Manchester Royal Infirmary

Having A Liver Resection

Information For Patients
**Why do I need a liver resection?**

A liver resection is offered to patients who have, or are thought to have a tumour (growth) on the liver. A tumour is an abnormal growth of cells and may be described as malignant (cancerous) or benign (non-cancerous). You may also be offered a liver resection if you have already had a bowel operation for bowel cancer and been found to have liver metastases (secondary cancer cells in the liver). The diagram below will be used to show you where your tumour/s is.

The liver is divided into eight segments and the detailed knowledge of the liver allows your Surgeons to plan your operation. Your Surgeon will discuss with you the exact operation in more detail.

You will have already undergone many tests and investigations. The results of these tests have been looked at carefully by a team of specialists known as the Multi-Disciplinary Team (MDT). This team includes Consultant Surgeons, Consultant Physicians, Consultant Radiologists (experts in taking and reading X-rays and scans) and the Clinical Nurse specialist. The team has been able to make a diagnosis of your condition/illness, and a decision made about how best to treat it. As a result, they have suggested that you have a liver resection. This will have been discussed with you.

Only a relatively small number of patients with liver tumours are suitable for surgery, and whether or not this operation is an option for you depends on:
• Whether the tumour in your bowel has been treated/is treatable.
• How much of the liver is affected.
• The size of the tumour(s).
• Where in the liver the tumours are located.
• Whether there are any tumours outside the liver.
• Your general level of fitness.

**What is a liver resection**

A liver resection is an operation to remove a part of the liver. If the right side of the liver is removed, this is known as Right Hemihepatectomy. The gallbladder is also removed at the same time. If the left side of the liver is removed this is known as a Left Hemihepatectomy.

The liver has the ability to repair and regenerate (grow back) itself. Up to 65% of the liver can be removed. The remaining liver will regenerate itself following surgery and will grow back to its original size in about 3 months.

Most liver resections are performed during (open) surgery through an incision (cut) in your abdomen. However sometimes they may be done through (keyhole) surgery. This may not be suitable for some patients for a number of reasons including the size and/or number of tumours to be removed as this makes the operation more complex.

**Are there other types of treatment I could have?**

There are other treatments possible for liver tumours, which include ‘burning’ the tumour (ablation). This treatment is usually indicated in combination with liver surgery if there are many tumours to treat. It is also reserved for patients that cannot undergo a general anaesthetic. Radio-frequency ablation and microwave ablation are the two-ablation techniques that are commonly used.

Nearly all patients have chemotherapy after surgery. Some patients undergo chemotherapy before surgery.
‘Neo’-adjuvant or pre-operative chemotherapy is advised in certain situations where the tumours in the liver are too large to be removed. They require chemotherapy first to try and ‘shrink’ the tumours.

**Are there any risks in having the operation?**

As with all operations, the surgery and the anaesthetic carry risks to your health. Some of the risks of this operation can be serious. However, you will be under the care of a specialist team of Doctors and Nurses, who will monitor your condition to make sure that any complications that occur are treated as soon as possible.

A liver resection is a major operation and is done under general anaesthetic. This means that you will be unconscious and unaware of anything during the operation. The operation lasts between 2-6 hours but may take longer which means you will be under general anaesthetic for a long time.

**The main risks of this type of surgery are:**

**Chest infection:**
Because of the cut on your abdomen, you may find it difficult to breathe deeply or cough, which can lead to a chest infection. The Physiotherapist and Nurses will teach you breathing exercises to help prevent a chest infection. We also encourage you to be up and mobile as soon as possible after your operation.

It is very important that you tell us if you have any pain, as this will prevent you from breathing deeply and mobilising.

If you smoke, your lungs will be more sensitive to the anaesthetic. It would benefit you greatly to stop smoking or at least cut down before your operation. We are able to provide nicotine replacement therapy during your stay if required.

**Blood clots in the legs (deep vein thrombosis) or in the lungs (pulmonary emboli):**
Moving around as soon as possible after your operation is recommended. We will give you special surgical stockings to wear whilst you are in hospital and injections to thin the blood. The Physiotherapist will show you some leg exercises to help prevent blood clots.
Wound infection:
Sometimes the wound can become infected. The Nurses will check regularly for any signs of infection and keep the wound clean and dry. If an infection does develop you may be given antibiotics. Very occasionally, the wound may open and can then take a little bit longer to heal.

Bleeding:
A blood transfusion may be needed to replace blood lost during or after the operation.

Bile leak:
The liver can leak bile from where it has been cut. Should this happen you may need to have a drain inserted to help correct this. This usually settles down without any further intervention. In very rare cases, you may require further surgery.

Liver failure:
This is very rare. The remaining part of the liver is unable to function fully. This can lead to swelling of the legs, jaundice (yellowing of the skin) and confusion. If this occurs the team of Surgeons will support your liver with medication until it recovers and may ask the liver medical specialists (Hepatologists) to be involved in your care.

Heart problems:
Having a major operation can put stress on the heart. If you already have heart problems, the surgery may make these worse. Your team of specialists will speak to you in more detail about any heart concerns before the operation.

Death:
A small number of patients (less than 1%) who have this surgery may die within 30 days after surgery. This may be due to serious complications associated with this operation or as a result of some other medical problem. It is important to remember that you will be under the care of a specialist team of Doctors and Nurses. They will be closely monitoring your condition to make sure any complications are noticed and treated before they become a serious risk to your life.
What will happen before I have my operation?

A liver resection is a major operation and we need to know that the information is then processed and gives the Doctors an accurate idea of how medically fit you are. You are fit and well enough to have the operation.

To ensure that you have the best chance of making a full recovery you may be asked to undertake a Cardio-Pulmonary Exercise Test (CPET). This is a very simple test which involves you sitting on an exercise bike and the Specialist Doctors take measurement of your breathing and tracings of your heart. The results of this if not favourable may delay or prevent you having a major operation.

Before your admission to hospital, you will have an appointment to attend the pre-op assessment clinic. Here you will be seen by a Doctor and a Nurse who will ask you about your general health, and about any previous or current illnesses.

You will be asked about any tablets you are taking, so it is useful to bring either your medication with you or a list of what you are taking.

The Anaesthetist may also see you. This Doctor looks after you whilst you are asleep during the operation. This includes looking after your breathing and heart rate during the operation, and overseeing your pain relief afterwards. They will also discuss in detail about what they need to do to prepare you for the operation and the options for relieving any pain you may have afterwards.

At the clinic, you will have routine investigations such as blood pressure, pulse, urine test, blood tests and an ECG (electrocardiogram or heart trace).

Your Surgeon and the Anaesthetist will want to see the results of these tests to make sure you are fit enough to have the operation. If there are any concerns about the results of your tests your Consultant will discuss these with you.

At the clinic you and your relatives will be able to ask any further questions about the operation, and talk about any concerns you may have. Please tell the clinic staff if you want to see your Clinical Nurse Specialist whilst you are in clinic.

When possible, the clinical Nurse will tell you the date your operation is planned for, and what you need to bring into hospital.
You may be asked to attend Test clinic in the 3 days leading up to your operation. This will be to take a blood sample so we can replace any blood you lose during your operation. If you cannot come to test clinic, we can take the sample when you are admitted to hospital, but this may slightly delay your transfer to theatre.

**What will happen when I come into hospital?**

You will be asked to come into hospital on the day of your operation, unless told otherwise. Your Consultant will come to see you before your operation. This is to ensure you fully understand what will happen and to answer any further questions and discuss any concerns you may have.

You will also see an Anaesthetist who will discuss the types of anaesthetic that are best for you, the risks associated with them and how your pain will be controlled. The Anaesthetist will carefully monitor you during your operation.

Once you have had all your questions and concerns answered to your satisfaction and understanding you will be asked to sign a consent form giving your permission for the operation to proceed. You should only do this if you fully understand why you are having the operation, and the risks and benefits.

**What will happen on the day of my operation?**

You will not be able to eat any food for 6 hours before your operation. If you are coming into hospital on the morning of your operation, we will ask you not to eat anything after 2 o’clock in the morning (2am). You may drink clear fluids up until 6 o’clock in the morning (6am). You may be given Pre-op Drinks, which are a clear, carbohydrate rich drink designed to reduce dehydration and improve your nutrition intake before you go to theatre. You will be given more information about these in pre-op assessment clinic.

You should have a bath or a shower on the morning of your operation. In the Surgical Admission Lounge (SAL), you will be given a theatre gown and some surgical stockings to wear. The Nursing team will confirm your personal details and fill out some necessary paperwork.
You will have your temperature, blood pressure and pulse recorded. When it is time for you to be transferred to theatre, you will be given the option to walk to theatre, or be transferred in a wheelchair. If you have been given a pre-med, some medication that makes you feel relaxed or sleepy, you will be transferred on a trolley.

When you arrive in the anaesthetic room, you will be prepared for theatre. You will have some sticky pads put on your chest to monitor your heart and your blood pressure and pulse will be checked again. You will have a drip placed in your hand or arm, and have some more tubes (lines) placed in your arm and neck. These will help the anaesthetist to monitor you closely during your operation, and enable us to give you fluid / blood drips. You may have an epidural put in which will make your tummy feel numb after the operation. An epidural is a fine tube which is placed in your back. When your are fully prepared, you will be asked to breathe some oxygen through a mask before you drift off to sleep.

**What will happen during my operation?**

The Surgeon will make a large incision (cut) along the bottom of the right side of your rib cage. The Surgeon will then remove the part/parts of the liver that has disease in it.

The surgeon will put some tubes in your tummy. These will allow any excess fluid to drain into a bag. These will stay in place until the fluid stops draining. This is usually several days but can be a few weeks. We will aim to take the drain the drain out before you are discharged from hospital. If they do need to stay in, we can arrange for district nurses to visit you at home.

The cut on your tummy will be closed either with metal clips or with internal dissolvable sutures.

Metal clips will be removed 10 days after your surgery.

Soluble sutures will dissolve away slowly and will not need to be removed.

A tube, called a catheter will be inserted into your bladder to drain urine while you are asleep. This will be removed a few days after your operation.
All of the tissue/liver that is removed by the Surgeon during your operation will be sent to the histology department to be analysed. This is where Specialist Doctors look at the tissue to determine the nature of the tumour. The results of this usually take 7-10 days and will be discussed with you as soon as they are available.

**What can I expect to happen after the operation?**

When your operation is finished you will be taken into the recovery room. When you are awake and comfortable, you will be transferred to the High Dependency Unit (HDU) where you will stay for 1 or 2 days, or until you are well enough to return to the ward.

In HDU, you will be attached to monitors that check your heart rate, blood pressure and fluid levels. You will be awake but it is quite normal to feel tired / sleepy.

**Will I be in pain after the operation?**

It is normal to have some pain after this type of operation. The Anaesthetist and Nurses will check to make sure that you are comfortable, and you will be given medication to keep you as pain free as possible. This is very important, as you will find it easier to breathe deeply, cough and move around. This will help reduce your risk of developing a chest infection and deep vein thrombosis.

The epidural will stay in place for around three days after your operation to give you pain relief. You will not be able to feel this tube. You may also be connected to a special pump called a patient controlled analgesia pump (PCA) or have small tubes in your tummy giving local anaesthetic around your scar, called wound catheters. After the first three days, you will be given strong, pain relieving tablets.

If you are not comfortable, please tell the nurses looking after you so they can help.
When will I be able to eat and drink?
You will be able to have fluids as soon as you have woken up from the anaesthetic. Once you are able to manage fluids you will be able to eat as soon as you feel able to. Anaesthetic and pain relieving medications can often make you feel sick, so we will offer you anti-sickness tablets / an injection to make you feel better. If you do not feel like having a meal, you can have a supplement drink to give you some nutrition and energy.

How long will I need to stay in bed for?
Moving about as soon as possible after your operation will help to improve your circulation and prevent you from developing a chest infection, pneumonia and deep vein thrombosis. It will also help to stimulate your bowels to start working again.

For the first couple of days after the operation you will be attached to monitors and drips and you will feel tired and weak. A Physiotherapist will teach you how to do deep breathing and leg exercises, and you will be encouraged to move around in your bed. You will be given help to get out of bed, sit in a chair and to walk a short distance as soon as possible after surgery.

How long will I be in hospital for?
Most patients are able to leave hospital 8 days after their operation. How long you are in hospital for will depend upon how quickly you recover from the operation, your general health and whether you develop any complications. Once you are able to eat, drink and move about on your own, and your Consultant is satisfied with your progress and recovery you will be able to leave hospital.
From the Day of your Operation – Day 2 afterwards

- We will encourage and assist you to change position.
- We will encourage and assist you to sit up in bed, or sit in a chair, and gradually increase your activity to marching on the spot and taking short walks as you are able to.
- We will give you medication to prevent you from feeling sick.
- You will have an epidural, wound catheters and/or a PCA (patient controlled analgesia) to control your pain.
- You will have a catheter in your bladder to drain urine.
- You will have a number of drips / lines in your hand, arm and neck to give you fluids and monitor your blood pressure.
- You will have a drain (tube) in your tummy attached to a clear, drainage bag.
- You will be able to eat and drink as soon as you feel like it.
- You can take nutritional supplement drinks if you do not feel like eating a meal.

Day 3

- We will encourage and assist you to sit out of bed and take short walks as you are able to.
- We will encourage and assist you to perform deep breathing exercises.
- We will remove your epidural / wound catheters / PCA and give you strong, pain relieving tablets instead.
- We will remove your urinary catheter so you can pass water into the toilet.
- We will encourage you to eat regularly, and give you nutrition supplement drinks as required. If you are eating and drinking enough, your drip will be removed.
- The Doctor will assess your drain and remove it when he feels it is safe to do so.

Day 4

We hope that you will now be building your health back up in preparation to be discharged home.
Being Discharged from Hospital

We recognise that some patients will feel anxious about going home after an operation. No one is discharged until they are considered to be medically fit. You will be discharged when:

- You are independent with washing and dressing yourself.
- Your pain is well controlled.
- You are eating and drinking.
- You are passing wind (flatus) or have opened your bowels, and
- WHEN YOU FEEL CONFIDENT TO GO HOME.

You will be given contact numbers to discuss any queries and a nurse will contact you on the day after and the week after you are discharged. You will be given one week’s supply of medication to take home with you. Your next clinic appointment will be in 6-8 weeks time.

When can I get back to normal?

It will be some time before you regain the energy you had before the operation. It is important to be aware that it may take many weeks and even some months before you feel completely fit again. Rest as much as possible, gradually increasing your level of activity. It is important that you do some gentle exercise each day when you go home without over doing it. Gentle exercise such as walking and swimming will help you regain your strength.

You may need help with shopping and cleaning from family and friends for the first few weeks you are at home. If you live alone or feel that you may need extra support please mention this to the Nurse at the pre-admission clinic and again to the ward Nurses when you are admitted for your operation.

We advise that you avoid lifting heavy objects and driving for six weeks after your operation.

Before you start driving again you are advised to check with your insurance company that they consider you fit to drive or you may not be covered by your insurance.

If you work we advise you to take 6-12 weeks off, longer if necessary. Your GP will provide you with a sick note to give to your employer until you feel ready to return to work.
**Will I need any further treatment?**

Depending upon your histology results you may be referred to an Oncologist (a Consultant who specialises in cancer treatments). If you have had your surgery after having a previous bowel cancer operation it may be your Colo-Rectal (bowel) Surgeon who decides on any further treatments.

If you are referred to an Oncologist you will be seen around 2 to 3 weeks after you have been discharged home from hospital after your operation.

The details of your appointment with the Oncologist will be sent to you by post. The oncology Doctors are based at The Christie Hospital. However, you may be referred to an Oncologist at your own local hospital.

Your Nurse Specialist will be able to tell you the name of the Oncologist you are to be referred to.

When you see the Oncologist they will discuss with you in more detail any further treatment they advise, and where this will take place.

**Are there any long term effects from the operation?**

As with all operations you will need time to recover. However, some things may particularly affect you after a liver resection.

**Fatigue or tiredness.**

This is a common side effect following a liver resection. You may feel very tired during the day for at least the first 6-8 weeks. You may need to sleep during the day and it is important that you get plenty of rest. Gradually your energy levels will increase and your normal daily life will return.

**Wound pain:**

The cut the Surgeon makes is quite large and lies underneath the bottom of your rib cage on the right hand side.

You may find that the wound is quite painful for several weeks after you go home. The pain should be relieved with some simple painkillers.
Drinking alcohol:
After surgery, as the Liver regenerates, you are able to drink alcohol to the recommended levels suggested by the department of health (Men – 20 units/week, women 14 units/week). If there are any other concerns, then your Doctors will advise you at the time.

How often will I be seen at hospital after my operation?
You will be sent an appointment in the post to attend the out patient clinic 6-8 weeks after you leave hospital. You will be seen by a member of the team to find out how you are recovering from the operation. You will also be able to discuss any concerns you may have about your recovery.
You will then have regular 6-12 monthly CT scans for the next two years to monitor you. Following your scans, you will be seen in clinic by a member of the team to discuss the results and your well-being.
If you have had the surgery for liver metastases, you may only be seen by a member of the team here once or twice. The rest of your follow up care will be with the Consultant who performed your bowel surgery.
You will also have the details of how to contact the Specialist Nurse. Should you have any problems, concerns, or questions about your recovery and/or health when you go home, or in between clinic appointments, you can contact them for further advice.
As your key worker, the Specialist Nurse can also contact other members of the team involved in your care.

Useful contact numbers
Clinical Nurse Specialist: 0161 276 4263 (Answer Machine)
07827 895 413 (Mobile)
Enhanced Recovery Nurse: 0161 276 3649 / 07500 020 456
Ward: ................................................
Consultant Secretary: ................................................
Oncologist Secretary: ................................................
Source of information and support

Macmillan Cancer Information and Support Centre
Provides information about cancer and support for people affected by cancer.

**Address:**
Drop in Centre  
Main Out-patients  
Manchester Royal Infirmary

**Opening times:**
10.00 am – 3.00 pm Monday to Friday

**Telephone:**
0161 276 6868

**Website:**
www.cancercentre.info

**Email:**
cancer.information@cmft.nhs.uk

CancerBackup
Provides information on all aspects of cancer and its treatment, as well as practical and emotional aspects of living with cancer.

**Telephone:**
020 7739 2280

**Website:**
www.cancerbacup.org.uk

Macmillan Cancer Support
Provides information, specialist advice and support, as well as financial grants for people affected by cancer.

**Telephone:**
0808 808 2020

**Website:**
www.macmillan.org.uk

**Email:**
cancerline@macmillan.org.uk

Greater Manchester and Cheshire Cancer Network
Website with information on all aspects of cancer and support available.

**Website:**
www.gmccn.nhs.uk
No Smoking Policy

The NHS has a responsibility for the nation’s health. Protect yourself, patients, visitors and staff by adhering to our no smoking policy. Smoking is not permitted within any of our hospital buildings or grounds.

The Manchester Stop Smoking Service can be contacted on Tel: (0161) 205 5998 (www.stopsmokingmanchester.co.uk).

Translation and Interpretation Service

These translations say "If you require an interpreter, or translation, please ask a member of our staff to arrange it for you." The languages translated, in order, are: Arabic, Urdu, Bengali, Polish, Somali and simplified Chinese.

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