Organization Accredited
by Joint Commission International

Certified
Medical travel

Centre of Excellence
For Bariatric & Metabolic Surgery

Member of:
DXH
Dubai Health Experience

Dr. Arun Kanala
Thoracic Surgeon

Dr. Sadir Alrawi
Director of Surgical
Oncology Services

P.O. Box. 124412, Al Barsha 1, Dubai, UAE
Tel: +971 4 378 6666, Fax: +971 4 378 6721

www.AZHD.ae

مستشفى الزهراء دبي
AL ZAHRA HOSPITAL DUBAI
Care in Style
رعاية راقية

VIDEO-ASSISTED THORACOSCOPIC SURGERY

Video-assisted thoracoscopic surgery (VATS) is a surgical procedure that allows doctors to see inside the chest and lungs. It is a form of 'keyhole' surgery which can be used to do a number of different surgical procedures.

This booklet will explain the reasons for the operation, the procedure itself and potential risks involved. It will also explain the care you will need before and after the operation.

You have been referred to a thoracic (chest) surgeon for investigation of the symptoms you have been experiencing, such as shortness of breath or to determine the nature of an abnormality found in the lung.

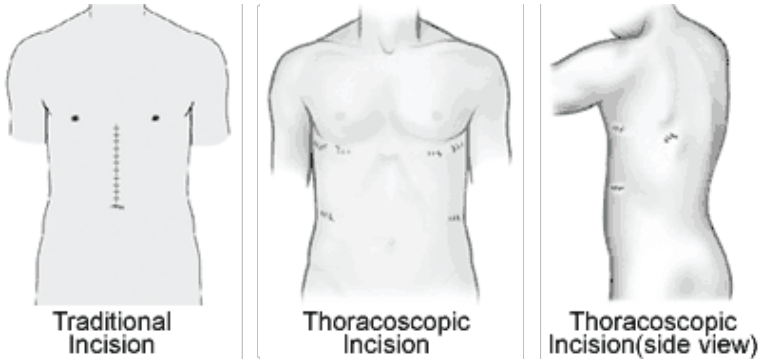
It is your decision whether you have surgery or not. The doctors and nurses will be available to offer information, advice and support, please feel free to ask any questions and discuss concerns you may have.

Why opt for oncoplastic surgery?

VATS (video-assisted thoracic surgery) is a type of 'keyhole' surgery/ minimally invasive thoracic surgery of the chest, performed with a thoracoscope (small videoscope) using small incisions and special instruments to minimize trauma.

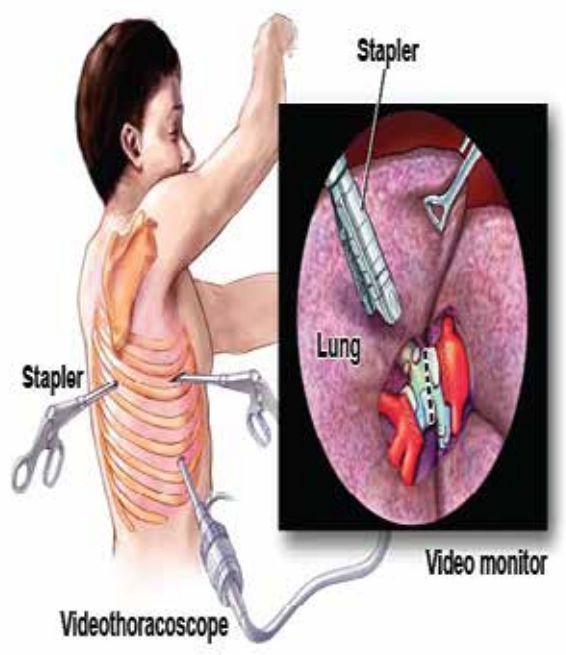
Other names for this procedure include thoracoscopy, thoracoscopic surgery or pleuroscopy,

During thoracoscopic surgery, three small (approximately -1inch) incisions are used, as compared with one long -6 to -8inch chest incision that is used during traditional, "open" thoracic surgery. Surgical instruments and the thoracoscope are inserted through these small incisions. Thoracoscope is a thin, tube-like instrument which shines light from the end inserted into the patient. It also transmits images back to an eyepiece or video display so the surgeon can see into the chest cavity.



What are the advantages of VATS?

VATS has many advantages over a thoracotomy. In a thoracotomy, the doctor makes a large opening in the chest and spreads the ribs apart. The openings made for VATS are smaller, which means less pain and fewer complications. Patients usually leave the hospital sooner after VATS than after a thoracotomy.



How is VATS lung biopsy performed?

The operation is done under a general anaesthetic.

It is routine practice to check the airway for any abnormality. This is done by introducing a bronchoscope (surgical telescope) via your mouth into the windpipe.

You will then be positioned on your side with your arm above your head.

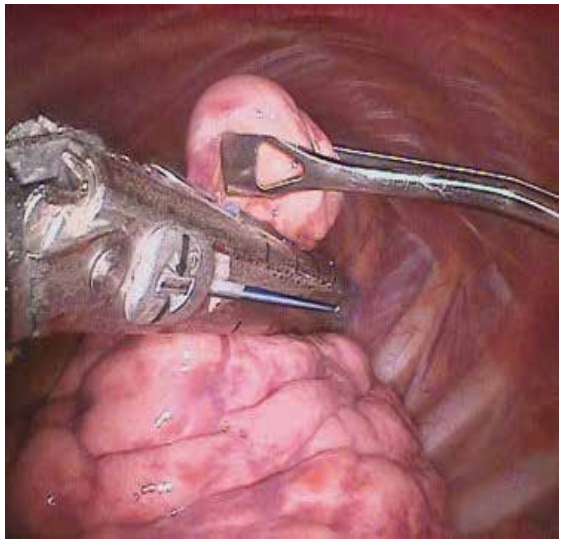
The surgeon will make one to three small cuts on your chest, about two to four centimeters long.

One cut will be for a telescope with a camera on the end to look around inside your chest.

The other two will be for the special instruments to perform the operation. Using a special stapling device, the surgeon will separate and remove a small piece of lung. This will be sent to the laboratory for analysis.

At the end of the operation two of the wounds will be closed using absorbable stitches under the skin. The other will be used for a chest tube, which will drain any air and fluid after the operation.

The operation usually takes between 45 minutes and an hour.



How video-assisted thoracoscopic surgery does (VATS) work?

The surgeon makes one to three small cuts in the chest wall near the ribs. These holes are known as ports and are usually about 2cm long. The surgeon then inserts the thoracoscope through one hole. The thorascope allows the surgeon to see inside the chest. Usually he/she will also insert special surgical instruments into the other incisions. These instruments can be used to remove tissue which may have been seen on an X-ray, or fluid found in the chest. Once the surgery has finished, the instruments are removed and the incisions are closed, usually with stitches.

What is video-assisted thoracoscopic surgery (VATS) used for? Why it's done?

Surgeons use the VATS technique to perform a variety of operations, such as:

- Biopsy to diagnose lung cancer, mesothelioma and other chest cancers
- Removing lymph nodes in the chest
- Esophagus surgery (esophagectomy)
- Hiatal hernia repair
- Lung surgery, such as lobectomy/pneumonectomy to treat lung cancer and lung volume reduction surgery
- Procedures to remove excess fluid or air from the area around the lungs
- Surgery to relieve excessive sweating (hyperhidrosis)
- Surgery to relieve gastroesophageal reflux disease (GERD)
- Thymus gland removal surgery (thymectomy)

When compared with a traditional open operation (thoracotomy), video-assisted thoracoscopic surgery may result in less pain and shorten recovery time.

What are the key benefits of VATS?

- Just 3-2 one inch incisions (a traditional thoracotomy requires an incision of 14-10 inches as well as unavoidable injury to one or more ribs and damage to muscles)
- A one to two day hospital stay (patients of a typical thoracotomy require stays of 10-7 days)
- A markedly reduced in recovery time as compared to the traditional thoracotomy
- A significantly reduced complication rate due to minimal invasion (less than five percent of VATS patients experience post-surgery complications compared to 30 percent of thoracotomy patients)

Simply put, VATS minimizes surgical and health risks – allowing a speedier recovery with less scarring, less pain, and less complications.

What happens during video-assisted thoracoscopic surgery (VATS)?

VATS is carried out in the operating theatre. Before the procedure, a small needle will be placed in a vein to give you fluids and medications. It is usually done using a general anesthetic, which means you will be asleep for the surgery. You may also have an epidural. An epidural is a form of pain relief given through a thin tube placed into your back. Once you are asleep you may have a catheter put into your bladder. This is a thin, flexible tube that is inserted into the hole through which you urinate (your urethra) and then advanced into your bladder. This is because the epidural will make it difficult to urinate by yourself. It also allows doctors to measure how much urine you are making. You will be placed on the operating table on your side. Your surgeon will make the cuts (incisions) in your chest and insert the thoracoscope and any other instruments that are needed. After the surgeon has finished the surgery he/she will insert some small tubes into the chest. These are known as 'chest drains' and allow any fluid or air that collects to leak out. The chest drain normally stays in for 24 to 48 hours, depending on how much drainage there is and if there is an air leak. The nurses will be measuring the amount of drainage from your drain. With this information and a chest x-ray the doctors will decide when the drain can be removed. Any samples of tissue taken from your chest or lungs will be sent to the laboratory for further testing.

You will slowly be allowed to come out from the anaesthetic. Usually you are given oxygen through a mask. After a while you will be taken back to the ward to rest. The epidural usually stays in until the chest drains are taken out and you are able to take pain relief tablets. Occasionally, although it was planned to use VATS, it is not possible to carry out your operation using keyhole surgery. This means another technique may need to be used. Your doctor should discuss this with you before the procedure.

What is VATS lobectomy? How is it done?

The operation is done under a general anesthetic. The surgeon will do a bronchoscopy first; they will use a telescope to look into your windpipe and airways. This is routine for anyone having lung surgery. You will then be positioned on your side, with your arm above your head. The surgeon will make three small cuts on your chest about 2cm to 4cm long. One cut will be for a telescope to look around inside your chest. The other two will be for the instruments to perform the operation. Using a stapling device, the surgeon will separate the lobe of the lung with the tumour in from the rest of the lung. This lobe will then be completely enclosed in a sealed bag and removed through one of the cuts in the chest. Two of the cuts will be stitched closed. The other will be used for a chest tube, which will drain any air and fluid after the operation. The operation usually takes two to four hours. The lobe of lung removed will be sent to the laboratory to confirm what it is. This normally takes seven to 10 days.

Are there any changes to the planned surgery?

For technical reasons the surgeon may be unable to do your operation using the VATS method and may have to extend one of the cuts or make a new longer cut. This is called a mini-thoracotomy or open operation.

Very occasionally if there is bleeding during the operation that cannot be controlled through the VATS cuts, the surgeon will need to make one of the cuts larger to gain direct vision and control the bleeding.

How do I prepare for video-assisted thoracoscopic surgery (VATS)?

Your doctor should discuss any specific preparations with you before the surgery. Generally, if you smoke you may be asked to stop before the surgery, as this reduces the chance of breathing problems. If you take 'blood-thinning' medicines (anticoagulants) you may need to stop these for a few days before the surgery. Your doctor should discuss this with you. To reduce the risk of infection, you will need to have a shower in an antiseptic solution the night before your operation. We will give you this special liquid soap.

You may also have some special tests of your lungs to see how well they are working. You may need to undergo some tests to determine whether video-assisted thoracoscopic surgery (VATS) is a good option for you. These may include imaging tests, laboratory tests, pulmonary function tests and cardiac evaluation. If you are to have a general anaesthetic you will be asked not to eat or drink for a certain length of time before the procedure. Your local hospital will give you information on this.

If you take any medications the nurses will advise you which you may take before your operation. You may be admitted to hospital the day before your operation, or on the day itself.

On admission you may need to have the following tests:

- Blood tests
- ECG – heart tracing
- Chest x-ray
- A full set of observations - blood pressure, pulse, oxygen levels, temperature, respiratory rate, weight and height.

The anesthetist will see you to discuss having a general anaesthetic. We do not routinely give pre-medications; however if you are particularly anxious then please mention this to the anaesthetist.

The procedure will be explained to you again and any questions you may have will be answered. Once everything has been completed a doctor will ask you to sign a consent form giving your permission (consent) for the operation to take place.
Before your operation a doctor will mark the side you are to be operated on.
Please let a member of staff know if this gets washed off.

Before going to theatre the nurses will complete a checklist with you. This will be repeated several times when you go to theatre. This is for your safety.

What can I expect after video-assisted thoracoscopic surgery (VATS)?

After the operation you will be taken to the recovery room. The staff will constantly monitor you and make you comfortable. Once they are happy with your condition you will return to the ward. You would normally stay in recovery room for about two to three hours after your operation. Some patients will have a chest x-ray.

You will generally stay in hospital for between 3-5 days after the surgery. However, this is a rough guide and will depend on the speed of your recovery. Your surgeon will discuss your progress with you and advise you on how long you should stay. When you get back to the ward you will go to an area where we can closely monitor you for the first part of your recovery.

You will have oxygen via a mask, which will need to stay on for at least the first few hours. You will not be able to drink for four hours after your operation. You will have fluids given by a tube going into a vein until you can drink freely. You may have a tube in your bladder to measure your urine; this will normally be taken out the next morning. You may be seen by the physiotherapist who may give you some breathing exercises to help prevent infection.

You should not expect to be back to full mobility immediately after the operation. You will be shown how to do breathing exercises and how to cough to prevent a chest infection, as well as exercises to prevent getting a frozen shoulder or a blood clot. It is very important to do these exercises as they will help with your recovery.

Although VATS is a 'keyhole' procedure, the instruments have to pass between the ribs. Sometimes they can press against the nerves which also lie here. This may cause some pain or numbness in the area of the incisions. This will gradually go away with time and you should contact your specialist doctor for advice. You will usually be discharged from hospital with a supply of painkillers.

How is Pain relief achieved?

It is our aim to make patients as comfortable as possible following their thoracic surgery. It is important that we achieve this not only for your own comfort, but to ensure that we reduce the risk of complications after the operation, which can be caused by restricted breathing due to postoperative pain. This may include: chest infections, sputum retention and poor oxygen take up into the bloodstream through partially collapsed lungs. Effective pain relief will allow you to participate in postoperative physiotherapy, which is very important for your recovery.

For a lung operation requiring a thoracotomy, we generally recommend an epidural or paravertebral continuous infusion of local anaesthetic to manage postoperative pain. The use of local anaesthetic as a pain relieving drug in this way reduces the side effects that can be induced by using large doses of the other types of pain relieving drugs which would need to be used. If, after discussion with one of the pre-operative assessment or anaesthetic team you prefer not to have an injection in the spine, or if one of the above proposals cannot be sited safely, we will provide you with a patient controlled analgesic pump (PCA) as an alternative form of post operative pain relief.

What are the different strategies to control pain after the surgery?

1. **Epidural analgesia:**
   This is a technique of injecting local anaesthetic into the space between the coverings of your spinal cord and the bones that make up your spine. The nerves that will be affected by your operation pass through this space and are numbed by the local anaesthetic. This gives you analgesia across your whole chest at the level of your operation. The continuous infusion will be gradually reduced over the course of two to five days and is then removed.

1. **Epidural analgesia:**
   This is a technique of injecting local anaesthetic into the space between the coverings of your spinal cord and the bones that make up your spine. The nerves that will be affected by your operation pass through this space and are numbed by the local anaesthetic. This gives you analgesia across your whole chest at the level of your operation. The continuous infusion will be gradually reduced over the course of two to five days and is then removed.

2. **Paravertebral analgesia:**
   This is a technique of injecting local anaesthetic in the vicinity of the thoracic spinal nerves as they emerge from the side of the bodies of the bones that make up your spine. This technique gives you one sided pain relief on the side of your operation. The continuous infusion will be gradually reduced over the course of two days and then removed.

3. **Patient controlled analgesia (PCA):**
   This system comprises a pump connected to a hand held button. When you press the button, a small amount of pain relieving drug will be delivered into your intravenous drip. You cannot give yourself an overdose as there is a preset limit that is delivered. This way, you stay in control of your own pain relief. This system may rarely lead to side effects such as nausea and vomiting, constipation, itching, excessive sedation that may inhibit deep breathing and, very rarely, hallucinations. In addition to any of the above systems, you will be given regular pain relieving tablets.

What is Incentive Spirometer and its advantages?

You will have an incentive spirometer before and after the surgery. An incentive spirometer is a hand-held machine that shows you how well you are expanding your lungs during deep breathing exercises. You need to do deep breathing exercises about every 2 hours while awake. Deep breathing helps the lungs expand and prevents pneumonia. You will have chest x-rays often to make sure your lungs are healing.

Physiotherapy advice following VATS procedure

Having lung surgery leaves you at risk of developing a chest infection. This is due to several factors – the anaesthetic, the wound, chest drains, discomfort, and not being able to move around as normal. By following the advice given, you should be able to prevent this happening. The physiotherapist will visit you the day after surgery to check your breathing. However, it is important to practice the following breathing exercises as soon as you are awake enough to do so. • If possible, sit upright in your bed (or chair) keeping your shoulders relaxed. • Take a slow deep breath in through your nose. Hold your breath for three seconds, then gently sniff in some extra air.

• Then breathe out through your mouth. Take a few normal sized breaths. • Repeat three times. This cycle needs to be repeated regularly until you are walking around the ward on your own and your chest is clear. Repeat hourly while you are awake. It is important that you can cough and clear any secretions that you feel on your chest. You cannot damage your stitches, but some people feel more secure if they hold a folded towel over their wound. All of these exercises are easier to do if you are comfortable. If you cannot take any deep breaths or cough because of pain, it is important that you tell the nursing staff, who should be able to give you regular painkillers.

Are there any possible side-effects, risks or complications?

With any surgical procedure, there are certain risks attached. The risks will depend on how well you were before undergoing the operation. Your surgeon will discuss the risks with you.

It is usually easier for patients to recover from video-assisted thoracoscopic surgery (VATS) compared with normal chest surgery (often called 'open' surgery) because the wounds from the cuts (incisions) are much smaller. Air leaks from the lung that don't heal up quickly can keep you in the hospital a longer time and occasionally require additional treatment.

A very small number of patients have significant bleeding requiring a transfusion or larger operation. It is also possible, although not common, to develop an infection of the wound site or of the lung itself. You should contact your doctor if you become unwell after having VATS. In particular, if you have any of the following problems: high temperature (fever), chest pain, coughing up blood, shortness of breath, or the wound sites becoming red or looking to have pus draining, you have to see your doctor immediately.

What are the possible complications?

Sore throat
It is normal to have a sore throat from being anaesthetized, this should settle in a few days.

Disorientation
While recovering from an operation, some patients may be disorientated with the ward and people around them. They may behave differently from normal and temporarily have some loss of memory. This is often a reaction to anaesthetic drugs and strong pain relief. Full recovery is usually expected within a few days.

Damage to teeth
Teeth can sometimes be damaged from the anaesthetic and bronchoscopy instruments. The surgeon and anaesthetist will try very hard to prevent this.
Let the doctors know if you have any loose teeth, crowns or bridges before your operation.

Changes to blood pressure
Sometimes your blood pressure may be lower after an anaesthetic. This is normally due to not having anything to drink for a while. You will either be asked to drink more or you may need to have fluids through a tube into a vein in your arm.

Constipation
Pain medicine can make you constipated. Drink a lot of fluids and add more fiber in your diet, unless your doctor tells you otherwise. If you are constipated, your doctor may suggest a stool softener or laxative.

Numbness
It is normal for the skin below and in front of the incisions to be numb. This is because some of the nerves were cut during surgery. Numbness may last up to 6 months after surgery. Your doctor will tell you how to check and care for your incisions.
Coughing up blood

It is normal to cough up a little blood for the first few days after lung surgery. The nurses will help with breathing exercises to clear this and it will gradually get less over time.

Shortness of breath
It is normal to feel short of breath after chest surgery, particularly if this was one of your symptoms before surgery. You will be given oxygen for as long as you need it. The doctors, nurses and physiotherapists will be there to support and monitor your condition at this time.

Chest infection
Breathing exercises, early mobilisation and adequate pain relief can help reduce the risk of a chest infection. If you do develop a chest infection you may need physiotherapy and sometimes treatment with antibiotics. You may need to stay in hospital for a little while longer.

Pain
It is normal to have pain after this operation. You will have regular pain relief to control the pain and it should settle in a few weeks. Very occasionally pain does not settle and you may need to see a specialist at a pain clinic.

Painful shoulder
This is very common after chest surgery. It can be eased with pain relief and moving the shoulder regularly.

Bleeding
Following lung surgery some blood loss will happen into your chest drains which is normal and is usually minimal. However, very occasionally a blood transfusion is necessary. If this is the case, we will give you more information. Very occasionally patients will need to return to theatre to control the bleeding.

Wound infection
Showering in an antiseptic solution before surgery, frequent hand washing and using the alcohol rubs provided all help to prevent this risk. A small percentage of patients having this surgery will develop a wound infection requiring antibiotics and wound dressings. This may require help to dress the wound once you are discharged.

Blood clots
These can occur in the legs and then travel to the lung. The risk is greatly reduced by wearing compression stockings, daily injections of a blood-thinning drug and early mobilization.

Faster heartbeat
This can occur following lung surgery and may be treated with drugs to slow down the heart.

Air leak
This is when the cut surface of the lung leaks air. It usually settles within a few days but will mean that the chest drain has to stay in until the air stops leaking. If it is taking longer to settle the surgeon will discuss what can be done about it.

Pneumothorax
Very occasionally the lung will not fully inflate following this surgery and you may need a chest drain for longer. Sometimes once the drain has been removed the lung will partially collapse. This will either resolve on its own or need a chest drain to be put back in until it resolves.

Heart attack or stroke
This can occur during or after any surgery. The risk is higher in patients with a cardiac history or undiagnosed cardiac disease. For this reason, every patient will have investigations and be fully assessed before surgery takes place.

Any surgery carries a degree of risk, including a risk of death. The risk of this will vary from patient to patient. Your surgeon and anaesthetist will discuss specific risks that apply to you.

How many days rest do I need after the surgery?

It is normal to feel more tired than before surgery for at least the first week after discharge and often longer. Rest is a very important part of your recovery, so ensure that you have several rest periods during the day, between activities.

Don't be surprised at how tiring activities can be at first, increase them gradually as you feel able to. Restrict any activities that cause pain or wear you out.

Try to go to bed at a regular, reasonable time and don't rush to get up in the morning.

It is nice to see visitors when you are at home but it can be very tiring. Try and restrict visitors to begin with and don't be afraid to excuse yourself from company if you feel tired and want to rest.

Tiredness and sometimes periods of feeling low in mood are all part of your recovery and a natural reaction to surgery. Try to maintain a positive attitude and remember your recovery will not happen overnight. Try not to compare yourself with anyone else; you will recover at your own pace.

If you have concerns about how you are recovering please contact the thoracic specialists or your GP.

What exercises are advised after the surgery?

It is important to exercise following your surgery, within your own limits, to maintain mobility and help with your recovery. Carry on with what you have been doing in hospital and increase steadily.

You should carry on wearing the compression stockings after you leave hospital, until you are fully recovered. If you experience any pain or discomfort in your calves (lower legs) or they become swollen please contact your doctor for advice.

Remember to do your breathing exercises, these are very important, and move your shoulder regularly. Be aware of your limits and rest between activities.

Walking is a good form of exercise, which you can do at your own pace and increase gradually.

Please ask if there is anything you are unsure about.

If you feel tired or have pain while exercising stop and rest.

What Medication is advised after the surgery?

- Your doctor will tell you if and when you can restart your medicines. He or she will also give you instructions about taking any new medicines.
- If you take blood thinners, such as warfarin (Coumadin), clopidogrel (Plavix), or aspirin, be sure to talk to your doctor. He or she will tell you if and when to start taking those medicines again. Make sure that you understand exactly what your doctor wants you to do.
- Take pain medicines exactly as directed.
  - If the doctor gave you a prescription medicine for pain, take it as prescribed.
  - If you are not taking a prescription pain medicine, ask your doctor if you can take an over-the-counter medicine.
- If you think your pain medicine is making you sick to your stomach:
  - Take your medicine after meals (unless your doctor has told you not to).
  - Ask your doctor for a different pain medicine.
- If your doctor prescribed antibiotics, take them as directed. Do not stop taking them just because you feel better. You need to take the full course of antibiotics.

How to get good Pain relief?

It is important to take your pain relief medication regularly to begin with. This allows you to cough, take deep breaths and move about to aid your recovery. Do not try to stop your pain relief too soon.

Most patients need to take some form of pain relief for one to three weeks.
Once your pain is improving, reduce your pain relief gradually. You may need to get further supplies from your doctor.

If you find that your pain relief is not as effective as it was to begin with, speak to your doctor about trying different types. Do not exceed the stated dose.

How to take good Wound care at home?

The staff will give you advice about your wound before you go home.
Your wound will normally take two to four weeks to heal.

You may have a stitch/stitches that will need to be removed by your doctor seven to ten days after the drain/s are removed. You will be given instructions about when to make an appointment.

Occasionally you will have more than one stitch which will be explained to you.

You may still have a light dressing over your wound on discharge. You will be given instructions about this but usually all dressings are removed before going home.

You may shower/bath daily, but do not soak the wounds if you have a bath.
Do not use very hot water as this may make you feel faint. Ensure there is someone in your home with you when you bath or shower in case you need some help. Take care when washing around your wounds and pat dry carefully.

Do not put any lotions or talcum powder on your wounds until they are fully healed.
Wounds should not be exposed to direct sunlight for at least six months after surgery.
You may have some numbness, tingling and pins and needles around your wounds and at the front of your chest. This will normally settle over the next few weeks but on occasion may take several months.

If you are worried at any time about the healing of your wound, if it becomes more painful, red, inflamed or oozy, contact the thoracic specialist for advice, or see your practice nurse or GP.

What Diet is advised following surgery?

• You can eat your normal diet. If your stomach is upset, try bland, low-fat foods like plain rice, broiled chicken, toast, and yogurt.
• Drink plenty of fluids (unless your doctor tells you not to).
• You may notice that your bowel movements are not regular right after your surgery. This is common. Try to avoid constipation and straining with bowel movements. You may want to take a fibre supplement every day. If you have not had a bowel movement after a couple of days, ask your doctor about taking a mild laxative.

When can I consume Alcohol?

Alcohol can sometimes react with medication you may be on, so always check with your staff before you leave hospital.

When Can I Smoke after surgery?

We strongly advise you not to smoke after your surgery and to avoid smoky environments. There are some leaflets available on the ward with advice and help on quitting.

When can I Drive?

You will normally be able to drive two to four weeks after your surgery.

Always check with your insurance company first.

If when you first drive you find it difficult due to pain and restrictions in your mobility then leave it for a few days before trying again. It is always a good idea to take a competent driver with you the first time you go out.

When can I return back to work?

Depending on your job and how quickly you recover you will need approx two to four weeks off work.

If you have a very physical job you may need a bit longer. Please ask for advice before you leave hospital.

It may well be that due to the symptoms you had before surgery you are not able to return to work until you have had treatment for your condition.

If you need a medical certificate please ask for one before going home.

What Help do I need at home?

After your surgery you will need someone to be at home with you for the first few days. You will need help with heavier housework such as hoovering, changing the bed, loading and unloading the washing machine, hanging up washing, shopping and mowing the lawn.

Family and friends are often very willing to help, so please ask them and accept their help.

However if you live alone and have no one to provide support please tell the Hospital authorities on admission.