

## **Thoracotomy**

### **What is it?**

A thoracotomy is an operation that is used to enter the chest. A thoracotomy differs from a thoracoscopy by the size of the incision, and use of direct vision rather than the use of endoscopy (small television cameras.) Although a thoracotomy is not considered “minimally invasive surgery,” our thoracotomy technique has been strongly influenced by our experience with minimally invasive surgery. The surgeons of Thoracic Surgery Associates, PC, use a small-incision “muscle sparing thoracotomy” to limit the size of the incision, and limit the effect of the surgery on the muscles of the chest wall.

The thoracotomy incision used by Thoracic Surgery Associates, PC, is typically about four to six inches long, and is located on the side of the chest, several inches beneath the axilla, or armpit. We are able to operate through a relatively small incision because we use visual magnification, headlight illumination, and long, thin instruments.

### **What is it used for?**

A thoracotomy is used for operations that are too extensive to be done by thoracoscopy. While minimally invasive thoracoscopy is adequate for many biopsies and small resections, the use of the small endoscope is generally inadequate for removal of large portions of the lung, when vascular surgery is required, or when a significant amount of scar between the lung and chest wall is present.

A thoracotomy is used for lung operations such as lobectomy, pneumonectomy, removal of deep lung tumors, or extensive decortication. Thoracotomy may be required for the removal of mediastinal tumors, or small tumors that are adherent to large blood vessels. A thoracotomy is necessary when an attempted thoracoscopy fails due to dense adhesions between the lung and chest wall, or when issues arise during thoracoscopy that require direct vision and direct surgical techniques.

### **How is it done?**

The Thoracic Surgery Associates, PC, thoracotomy is significantly less invasive than a typical thoracotomy. We usually create an incision that begins at the tip of the scapula (wing bone) and is directed forward toward the breast for a distance of four to six inches. The incision is carried through the skin to the depth of the latissimus dorsi muscle (the “lats”.) Rather than cut through this muscle, the muscle is mobilized, or moved, posteriorly to expose the serratus anterior muscle (the “sawing” muscle.) The fibers of this muscle, rather than being cut, are separated in the direction of their travel, exposing the ribs. The intercostal muscle, which is the small, sheet-like muscle that connects the ribs to each other, is then separated from the rib, and the chest is entered.

Metal devices called retractors are then placed into the opening that has been made between the ribs, and the opening is slowly enlarged. The ribs are somewhat flexible, like a bow, and can be “sprung open” with the use of the retractor. At this point, more of the intercostal muscle is separated from the rib forward and backward (beneath the skin) to release the rib so that the opening can be enlarged without breaking the rib.

The site of surgical interest is then located by the surgeon, and the main portion of the operation is performed.

After the main operation has been performed, one or two chest tubes (drains) are placed, and secured to the skin. The retractors are removed, the ribs are put back together, and the skin is closed with absorbable suture. The chest tubes remain in place for three to four days, on average.

### **What are the risks?**

The risk of a thoracotomy is related to the incision, the type of operation being performed inside the chest, the medical condition of the patient, and the conduct of anesthesia.

A thoracotomy is a serious operation, but is generally safe. The risk of death of an elective thoracotomy for lung surgery in a healthy patient is less than two percent. The operative risk of surgery is primarily related to the medical condition of the patient. If the patient has a history of heart attack, stroke, kidney failure, diabetes, hypertension, or other major medical problem, then the risk of surgery rises. In addition, risk is directly related to the patient's age, degree of lung function (measured by the pulmonary function test), and the ability to exchange oxygen (measured by the pulmonary function test.) Patients who are smoking or who have active bronchitis at the time of surgery are more likely to get post-operative pneumonia that can prolong the hospital stay, and require prolonged antibiotic therapy.

It would be very unusual for us to administer a blood transfusion for elective surgery. If the patient has severe anemia or kidney failure prior to surgery, a transfusion may be necessary. The risk of Hepatitis B or HIV from a blood transfusion is about 1 in 930,000 (nearly one in an million.)

In general, with any operation, there is about a one percent risk of wound infection. We prepare our patients with a sterile skin preparation before surgery, use sterile surgical technique, and generally use antibiotics before, during, and after surgery to avoid infection.

The short-term risks of a thoracotomy are related to the incision itself. All patients can have a significant amount of pain. We recommend that the patient consider the use of an epidural, placed by the anesthesiologist, to help control post-operative pain for the first several days. After the epidural is removed, an IV pump called a PCA pump is used for pain control. The PCA pump allows the patient to administer their own pain medicine intravenously by pressing a button whenever they have significant pain. When the patient is ready to go home, the PCA pump is replaced by pain pills.

The medium-term risks are related to the incision. Pain should be controlled with pain pills. By the end of three weeks, most patients do not require narcotic pain medicine. Most patients will feel numbness, pain, or sensitivity in or beneath the breast in front of the incision. The skin will be sensitive to a loose shirt rubbing over the skin. A tight T-shirt, or for women, a Danskin or jog-bra, worn tightly beneath a loose shirt, will relieve that discomfort.

Some patients will have a small amount of clear or pink fluid drain from the chest tube site. This drainage is generally normal. Patients may shower, but they may not soak the incisions under water in a bath tub or spa for three weeks.

We ask that patients walk for twenty to thirty minutes a day at home while recovering from surgery. The first week, walk around the house and yard. The second week, walk around the block, or the equivalent of a quarter mile a day. By the end of three weeks, the patient should be able to walk a mile a day, if there are no other medical reasons to limit exercise.

Patients should not drive for three weeks after a thoracotomy, or longer if taking narcotic pain medicine. Patients generally do not return to work for about six weeks.

### **The long term effects of a thoracotomy.**

By the end of three months, most patients have returned to normal exercise level and are pain-free. There may be numbness beneath or in the breast for the remainder of the patient's life.