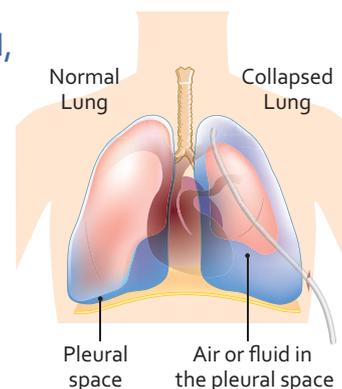


Chest Tube Thoracostomy

Chest tube thoracostomy (*thoʹr-ə-ˈkas-tə-meʹ*), commonly referred to as “putting in a chest tube”, is a procedure that is done to drain fluid, blood, or air from the space around the lungs. This procedure may be done when a patient has a disease, such as pneumonia or cancer, that causes extra fluid to build up in the space around the lungs (called a pleural effusion). A chest tube may also be needed when a patient has had a severe injury to the chest wall or surgery that causes bleeding around the lungs (called a hemothorax). Sometimes, a patient’s lung can be accidentally punctured, allowing air to gather outside the lung, causing its collapse (called a pneumothorax).



Chest tube thoracostomy involves placing a hollow plastic tube between the ribs and into the chest to drain fluid or air from around the lungs. The tube is often hooked up to a suction machine to help with drainage. The tube remains in the chest until all or most of the air or fluid has drained out, usually within a few days. Occasionally special medicines are given through a chest tube when the fluid or air does not resolve within a few days.

Why Do I Need a Chest Tube?

Common reasons why a chest tube is needed include:

- **Collapsed lung (pneumothorax)**—This occurs when air has built up in the area around the lungs (the pleural space) from a leak in the lung. This leak may be the result of lung disease. It can also occur as a complication of certain medical procedures. Chest tubes are often needed to remove air from around the lung. Failure to remove such air can be life-threatening if there is a lot of air or a continued leak. Removing the air allows the lung to re-expand and seal the leak.
- **Infection**—An infection can sometimes cause fluid to build up around the lung and may be necessary to insert a chest tube to remove the fluid. Getting the fluid out can at times help clear the infection faster. A culture can also be done on the fluid to try to figure out what type of infection is present.
- **Cancer**—Some cancers spread to the lung or pleura (lining of the lung). This can cause large amounts

of fluid to build up around the lung. Doctors usually drain the fluid with a needle. If the fluid keeps coming back, however, it may be necessary to insert a chest tube to first drain the fluid, and then deliver special medicines into the chest that reduce the likelihood of the fluid building up again.

- **Comfort**—A large buildup of fluid or air in the chest can make it difficult to breathe. Removing some of the fluid or air may decrease discomfort and make it easier for the person to breathe.
- **Chest Surgery**—Sometimes a chest tube is left in place after surgery. The surgeon can usually tell you if it will be needed and how long it may need to stay in.

Risks of Chest Tube Insertion:

Below are listed some risks of chest tube thoracostomy. It should be noted that the risk of serious complications (bleeding and infection) is uncommon (usually less than 5% of cases). Your healthcare provider will explain the risks and how likely they may be for you when you give consent for the procedure.

- **Pain during placement**—Discomfort often occurs as the chest tube is inserted. A local numbing medicine is used to help reduce any pain or discomfort. The discomfort usually decreases once the tube is in place.
- **Bleeding**—A blood vessel in the skin or chest wall may be accidentally nicked as the tube is being placed. Bleeding is usually minor and stops on its own. Rarely, bleeding can occur into or around the lung and may

require surgery. Usually bleeding can just be watched with the chest tube in place.

- **Infection**—Bacteria can enter around the tube and cause an infection around the lung. The longer the chest tube stays in the chest, the greater the risk for infection. The risk of infection is decreased by special care in bandaging the skin at the point where the tube goes into the chest.

Chest tube insertion

Fluid or air in the chest that needs to be drained is identified using chest imaging such as chest X-ray, chest ultrasound, or chest CT scan. If the X-ray shows a need for a chest tube to drain fluid or air, the procedure is likely to be done by a surgeon, a pulmonary/critical care physician or an interventional radiologist.

Often an adult or older child remains awake when a chest tube is inserted, except when it is placed in the operating room during an open chest procedure. Sometimes a person, particularly a younger child, is given a small amount of medicine (a sedative) that causes sleepiness before a chest tube is inserted. The skin will be thoroughly cleaned. A local anesthetic (numbing) medication will be injected into the skin and in the tissue along the path between the ribs that the tube will follow. A cut (incision) from $\frac{3}{4}$ inch to $1\frac{1}{2}$ inches long, between the ribs (the exact location depends on what is being drained and its location in the lungs). The chest tube is inserted and will be stitched into place to prevent it from slipping out. An airtight sterile dressing bandage is placed over the insertion site. The chest tube will be connected to a drainage collection device (usually a clear plastic container that rests on the floor). Often it is attached to suction to help draw out the air or fluid.

What happens when the chest tube is in?

Most people will need to stay in the hospital the entire time the chest tube is in. You will be checked often for possible air leaks, plugging of the tube, and any breathing problems you may be having. Usually, you will be able to breathe more comfortably with the tube in place. Sometimes pain around the area where the tube enters the chest may cause you to take more shallow breaths. The nurse or doctor will tell you how much you can move around with the chest tube in place. Less and less fluid drainage in the collection device often means your lungs are improving. Sometimes the tube is clamped and left in place to make sure no fluid or air comes back before it is pulled out.

Will there be any pain or possible complications when the chest tube is removed?

When the doctor determines that you no longer need the chest tube, it will be removed. Usually it can be taken out right at your bedside. There rarely is a need for sedation medication. You will be told how to breathe as the tube is being pulled. A secure bandage will be put in place. You will be told when the bandage can be removed. Often, a follow-up chest X-ray will be done to make sure that fluid or air haven't come back. Generally there are no complications from the chest tube once it has been removed. You will only have a small scar.

Source: Manthous, CA, Tobin, MJ, *A Primer on Critical Care for Patients and Their Families*, ATS Website: <http://www.thoracic.org/clinical/critical-care/patient-information/index.php>

Reviewed and revised August 2012 by Kevin Wilson, MD and Colin Cooke, MD.

Reviewers: Marianna Sockrider MD, DrPH, Glen Chung MD

Rx Action Steps

You/your loved one has or is scheduled to have a chest tube inserted to remove excess fluid, blood or air from the area around their lungs.

- ✓ Talk with the healthcare provider about the use of numbing medicine or medicine that causes sleepiness (sedation) before the procedure.
- ✓ Talk to your doctor or nurse about any pain or shortness of breath you may have after the chest tube is in place.
- ✓ Have your nurse tell you what to watch out for with the chest tube for any possible problems.

Healthcare Provider's Contact Number:

For More Information

American Thoracic Society:

- www.thoracic.org

U.S. National Library of Medicine—Medline Plus

- <https://medlineplus.gov/ency/article/002947.htm>

This information is a public service of the American Thoracic Society. The content is for educational purposes only. It should not be used as a substitute for the medical advice of one's healthcare provider.

