

Fluid in the Chest (Pleural Effusion)

What is the pleural cavity?

The lungs lie in the chest cavity inside a bony cage made up of ribs. The inside of the chest cavity and the outer surface of the lungs are lined by a thin membrane called the pleura. The pleural lining produces a small amount of fluid that acts as a lubricant.

What is a pleural effusion and what causes it?

A pleural effusion is a buildup of fluid between the layers of pleura – around the lung. Two different types of effusions can develop: Transudative pleural effusions: These are caused by fluid leaking into the pleural cavity. This is caused by increased pressure in, or low protein content in, the blood vessels. Heart failure is the most common cause of this type of pleural effusion. Exudative effusions: These are caused by blocked blood vessels, inflammation such as tuberculosis, lung injury, and drug reactions. In addition, cancers arising in the lung or spreading to the chest cavity from other organs also produce such a fluid collection – malignant pleural effusion. Hemothorax: This is the collection of liquefied blood or bloody fluid in the chest cavity. This may occur trauma to the chest.

What are the symptoms of fluid in the pleural cavity?

Patients with pleural effusion experience a combination of the following symptoms

- Chest pain, usually a sharp pain that is worse with cough or deep breaths
- Cough
- Fever
- Hiccups
- Rapid breathing
- Shortness of breath

Sometimes there are no symptoms. These patients are usually first seen and investigated by a physician or a chest specialist (pulmonologist).

What tests are necessary to detect fluid in the chest?

If after a physical examination, the doctor suspects a pleural effusion one of the following tests are ordered to confirm it.

- Chest x-ray
- Blood tests to determine the likely cause of the fluid
- CT scan of the chest
- Pleural fluid analysis: A small amount of fluid is drawn with the help of a needle and sent for analysis for its composition as well as examination under a microscope to look for bacteria and presence of cancer cells.

How is fluid in the chest treated?

The treatment of fluid in the chest is directed at the underlying disease causing it. For example, in heart failure medicines are administered to improve the function of the heart and clear the fluid. Sometimes it becomes necessary to remove a substantial quantity of fluid so that the lung can expand well and the breathing can improve. At times, a tube may have to be placed in the chest cavity for a few days / weeks to drain the fluid out.

How does thoracoscopic surgery help in patients with fluid in the chest?

Thoracoscopic surgery or video-assisted thoracoscopic surgery (VATS) is a form of “key hole” procedure that allows doctors to see inside the chest cavity to help in the diagnosis and treatment of fluid in the chest. For diagnosis: At times, despite several investigations the cause for the accumulation of fluid may not be clear and the fluid keeps filling up after it is removed. In such cases thoracoscopy can be performed for looking inside the chest cavity and obtaining biopsy samples which can confirm the precise diagnosis. The biopsy may confirm an infection or a

cancerous process as the underlying cause. The operation is performed under general anesthesia. During thoracoscopic operations the surgeon makes two to three small (about 1-cm) incisions and places tube called cannulas through the chest wall. To look inside the chest, the surgeon passes a telescope connected to a miniature video camera through one of the cannulas. The video camera picks up the picture of the inside of the chest cavity and transmits it to a television screen. The surgeon then carries out the operation with the help of special instruments introduced inside the chest through other cannulas and by observing the picture of the operative site on the television screen. At the end of the surgery usually a thin tube is placed in the chest cavity through the small incisions used for placing the cannulas. This tube drains out the fluid or air that may collect inside after surgery. The tube is removed after a few days. For evacuation of fluid: When the fluid collecting in the chest cavity is liquefied blood, it does not often drain well through a tube. Such a collection may get infected and delay recovery. Thoracoscopic surgery allows the surgeon to clear out all the blood and a film that often forms over the lung so that the lung can expand again. Chemical pleurodesis: This literally means coming together or fusion of the two layers of the pleura so that the space is obliterated and no further fluid can collect in the space. This is achieved by spraying an irritant such as talc powder or drug such a bleomycin in the pleural cavity under the control of thoracoscopic vision. A tube has to be left in place for several days till drainage of fluid stops completely.

What are the advantages of thoracoscopy?

- Ability to identify the area of abnormality in the pleura and obtain adequate samples
- Ability to do talc pleurodesis
- Less pain from the incisions after surgery
- Shorter hospital stay
- Shorter recovery time
- Faster return to work or normal activity
- Better cosmetic healing

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Disclaimer

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