

associated with varicose veins. They aid the healing of the ulcer and facilitate venous return to help prevent recurrence of the ulcer.

Effective therapeutic compression starts with a minimum sub-bandage pressure of 18 mm Hg at the ankle.

Anything lower, whilst appropriate for support, is not considered appropriate for the treatment or prevention of venous leg ulcers. The primary aim of compression is to reduce the pressure in the superficial veins. This improves venous return to the heart by increasing flow velocity in the deep veins and limits oedema by reducing the pressure difference between the capillaries and the tissues. The most effective method is to apply graduated compression from the toe to the knee. The highest pressure should be exerted at the ankle, gradually falling to about 50% at the knee.

The aim of using compression bandages is to enclose the leg with pressure firm enough to compress the pathologically distended veins, thus enabling valves to function more efficiently, increasing the velocity of the venous blood stream, and normalising the return of blood flow to the heart. The accumulated fluid and waste products are removed from the affected tissue at an accelerated rate. Compression bandages are also used in the management of lymphoedema.

Compression bandages are available in several different types.

High-stretch compression bandages

These have an extensibility of 130–200%. They have high elasticity, high to medium resting pressure, and high to medium working pressure. They mainly exert their effect superficially by working in combination with the muscles and are indicated for the treatment of venous oedema and the management of venous ulcers.

Short-stretch bandages

These have an extensibility of 30–90%, low elasticity, and low to slight resting pressure but high to very high working pressure. They mainly exert their effect deep within the limb and are indicated for both venous oedema and lymphoedema.

Table D.40 Compression bandages

Product®	Manufacturer
<i>Eloflex</i>	Smith & Nephew
<i>Setopress</i>	Aaxis Pacific
<i>Surepress</i>	ConvaTec
<i>Tensopress</i>	Smith & Nephew
<i>Comprilan</i>	Smith & Nephew
<i>Tensolan</i>	Smith & Nephew
<i>Tubigrip shaped</i>	Aaxis Pacific
<i>Tubular Bandage</i>	Sutherland Medical

Multi-layer bandages

A development in bandaging has been the introduction of the Charing Cross four-layer system. This combines an orthopaedic wool, a crepe bandage, a lightweight compression bandage and a cohesive bandage in multiple layers. The combination achieves 40 mm Hg at the ankle, graduating to 17mm Hg at the knee. A number of published studies have shown good healing rates within 12 weeks with this system.

Another form of compression garment is the straight tubular bandage. When used for this purpose it is usually applied in multiple layers, with a full bandage from the toe to below the knee, a second bandage from toe to mid-calf and a third from toe to ankle. This type of product is also available in a shaped version that provides graduated compression. A single layer of shaped tubular bandage will produce a pressure of 12–15 mm Hg. They may also be applied in multiple layers.

Table D.41 Multiple layer compression bandages

Product®	Manufacturer
<i>Profore</i>	Smith & Nephew
<i>Profore Lite</i>	Smith & Nephew
<i>Proguide</i>	Smith & Nephew
<i>Veno 4</i>	Hartmann
<i>Coban 2</i>	3M

Contraindications for the use of compression bandages

Some compression stockings have been designed to prevent post-operative deep vein thrombosis and are *not* appropriate once the patient is ambulant (e.g. hosiery identified as anti-embolic stockings, such as TED stockings).

Great care must be taken before applying any pressure garment if there is an indication of arterial disease. It is important that, before compression bandages or similar are used, the patient's peripheral arterial circulation be checked to ensure that it will not be compromised by the application of compression bandages. Use of compression may lead to skin necrosis, direct trauma, ulceration and, ultimately, amputation. It is essential when applying a compression bandage to a leg, especially where there is unevenness of circumference, that the area around the ankle in particular is padded out with orthopaedic wool to ensure even distribution of the compression along the leg.