

Lymphoedema

– swelling of the limbs

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➡ THE CIRCULATORY SYSTEM

comprises arteries which carry blood from the heart to the tissues of the body, and the veins which bring the blood back to the heart. However, a third system of vessels, the lymphatics, is also crucial in maintaining the wellbeing of the body, especially the limbs.

As far as the circulation of the blood is concerned, these lymphatics have an important function in collecting water which escapes from the capillaries as the blood passes through the tissues. This reaches the spaces between the cells (interstitial space) and is collected via the lymphatic capillary vessels.

The actual volume of the fluid, known as lymph, which is collected this way is a small fraction of the total blood flow to the body. The heart pumps about 5L of blood per minute through the arteries, but only about 2L of fluid is eventually returned to the veins by the lymphatic system. Much of this lymphatic flow comes from the intestines.

From the legs, the lymph passes upward in the lymphatic trunks and then via the back of the abdomen and then the chest. The lymph is eventually returned to the venous system at a point when the thoracic duct (lymph) joins the left subclavian vein from the arm.

A further important function of the lymphatic system is participation in the immune defences of the body since it carries the blood cells which detect foreign material and mount an immune response.

What can go wrong with the lymphatics?

In clinical medicine the most common malfunction of the lymphatic system is lymphoedema, swelling of the peripheries, which affects part or all of a limb. The lymphatic vessels are very fine and may be damaged by infection, for example. This can happen spontaneously when bacteria enter the skin via a small abrasion and cause a severe infection, known as cellulitis. The immune system collects and destroys the bacteria which enter the lymphatic vessels. The lymphatic system may be badly damaged during such an encounter with the lymph vessels, becoming permanently destroyed.



A limb affected by lymphoedema. The foot is the most severely affected region

Trauma is another mechanism of injury. Although I have seen lymphoedema arising from accidental trauma suffered in a road traffic collision, surgical injury is more common in my experience.

In some apparently minor operations, the lymphatic vessels lie close by. In varicose veins surgery, the superficial lymphatic trunks lie close to the saphenous veins and may be irreversibly damaged during old-fashioned varicose veins surgery (stripping operations).

Cancer surgery in which the lymph nodes are removed as a deliberate strategy to cure cancer may lead to impairment of lymphatic function in the limb drained by the lymphatic system. Radiotherapy given as part of cancer treatment may also cause damage to the lymphatic vessels.

The consequence of damage to the major lymphatic vessels is lymphoedema. The water and associated protein which leak from the capillaries are no longer efficiently drained from the limb. The limb becomes 'water-logged' or affected by oedema. Swelling is the main clinical feature of this condition, and most severely affects the distal part of the limb. In the lower limb the foot becomes swollen and this may also affect the ankle and calf. In severe cases, the whole limb becomes swollen.

Is lymphoedema after surgery the result of negligence?

Patients undergoing varicose veins surgery do not usually expect to encounter a permanently swollen limb following their treatment. These days, minimally invasive treatments are available which avoid

surgical dissection in the region of the main lymphatic vessels and are to be preferred to varicose vein 'stripping' operations, avoiding the likelihood of lymphatic damage. Were lymphoedema to occur following a varicose veins 'stripping' operation, the claimant could argue that a minimally invasive treatment should have been used instead and would have avoided the occurrence of lymphoedema. I have advised claimants in a number of such cases.

Cancer surgery may necessitate removal of lymph nodes, such as in the management of breast cancer where removal of axillary lymph

nodes is considered to be needed. In these cases, lymphoedema affecting the upper limb is an expected adverse event arising from treatment and patients should receive detailed advice about this risk and the post-treatment management of the arm to minimise the risk of lymphoedema. I have seen cases of lymphoedema affecting the lower limb when pelvic lymph nodes have been removed during radical surgery for cancer of the uterus.

Management of lymphoedema

The occurrence of lymphoedema leads to the need for life-long management of limb swelling. In many cases, an elastic compression stocking is sufficient to moderate the swelling in the lower limb. Compression sleeves and gloves are also available to reduce swelling in the arm following breast cancer surgery. In more severe cases, lymphoedema bandaging provided by a lymphoedema specialist is required to control swelling. Lymphatic massage is another useful modality of treatment.

In the longer term lymphoedema, once established, tends to persist for the rest of the patient's life. Lymph flow may find alternative routes to return to the venous system, but these are never as efficient as before lymphoedema occurred. Surgical treatments to join lymphatic vessels to the local veins have also been described and have limited efficacy in more severe cases.

Conclusions

Lymphoedema may arise following severe bacterial infection or after surgical intervention in some cases. Where surgical treatment was inappropriate and alternative methods of treatment are available, the claimant may argue that life-long lymphoedema would have been avoided with more appropriate treatment.

In the management of cancer, lymphoedema affecting the upper limb after breast cancer surgery is a known adverse event and patients should receive appropriate counselling concerning this possibility during the consent process.

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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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