The Leeds Teaching Hospitals NHS Trust

Portal vein embolisation

Information for patients

Leeds Radiology

Your liver surgeon has recommended you undergo Portal Vein Embolisation (PVE) before they operate on your liver. This leaflet will explain what the procedure involves, the outcomes and the possible risks.

Why do you need this treatment?

We have identified cancer in your liver and you have seen a liver surgeon in a clinic who has discussed surgery to remove it. The safest way to do this is to remove the part of the liver containing the cancer. If the portion of liver being removed is too great there is sometimes not enough liver left behind to fulfil the body's needs which can result in liver failure. Your surgeon is concerned about this possibility in you.

To reduce the risk of liver failure after your surgery we undertake a procedure called portal vein embolisation to try to increase the size of the part of the liver that will be left behind, the 'Future Liver Remnant' (FLR).

What is portal vein embolisation?

Portal vein embolisation involves the selective blocking of blood supply to the part of the liver that will be removed. This diverts blood to the part of the liver that will remain after surgery causing it to grow. We usually allow 4-6 weeks for the liver to grow after portal vein embolisation before undertaking the liver surgery.

During the procedure a small tube (called a catheter) is inserted into a blood vessel in the liver, a branch of the portal vein, via a tiny skin puncture just below the ribcage on the right. X-ray pictures are taken to help work out the exact anatomy of the blood vessels (which can sometimes vary). Vessels to the part of the liver to be removed are then blocked one by one by injecting glue, microscopic particles, metal coils or plugs through the catheter.

What are the results?

The volume of the liver that will remain after surgery usually increases by about 40% on average. Most people who undergo portal vein embolisation end up having their liver surgery. Liver failure after surgery occurs in about 5% of patients despite them having had portal vein embolisation.

Are there any risks?

Portal vein embolisation is a safe procedure and overall the risks are small. Major complications occur in about 2-3 in 100 patients. These include bleeding, infection and abscess, bile leak and inadvertent blockage of the main portal vein rather than just of the branches to the part of the liver to be removed.

In about 1% of patients unintentional blockage of the veins to the future liver remnant occurs, which means the FLR will not grow. In a further 5% of patients the FLR does not grow despite a successful procedure. If the FLR does not grow sufficiently it is unlikely you will be able to have the liver surgery.

Because we must wait for the liver to grow, there is a necessary delay before the liver surgery can be performed. Sometimes this delay results in the existing cancer growing or spreading so that surgery is no longer possible. This occurs in about 15% of people.

Overall about 80% of people who have portal vein embolisation end up getting their liver surgery.

What are the alternatives?

The liver surgery can be performed in two stages (a procedure called ALPPS) though this involves two major open operations rather than one. For most people this is not necessary. There are experimental techniques to get the FLR to grow (such as injecting radioactive beads into the liver) but they are not established practice and their safety and effectiveness remain unproven.

We would not advise proceeding directly to surgery in your case without portal vein embolisation. Surgery offers the only chance of cure.

Chemotherapy does not require portal vein embolisation and while it can slow or halt the tumour growth temporarily, it cannot cure you of it.

Do I need to make any special preparations?

Portal vein embolisation is performed as an inpatient. You will usually be in hospital for about three nights.

If you are taking blood thinning medications (such as warfarin), these will need to be stopped before the procedure.

You will be given specific instructions about this. Please contact the vascular radiology department in good time before your appointment if you have not received these instructions. The numbers are at the end of this leaflet.

If you have any allergies or have previously had a reaction to X-ray dye (contrast agent) you must tell the radiology staff before the procedure

Who will I see?

A specially trained team led by an interventional radiologist. Interventional radiologists are doctors with special expertise in using medical imaging techniques to undertake procedures through tiny pinholes in the skin.

The interventional radiologist will discuss the procedure with you and ask you to sign a consent form. This will help you understand the process, gives you an opportunity to ask any questions and allows you more time to consider whether you wish to have the procedure.

What happens during portal vein embolisation?

You will need to change into a hospital gown and we will give you a drip and oxygen to breathe via a mask.

The skin over the ribcage will be cleaned and local anaesthetic will be injected to numb the skin and the deeper tissues. A very fine needle and a fine plastic tube are then passed into the liver. You will be asked to hold your breath for a few seconds while x-rays of the blood vessels are taken.

We will give you powerful painkillers and sedatives into the drip as we start to block the blood vessels. By the end of the procedure you are likely to be very drowsy.

At the end of the procedure we remove the fine plastic tube and glue the skin puncture.

Portal vein embolisation usually takes about two hours though every patient is different and some procedures can take quite a bit longer.

Will it hurt?

At the start of the procedure the local anaesthetic stings for a minute or two. The needle and tube being passed into the liver may be uncomfortable but this will only last a few seconds.

As the blood vessels are blocked, pain over the liver can become quite intense. You will receive strong painkillers and sedatives into the drip during the procedure and for the first night thereafter. This controls the pain though can make you sleepy. Most people find the evening and first night after the procedure difficult due to pain (despite the painkillers) but this has usually settled the morning after the procedure.

Can I have a general anaesthetic?

No, this is not necessary. The pain usually occurs towards the end of the procedure and afterwards and can be controlled with the painkilling medications.

What happens afterwards?

We need to keep you in hospital to make sure your liver is functioning properly and your pain is adequately controlled. Most people go home after a few days.

There are usually a few days of abdominal pain, nausea and mild fever following the procedure. These can almost always be managed at home with medications that will be provided to you. We advise a period of about 10-14 days off work to rest after portal vein embolisation.

We will arrange for you to have a scan about 4-6 week after the procedure to assess the result. If the FLR has grown, we will book your surgery.

Finally

We hope some of your questions will have been answered by this leaflet. An interventional radiologist will discuss the proceedure with you immediately before it and you will have the opportunity to ask questions. Please make sure you are satisfied that you have received enough information about the procedure before you agree to proceed.

If there are any questions you would like to ask before you come for the procedure please get in touch.

Contact details

Radiology theatres: **0113 206 6841**

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What did you think of your care?

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LN001993
Publication date
04/2022
Review date
04/2024