Video Assisted Thoracoscopic Surgery (VATS)

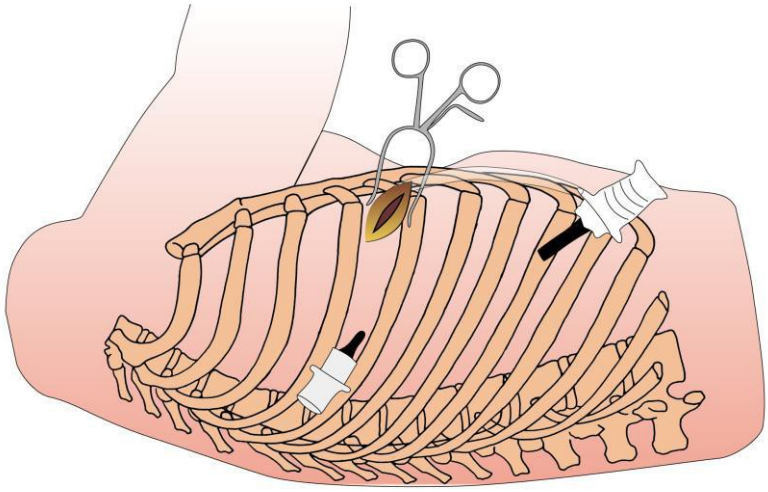
What is a VATS?

VATS is “keyhole surgery‟ carried out in the chest and is a procedure where investigations can be performed to identify, diagnose, and treat many types of chest and lung problems. It is a surgical procedure used for taking samples from the lung, pleura (lining of lung), correction of pneumothorax (lung collapse) as well as for other reasons.

The procedure is performed under a general anaesthetic where typically two small incisions and one slightly larger (3-8 cm) incision is made between the ribs on the relevant side of the chest.

The small incisions are used for the insertion of a small camera and some instruments into the chest. The remaining large incision is used for additional instruments and also for retrieval of biopsy specimens, fluid and resected lung (pending on type of surgery).

Illustration of insertion sites for a right sided procedure



Lung resections

Each lung is comprised of lobes, the left has two and the right has three. This is important to know as you may have a removal of part of a lung.

Wedge resection of the lung

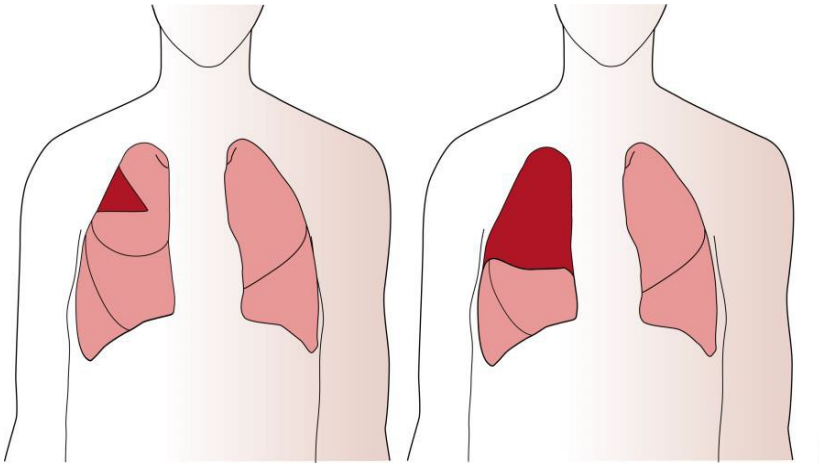
This means removing a small amount of lung. This is the procedure of choice if the condition affecting your lung will not allow, or does not require, more extensive surgery.

Lobectomy

This means removal of part (a lobe) of the lung.
Your surgeon will remove the lobe (or lobes) that are affected. The remaining

lobe or lobes will then expand to fill the space. Removing a lobe (or lobes) may cause some alteration in your breathing, but in the long term this should not prevent you from leading a normal life after surgery.

Wedge Resection Lobectomy



Occasionally, although your operation may have been planned as a “keyhole” operation it might not prove possible to carry it out this way and an alternative technique may need to be used with a larger incision needed (thoracotomy). Your surgeon will discuss this with you ahead of your surgery.

Benefits of the operation

These will have been outlined during your meeting with the consultant and will vary depending upon the exact purpose of the operation. The operation may be for purely diagnostic reasons for example a biopsy. In the case of operable lung cancer surgery, this operation represents the best possibility of cure. In other lung diseases, surgery may lead to an improvement in your quality of life.

Risks and Complications

You will be told your individual mortality risk for this surgery by the surgeon as it will depend on the reason for the surgery.

Bleeding

If bleeding occurs during the operation the surgeon may need to extend the incision (thoracotomy) to get better visibility and to control the bleed, a blood transfusion may be needed. Following the operation some blood loss in your drain is expected. This output will be observed closely. Very occasionally, a patient may need to return to theatre to have the bleeding controlled.

Changes in blood pressure

Blood pressure can be lower than normal following an anaesthetic and also due to some pain relief medication. Fluid will be going through a vein to help maintain your blood pressure until you are able to drink enough fluids. Your blood pressure and other observations will be checked regularly throughout your inpatient stay.

Pain

You will be given analgesia (pain relief medication) for as long as you need them. The type of drug will depend on the extent of your surgery and the amount of discomfort you experience. It is however normal to have discomfort after this operation and will not be completely pain free. You must be able to mobilise, perform deep breathing exercises, cough and sleep. If pain prevents this please inform the nursing staff as soon as possible as there is always additional pain relief available to you.

Although VATS is a "keyhole" procedure, the camera and instruments used do have to pass between the ribs and can press against the nerves which also lie here. Sometimes there may be residual pain after VATS but this can usually be managed simply by medication. You will be discharged from hospital with a 14 day supply of pain relief medication so it is important you contact your GP for additional supplies if needed. Eventually this pain will settle. Very rarely will the pain be a residual problem, which may take 3 to 6 months to settle.

Painful shoulder

This is partly due to the position you lie in during the operation as well as due to certain nerve mobilisation and irritation of the diaphragm. It can be eased with pain relief and moving the shoulder regularly. A good exercise is to shrug the shoulders regularly and circle them.

Coughing up blood

It is normal to cough up a little bit of blood for the first few days after the operation. The physiotherapist and nurses will show you breathing exercises to do post-surgery to help clear this.

If you continue to cough up blood or cough up yellow/green phlegm then please let the nursing staff and doctors know.

Chest infection

This occurs in approximately 10% of patients undergoing a VATS procedure.

Any operation in the chest can lead to a chest infection. It is essential you stop smoking and exercise frequently before the operation to help prevent post-surgery chest infection.

Physiotherapy, early mobilisation around the ward and good pain relief will help reduce this risk by allowing you to cough and clear the mucus from the lungs.
A chest infection is often treated with antibiotics and extra physiotherapy; this may lead to a longer stay in hospital.

Fast/irregular heartbeat

The heart can start beating faster and in an irregular pattern this is called AF (atrial fibrillation). This can be managed with medication.

Air leak

This is when the surface of the lung leaks air and is a frequent occurrence following lung surgery. You will have chest drains to drain the air and they will remain in for as long as the air leak is present.

Frequent mobilisation, deep breathing and coughing exercises may help resolve this air leak. A persistent air leak may result in a longer hospital stay.

Wound infection
You will be given some antimicrobial wash solution and nasal ointment at the pre–operative assessment. Please shower in the antimicrobial wash solution before your operation and bring this lotion with you as you will continue to wash with it whilst in hospital. If your wound becomes sore, red, smells offensive or leaks fluid there may be a wound infection. This is usually treated with antibiotics and regular dressing changes.

Blood clots
To reduce the risk of this you will receive an injection of dalteparin (heparin) each evening and may be required to wear compression stockings. Frequent mobilisation will also help reduce the risk. Some patients may need to continue taking the dalteparin at home, support will be provided.

Shortness of Breath
Some breathlessness is expected after lung surgery. This depends on the type of operation, amount of lung you have had removed and how fit and well you were prior to surgery. Many people worry that they won't be able to breathe properly after having part of their lung removed but the remaining lung usually adapts, and breathing should improve over time. While most people find that their breathing improves as they recover, other people (especially those who had breathing problems before the operation) might have long term problems and worsening of breathing afterwards (especially on very warm, cold and windy days).

The phrenic nerve provides the primary motor supply to the diaphragm, the major respiratory muscle. Very rarely surgery can cause phrenic nerve injury; this can lead to diaphragm paralysis or dysfunction in turn causing breathlessness.

Sore throat
This is from being anaesthetised, it should settle in a few days.

Damage to teeth
Teeth can sometimes be damaged from the anaesthetic instruments, please inform the specialist nurse at pre assessment and the anaesthetist if you have any loose teeth/crowns.

Damage to vocal cord
This is a rare complication but due to the position of the nerves, which supply the vocal cords (recurrent laryngeal nerves), might get damaged. This leads to possible vocal cord paralysis causing a hoarse voice. This is often a temporary problem but in some cases may need treatment from an ENT surgeon.

How do I prepare for the surgery?

Smoking cessation:
If you smoke, you should give up as early as possible. You will need to stop smoking before the operation as it reduces the risk of breathing and other problems after surgery.

For help giving up smoking please discuss with any of the following:

- Thoracic Specialist Nurses on 01603 287473 or 01603 286396
- Contact "Smokefree Norfolk", the stop smoking service on 0800 0854 113
- Your local GP, practice nurse or health centre

Who can all give advice and help you to stop smoking.

Back to Fitness:
The fitter you are, the lower the risk will be in the postoperative period. It is beneficial to get back to fitness as soon as possible.

One easy to implement method is based on a 30 minute walking program performed twice a day. It involves 10 minutes walking at an easy pace (warm up), followed by a very good pacey walk again of 10 minutes duration (main exercise) and then again followed by 10 minutes of easy walking (cool down). This should be done twice a day until the day of your surgery.

Alternatively click on-line to www.nhs.uk/livewell for advice

Dental work:
If you have loose teeth or crowns having dental treatment before your operation will reduce the risk of damage to your teeth. This can occur when the anaesthetist needs to put a tube into your throat to help you breathe.

Medication:
Please bring with you any medicines, tablets or inhalers that you are taking. These will need to be kept securely for the safety of all patients. They will be returned to you on your discharge.

Feeling unwell on the day
If you feel unwell when you are due to come into hospital, please telephone for advice. For example, contact the hospital if you have had symptoms of diarrhoea and vomiting within the last 48 hours that are not related to your medical condition.

Before Surgery
Before the surgery you will attend the Pre-Operative Assessment Clinic led by the Thoracic Clinical Nurse Specialists. This appointment will include an examination, blood tests, a chest x ray and ECG (tracing of the electrical activity of your heart). You may also meet the Anaesthetist.

At this appointment you will have an opportunity to discuss the procedure and ask any questions you may have. Your medications will be reviewed and, if necessary, adjusted for surgery. If you take medication to stop you getting blood clots or medication for diabetes you will be given specific instructions. Please bring your medications or recent list of your medications to the appointment with you.

At this appointment you will be swabbed for MRSA. Please inform the specialist nurse if you have ever been diagnosed with this infection before.

Give some thought about coping after discharge from hospital, as during your first week at home you will need practical help as well as emotional support. If possible, this should be arranged before your admission. If nobody is going to be available to help with this, please let the specialist nurse know at your pre-operative assessment.

You will be given clear instructions about when you should stop eating and drinking before your operation. No food after midnight and water only until 06:00am: nothing else until after your procedure. It is important to follow these. After surgery you will be able to eat and drink as normal.

You will need to take a bath or shower and to remove any make-up and nail varnish. If you are taking medicines, you can take these as usual unless a member of your surgical team or the anaesthetist has asked you not to.

Surgery Day
Most patients are admitted on the morning of surgery to the Same Day Admissions Unit (SDAU). You will see the thoracic team and go through the consent form and then the nurses will help you get ready for theatre. How long your surgery takes will depend on exactly what needs to be done. Your Surgeon will be able to discuss this with you.

You must remove contact lenses, but you can wear your glasses, hearing aid, denture or wig to the operating theatre. You will need to tie back long hair but avoid using metal clips. You will need to remove jewellery, although a wedding ring may be taped.

You will usually be asked to wear support stockings to help prevent a blood clot forming in the legs. These stockings remain on for the duration of your stay. You may also be given a small daily injection to help to try and prevent this complication. You will be given a clean cotton gown that ties at the back. If you wish to wear your briefs or pants they must be cotton.

You may be given a pre- medication (“pre-med”). This is the name for medication that is sometimes given before an anaesthetic, although today they are not often used. This may make you drowsy so you will need to stay in bed after you have been given it.

What will happen when you are called for your operation?
A support worker will arrive and take you to theatre on your bed after checking your details. A nurse will accompany you to the anaesthetic room where staff will introduce themselves and check your identification bracelet, your name, hospital number and the consent form.

You will be attached to monitors to measure your blood pressure, heart rate and oxygen levels continuously.

The anaesthetist will place a small plastic tube in the back of your hand or arm where medication will be given through. Before you go to sleep you will be given oxygen to breathe through a face mask.

Immediately after your operation
Following the operation, you will wake up in the recovery department, the nurses will observe you carefully until you are ready for transfer to the ward. You will have an oxygen mask over your nose and mouth, and you will be sitting up in bed. You may have a drip which will be used to give fluids until you are able to eat and drink again, usually later that day. On the ward the nurses will monitor your progress and make sure you are comfortable. You will also see the surgical team regularly.

It is important to take deep breaths and cough to keep your lungs free from secretions/mucus.

Chest drains
You will have 1 or 2 chest drains placed where some of the incisions were made, and these are to allow any fluid or air to drain from the chest. The nurses will help you look after these. The drains will be removed following review by the surgical team and the stitches used to secure them will be removed by your practice nurse at your local GP 7 to 10 days later.

Analgesia
Your pain management will vary depending upon the full nature of your operation.

In the first few days after your surgery you will require strong painkillers; these may be given through a paravertebral catheter (very fine plastic tube placed in the muscles next to your spine) which delivers continuous local anaesthetic, tablet, liquid or as patient controlled analgesia (PCA). Patient controlled analgesia allows you to press a button on a handset to infuse a set dose of pain relief medication into a vein.

Occasionally some side effects occur when taking strong painkillers. Some people may feel sick but this can be helped with regular anti–sickness medication. Other side effects may include drowsiness, itching and constipation; laxatives can be given to ease this. Usually these are not too troublesome but if they are let the nurse or doctor know as it may be possible to change to another drug. Later you will move onto moderate pain relief medication as the discomfort begins to settle, these will be in tablet or liquid form taken orally.

Breathing
You will be given oxygen to assist your breathing after the operation and the nursing staff will closely monitor this. It is important that you are as comfortable as possible so you can take deep breaths and are able to cough easily.

You will be seen by the physiotherapist who will also help you to do this by showing you breathing exercises. Please inform the nursing staff if you are uncomfortable and feel restricted in taking deep breaths and moving so they can review your pain medication.

Mobility
You will be encouraged to mobilise with assistance as soon as possible, and again the physiotherapists and nursing staff will help with this. Once you have been shown exercises to do it is important that you continue to do these independently throughout the day whilst in hospital and also once discharged.

Eating and Drinking
You will be able to eat and drink normally once you are fully awake and feel able to do so.

Length of stay
This will depend on the procedure performed and your own recovery, but generally patients remain in hospital for between 3-5 days. The thoracic team will discuss your progress with you and will advise you on your length of stay.

Discharge
Please arrange in advance for someone to be able to collect you from hospital. You will be discharged from hospital approximately 3-5 days following surgery, but the length of stay is variable.

We recommend you have your own supply of paracetamol and laxatives (available from pharmacies) to ensure you have full cover of pain relief when home. If you feel the pain is not improving, please contact your GP or the Specialist Nurses whose contact details are at the end of this leaflet.

When at home you may experience some pain and discomfort from the wound site and surrounding area. We recommend that you have someone nearby after discharge but you will not need someone with you all of the time.

Please bear in mind that you must not lift heavy objects for approximately 2-4 weeks and must avoid driving for at least 2 weeks, if no pain is experienced, or until you have been reviewed in clinic by the surgical team. After a major resection lung resection (wedge/lobe/biopsy lung) there will be a 4 week no driving period unless confirmed otherwise by the surgeon or one of their team members. Please check with your individual car insurance company for confirmation as to when you can return to drive.

The surgical team will advise you on a suitable time to return to work and will provide a work sickness note if required.

Smoking
If you smoked before your operation, it is likely this contributed to the development of your illness. You will not have smoked while in hospital, so use this as an opportunity to become a non-smoker. If you still require help with giving up smoking please speak to the thoracic specialist nurse.

Holidays
If you have planned a holiday, then you can take one as soon as you feel ready to travel. However, holidays involving flying should not be taken until about 6 weeks after the operation and it is best to seek advice first.

Sex
It is not uncommon for major surgery to cause a temporary drop in libido.
You should be able to resume sexual activity as soon as you feel physically able to.

Clinical review
You will receive a telephone review by the thoracic Specialist Nurse following discharge and will be seen in the Surgical Clinic Outpatients Department 3 - 6 weeks after this. If you are awaiting the results of the operation you may be invited to clinic earlier.

Do not hesitate to contact the Thoracic Specialist Nurses if you have any questions regarding any aspect of your care.

- Thoracic Specialist Nurse on **01603 287473** and **01603 286396**
- Docking Ward on **01603 286421**
- Your General Practitioner

For further information regarding your lung surgery please visit:
www.roycastle.org/mylungsurgerybooklet

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Norfolk and Norwich University Hospital
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NR4 7UY
Telephone: 01603 286112
0800 092 7640
Email address: norwichcentre@big-c.co.uk

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