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The website for the answer to all your Orthopaedic Questions

- **Orthopaedic Opinion Online** is a website designed to provide information to patients who have orthopaedic and musculoskeletal problems and are undergoing treatment.
- **Patient information** is provided in the form of downloadable information sheets.
- **Orthopaedic advice** and second opinions can be provided by our expert internationally renowned Consultant Orthopaedic Surgeons.
- **Online review** of patients' X rays or MRI scans can also be provided and any proposed treatment plans reviewed.
- **Book a clinical consultation** with one of our internationally renowned consultant orthopaedic surgeons in Bristol or London.
- **Orthopaedic reports** can be provided for Injury or Accident Claims and Medical Negligence claims.

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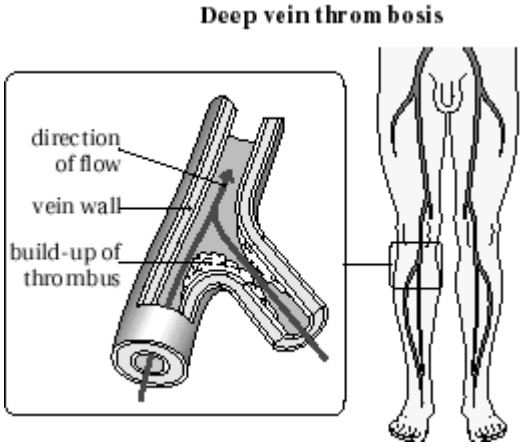
Deep vein thrombosis

Introduction

A deep vein thrombosis (DVT) is a blood clot or thrombus which develops in any vein. It commonly occurs in the leg or pelvis. Whilst it can develop spontaneously it more often follows an accident, fracture or operation, illness or a period of immobility. The condition is also more common in women and women taking hormones such as the contraceptive pill and Hormone Replacement Therapy. About one in 2,000 people in the UK develops a DVT each year. Although the thrombosis often causes nothing but some local pin and distal swelling serious complications can occur including chronic swelling, leg ulceration, varicose veins or if a fragment of the thrombus breaks off a Pulmonary embolism can occur causing pain in the chest and difficulties with breathing. This can be a serious complication.

Anatomy

The are two types of veins in the legs the superficial vein usually seen in varicose veins and the deep system within the muscles. Whilst the superficial veins can be affected this is usually termed thrombophlebitis. Involvement of the deep system is more significant and termed Deep Venous Thrombosis. Following trauma or surgery DVT's can also occur in the deep veins of the arm or pelvis.



Causes of DVT

Certain factors make a DVT more likely to occur. They are more common in people aged over 40 and in people who are obese, or who have already had a DVT. Smoking, immobility and hormone use also increases the risk. There are several rare inherited conditions make the blood more likely to clot than usual, increasing the risk. Other factors include:

- prolonged bed rest or immobility.
- Smoking.
- major injuries, fractures or paralysis.
- surgery, especially if it involves joint replacement or the pelvis.
- cancer and its treatments, which can cause the blood to clot more easily.
- long-distance travel. This includes air travel.
- pregnancy and childbirth.
- taking the contraceptive pill that contains oestrogen.
- hormone replacement therapy (HRT).
- other circulation or heart problems

Symptoms of a DVT

The symptoms associated with a DVT in the calf are a swelling of the ankle and foot, pain and tenderness in the calf muscle, pain on walking and difficulty bending the ankle. Sometimes there are very few symptoms and the condition is not always readily recognised. The signs on examination are usually of swelling in the foot, congestion and dilation of the foot veins, tenderness in the calf, pain on squeezing the calf and on stretching the calf muscle.

If a DVT is suspected, the doctor will also usually undertake some tests. These might include a ultrasound scan of the venous blood flow in the legs. Alternately a venogram can be undertaken where a radio-opaque dye is injected into a foot vein and x-rays taken to demonstrate its progress through the deep veins of the leg.

Symptoms of pulmonary embolism

A pulmonary embolism is where a fragment of thrombus becomes detached from the leg, travels up to the heart via the venous system and into the heart. From there it can pass through the heart into the vasculature of the lungs. There is can cause a sudden blockage of the blood flow. This usually results in difficulty breathing, a rapid fall in blood pressure and chest pain, a cough and a cough producing flecks of blood. Anyone with these symptoms should seek emergency medical treatment.

Treatment

The treatment of a localised calf DVT is aimed at prevention of enlargement and propogation, allowing the bodies own mechanisms to dissolve the clot and clear the veins and to prevent the long term consequences. By the prevention of propogation by inhibiting the natural clotting of the blood this prevents propogation of the clot but also is effective treatment should any small fragments break off and cause small pulmonary emboli.

The most common treatment involves anticoagulation or thinning of the blood. This reduces the blood's tendency to clot. This is usually undertaken by drug medication usually taken for three to six months. Regular blood tests are needed to check the resultant effect on the clotting of the blood. Whilst this can be undertaken with oral medicines these usually take several days to accumulate in the body to the desired level. Consequently an initial period of other drugs is needed before switching to the oral drugs. The anticoagulants used are heparin or other newer types of heparin. These dugs are usually given through a vein as a drip or injected just under the skin several times each day.

Compression stockings and elevating the affected leg or putting your feet up helps. This has the effect of compressing the veins and reducing the pressure in the veins of the calves.

Less commonly, clot dissolving drugs called thrombolytics are used to dissolve a DVT. They carry a high risk of bleeding, so are only used in severe cases or in sever cases of pulmonary embolism.

Prevention

Compression stockings have the effect of compressing the veins and preventing stasis and pooling of blood in the veins. This has an effect in prevention of DVT following injury or surgery but is also used in treatment of calf DVT's. In treatment it also may help to relieve pain and swelling, and to prevent some of the subsequent problems. Long term problems following DVT include skin discolouration, chronic swelling, venous ulceration and varicose veins. These long term complications are known as post-thrombotic syndrome.

Surgery and some medical treatments are associated with a peri-operative risk of having a DVT. So, hospitals often do a pre-operative risk assessment for DVT, which takes into account your personal risk factors such as weight, smoking habits and use of hormones, and the type of surgery proposed. Various measures can then be used to keep the risk as low as possible. These include compression stockings, an intermittent compression pump and anticoagulant medicines. The compression pump is a mechanical device that automatically squeezes the feet and lower legs. This helps the circulation of blood from the legs in the first few days after surgery. These measures are used particularly following knee or hip joint replacement.

Anyone who feels they are at high risk of developing a DVT should seek medical advice. There are measures anybody can take to help prevent a DVT. Simple measures include exercising the legs regularly such as a 30-minute walk every day. Avoid obesity and immobility. Women over the age of 35 taking the contraceptive pill or those on hormone replacement therapy should consider their options and the risks with their prescribing doctor.

Preventive measures for travellers

Although the added risk of developing a DVT caused by travelling appears to be low, it can be reduced even further by exercising the legs at least once every hour during long-distance travel. This means taking regular breaks if driving, or walking up and down the aisle of a coach, train or plane.

The muscles of the lower legs (which act as a pump for the blood in the veins) can be exercised while sitting by pulling the toes towards the knees then relaxing, or by pressing the balls of the feet down while raising the heel. This should be done at regular intervals say every 15 minutes throughout the flight. Longer walks should be taken at intervals. For people at risk this should be as much as every 30 minutes.

Other travelling measures include keep hydrated by drinking normally. This should include lots of water. Alcohol should be avoided as this causes dehydration and immobility. Compression stockings over the calf help prevent stasis of the blood in the calf muscles. Simple aspirin has an effect in preventing DVT. It is suitable for adults who have previously taken aspirin without any complications. If in doubt, seek advice from a pharmacist or doctor.

Anyone who develops swelling or pain in the leg, or breathing problems after travelling should seek medical advice urgently.

Further information

Department of Health
http://www.doh.gov.uk/blood/dvt/