



# PROBLEMS WITH NERVES IN VASCULAR SURGERY

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⇒ **INADVERTENT DAMAGE** to peripheral nerves may occur during vascular surgery or the management of vascular diseases. Damage to cutaneous nerves may occur following surgery to the arteries or veins of the lower limbs and are sometimes the subject of litigation.

Limb ischaemia may give rise to neurological injury to peripheral nerves leading to troublesome chronic pain. Not all of the damage to nerves is avoidable but competently conducted surgery will prevent much of the problem.

## Damage to nerves during ischaemia

The main region where nerve damage may occur during ischaemia is the lower limb, although I have advised in several cases of upper limb ischaemia. Most commonly, nerve damage occurs during an episode of acute limb ischaemia arising from thrombosis of an atherosclerotic artery or from peripheral embolisation of thrombus.

The most common symptom at the start of an episode of acute limb ischaemia is severe pain arising from damage to the muscles of the leg. This is later followed by a loss of sensation as the nerves suffer from ischaemia and stop working. Muscles and nerves are both highly susceptible to permanent damage from limb ischaemia unless the blood flow can be restored within a few hours.

In cases where there has been a delay in restoring blood flow to the legs, muscle necrosis (death) may occur leading to loss of function. Nerves may not regain their function after restoration of blood flow. Both of these problems lead to loss of function and disability.

In general, nerve function may improve as the peripheral nerves regenerate from above the level of ischaemia. The rate of growth is about 1-2 mm per day so recovery may take months. During this phase a further problem may arise, that of neuropathic pain. Nerves damaged by ischaemia may regain some function but this is perceived by the patient as chronic unremitting pain. This is a very troublesome symptom and is usually managed by an expert in pain medicine. Once established, neuropathic pain is long lasting and can lead to considerable loss of quality of life.

The spinal cord and the nerves in the spinal canal receive a blood supply from the aorta via segmental arteries in the thoracic and lumbar regions. Surgery to treat atheroma and aneurysms of the aorta, including

endovascular surgery, may lead to ischaemia of the spinal cord and the nerves which emerge from it. It may lead to paraplegia or reduced neurological function in the legs.

Although it is a recognised adverse event of this type of surgery, very limited methods are available to avoid the problem and no specific treatment is available. As a result, the claimant's case in such litigation is likely to be very weak.

## Peripheral nerve injury

Injury to the peripheral nerves may arise from both arterial and venous surgery. The most commonly damaged sensory nerve is the saphenous nerve which accompanies the saphenous vein along the medial aspect of the leg from the knee to the ankle. This section of vein is often used in arterial surgery as a bypass graft. However, the most common type of surgery to this vein is varicose vein surgery.

During arterial surgery the vein is carefully dissected, however deep dissection to identify the artery may lead to stretching of the nerve or necessitate deliberate division of the nerve. Saphenous nerve injury during arterial surgery is recognised as an adverse event arising even from competent surgery.

Varicose vein surgery is the most common source of litigation in connection with nerve injuries. Older publications have indicated a risk of nerve damage of about 5-10% following surgery. However, more recent studies indicate that varicose vein 'stripping' operations may lead to nerve injury in up to one third of cases.

NICE has recommended that varicose vein surgery should be regarded as a third-line treatment with more modern endovenous treatments used instead. As a result, the most commonly used method of treatment in the UK is thermal ablation in which the saphenous vein is heated with a catheter passed along the inside of the vein. This uses laser energy or electrical energy to heat the vein.

There is a risk of thermal damage to structures adjacent to the vein, so this treatment is not normally used below the knee where the saphenous nerve lies adjacent to the great saphenous vein. Similarly, the sural nerve lies adjacent to the distal part of the small saphenous vein on the back of the calf where thermal ablation should be avoided.

I have advised in cases where the neuropathic pain arose from thermal damage to the saphenous nerve below the knee following thermal ablation in this region. I consider that this may comprise substandard care.

Where veins are in the vicinity of nerves, there are a number of methods of treatment such as foam sclerotherapy, mechanochemical ablation and glue ablation which will not risk damage to the adjacent nerve.

A further treatment which may give rise to nerve injury is phlebectomy (pictured). This method is used to remove the varicose veins themselves. A small incision is made over the varicose vein and a hook or artery forceps used to pull out the vein. Cutaneous nerves may be damaged inadvertently by this technique, having been mistaken for a vein by the surgeon. I have advised in cases where such treatment has led to severe neuropathic pain as well as a loss of sensation in the lower limb.

Alternative methods of treatment of varices, including foam sclerotherapy, are available and patients should receive an adequate explanation of all available treatments and associated risks during the consent process.

Motor nerve injury is much less common but can follow phlebectomy for varicose veins at the back of the knee or the upper part of the lateral aspect of the calf where the common peroneal nerve lies. Surgery leading to damage to this nerve is likely to be considered substandard. I have advised in a number of cases in which the claimant succeeded in civil litigation following this type of injury.

## Conclusion

Severe and troublesome persistent symptoms may arise following various types of vascular surgery. In many instances, such as severe limb ischaemia, expedient treatment will avoid protracted neuropathic pain. Damage to peripheral nerves during varicose vein surgery can largely be avoided by the surgeon adopting modern methods of treatment. However, some of the older methods such as phlebectomy are still in common use and may give rise to long-lasting troublesome symptoms due to peripheral nerve injury. □

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**The British Vein Institute**

**20 years**  
Defendant instructions  
Claimant instructions  
Single joint expert  
Court experience

**Areas of experience:**

- Surgery of veins and arteries
- Sclerotherapy & laser ablation of varicose veins
- Varicose veins
- Deep vein thrombosis
- Pulmonary embolism
- Leg ulcer
- Lymphoedema
- Peripheral ischaemia
- Injury to blood vessels
- Medical negligence and personal injury

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