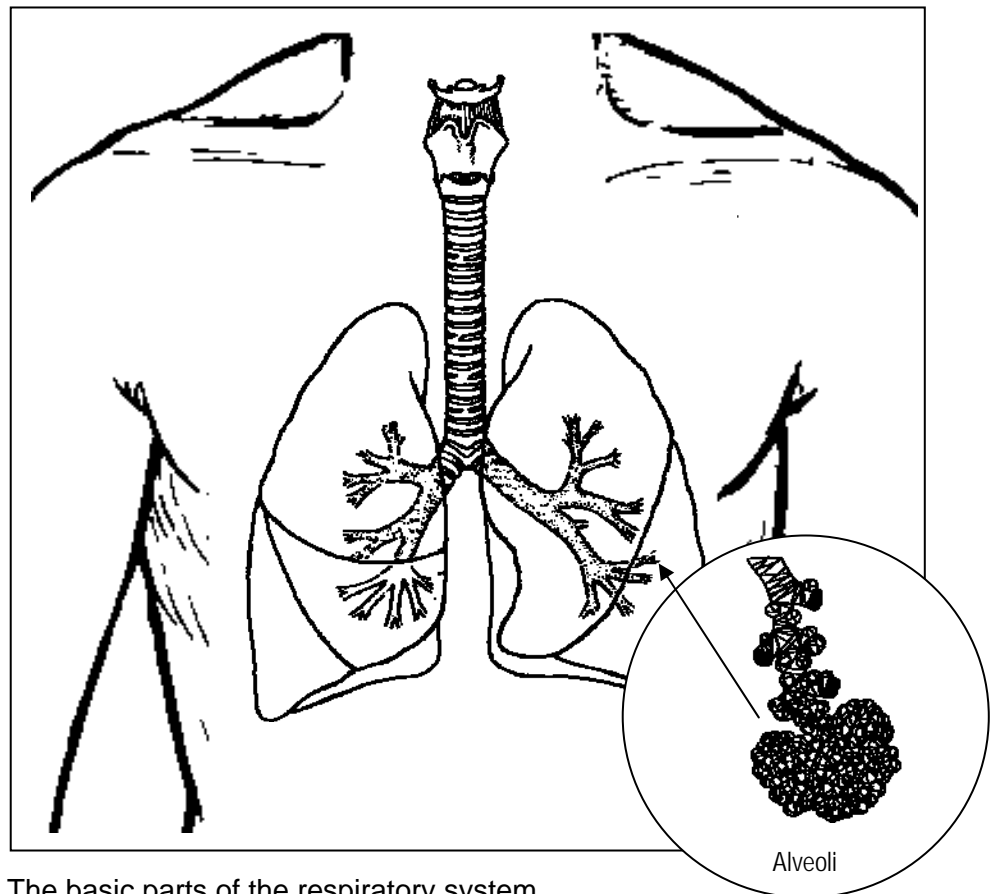
People need thoracic surgery for different reasons. Your doctor has most likely talked with you about why it is recommended for you.

Here is some general information about the respiratory system and the different types of surgery that may be done.

How the Respiratory System Works

The lungs are the main organs in the respiratory system. They bring oxygen to the body. The lungs also remove carbon dioxide, a waste product your body produces as it works.

When you breathe in through your mouth and nose, the air moves through the *trachea* (windpipe). The trachea branches into the right and left *bronchi* (breathing tubes). The smallest branches of the bronchi are called *bronchioles*. The air that you breathe travels through the bronchioles to groups of very small air sacs called *alveoli*. In the alveoli, the inhaled oxygen enters tiny *capillaries* (blood vessels). At the same time, the alveoli take carbon dioxide from the capillaries. This carbon dioxide leaves the body as you exhale.



The basic parts of the respiratory system.

Incision Methods

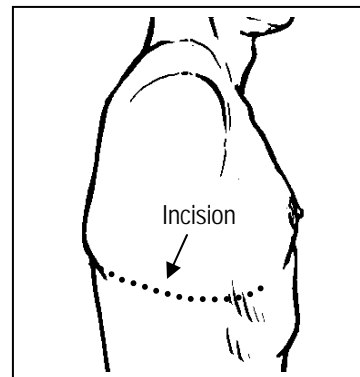
Lung surgery involves opening the chest to reach the lung. Your surgeon will choose the incision method that is best for your condition. These are the different types of incisions used in lung surgery:

- **Thorascopy** uses several small incisions. The surgeon places a thin tube with a tiny camera through one incision and can see the lung on a video monitor.
- **Thoracotomy** is a larger incision on one side of the chest (see top illustration at right). This opening lets the surgeon see the lung without using a camera.
- **Sternotomy** is used to access both lungs (see middle illustration at right). The incision is vertical, down the center of the chest through the breastbone. This opening lets the surgeon see both lungs directly.
- **Transverse sternotomy** is used to access both lungs (see bottom illustration at right). A *curvilinear bilateral submammary* incision is performed. It resembles a clamshell.

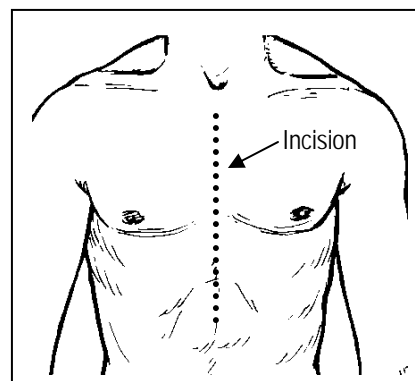
Types of Surgery

Your doctor will do one of these types of surgery:

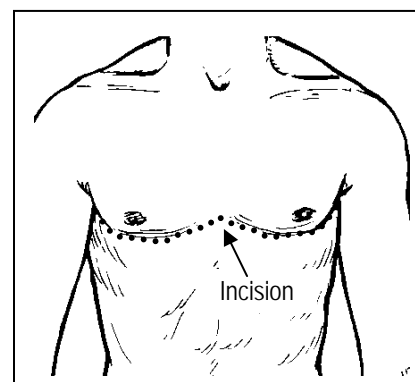
- **Biopsy** – a small piece of lung tissue is removed and tested to identify what type of disease you have.
- **Wedge resection** – one or more small triangular or wedge-shaped sections of the diseased lung is removed. A sternotomy incision may be used if both lungs need resections.
- **Lobectomy** – a lobe of the lung is removed.
- **Pneumonectomy** – an entire lung is removed.
- **Lung volume reduction (LVR)** – sections of the lung are removed to reduce the size of an over-inflated lung. This operation is often used for patients with emphysema.
- **Decortication** – removing the surface layer (*pleura*) of the lung).
- **Pleurodesis** – the lung membranes (*pleural surfaces*) are made to stick together. This operation is done to treat recurrent collapsed lung (*pneumothorax*).



Right thoracotomy incision.



Sternotomy incision.



Transverse sternotomy incision.

Before Surgery

48 Hours Before

- Do not shave any part of your body that you do not already shave every day. If you normally shave near your surgical site, do **not** shave that area for 2 days (48 hours) before your surgery.

The Evening Before

- You may eat your evening meal as usual and drink non-alcoholic fluids.
- After midnight, do **not** eat or drink anything other than small sips of water as needed, with medicines.

Day of Surgery

- At the hospital, you will be asked to sign a consent form if you have not already done this. This is your agreement to have the surgery done.
- To reduce your risk of infection, you will be covered with a heating blanket to warm your body while you wait to go into the operating room. Ask for a heating blanket if you do not receive one.
- You will be asleep during your surgery. A breathing tube will be placed through your mouth into your trachea. A machine will breathe for you through this tube during your surgery.
- The lung being operated on will be deflated, and the machine will help your other lung continue to work. The deflated lung is examined, and the procedure is done. This may include removing part or all of the lung.
- When your operation is done, a chest tube is placed in your chest cavity (see “After Surgery” below for more information about chest tubes). For a sternotomy, the *sternum* (breastbone) is wired back together. The muscles and skin of the rib cage or sternum are closed with stitches or surgical staples.

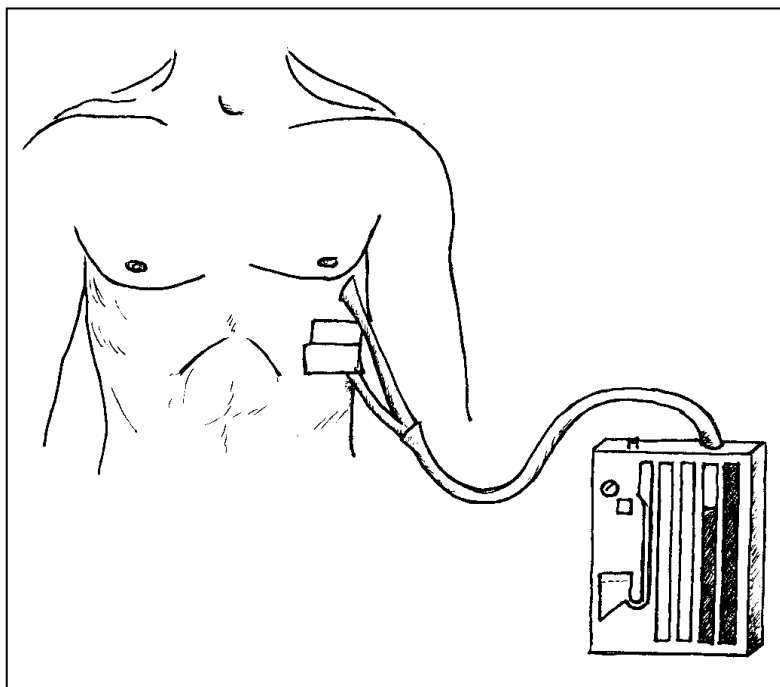
After Surgery

You will wake up in the recovery room. When you are fully awake, you will be moved either to an intensive care unit (ICU) or to a nursing unit. Your hospital stay will be at least 3 to 4 days, and up to a week or longer, depending on your recovery.

When you wake up after surgery, you may find:

- An **intravenous line** (IV) in your hand or arm. This small tube allows fluids and medicines to be given to you quickly and easily.
- A **catheter tube** that goes into your bladder. This tube drains urine. It will be removed when you are able to get out of bed to use the bathroom.

- **Chest tubes** that come out of your body through your incision. These tubes drain air, blood, and other fluids that build up in your chest cavity after surgery. They also keep your lungs inflated. These tubes are removed when the drainage and air leakage lessens, and your lungs have healed. Chest tubes may stay in place for a week or longer.
- **Sequential compression devices (SCDs)**, which are plastic sleeves on your legs. These devices help move the blood from your legs back to your heart. SCDs help prevent blood clots in your legs while you are not moving around much.
- **TED hose** on your legs, which also provide compression to improve blood flow and help prevent blood clots.
- An **epidural catheter**. This tube may have been inserted before surgery to supply pain medicine as needed after surgery.



Chest tubes drain excess air, blood, and other fluids from your chest cavity after surgery. They also keep your lungs inflated.

Right after surgery, you may feel groggy or thirsty. You will be allowed to try drinking when you are fully awake. You will be allowed to eat when your nurse is sure you can swallow.

You may have a sore throat from the breathing tube. This will go away in a few days.

Pain Control

It is important to have good pain control after surgery. You and your health care team will work together to manage your pain.

Coughing and Deep-Breathing Exercises

One reason for good pain control is that you will need to cough and breathe deeply after surgery to clear mucus and fluids from your lungs. Doing this helps prevent *pneumonia*, an infection of the lungs. When you are in pain, it is very difficult to cough and breathe as deeply as you need to.

The respiratory therapist and your nurses will show you how to use *incentive spirometer* and *acapella* devices to help clear your lungs after surgery. The goal is to repeat these exercises 10 times every hour. It is OK to switch between the 2 devices.

Your nurses will ask you often about your pain, especially when you are doing the coughing and deep-breathing exercises. You will be asked to rate your pain on a scale of 1 to 10, with 1 being little or no pain, and 10 being the worst pain you can imagine.

Be sure to tell your health care team about your level of pain. This helps them track your progress and make sure you are getting the right amount of pain medicine. Tell them when you notice that the pain medicine is wearing off, so your next dose can be given before your pain gets too strong.

Methods of Pain Control

There are many ways to control pain. A special team of doctors and nurses, called the Acute Pain Service, will likely be involved in your care.

You may receive oral pain medicine at first. Or, you may receive pain medicines through a medical device. This can occur in 1 of 2 ways:

- Through your IV line using a *patient-controlled analgesia (PCA)*.
- Through an *epidural catheter*.

With a PCA, you can decide when to take the next dose to control your pain level. With an epidural, the pain medicine is given continuously. In either case, it is important to tell your nurse when you need more pain control medicine so that your dose can be adjusted.

Many people are worried about becoming addicted to prescription pain medicines. When these medicines are used as prescribed, they will help in your recovery without causing you to become addicted.

Activities after Surgery

With good pain control, you should be able to sit in a chair to eat your meals and walk in the hall, with help, soon after surgery. It is important to exercise your arms, especially on the side most affected by the surgery, so that your muscles do not get stiff.

Your nurses will help you slowly increase your activities to include bathing, dressing, and walking by yourself. Movement is important to help prevent pneumonia.

Sternotomy Precautions

If you have had a sternotomy, your breastbone, which has been wired back together, must heal completely before you resume your normal activities. Your health care team will teach you about precautions to take.

Sleeping

It is common for sleep patterns to change after surgery. You may find that you:

- Sleep more than usual.
- Have trouble falling asleep.
- Wake up during the night.
- Have nightmares or intense dreams.

Sleep changes are probably caused by anesthesia, medicines, and being in a different setting than usual. Once you return home, catch up on your sleep, and return to your normal routines, these sleep disturbances will go away.

Nutrition

It is common not to want to eat much after major surgery, but your body needs more calories than usual for healing. We recommend you eat foods that taste good to you in small meals throughout the day.

Going Home

Your health care team will assess your needs after surgery. If you had a sternotomy, your breastbone must heal completely before you resume your normal activities. Your team will help you and your family prepare so that you can continue to recover at home.

Activities

For 6 to 8 weeks after surgery, **DO NOT**:

- Do any activities that might put stress on your incisions. Some of these are golf, tennis, and mountain biking.
- Lift, push, or pull anything heavier than 10 pounds.
- Drive a car.

Medicines

A pharmacist or nurse will review all your medicines before discharge and will give you a written schedule of when to take them. Your pain medicines will be listed “take as needed.” Take them before your pain gets too strong. If you need oxygen at home, this will be arranged by hospital staff before discharge.

Questions?

Your questions are important. Call your doctor or health care provider if you have questions or concerns. UWMC clinic staff are also available to help.

Weekdays from 8 a.m. to 4 p.m., call the Surgical Specialties Nurse Advice Line at 206-598-4549.

After hours and on weekends and holidays, call 206-598-6190 and ask for the resident on call for Thoracic Surgery to be paged.

Or, ask for your surgeon to be paged:

Dr. _____

Incision Care

- Watch your incision every day for any changes. Call your doctor if you see increased redness, tenderness, swelling, drainage, or opening.
- You may shower about 24 hours after your chest tube is removed.
- Do not use any lotions on your incisions. Incisions heal best when they are left open to the air. If needed, use dry gauze to cover your incisions.
- After your chest tubes are removed and you become more active, you may have a gush of drainage from the chest tube site. This drainage should lessen over the next few days. You may cover the site with a sterile gauze pad to absorb the drainage and to prevent soiling your clothes.

When to Call the Doctor

Call your surgeon or the surgical residents if you have:

- Pain at your incision that is not eased by your pain medicine, or a sudden sharp pain.
- Any new drainage from your incision, or the incision opens.
- Signs of infection such as pain, redness, tenderness, or swelling.
- Fever greater than 100.5°F (38°C) and/or chills.
- Increased tiredness, shortness of breath, or fatigue.
- Nausea, vomiting, or other conditions that last more than 24 hours and make you unable to take your medicines.
- Faintness or feeling of tightness in your chest.

Follow-up

- **If you are discharged on a weekday:** A follow-up appointment will be made for you before you leave the hospital.
- **If you are discharged on the weekend:** Make your own follow-up appointment. Call the Thoracic Surgery PCC (patient care coordinator) at 206-598-1980 the Monday after you leave the hospital to schedule this appointment.

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