



Leaflet: Deep vein thrombosis (DVT)

Deep Vein Thrombosis (DVT)

A deep vein thrombosis (DVT) is a blood clot that forms in a deep leg vein. The deep veins go through the muscles and are not the ones just below the skin. A calf vein is the common site for a DVT. A vein in a thigh can also be affected.

Why do blood clots form in leg veins?

Blood normally flows quickly through veins and does not usually clot. Sometimes a DVT occurs for no apparent reason. However, the following make the chance of a DVT more likely.

- ◆ *Immobility* causes blood flow in the veins to be slow or sluggish. Slow flowing blood is more likely to clot than normal flowing blood. The commonest cause of a DVT is immobility due to surgery. During and after a long operation the leg is still for a long time and the blood flow in the leg veins becomes sluggish. However, any illness or injury that causes immobility increases the risk of a DVT. It is also thought that there is a small risk of having a DVT during a long plane journey due to sitting cramped for long periods.
- ◆ *Faulty blood clotting* is an uncommon cause. One example is an inherited condition that causes the blood to clot more easily (factor V leiden).
- ◆ *The contraceptive pill* can cause the blood to clot slightly more easily in some women. Women taking 'the pill' have a very small increased risk of having a DVT.
- ◆ *Damage to the inside lining of the vein* may increase the chance of a blood clot forming. For example, a DVT may damage the lining of the vein. People who have a DVT have a higher than average chance of having a further one sometime in the future.
- ◆ *Older people* are more likely to have a DVT, particularly those with poor mobility.
- ◆ *Pregnancy* increases the risk of a DVT. About 1 in 1000 pregnant women have a DVT.
- ◆ *Obesity* also increases the risk of having a DVT.

What are the symptoms of a deep vein thrombosis?

The typical symptoms are pain and swelling of the calf. Blood that would normally go through the blocked vein is diverted through outer veins. The calf may also become warm, red and tender. Sometimes there are no symptoms and a DVT is only diagnosed if a complication occurs (see below). Sometimes it is difficult for a doctor to be sure of the diagnosis as there are other causes of painful and swollen calves such as muscle strains or infections. An admission to hospital is usual if a DVT is suspected. Special tests may be needed to confirm the diagnosis.

Is a deep vein thrombosis serious?

A DVT sometimes causes the serious complication of a large embolus. An embolus is a blood clot that travels in the bloodstream until it becomes stuck. An embolus that breaks off from a clot attached to a leg vein will be carried up the larger leg veins to the heart, through the large heart chambers and become stuck in a lung (a 'pulmonary embolus'). How this may occur is described below. A large pulmonary embolus can be fatal. A medium sized embolus can cause breathing problems. A small embolus may go unnoticed and not cause symptoms.

- ◆ *Deep vein thrombosis in the calf* - without treatment, about 1 in 4 blood clots in the calf become longer and wider as the blood on top of the clot may also clot. If this occurs, the initial small and thin clot from a calf vein extends upwards in the bigger veins of the thigh over several days. If the clot does extend and enlarge and then breaks off, it can cause a large pulmonary embolus as described above. Treatment aims to stop the small blood clot in a calf vein from extending upwards. (If the blood clot does not extend up from the calf, any embolus that breaks off will be small and unlikely to do serious harm).
- ◆ *Deep vein thrombosis in the knee or thigh area* - these may occur on their own or be an extension from a clot that originally started in the calf. Without treatment, about 1 in 10 of these blood clots breaks off to form a serious

or fatal pulmonary embolus described above.

Ongoing calf symptoms after a deep vein thrombosis

Without treatment, up to 6 in 10 people who have a DVT develop ongoing (chronic) symptoms in the calf. This is because the affected vein and the valves of the vein are damaged. Blood flow may be diverted to veins nearer the skin surface. The increased flow and pressure of the diverted blood can affect the tissues of the calf. Varying degrees of ongoing calf pain, discomfort, swelling and even skin ulceration are possible problems after a DVT.

What is the treatment of a deep vein thrombosis?

The aims of treatment are as follows.

- ◆ To prevent the clot enlarging in order to prevent a large embolus breaking off to the lungs.
- ◆ To minimise any damage to the vein and surrounding tissues which will reduce the chance of ongoing calf symptoms.
- ◆ To prevent the recurrence of a DVT.

Anticoagulation - preventing clots enlarging

Anticoagulation is often called 'thinning the blood'. The blood is not actually made thinner. Treatment alters some chemicals in the blood to stop it clotting so well. Anticoagulation prevents clots enlarging. A serious embolus is rare if treatment is started early after a DVT. Warfarin tablets are the usual treatment. However, it takes a few days for warfarin to become fully effective. (This is why heparin injections are used in the first few days for immediate effect). The aim is to get the dose of warfarin just right so the blood is thinner than normal but not too much which may cause bleeding problems. Regular blood tests are needed whilst taking warfarin. They may be quite often at first but then less frequent once the correct dose of warfarin is found. (Regular heparin injections rather than warfarin tablets may be used in pregnant women).

Compression stockings and raising the leg - to prevent ongoing calf symptoms

A compression stocking may be advised. Without this, there is about a 6 in 10 chance of developing ongoing calf symptoms after a DVT. This is reduced to about a 3 in 10 chance if a stocking is worn each day for at least 2 years (symptoms may develop even several months after a DVT). The slight pressure from the stocking helps to prevent fluid seeping into the calf tissues from the veins which carry any extra diverted blood. The stocking also reduces, and may prevent, calf swelling. This in turn reduces discomfort and the risk of ulcers forming on the skin. Raising the leg as much as possible may also be advised. This too reduces the pressure in the calf veins and prevents blood and fluid from 'pooling' in the calves. A daily walk will also encourage a healthy blood flow in the calf.

If a compression stocking and elevation is advised, one routine is as follows. Wear the stocking after getting up from bed for the whole day until either going to bed or until resting in the evening with the leg raised. (Raised means the foot is higher than the hip so gravity helps with blood flow returning from the calf). The stocking can be taken off when sleeping but the foot of the bed should ideally be raised a few inches - again so the foot and calf are slightly higher than the hip.

Preventing a recurrence of a deep vein thrombosis

The reason many people have a DVT is because of a 'one off' event such as a major operation. For these people the warfarin is usually stopped after a few months. Some people have an ongoing risk of a further DVT. For example, people with a blood clotting problem. Warfarin may be continued in such people. Other things that may help to prevent a first or recurrent DVT include the following.

- ◆ If possible, avoid long periods of immobility, such as sitting in a chair for many hours without moving around.
- ◆ Major surgical operations are known to be a risk for a DVT - particularly operations to the hip and leg. Heparin injections and early mobilisation after operations may be advised to prevent a first or recurrent DVT.
- ◆ Until the risk of long plane trips is clarified, it seems sensible to have little walks up and down the aisle every now

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