

Radiology Department

Inferior Vena Cava (IVC) Filter Insertion and Removal

What is an inferior vena cava filter?

A vena cava filter is a small metal device about one to two inches long. There are a number of different types, but most look similar to the metal frame of an umbrella. The shape of the filter allows it to catch or break up any possible clots. Sometimes it is decided to leave the filter in for the rest of a patient's life, although some types can be removed when the doctors feel that the danger to you from a pulmonary embolus is over. Occasionally the doctors are unable to remove the filter but they are designed to be either temporary or permanent and this should not cause a problem.

The **inferior vena cava** is the main vein in the abdomen that takes the blood back to the heart and lungs from the legs and pelvis. Blood clots can sometimes form in the veins in the legs or pelvis, and these clots can occasionally break up. They can then be carried, via the veins and lodge in the blood vessels in the lungs. This is called a pulmonary embolism (PE) and is potentially life threatening. The vena cava filter is designed to prevent the passage of large blood clots to the lungs, and therefore reduce the risk of a large embolism.

Why do I need this procedure?

A vena cava filter is required:

- If you have a blood clot which cannot be treated with blood thinning medication, (anticoagulants)
- If a blood clot forms despite blood thinning treatment
- Occasionally as a temporary measure around the time of a major operation where the risk of a blood clot forming in the leg or pelvis veins is high.

The decision to insert a vena cava filter is usually made between your



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doctor and a specialist X-ray doctor (a radiologist) who inserts them. Your doctor should discuss with you the reasons why you would benefit from a vena cava filter and together you can decide whether to go ahead with the procedure.

Referral and consent

If you are having the Inferior vena cava filter as a planned procedure, then you should have plenty of time to discuss the situation with your consultant and the radiologist who will be performing the procedure.

If you need the filter as an emergency, there may be less time for discussion, but you should still have had sufficient explanation before you sign the consent form. If after discussion with your hospital doctor or radiologist you do not want the procedure carried out, then you can decide against it.

You will be asked to sign a pink consent form confirming that you understand the procedure and are aware of the risks and benefits. This will be done either when you see a doctor in the Out Patient Department or on the ward before you have the procedure done.

At all times the radiologist and referring clinician will be acting in your best interests.

Before the test

If you are not an inpatient, you will be admitted to hospital either on the day of the procedure, or possibly the day before. There is no special requirement to starve. You will be asked to change into a hospital gown and taken down to the X-ray department, usually on your bed.

You should let the doctor or nurse know if you have any allergies, particularly reactions to X-ray dye (contrast medium).

If you take anticoagulants, for example, Warfarin, these may need to be stopped or adjusted. You should tell your doctor about all the medication you are taking.

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Preparation

- You will have had some blood tests to check your blood clotting ability and kidney function.
- There is no need for you to stop eating before the procedure but it is important that you drink plenty, **we advise one pint (500mls) of water or squash above your normal fluid intake.**
 - **Important information for patients on a fluid restricted allowance:** If you are under the care of a renal specialist and or have to follow a fluid restricted diet, you should include this preparation as part of your fluid allowance. Please speak to staff if you need clarification.
- If you have severe kidney problems you will be put on intravenous fluids (a drip) for six hours, starting the hour before the procedure
- If you are taking **Metformin** please inform the ward staff as this **may** have to be stopped for 48 hours after the procedure.
- Some pain killers (Non Steroid Anti-Inflammatory Drugs) **may** have to be stopped on the day of the examination for 24 hours, please discuss this with the nurses on the ward. Paracetamol may be used instead.
- Before coming to the X-ray department a cannula will be inserted into a vein in your arm.
- You will need to wear a hospital gown. The porters will collect you from the ward and take you to the X-ray department on your bed for the procedure.

During your examination

- The procedure will be explained to you again by the radiologist and you will be able to ask any further questions that you may have
- You will be taken into the X-ray room where you will be asked to get onto the X-ray table lying on your back
- The radiologist will inject a local anaesthetic into the skin of your groin or neck (depending on which way they have decided is best to insert the filter) to freeze the area.
- You may still feel some pressure sensation, but if you feel any pain during the procedure inform the radiologist. You will be asked to lie as still as you can.

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- The catheter is then inserted into the vein at the groin (or neck), and using X-rays to help, the radiologist moves the catheter into the correct position. X-ray pictures are taken whilst the dye is injected through the catheter into the vena cava. Sometimes the injection may cause a hot feeling for a short while. It may also make you feel as if you have passed urine.
- These pictures allow accurate positioning of the filter.
- When the filter is in place, the catheter is removed and pressure will be applied to the groin (or neck) for about five minutes to minimise any bruising.

Risks of the procedure

- As with any procedure or operation, complications are possible. We have included the most common risks and complications in this leaflet. The probability of these complications occurring will vary for each patient and the possibility of these complications happening to you will be discussed with you before you sign the consent form.
- You may get a small bruise in the groin where the vein has been punctured, but this should settle over the following weeks. Rarely, this bruise can be large and cause problems because of added infection. In this case, you may need a course of antibiotics.
- Occasionally, the artery in the groin (which sits next to the vein) is inadvertently punctured. This is usually recognised by the radiologist who will remove the needle and press firmly for five minutes or so, before continuing with the procedure.
- Very rarely, the vein can be damaged by the catheter, and this may require an operation or a further radiological procedure to fix it.
- If the filter is left in it can sometimes fill with the blood clot it has caught, blocking the vena cava, and this may result in swelling of your legs. This can occur after many years, in up to 1 in 10 to 1 in 5 (10-20%) of patients.
- As with any implanted device, there is also a possibility that the filter will stop working properly or become dislodged with time. Approximately 1 in 20 (5%) patients will have an embolism even with a filter in place
- Allergic reactions can occur with the X-ray contrast, only very rarely requiring any treatment. You will be asked about allergies by the

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radiologist at the time.

Despite these possible complications, the procedure is normally very safe. At all times during and after the procedure the staff will be monitoring your responses to this treatment in order to minimise the effects of any complications.

X-rays are a type of radiation. We are all exposed to natural background radiation every day of our lives; this comes from the sun, food we eat, and the ground. Exposure to X-rays carries a small risk, but your doctor feels that this risk is outweighed by the benefits of having the test. We will take all safeguards to minimise the amount of X-rays you receive.

Safety

The contrast agent contains iodine and is excreted by the kidneys in your urine. Please inform the radiologist or radiographer:

- If you are allergic to iodine, have any other allergies or suffer from asthma.
- If you have reacted previously to the injection used for kidney X-rays or CT scanning.
- If you have known kidney problems.

Patients aged 12 – 55 years- could you be pregnant? The risks of radiation are slightly higher for the unborn child so you will be asked to confirm that you are not pregnant before the examination can proceed.

After your examination

- You will be taken back to the ward and asked to remain lying flat for approximately two hours so your groin does not start to bleed. It is important that you do not try to sit up or get out of bed.
- You should eat and drink normally. **Please ensure you have drunk at least 1 pint (1/2 litre) of water on the ward within the two hours following the procedure.**

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- **Important information for patients with renal impairment:** You will be kept on intravenous fluids for the remainder of the six hours. You should have a further kidney function test before you are discharged home from the ward. You may require special monitoring and referral to a renal specialist if your kidney function has decreased by 10%.
- If you have any problems after the procedure please speak to staff on the ward.

What happens if the Vena Cava Filter needs to be removed?

All of the filters can be left permanently inside the body.

However, in certain circumstances, a **retrievable filter** may be considered which can be removed in the future. These are used as temporary protection against a large embolism.

In order to remove a retrievable filter, local anaesthetic is injected into the skin on one side of the bottom of the neck and a small, special tube is inserted into the vein at that site. The tube is used to grasp the filter from above and remove it. Occasionally, it is not possible to remove a retrievable filter, particularly if there is still some blood clot caught within it.

Other sources of information

For information about the effects of X rays and information about radiology departments visit the NHS website: <https://www.nhs.uk/conditions/x-ray/>

Please note that the views expressed in this website do not necessarily reflect the views of UHCW NHS Trust.

Patient Information

Useful Contacts

PALS (Patient Advice and Liaison Service) Freephone 0800 028 4203

Email: feedback@uhcw.nhs.uk

Benefit Enquiry Line: 0800 882200

Stop Smoking UHCW: 024 7696 4760 Email:
stopsmoking.services@uhcw.nhs.uk

Stop Smoking Coventry: Call us free on: 0300 200 0011

Text QUIT to 07768 867897 Email: healthylifestyles@covwarkpt.nhs.uk

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