

Diabetic foot: what are the issues and how should it be treated?

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⇒ **DIABETES AFFECTS** about 3.9 million people in the UK at present and leads to about 9,000 lower limb amputation per year, according to Diabetes UK. Diabetes occurs in two forms: Type 1, in which the pancreas fails to make sufficient insulin, usually presents in early adult life and requires treatment with insulin injections; Type 2 usually arises in later life and is associated with obesity.

In Type 2 the pancreas continues to produce insulin, but the body does not respond correctly to the insulin – leading to high glucose levels in the blood. Treatment usually starts with a combination of diet and oral medication; some patients also require treatment with insulin. That type of diabetes is the most frequent, accounting for 90% of patients with diabetes. The number of people with Type 2 diabetes continues to grow.

Complications of diabetes

Diabetes gives rise to a number of complications, whether arising from Type 1 or Type 2 diabetes. They include damage to the nerves, leading to loss of sensation or unpleasant feelings – especially in the legs. In turn, loss of sensation in the feet can lead to diabetic foot ulcers, which may lead to uncontrolled infection in the feet and the need for an amputation.

Diabetes may also lead to damage to the retina in the eye, resulting in loss of vision. The kidneys may also be damaged, leading to renal failure with the need for dialysis and renal transplantation. Finally, diabetes increases the risk of arterial disease, which may affect any or all of the blood vessels in the body. Vascular surgeons often see patients with lower limb ischaemia arising from diabetes. The risk of heart attack and stroke is also increased.

Overall, diabetic patients experience a loss of life expectancy of about a decade, principally attributable to the increased risk of cardiovascular disease.

Prevention of diabetic foot problems

All complications arising from diabetes are minimised when good diabetic control is achieved. Patients are encouraged to measure their blood glucose levels regularly and to attend diabetic review clinics, where all aspects of their care can be reviewed. A measure of the quality of diabetic control is a blood test to measure the extent to which glucose had become bound to the haemoglobin in the blood. The measurement is known as HbA1c. Raised levels of that parameter



A diabetic foot after surgical resection of all necrotic tissue, leaving a large defect in the foot

have been shown to be associated with increased cardiovascular risk and poor outcomes in patients with diabetes. Regular clinic reviews allow advice to be offered concerning better diabetic control, adherence to the dietary regime with weight loss and exercise.

Diabetic foot problems

In general, a combination of problems gives rise to 'diabetic foot'. The main issue is damage to the nerves of the leg, which reduces sensation in the foot. Reduced sensation in the foot can give rise to inadvertent damage to the foot, for example when wearing new shoes or walking without shoes.

Damage to the nerves also affects the nerves which regulate the circulation of the limbs as part of the autonomic nervous system. That system ensures that sufficient blood flow reaches all parts of the skin and tissues, but we are not aware of its function – except when our fingers and toes go cold when we go outside during frosty weather. Failure of that system leads to the skin becoming much more susceptible to damage and to poor healing.

Loss of a region of skin (an ulcer) following a minor injury can

allow the entry of bacteria. Diabetic patients are at increased risk of infection, so it can swiftly lead to extensive and destructive infection advancing within the foot. For that reason, national guidelines provided by NICE advise urgent assessment of any new diabetic foot ulcer by a diabetic foot multidisciplinary team.

Admission to hospital and treatment with intravenous antibiotics is required when evidence of significant foot infection is present. Delayed treatment of a diabetic foot infection may lead to the need for extensive and destructive removal of dead tissue from the foot or even a below-knee amputation.

Lower limb arterial disease is common in diabetic patients, as I have noted above. Any patient – especially diabetic patients – who present with a foot or leg ulcer should have an assessment of the circulation of the leg. The simplest evaluation is to palpate the ankle pulses, but a Doppler ultrasound probe is more reliable at assessing the pulses.

Measurement of the ankle blood pressure using Doppler ultrasound will help in evaluating the circulation where impairment is suspected. In patients with blocked blood vessels consideration of angioplasty to improve blood flow to the leg is necessary to facilitate healing of a foot wound. Again, that treatment needs to be provided expediently before

extensive damage to the foot has arisen. As with much of vascular surgery, expedient treatment of limb ischaemia-associated diabetic foot problems is essential if major amputations are to be avoided.

Litigation arising from diabetic foot

As I have noted above, about 9,000 patients per year undergo amputations as a result of diabetic foot problems. Some patients consider that the amputation should have been avoided; however, not all patients are diligent with their diabetic control or adherence to the diabetic regime, including the correct diet. Poor diabetic control greatly increases the risk of amputation and, since many of the cases are defended on causation, it may be the case that the amputation would have been required in any case as a result of poor patient compliance with treatment.

In some instances, substantial delays in management between the onset of a foot infection and the instigation of appropriate treatment lead to a major amputation. In such cases it may be possible to show that rapid and severe infection progressed in an uncontrolled manner, leading to loss of the limb before appropriate management was instigated. Where more minor amputations have occurred, such as loss of toes, that may have been the outcome even with a good standard of treatment and proving causation is likely to be difficult. Claimants who have concealed their symptoms from their medical advisors or treated themselves without seeking medical advice may also find that proving causation is difficult.

In summation, diabetic foot problems, including infection and ulceration – perhaps leading to a major amputation – are common events. Where it can be shown that the treatment provided did not comply with national guidelines, or that needless delay in referral and treatment occurred, claimants may have a case. However, those with a substantial history of poor control, despite having received medical advice on management of their diabetes, may find that proving causation is a difficult task. □

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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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