Venous stenting

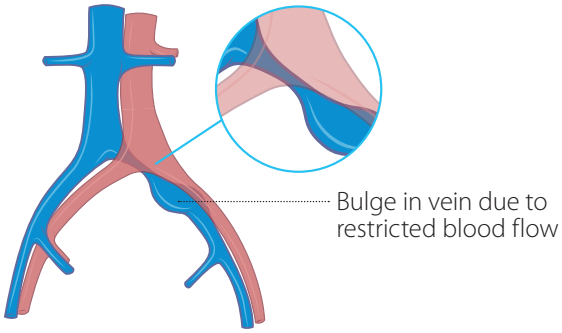
Our bodies have vessels called arteries which bring blood pumped from the heart to the rest of the body. The tubes that bring the blood back to the heart are called veins. Veins can become narrowed or blocked for several reasons: a blood clot inside the vein, scarring in the wall of the vein, or something pressing on the vein. This compression is usually caused by a mass such as cancer or, less often, a neighbouring artery. Narrowing or blockage can also occur if a person has a long-term device in their chest veins such as a portacath or dialysis catheter.

When a vein becomes blocked, the blood from that part of the body can't drain away properly. This causes swelling, pressure, or even thrombosis, for example, in the legs, arms, face, or neck, depending on which vein is blocked. If the main vein in the chest (the superior vena cava) is blocked, in addition to a puffy face, you might develop voice hoarseness and shortness of breath. You might also see bulging veins on your chest and neck.

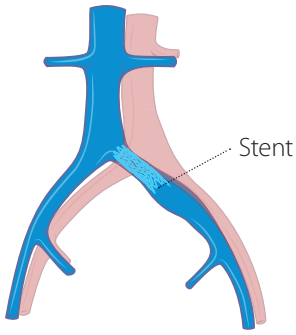
Your doctor or specialist may recommend a procedure called 'venous stenting'. This involves putting a wire mesh tube (stent) into the vein which opens it up, stops it from collapsing and allows the blood to flow normally from that part of the body back to the heart.

The stent is collapsed around a long thin tube called a catheter when it is being put into the vein, but is opened up when it is in the right position. The stent is put into the vein through a very small cut in the skin (using ultrasound to see the vein under the skin) and is guided to the right position using X-rays. The interventional radiologist performing the procedure will make sure that you don't get any more X-rays than are necessary.

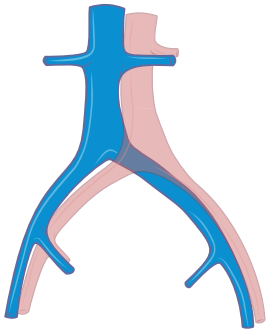
What are the benefits of venous stenting?
The benefits can be seen rapidly, usually immediately or within the first 12 to 24 hours after the procedure. If the main vein in the chest (superior vena cava) is being treated, the puffiness of the face, hoarseness of voice, difficult breathing, and arm swelling will get better quickly. If the main vein in the abdomen (inferior vena cava) or the big veins in the pelvis (iliac veins) are being treated, the leg swelling, heaviness, and difficulty walking caused by the swelling will get better quickly.



A. Venous narrowing due to compression by artery



B. Stent inserted to widen the narrowed vein and enable blood flow



C. Widened vein and normal blood flow post stenting

** These images show a stent placed in a common iliac vein stenosis. Stents can be placed in other parts of the body, depending on your condition and symptoms.*

How do I prepare for the procedure?
Some hospitals will ask you to take a shower just before the procedure. You may be asked to shave your groin. You will need to let the nurses and doctors know about any allergies you have, especially if you are allergic to contrast – the liquid that your interventional radiologist injects into your veins to see them on the screen. You will be put on blood thinners (anticoagulants) before the procedure and will usually continue taking them until after the procedure. It is a good idea to speak to the treating doctor or someone from their team if you do not fully understand the instructions.

The procedure
You will be placed on your back, or sometimes on your belly, on an X-ray table. The procedure will be performed either under local anaesthesia with painkillers or under sedation. If the vein has been blocked for a long time, you may receive general anaesthetic. A tiny incision (around 5 mm) will be made either in the arm, the groin, or the calf, depending on which vein is being treated. A small tube called a sheath will be placed into the vein under the incision. Everything else that is used for the procedure – the wires, stent and balloon, will be passed through this tube, which makes the procedure more comfortable for you.

If there are blood clots, they will be removed by sucking them out through this tube before the stent is placed. If clots need to be removed, this adds time to the procedure, which might then last up to two hours.
To put the stent in, the interventional radiologist must first pass a metallic wire across the blockage. The doctor then slides the collapsed stent over the wire and guides it to the blockage. When the stent is in the right place, it is opened. This opening is often helped by sliding a small balloon into place and inflating it inside the stent to open the stent completely and stick it to walls of the vein. Once this has been done, the doctor will take more pictures to show that the stented vein is now open and that the blood is now flowing freely. Any tubes going through your skin will then be removed so that the only thing left behind is the stent.

What are the risks?
There is a possibility that your doctor will not be able to get the wire through the blockage and might need to try again later. There is a possibility of causing a tear of the vein which could lead to internal bleeding. If this happens, the bleeding can be controlled by sliding a balloon into position and inflating it for a few minutes. You may need a blood transfusion. After the procedure, the stent may become blocked and need to be unblocked. Any of these events may increase the time you spend in hospital.

What should I expect after the procedure? What is the follow-up plan?
Your symptoms should get better quickly. You will be asked to keep the treated leg or arm straight for an hour or so after the procedure and you will be advised not to lift anything heavy for 48 hours. You will be put on blood thinners for six months or more. Your doctor will check that the stent is fully open and working well by doing a CT scan sometime after the procedure. It is important to note that if the symptoms come back, there is a possibility that your stent is blocked and you should contact your doctor immediatly.

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