

Pearls in Dermatology

How I manage venous ulcers with compression bandaging

MY Lee 李文英

Bandage compression is an effective treatment and preventive measure for venous leg ulcers. Selecting suitable patients, choosing appropriate compression bandages, using the correct application techniques as well as patients' compliance are all important factors in ensuring optimal therapeutic outcome.

Keywords: Compression bandaging, venous ulcer

Introduction

Chronic venous insufficiency accounts for 70% of venous ulcers.¹ Characteristic features are shallow, ruddy red, irregular edged ulcer, sometimes with yellow adherent or loose slough, typically located at the medial malleolar region. Before application of compression bandaging, Ankle Brachial Index (ABI) should be measured to rule out any ischemic status. ABI below 0.8 indicates some degree of arterial insufficiency and compression bandaging is therefore not recommended. For complicated venous ulcers that cannot be treated with high compression bandaging, lower compression pressure, medications (such as pentoxifylline and Flavonoid) and special dressings (such as hyalofill-F and Apligraf) may have some benefits.

North District Hospital, Hong Kong

MY Lee, Nurse Specialist(Geriatrics & Wound Management)

Correspondence to: Ms MY Lee

North District Hospital, 9 Po Kin Road, Sheung Shui, N.T., Hong Kong

Compression pressure

Compression bandaging aims to create a graduated external pressure to force fluid from the interstitial spaces back into vascular & lymphatic components. The recommended pressure to treat venous ulcers is 30-40 mmHg at the ankle, graduating up the leg to approximately 15-20 mmHg at the knee. Most patients in Hong Kong can only tolerate 25-35 mmHg compression pressure due to the hot and humid weather though some authors claimed healing can also be achieved with these lower levels of compression.² Measuring of the patient's ankle circumference is also essential. The larger the ankle, the stronger the elastic bandages required to achieve the correct level of compression. Normally, the ankle circumference is between 18 cm to 30 cm and may not require any modification of the bandaging system. If patients were suffering from heart failure or diabetics with falsely high ABI, or their ankle circumferences are less than 18 cm, caution should be taken to avoid occluding circulation.

Compression bandaging

Choice of compression bandaging depends on clinical effectiveness, patients' choice, availability

of products, local protocols and guidelines, knowledge and skills in application and cost effectiveness in overall management. Products for lower compression include straight tubular elastic type products (Tubrigrip), graduated tubular elastic type products and Elset. High compression bandaging products include four-layer bandages, multiple-layer bandages, short-stretch bandages and compression hosiery. All these are available in Hong Kong. All manufacturers have a clear classification system (Table 1).^{3,4}

Application techniques of high compression bandaging are as follows (Figures 1-7):

1. Before application of high compression bandaging, the patients should rest with leg elevation or bed rest for at least 15 minutes.
2. Apply padding (e.g. cotton gauze roll) for bony prominences, fragile skin and protruded varicose veins. Foam or high absorptive dressings are recommended to avoid extra pressure over the ulcerated area and to prevent exudate leakage.

Table 1. Compression pressure in various compression products

Lower compression products	Four-layer bandages	Compression hosiery
Tubrigrip: ~6 mmHg	Class 3a: 14-17 mmHg	Class 1: 14-17 mmHg
Graduated elastic: 18-24 mmHg	Class 3b: 18-24 mmHg	Class 2: 18-24 mmHg
Elset: ~17 mmHg	Class 3c: 25-33 mmHg	Class 3: 25-33 mmHg
	Class 3d: up to 60 mmHg	



Figure 1. Venous ulcer.



Figure 3. Padding.



Figure 2. Rest with leg elevation or bed rest & dorsiflex the ankle.



Figure 4. Pressure over foot area just for supporting.



Figure 5. Applying pressure above ankle in Spiral technique (50% overlap between bandage layers).



Figure 6. Safety pin or high elastic strapping for secure the bandages.



Figure 7. Ask the patient how is the feeling (e.g. any pain, numbness).

3. If the patients have peri-ulcer itch, topical steroid creams or perfume free moisturisers can help but avoid direct contact with the bandages.
4. Ask the patient to dorsiflex the ankle and keep still when applying the bandages.
5. Do not apply pressure when wrapping the bandage over the foot area, only applying firm and steady pressure when spiraling up the bandage starting from the ankle area to the knee.
6. If "figure of 8" technique is used in bandaging ankle area, no pressure is applied until above the ankle to avoid excessive sub-bandage pressure.
7. Spiral technique gives a 50% overlap between bandage layers from ankle to the knee.
8. Use safety pin or high elastic trapping to secure the bandages. Never use Micropore or Melfix adhesives tapings as they may not be able to withstand the tension of high compression bandaging.
9. Always remind the patients to report to the clinic and remove all the bandaging if there was increasing pain or that the bandages had become loose.
10. Theoretically, the bandaging can be kept for up to a week, how long it should stay depends on the patients' compliance and wish.

References

1. Vowden P, Vowden K. Investigations in the management of lower limb ulceration. In: White R, Trends in Wound Care: BJN monograph. Mark Allen Publishing LTD, Wiltshire 2002.
2. Rice J. Handy hints when treating venous ulcers and using compression therapy. *Primary Intention* 2002;10: 129-34.
3. Williams C. The management of patients with venous leg ulcers: new guidelines. *Br J Nurs* 1999;8:489, 492, 494-5.
4. Thomas, S. Compression bandaging in the treatment of venous ulcers. *World Wide Wound* 1998. <http://www.worldwidewounds.com/1997/september/Thomas-Bandaging/bandage-paper.html>