

Problems with the use of medical compression stockings to prevent DVT

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⇒ **CURRENT ADVICE** from NICE contained in NICE Guideline 89 concerning the prevention of deep vein thrombosis (DVT) includes the use of medical compression stockings in almost all hospital inpatients in order to minimise the risk of DVT.

However, inappropriate use of anti-embolism stockings may give rise to severe damage to the lower limbs, in some cases leading to the need for amputation. I have advised in a number of cases where substantial damage has arisen to the lower limbs of claimants by this mechanism.



Full-length anti-embolism stockings

As a result of this problem NICE recommends that the use of compression stockings is contraindicated in patients with lower limb arteries disease, those undergoing vascular surgery in the lower limb and those with peripheral neuropathy, which would include many diabetic patients.

I have advised in cases where compression stockings have been applied to the lower limb in patients with severe lower limb arterial disease leading to the development of gangrene and the need for below-knee amputation.

How do medical compression stockings work?

Medical compression stockings have been used to prevent deep vein thrombosis for several decades. It is supposed that patients with limited mobility experience low flow velocities in the lower limb veins which also dilate, especially during surgical procedures. It has been shown that the application of medical compression increases the flow velocity and reduces the swelling of veins.

How well do medical compression stockings work to prevent DVTs?

Numerous clinical data have been published over the years in which the efficacy of compression stockings has been evaluated in preventing DVTs. Some of the older studies received criticism because they used methods of detection of DVT that are no longer in use.

A recent publication in the Cochrane Database analysed 20 more recent randomised clinical trials in a meta-analysis. The authors concluded that medical compression stockings led to a 65% reduction in the frequency of DVT in a wide range of hospital patients. These data support the current recommendations for use of anti-embolism stockings in hospital practice.

Contraindications to the use of medical compression stockings

Application of compression to the lower limb is appropriate except where this may interfere with the blood flow to the leg. In patients with normal lower limb circulation medical compression stockings will not normally give rise to damage.

However, where arteries in the leg are blocked the blood pressure is reduced and the compression applied by the stockings may slow blood flow in some regions or lead to complete cessation of blood flow. This prejudices the wellbeing of the leg. In patients over the age of 75 years, about 20% of patients have significant lower limb arterial disease with blocked or narrowed arteries.

Monitoring of pressure areas and skin condition after the application of compression stockings

The manufacturer's instructions for use for medical compression stockings mentions the need for regular removal of the stockings for monitoring of the skin condition. The minimum frequency advised in the instructions is one to three times per day. However, some patients are at risk of forming pressure ulcers over the heels, hips and sacrum due to advanced age, frailty and neurological problems.

It is standard nursing practice to evaluate patients in hospital for their risk of pressure area damage and in many patients this necessitates inspection of the pressure areas every four hours. Of course, if the lower limbs are contained in anti-embolism stockings these must be removed for inspection of the skin on the heels. Nursing experts consider that failure to maintain this regime regularly may comprise substandard care.

I have been asked to advise in cases where compression stockings were not removed at all for several days or even a few weeks. In one case, an intravenous cannula had been included beneath the stocking which was only revealed when the stocking was removed. The result was loss of skin over a 2cm diameter area and an ulcer which healed very slowly.

In other cases when the stockings were removed after several days or weeks, the heels had become necrotic and large non-healing ulcers developed leading to the need for below-knee amputations.



A heel ulcer arising from anti-embolism stockings

Conclusions

The use of anti-embolism stockings is common practice in hospitals and is supported by advice from NICE. However, severe damage to the lower limbs may occur when stockings are applied to patients with lower limb arterial disease, contrary to the advice from NICE and the manufacturers of stockings.

Failing to observe pressure areas over the heels regularly or failing to remove the stockings may lead to avoidable ischaemic damage to the limb. Such cases may be pursued successfully by the claimant in many instances. □

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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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