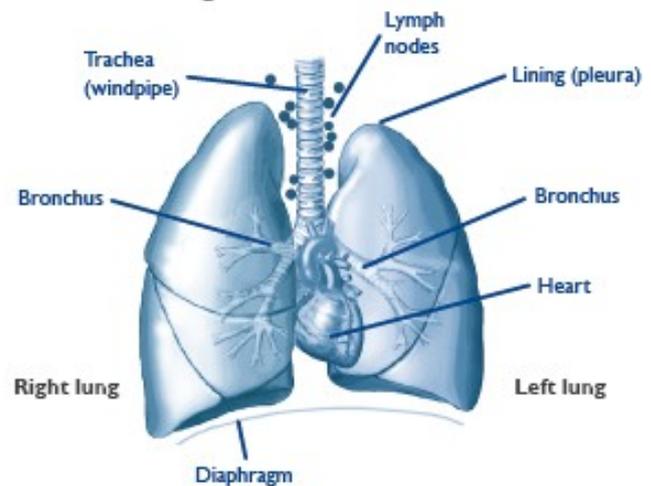


### What does surgery for lung cancer involve?

Surgery for lung cancer involves an operation, which aims to remove all the cancer from the lung.

### Who will carry out my operation?

In the UK, we have cardio-thoracic (heart and lung) and thoracic (lung only) surgeons. Your surgeon should have regular experience of carrying out surgery to remove lung tumours. If you are being treated in a cancer centre, there may be a team of thoracic surgeons who work together.



### How will it be decided if I am suitable for surgery?

It is more common for non-small cell lung cancers to be surgically removed as they are generally slower growing. However, small cell lung cancer can occasionally be removed if the disease is at a very early stage of development.

A team made up of various healthcare professionals (including a thoracic surgeon) should be involved in your care. This is called a multi-disciplinary team or MDT. At the regular MDT meetings, they will look at the results of your CT scans, PET scans and lung function tests.

They will also discuss the need for further tests to find out the stage of your lung cancer. You will then be referred to see the appropriate specialist to treat your lung cancer, such as a thoracic surgeon or cancer doctor.

### What will affect whether I am able to have surgery?

Surgery is most often suitable for people with early stage lung cancer, where the cancer has not spread beyond the tumour, or only to a few lymph nodes. TNM staging involves looking at:

- The size and location of your tumour, known as the T stage
- Working out whether your cancer is in the lymph glands or nodes, known as the N stage
- Whether the cancer has spread outside the chest to other parts of the body, this is known as the M stage for metastasis.



Occasionally people with more advanced lung cancer (where the cancer has spread to outside the chest) may be offered surgery along with other treatments.

Your surgeon needs to be sure of your diagnosis of lung cancer. Usually he/she will have this from the biopsy you have had. These results will help the surgeon, working with the MDT, decide the best treatment for you. Sometimes a biopsy will need to be taken during your operation to confirm these results.

**For more information on the MDT and staging for lung cancer, see our *Living with lung cancer* booklet. Visit our website at [www.roycastle.org/ayqpack](http://www.roycastle.org/ayqpack) or call our helpline on 0333 323 7200 (option 2).**

The surgeon must be able to completely and safely remove the tumour and the surrounding lung without damaging crucial structures in your chest, for example parts of the heart.

You and your lungs must be fit enough to cope with the surgery. This is called your Performance Status and is a scale that includes your general fitness, any other health problems you have that might affect you during or after the operation. The surgeon will ask you about any symptoms you have, assess how far you are able to walk and will ask about any other medical problems. Lung function tests will establish how well your lungs are working (air/oxygen capacity) and usually involve blowing into a mouth-piece.

### **What tests may I have before the surgery?**

A sample (biopsy) of your lung cancer may be taken by bronchoscopy or CT guided biopsy as part of the tests to diagnose and stage your lung cancer. These tests are usually done before meeting the surgeon. However, if it has not been possible to take a biopsy due to the position of the cancer, or it has been suggested that a pre-operative biopsy is not needed, it will be taken at the time of your operation. The surgeon may take a sample of the tumour and send to the pathology lab to confirm the diagnosis of cancer (called a frozen section) while you are under anaesthetic and will then perform the appropriate surgery.

There are various other surgical tests which the surgeon may also perform to make sure you are suitable for surgery to remove the cancer. Each of these procedures requires a general anaesthetic and are commonly, but not always, done as day-case operations where you are able to come to the hospital on the day of the surgery and go home in the evening after the operation.

**Cervical Mediastinoscopy:** A small cut is made in the bottom of your neck and a camera is inserted along the windpipe to examine and sample the lymph glands or nodes on the sides of the wind pipe and centre of the chest (mediastinum).

**Anterior Mediastinotomy:** A small cut is made in front of the upper chest between the ribs along the breast bone (commonly on the left side) to examine and sample the lymph glands in the centre of the chest (mediastinum).

For both Cervical and Anterior Mediastinoscopy, this will help decide whether the cancer has spread to the lymph glands (N stage) and what type of treatment is best for your cancer.

### **VATS – Video Assisted Thoracoscopic Surgery (Keyhole Surgery):**

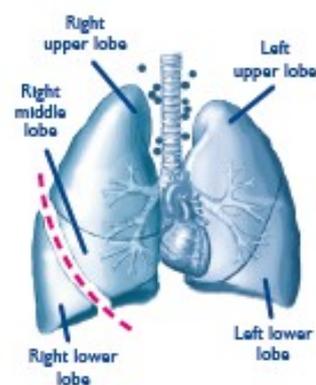
A camera is inserted through two or three small cuts (3-5cm) into your chest to examine and sample the lymph glands or nodes in the centre of the chest (mediastinum). It also allows the surgeon to assess the chest cavity and the tumour and may help decide if surgery to remove the cancer is possible. You will normally be required to stay in hospital for 24-48 hours after the surgery.

### **What are the main types of surgery for lung cancer?**

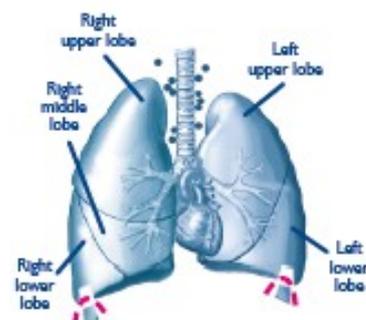
These are described below:

**Lobectomy** - This is performed when your cancer is only in a single lobe of the lung.

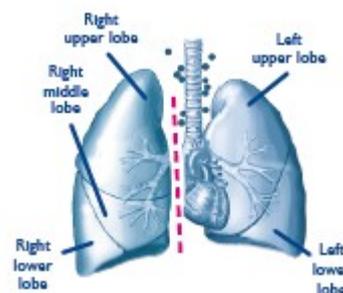
There are two lobes on the left and three on the right. This procedure involves the removal of a lobe of the lung. The remaining lung will expand and fill the space left by the lung tissue that has been removed. A bi-lobectomy is the removal of two lobes of the lung on the right side. Sometimes the surgeon may remove part of the main airway with the lobe and join the two ends to make sure all the cancer is removed. This procedure is called a sleeve lobectomy.



**Segmentectomy/Wedge resection** - Each lobe of the lung is made up of several segments. If your physical condition will not allow more extensive surgery, or the cancer is small, the surgeon may be able to remove just a segment, or small piece of lung tissue surrounding the cancer, rather than the whole lobe. This is called a sublobar lung resection.



**Pneumonectomy** - This involves removing a whole lung. The remaining lung will then need to work a bit harder but will soon become used to the workload. Along with removing the tumour with part or even the whole of the lung, the surgeon will remove lymph glands or nodes from the chest, as part of the operation. This will help decide if further treatment, such as chemotherapy, will be needed following the surgery.



### What are the risks of surgery?

When you meet the surgeon to discuss removing the lung cancer, a very important part of the meeting is to discuss the benefits and risks of the operation. The benefits of the operation are to remove the lung cancer and based on the stage of the cancer after it has been removed, decide on further treatment. It will give you some idea what the likely chance is of being cured from lung cancer. Along with the benefits the surgeon must decide on the risks of surgery to remove the cancer.

The risks of surgery depend on several things including the type of operation you are having and your fitness for surgery. All surgery carries a risk of serious complications. Surgery also carries a risk of death, this is called operative mortality. Operative mortality will depend on the type of surgery but also on your fitness; whether you have any other medical problems including heart problems. Your surgeon will take this into account, along with your lung function breathing test, to consider whether you should have surgery.

The chance of having some problem after the surgery which may or may not delay your discharge home is around 25 in 100 or 25% of people. This includes some more important problems or complications such as chest infection (pneumonia), wound infection and an irregular heart rhythm which may require further treatment or even additional support for your breathing. Other complications of surgery can include excessive bleeding, blood clot in your leg (deep vein thrombosis or DVT) or blood clot in your lung (pulmonary emboli).

One quite common reason that your discharge (going home) following the operation may be delayed is because of an air leak. An air leak can happen when the stitch line, which is where the lung tissue is joined after the tumour has been taken out, continues to leak. The drain or tube placed in the chest after the surgery is there to allow this air to escape but whilst the air leak continues the drain cannot be removed. It usually settles quickly but can take longer than expected.

## Surgery for lung cancer

# Understanding surgery



In the UK, 2 in 100 patients, or 2% of people who have a lobectomy will be at risk of operative mortality. If you are having a pneumonectomy, 8 in 100 or 8% of people who have this surgery will be at risk of operative mortality. Sublobar resection, which is either a segmentectomy or wedge resection, involves removing less lung but carries a higher risk. This is because it is often possible for people who are less fit and have other health problems to have this surgery. Risk of death is 4 in 100 or 4% of people having this type of surgery. You can ask your surgeon for more information on the statistics for lung cancer surgery at your hospital.

### How does the surgeon get to my lungs?

There are two main ways for the thoracic surgeon to get into the chest.

These are described below:

**Thoracotomy** - The name given to the incision (cut) that the surgeon makes around the side of your body, below your shoulder blade and between your ribs. It involves spreading the ribs to get access to the lungs.

**VATS - Video Assisted Thoracoscopic Surgery (Keyhole Surgery)** - This is where your surgeon uses a camera, inserted through two or three small cuts (3-5cm) into your chest, to perform the operation. Incisions (cuts) are generally made under the arm and/or just below the shoulder blade. The ribs are not spread and this may help the speed of your recovery following the operation.

Your surgeon will discuss with you the best way to get into the chest for your operation.

*"Before my surgery, the surgeon explained that when I woke up, what would be in me (drains, pain relief, etc) and what sort of machines I'd be wired up to. This was really helpful and helped reduce fear as I'd not had surgery since tonsillectomy aged 4. It helped reassure me that things were normal."*

Janette

### GIVING HELP AND HOPE

The charity has two aims:

**Supporting people living with lung cancer** - Working closely with lung cancer nurses, we provide information, run lung cancer support groups and offer telephone and online support. Our patient grants offer some financial help to people affected by lung cancer.

**Saving lives** - We fund lung cancer research, campaign for better treatment and care for people who have lung cancer, and raise awareness of the importance of early diagnosis. Our lung cancer prevention work helps people to quit smoking and encourages young people not to start smoking.

**Call us on 0333 323 7200 (option 2)**

This information has been taken from the following sources:  
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