Thoracic Surgery, Thoracotomy, VATS

Thoracic surgery is surgery on the chest (*thorax*) and the organs inside the chest. The chest is the space between the neck and the belly (*abdomen*). The chest is separated from the belly by a thin muscle called the diaphragm. The chest contains:

- The heart and its large blood vessels.
- Cartilage tube which gets air to the lungs (*trachea*).
- Right and left lungs.
- Food tube from the mouth to the stomach (*esophagus*).
- All the other tissues supporting those structures.

Thoracic surgery is often used to repair or remove diseased or damaged tissue in the chest. A thoracotomy refers to opening the chest with surgery. There is also video-assisted thoracic surgery. This is called VATS.

LIMITATIONS OF SURGERY

- Patients who have had previous thoracic surgery may not be good candidates for VATS. Scarring from the previous surgery makes the procedure more difficult and complicated.
- Patients who have blood-clotting problems may not be good candidates for surgery. There is an increased tendency to bleed following surgery.
- VATS requires the collapse of one lung, and patients need to have enough lung function to get oxygen into (*aerate*) their blood during the procedure. This means the lung that is not collapsed must be good enough to provide enough oxygen by itself.

PROCEDURE

You are placed under general anesthesia (sleeping during the procedure). An air tube is placed down your throat into your trachea for the procedure. The procedure differs depending on what is wrong and what needs to be done. The chest is cut open to expose the chest cavity. The incision will be made by your surgeon over the area of the chest which will expose the problem best. Following the procedure, a chest tube is inserted between the ribs to:

- Drain the wound.
- Re-expand the collapsed lung.

A less invasive procedure that uses a thoracic endoscope (thoracoscope) is called a video-assisted thoracic surgery (VATS). This instrument is like a long, thin, flexible telescope. It allows the surgeon to look into the chest cavity. Three to four small cuts (*incisions*) are made for the insertion of the thoracoscope and surgical instruments. The lung on the side which needs to be worked on is collapsed. During the procedure, the surgeon looks at the inside of the chest space on a video monitor. This is like seeing it on a small television. The thoracoscope may be pulled out and inserted through a different incision as needed. When the procedure is finished, the surgeon expands the lung and inserts a chest tube in one of the incision sites. The remaining incisions are stitched up or sealed with adhesive.

Thoracic surgeons may also use:

- **Mediastinoscopy** allows your surgeon to look inside the mediastinum. The mediastinum is the cavity located between the lungs.
- The **bronchoscope** enables the surgeon to view the larynx, trachea, and bronchi (parts of your throat and lungs and the tubes bringing air to your lungs).

These instruments may be used in a separate diagnostic procedure before thoracic surgery, or during the surgery.

TESTING PRIOR TO AND PREPARING FOR SURGERY

- For surgery not done as an emergency (*elective surgery*), a complete medical history and exam is done before surgery.
- If you are a smoker, quit. This improves recovery and decreases complications.
- Other tests may be done before the surgery. Your surgeon or other caregivers can explain these tests to you.

These may include:

- X-rays.
- MRI.
- Sputum culture.
- CT scans.
- Blood gas analysis.
- Lung (*pulmonary*) function tests.
- Electrocardiography.
- Endoscopy.
- Pulmonary angiography.

- Patients should be fully informed by their caregiver on what their surgery will involve. You should know the possible risks, complications and care needed after surgery.
- **Do not** to eat 10-12 hours prior to the surgery, or as directed by your surgeon.
- A sedative may be provided to relax you prior to surgery.
- An intravenous line (IV) is inserted into your arm or neck to give fluids and/or medication.

CARE AFTER SURGERY

- After surgery, the patient is taken to the recovery room and is closely watched. Depending on the procedure performed, the breathing tube may be removed.
- The patient usually experiences moderate to severe pain following surgery. Pain relieving medications (*analgesics*) are given to keep the patient comfortable.
- Chest tubes are watched closely for signs of fluid or air accumulation in the lungs that can lead to lung collapse.
- A urinary catheter will remain in the patient for 24-48 hours to drain urine from the bladder.
- Your stay at the hospital depends on the specific procedure performed. Patients who undergo a thoracotomy may be hospitalized a week or longer, while patients undergoing VATS usually have a shorter hospital stay of 2-3 days.
- During the recovery period, respiratory therapists and nurses work with the patient on deep breathing and coughing exercises to improve lung function.

RISKS

- Possible complications of general thoracic surgery include:
  - Respiratory failure (breathing not working).
  - Bleeding (*hemorrhage*).
  - Nerve injury.
  - Heart attack.
  - Stroke.
  - Blocked blood vessel (*embolism*).
  - Infection.
- The chest tubes used for drainage after thoracic surgery may cause a build-up of fluid or air in the area around the lungs (*pleural space*). Both of these conditions can lead to total lung collapse.
- Other specific complications may occur. It depends on the procedure performed.

NORMAL RESULTS

Thoracic surgery results are dependent on the type of procedure performed.

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