



Pulmonary Arteriovenous Malformation Embolisation

This information sheet explains about the procedure to embolise (close) pulmonary arteriovenous malformations. It describes what the procedure involves, the risks, and what to expect when you come to the Interventional Radiology department for treatment.

Please note that this leaflet is not meant to replace discussion between you and your doctor. You should raise any questions you may have with the doctor who has referred you for, or is performing, the procedure.

What is pulmonary arteriovenous malformation embolisation?

Pulmonary arteriovenous malformation (PAVM) embolisation is a minimally invasive operation performed under X-ray guidance, which aims to block abnormal connections between blood vessels in the lung (PAVMs) using metallic plugs or coils.

Why do I need an embolisation for my PAVM?

These abnormal connections have a risk of causing problems like a stroke and brain abscess formation. The majority of people with PAVMs do not experience any symptoms or feel unwell at the time of diagnosis, but are still at risk of these complications that can be prevented by embolization. Occasionally, PAVMs can bleed and lead to coughing up of blood- this is also successfully treated by embolisation.

How do I prepare for a PAVM embolisation?

Below is general preparation advice, please be advised that the radiology department where your procedure will take place may add extra information to help you prepare for your procedure. This will be discussed with you before your scheduled procedure date. Please ask for clarification if you do not understand the instructions.

Some medicines may increase your risk of bleeding during or after your procedure. Please tell your doctor if you are taking:

- medicines such as aspirin, clopidogrel or ticagrelor
- medicines such as warfarin, dalteparin, enoxaparin, tinzaparin, dabigatran, rivaroxaban or apixaban

Please also tell your doctor and imaging staff

- If you have any allergies or have previously had a reaction to the x-ray dye (contrast agent) - the radiology staff will also check before you have the procedure.
- If you are pregnant or think that you might be pregnant, you must tell your ward nurse, doctor and imaging staff.

Before the procedure you will also be asked not to eat for four to six hours before the procedure, although you may still drink clear fluids. You may also be advised to shave an area of the groin as the procedure is carried out through a vein (blood vessel) in this area.

Who performs the procedure and where?

The procedure is performed by a team led by an Interventional Radiologist within the radiology department. Interventional radiologists are doctors who have expertise in reading X-ray imaging and using them to guide catheters and other equipment to aid diagnosis and treatment. The team is made up of nurses and radiographers to look after you, assist the doctor, and help run the X-ray equipment.

The procedure will take place in the angiography suite, which is usually located within the radiology department. This is an operating theatre with special X-ray equipment installed.



How is PAVM embolisation performed?

You will be admitted to hospital and will be seen by the ward doctor(s) and/or nurses before you come to the Radiology (X-ray) department for your PAVM embolisation. The radiologist will discuss the procedure with you in detail and ask you to sign a consent form. This is to make sure you understand the risks and benefits of having the procedure.

You will be asked to change into a hospital gown. Staff in the Radiology department will check your details and examine you before taking you into the angiography suite. You may already have had a cannula (fine, plastic tube) put into your arm on the ward. Painkillers can be given through this tube if you need them during the procedure. You may be given antibiotics through the cannula before your PAVM embolisation to minimise the risk of infection.

The imaging staff will ask you to lie on your back on the X-ray table before connecting you to a monitor, which will record your blood pressure, pulse and oxygen levels throughout the procedure. Your groin will be cleaned with antiseptic fluid and covered with a sterile drape.

The interventional radiologist will give you an injection of local anaesthetic to numb the area. This may cause some stinging, but it will only last for a short time. When the area is completely numb, the radiologist will pass the catheter into the vein. You may feel some pressure or pushing at the insertion site to begin with, but this should not be painful. If it does become uncomfortable, tell the interventional radiologist, who may be able to give you some more local anaesthetic.

When the catheter is in the correct position, the interventional radiologist will inject the contrast medium. As the dye is injected into your blood vessels, X-rays will be taken to allow for a detailed assessment of the pulmonary arteries and identification of the PAVM(s).

You may experience a warm sensation throughout your body. This is normal and is nothing to worry about. The images will highlight the areas needing to be treated. Metallic coils, or plugs, will be inserted through the catheter and used to block the abnormal blood vessels.

The interventional radiologist will explain what is happening throughout the procedure. Pulmonary embolisation takes approximately one to two hours to complete, but may take longer in some cases. Patients with multiple PAVMs may require several embolisation sessions.

What are the potential risks/complications of PAVM embolization?

PAVM embolisation is a safe procedure, which aims to reduce the complications associated with having these malformations. Risks associated with the procedure are uncommon, but include:

- Bleeding or bruising around or from the insertion site in your groin.
- Infection at the insertion site. This is rare.
- Reaction to the contrast medium which contains iodine.
- As the equipment is taken through the heart, you may experience palpitations. This usually settles quickly although rarely can be more serious.
- Stroke, which occurs in 1 in 200 people; however, the risk of having a stroke without this treatment is more than 30 in 100 people over a lifetime.
- Coughing up of blood during the procedure, which occurs in 1 in 100 patients undergoing embolisation.
- Chest pain may develop several days after the procedure in up to 1 in 10 people and almost always responds to simple pain killers.

The interventional radiologist will discuss the risks relevant to your condition with you before starting the procedure and will be happy to answer any questions you may have about the treatment.



What happens afterwards?

Once embolisation has been completed, the catheter will be removed. The interventional radiologist will then press firmly on your groin for approximately five minutes to prevent bleeding and minimise bruising.

When you are back on the ward, you will stay in bed for a few hours. This will help stop your wound from bleeding. The nursing staff will continue to record your pulse and blood pressure during this time, as well as check the puncture site in your groin regularly.

You may require further imaging in the future to ensure the PAVM is fully treated and that no other abnormalities have become apparent. As you have a PAVM, we will advise you to take antibiotics before having any dental treatment or surgery to prevent infection. It is important that you follow this advice, even after having embolisation of your PAVMs..

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