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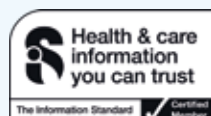
SURGERY FOR MALIGNANT PLEURAL MESOTHELIOMA

Reviewed by: Hannah Ball

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Introduction

Treatment for malignant pleural mesothelioma (MPM) may involve surgery, chemotherapy and radiotherapy or a combination of these. This booklet has been put together to describe some of the surgical procedures used to help diagnose or treat MPM.

Currently, there is no known cure for mesothelioma and surgical procedures are aimed at extending and improving the quality of life for as long as possible.

Some people may be offered surgery within a clinical trial. A clinical trial is a research study designed to evaluate new or existing treatments. People who enter a clinical trial are among the first to receive new treatments before they become widely available. Because this research often leads to improved treatments, clinical trials play a key role in progressing treatment for mesothelioma.

Some surgical procedures need a surgeon with a specialist interest in MPM requiring admission to a hospital some distance from your home. Other procedures are carried out in a larger number of surgical centres.

Part of the process for deciding your treatment involves your case being presented and discussed at your Local Lung Cancer Multi-Disciplinary Team Meeting. If your local team consider you suitable for surgery or entry into a clinical trial they will refer your case to a Mesothelioma Specialist Lung Cancer Multi-Disciplinary Team Meeting.

It is quite natural to feel a sense of urgency to get on with treatment and worry about the time it takes to seek the advice and opinion of the multi-disciplinary teams; however, this is necessary if people are to be offered the most appropriate up to date treatment options.

Your healthcare team will do everything they can to minimise delays and good communication and feeling well informed can help alleviate your concerns.

Pre-operative assessment

Before an operation and anaesthetic can take place, your fitness and general health is assessed. The assessment will involve some or all of the following:

Blood tests

These tell us about your general health including your liver and kidney function.

Chest X-Ray (CXR)

This provides basic information regarding your heart and lungs. You will have several CXRs throughout your treatment.

CT scan (Computerised Tomography)

This scan shows the inside of your chest in detail through a series of pictures. Each picture appears as a cross-section across the body.

Echocardiogram (Echo)

This is a scan of the heart and gives information about how the heart is functioning.

Electro-cardiograph (ECG)

This is a tracing of the electrical activity of the heart giving information on its rate and rhythm.

Respiratory (Lung) function tests

These tests allow us to find out how well your lungs are functioning.

PET scan (Positron Emission Tomography)

This is a scan that gives additional information to the CT scan and will tell us if the mesothelioma has spread outside of the lung.

Exercise test

This involves you exercising on a bicycle and walking on a treadmill. It tells us how well your heart works when exercising.

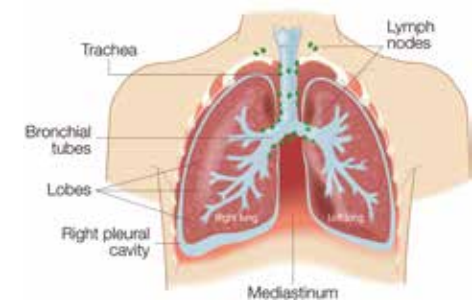
MRSA screen (Methicillin Resistant Staphylococcus Aureus)

– MRSA is a germ or bacteria that is carried harmlessly by many people on their skin and in their noses without causing any infection. However, if you have a surgical wound it may cause infection and delay healing.

Each hospital has its own policy regarding identifying, preventing and treating MRSA. Most people will be screened before being admitted to hospital to see if they carry MRSA. This screen involves a swab, which looks like a cotton bud, being used to take samples from areas of your skin and inside your nose. These are then sent to the laboratory for analysis. Most hospitals also provide people with wash solution and cream to help prevent wound infection. Your local hospital will tell you how and when to use these products.

Surgery for MPM

The diagram below shows the main structures within your chest.



Surgical biopsy

A biopsy is a medical term for a tissue sample taken because the doctors feel that there may be an abnormality.

Tissue samples can be taken of the lung, the lining of the lung (pleura) or glands (lymph nodes). These samples can then be sent to the laboratory for analysis. Samples can be obtained using a variety of procedures. Your surgeon will discuss your procedure in detail with you.

Biopsy results can confirm if you have mesothelioma or not and the type of mesothelioma – Epithelioid, Sarcomatoid, or Biphasic (which is a mixture of the two) and/or the extent (stage) of the disease e.g. whether it has spread to nearby glands.

Cervical mediastinoscopy

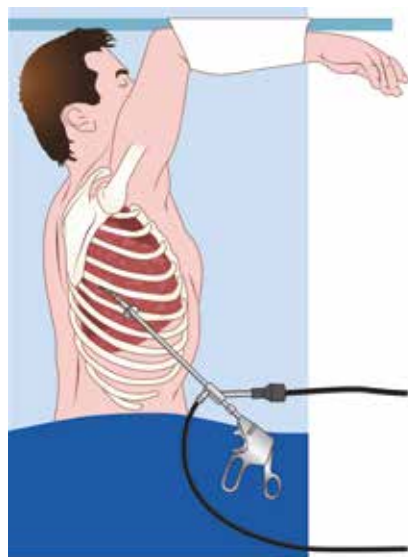
This is a procedure that allows the surgeon to take biopsies from glands (lymph nodes) behind your breast bone. This is carried out via a tube-like camera passed through a small incision made just above the breast bone through which biopsies of the glands (lymph nodes) can be taken.

Incisions used to access the chest

VATS – Video Assisted Thorascopic Surgery (keyhole surgery)

This is where your surgeon uses a camera through 1 to 3 small incisions (1-3cm) into your chest

to observe the lung. Incisions are generally made in the side or back of your chest.



Thoracotomy - The name given to the incision that the surgeon makes around the side of your chest, below your shoulder blade and between your ribs.

Median sternotomy - The name given to an incision made vertically down the chest over the breast bone.

Procedures

Pleurodesis - This procedure allows for the drainage of existing fluid within the space surrounding the lung and attempts to stop air or fluid re-accumulating by inserting a substance (sterile talcum powder) into this space once the fluid has been cleared, causing inflammation and sticking the lung to the inside of the chest wall. This should then seal the space so that the fluid cannot build up again.

Pleurectomy - This procedure involves peeling off part of the lining that coats the inside of the ribcage.

Decortication - This procedure involves peeling off part of the lining that covers the lung itself.

Lung sparing total pleurectomy (also known as radical pleurectomy/decortication) - This is a major operation suitable for some people that can be used to

debulk (remove) as much of the tumour as possible. It involves the removal of the two linings of the lung (the lining that covers the inside of the ribcage and the lining over the lung itself), part of the lining of the heart (pericardium) and the muscle (diaphragm) that separates the structures in the chest from those in the abdomen.

Extra Pleural

Pneumonectomy (EPP) -

This involves the removal of the whole lung along with its lining, part of the lining of the heart (pericardium) and part of the diaphragm (a sheet of muscle that separates the chest cavity from the abdomen) on the affected side. EPP is rarely performed in the UK.

After your operation

Tubes and lines - After your operation you may be attached to quite a few tubes and wires. These are there for monitoring purposes, giving you fluids or nutrition and removing unwanted fluid from your body.

You may also be attached briefly to a heart monitor.

Oxygen - Extra oxygen is given to you for the first few hours to ease the workload on your lungs. The facemask may be changed to a small soft tube that sits just inside your nostrils. This leaves your mouth free to take sips of water.

Central venous line - This is a plastic needle that goes into a large vein in your neck or below your collarbone. It is used to monitor the fluid levels in your body or to administer drugs or drips.

Intravenous drip - A tiny plastic tube in one of your smaller veins is used to administer fluid drips and also medications. It is usually located in the back of your hand.

Oxygen saturation probe - A small peg like device clipped to your finger that will read the level of oxygen in your blood.

Arterial line - Another small plastic tube but this one goes into an artery in your wrist. This gives us a more accurate blood pressure reading. Care is needed as these needles if caught can bleed quite heavily. (You will only have an arterial line if you are transferred to the High Dependency Unit).

Urinary catheter - This is a thin tube that goes into your bladder. It means that the nurses can monitor your fluid output very accurately and you get the benefit of not having to get out of bed to pass water. It is usually removed within one to two days.

Chest drain(s) - All of the procedures mentioned previously in this booklet will require the insertion of one or more chest drains. These are flexible plastic tubes coming out of your side. These tubes enable the lung to re-inflate after surgery and keep it inflated by removing air from

the chest, often with the help of suction. A pump on the wall applies the suction and your drains will be connected to this with tubing until your lung stays up by itself.

Your drain(s) will also remove unwanted fluid from around the lungs, which is collected in a bottle and recorded.

If your lung stays inflated off suction and your drain is still leaking small amounts of air or collecting fluid, a lightweight bag/bottle may be attached to the tube to allow you to walk around more freely.

Eating and drinking

You will have a drip going into your arm, which will prevent you from becoming dehydrated. When you are fully awake, the nurse will provide you with some cool water. This must only be sipped at first, otherwise you may upset your stomach. Once your stomach is used to fluids passing

through it you can then try a cup of tea or squash - usually around one to two hours after returning to the ward.

You may not have much of an appetite until the following day. If you have major surgery, it may be necessary to wait a little longer before drinking and eating.

Control of pain

Any type of surgery can be painful and so it is essential that you receive adequate painkillers. Strong painkillers are used immediately after surgery.

These may be given in several ways:

- Into your spine (epidural) through a small tube
- Through a drip in your arm
- As an injection
- As tablets

You may have a pain control button that you can press to give yourself more painkillers. Your nurse will show you how to use it.

The next 24 hours

Monitoring - The equipment will operate almost continuously over this period. The nursing staff will record this information to enable early detection of possible complications. Blood pressure, heart rate, oxygen levels, temperature and fluid intake and output are some of the items recorded. The nurse will also be checking your wounds and tubes.

Nausea - Unfortunately, anaesthetic and some of the painkillers can make you feel queasy and sick. This does not happen to everybody but if it does the nurses can give an anti-sickness injection that will take away those feelings.

Rest and sleep - It can be difficult to sleep in hospital and you may have an unsettled night even though the nurses endeavour to be as quiet as possible. You may feel tired and drowsy for a few days, yet as you

become more active, your sleep will return to a normal pattern.

Chest drain removal

It is usual for two nurses to remove the tube and seal the hole with a stitch that was inserted in theatre. This stitch will stay in place for seven to ten days and then will need to be taken out. This is generally done after you have gone home by the nurse at your doctor's surgery or health centre and the ward nurses will provide you with a letter to give to this nurse.

Looking after your wound

It can take two or three weeks for your wound(s) to heal. Whilst in hospital the nurses will check them regularly to make sure they are healing well. You will need to check your wound(s) after you have gone home. Use a mirror or get a member of your family to check your wound(s) every day. Some

swelling around the wound is perfectly normal and should go down after a few weeks.

You should, however, consult your GP for advice if you notice:

- The wound becoming red and inflamed
- Worsening of pain from around the wound
- Fluid oozing from the wound.

Try to avoid using soap, cream and talcum powder directly on the scar, as this can cause irritation. Numbness around the scar is not uncommon. Most stitches are dissolvable, except for the one(s) tied when your chest drain(s) was/were removed. Sometimes clips or staples are used along your wound. Your nurse will advise you if any stitches or clips need removing by your practice or district nurse.

Going home

The length of your hospital stay can vary from around 2-14 days depending on your surgery. The doctors and nurses will decide with you when you are safe and ready to go home.

Emotions - Any sort of operation can affect people emotionally and mentally, so it is usual to have feelings of anxiety or depression. Try talking about your feelings; remember your friends and family need to talk things over as well. Try to establish realistic goals.

Sex - Sexual relationships can be resumed when your wounds are healed, within the limits of your comfort and when you and your partner are ready. This may take several weeks. Remember your partner may be worried about hurting you. Try to take a more passive role.

Driving - It is essential that you can perform an emergency stop without pain when you start driving again. This can vary from two to six weeks after surgery. We recommend that you discuss when you can start driving again with the doctor at your outpatient check up. You are also strongly advised to check with your insurance company.

Work - You can return to work when you feel sufficiently well and comfortable. This depends upon your occupation and surgical procedure carried out, but is generally after one to three months. Please ask the medical staff for advice at your outpatient check up or discuss with your GP.

Activity and rest - Try to establish a balance between activity and rest:

- Get up at your usual time.

- Aim to go for a short walk each morning and afternoon. Slowly build up the distance you walk.
- Take an afternoon nap.
- Go to bed early.

You may find that you feel more breathless when walking. This is normal and proves that you are exercising your lungs.

You may find that you do not sleep as well as you usually do when you first get home. Your natural body clock will have been interrupted by hospital routines.

Eating - Sometimes appetite is reduced after an operation and you may lose some weight. You should try to eat small meals that contain more calories than you would normally eat.

Constipation can sometimes result from reduced mobility and the painkillers you may take. Eating two or three pieces of fruit

and three portions of vegetables a day can help reduce this problem. Consult your GP if it persists. You may need to take laxatives for a short while.

Pain - It is common for aches and pains to persist for a little while.

Remember to:

- Take your painkillers as described.
- Tell a doctor or specialist nurse if the painkillers are not working.
- Continue to exercise on a regular basis.

When you go home, keep taking your pain relief tablets. Pain can constrict mobility and slow recovery.

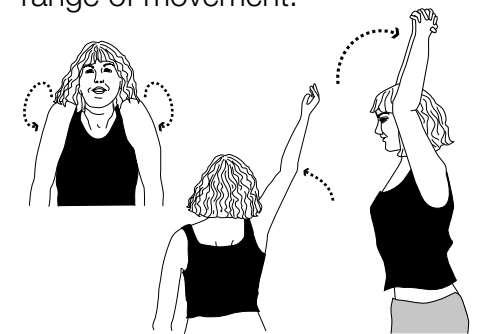
Sometimes aches and pains can linger for up to three or four months. Other areas may feel numb or you may experience pins and needles on or near the site of your surgery. This

usually passes with time. Please discuss any concerns with the doctors at your follow up outpatient appointment or contact the nurse specialist.

Exercise

Posture - It is important to maintain a good posture to avoid unnecessary strain on your spine, which can cause back pain and restricts the movement of your lungs and rib cage.

Shoulder exercises - After your surgery, you may find your shoulder(s) is stiff due to the position it was placed in during surgery. The following exercises will help maintain your shoulder range of movement.



Try and do these exercises regularly. Spend a few minutes on these exercises every day. Activities of daily living such as brushing your hair, dressing and reaching for light objects will also prevent shoulder stiffness.

As soon as you are out of bed, (usually the day after your operation), it is essential that you start to exercise. Whilst sitting in your chair your lungs are not able to fully expand and they need to be exercised to get them working effectively again. Whilst in hospital a physiotherapist is usually available to help and advise you with exercise.

Mucus and sometimes blood can collect in the airways after a lung operation. Deep breathing and supported coughing techniques will help to remove these secretions.

Initially, short assisted walks around the ward are encouraged. This can be difficult at first if your chest drain is still attached to suction

and the distance you can move away from your chair is restricted. In such cases you may be advised to walk on the spot or even try a short session on an exercise bike.

You may feel short of breath following exercise. This is normal and shows that you are exercising at the correct level. However, you should not be gasping for breath.

Once you are steady on your feet and your chest drain is free from suction, then you will be encouraged to walk around on your own as much as you can tolerate. Exercising in this way will encourage your lungs to expand and also may prevent any delays to your discharge home.

Once home you should continue to walk regularly, gradually increasing distance and pace. If you do any specific activities, e.g. swimming, golf or bowls, ask for advice on returning to these hobbies.