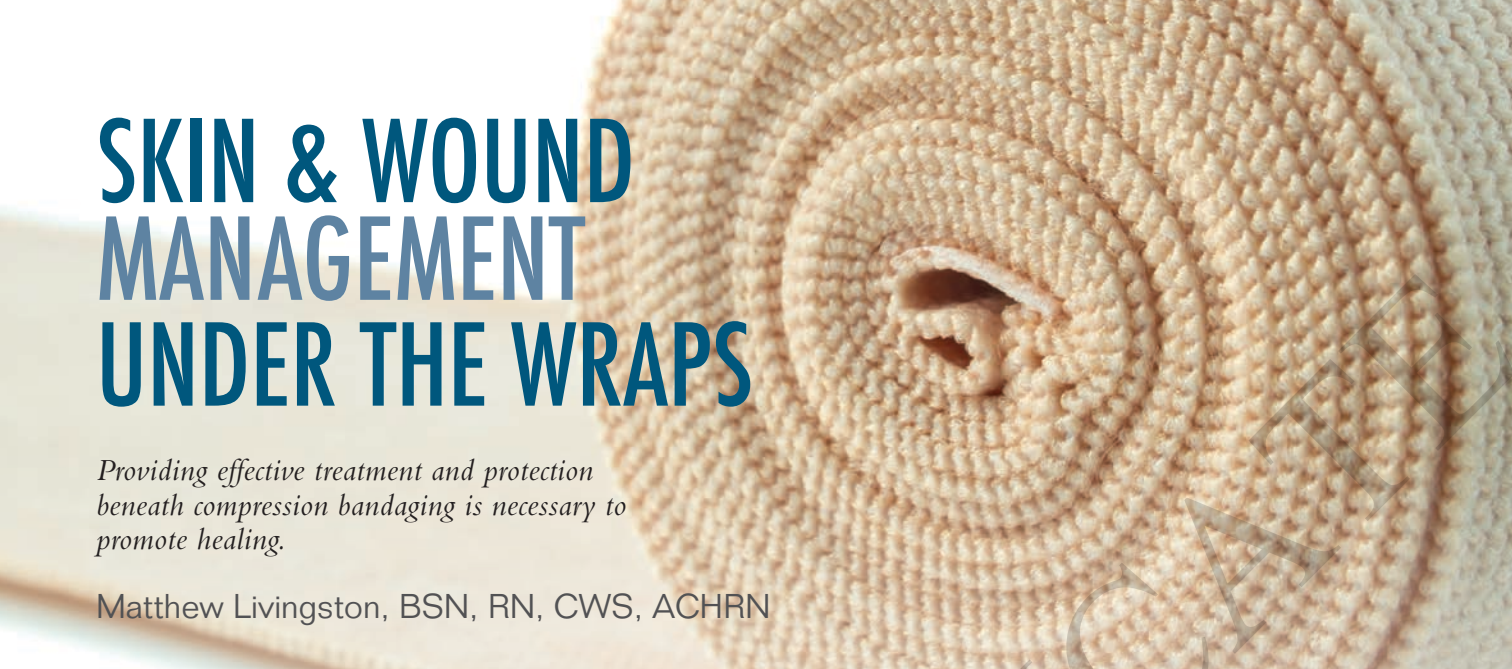
SKIN & WOUND MANAGEMENT UNDER THE WRAPS



Providing effective treatment and protection beneath compression bandaging is necessary to promote healing.

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Wound management for patients living with venous insufficiency often involves multiple complexities. These variations require providers to consider a spectrum of strategies. Some require an advanced knowledge of skin conditions and differential diagnosis while others are dependent on "tricks of the trade" for dressing changes and the understanding of different dressing modalities.

THE 'SKINNY' ON SKIN

Several dermatological conditions result from certain types of compression. These include folliculitis, fungal infections, and contact allergies.

Folliculitis, which appears as inflamed pustules around hair follicles, occurs due to any type of trauma to the follicle, such as pressure or friction, chemical irritation, or bacterial colonization.[1] Milder forms of this skin condition are referred to as superficial folliculitis. This is considered self-limiting as long as the source of the injury is reduced. Painful, deep folliculitis warrants a culture to isolate the type of bacteria involved, and treatment with systemic antibiotics.[1]

Fungal infections including candidiasis present as groups of small, red open or closed pustules around the moist edge or macerated wound. This is often exacerbated by the use of moist or occlusive dressings. In this case, an antifungal ointment or powder over the area and a drier skin surface dressing, such as cotton batting, will reduce the fungal outbreak. Be aware that most rashes in venous disease are from stasis dermatitis, not candidiasis.

In its milder form, a latex allergy caused by compression wraps appears as an itchy rash or hives over the majority of the lower extremity, or just above the knee (with possible systemic effects including puffy face and full-body rash). The elastic component of the multilayer compression dressing can be replaced with a latex-free brand. Depending on the severity of the rash, the provider may choose to prescribe antihistamines or corticosteroids (such as methylprednisolone) to mediate the latex reaction. If changing to a non-latex brand of compression is ineffective in mediating the skin reaction, patch testing may be ordered to rule out other causative agents.

Skin conditions related to chronic venous insufficiency are also a concern. Stasis dermatitis presents as a rash with flaking skin and complaints of itching. Skin may become thickened over time, a condition known as hyperkeratosis. This occurs due to the chronic inflammation caused from venous insufficiency when white blood cells become trapped in the sluggish flow through capillaries, become activated, and release pro-inflammatory cytokines, which leads to chronic inflammation and hypersensitivity to products.[2] This should be managed with medium potency corticosteroid ointments. Choose ointments that do not

An Approach to Addressing Slippage

1. Start by creating a tacky area (on healthy skin only) by using a thick barrier paste at the anterior aspect just below the knee. This step will greatly improve the chance of securing the dressing. Use caution when putting creams and ointments on these patients as sensitivity reactions are common.
2. Bolster the wicking and elastic layer of the multilayer compression wrap with tape running in an upward spiral to secure each of the horizontal wrap layers together. Be careful not to form ridges that can lead to skin irritation.
3. Insure the dressing is hinged around the posturer aspect of the upper calf (in the area that contours back into the break of the knee). Take care not to cause increased compression here (LaPlace's law).
4. Build several layers of rolled cotton (ie, web roll) around the lower third of the lower extremity to help limit slippage by reducing its lower inward angle. However, maintain larger circumference at the calf to maintain pressure gradient.
5. Use a tacky foam, such as Rosidal Soft, which is used in lymphedema care. This can be placed on the entire anterior tibia, ankle, and foot to pad, protect, and prevent slippage.
6. Apply 1 layer of paste bandage in a spiral fashion up the foot and leg. This will grip the leg and prevent slippage, but will increase the cost of wrapping the patient.

When Edema Remains Beyond Compression

There are times when, regardless of conservative compression techniques, the patient still presents with unresolved edema. If the extremity as a whole remains swollen (with additional redness, breakdown, or pain while using higher amounts of compression), rule out other causative etiologies such as fluid overload, deep vein thrombosis, or lymphedema. The compression dressing, moreover, may not meet the full needs of the patient, which could include swelling of the toes, forefoot, and/or knees and require specific dressing suggestions:

- A certain population (usually related to lymphedema) presents with edematous knees and thighs above the compression wrap. In this case, the clinician may consider an elasticated tubular bandage (Tubigrip,™ Mölnlycke Healthcare, Norcross, GA; or Medigrip, Medline, Mundelein, IL) or longitudinal yarn compression (EdemaWear,® Compression Dynamics LLC, Omaha, NE) from just below the top of the compression dressing to the top of the thigh. To prevent a crossover of compression pressure between the 2 dressings, place a strip of foam dressing under the top of the multilayer compression dressing.

- An edematous forefoot is typically the result of a compression dressing that has been pushed up by mechanical means (often related to poor-fitting shoes or human intervention). Recommend that the patient wear shoes with larger toe space. Minimize use of post-operative shoes as they negatively affect ankle mobility and the calf muscle pump. If edema persists with an intact dressing, consider placing an extra turn of the compressing wrap along with a plain foam dressing over the top of the swollen foot area.

- Swollen toes may be controlled by inserting rolled cotton between each of the toes accompanied by padding over and around the toes before wrapping the toes with a layer of non-adhesive elastic. Lymphedema therapists have an excellent technique for wrapping toes. Collaborate with them to learn this method of toe compression. Caution must be used, however, because pressure ulcers can occur on the plantar surfaces of the toes from the wraps, especially in patients with hammer or claw toe deformities.

- The inferior medial and lateral malleolus often presents with wounds (in venous insufficiency patients) along with an area of uncontrolled edema. The low-set contour of this area along with the protruding aspect of the medial malleolus often leads to the problem of being unable to adequately compress the area. To better control this problem under compression, the clinician may build up 2 layers of a foam dressing cut to fit the contoured area.

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have preservatives in them (eg, fluocinolone ointment 0.025%) to minimize risk of sensitivity reactions. Once skin is cleared up, discontinue the corticosteroid. No creams or ointments are used at this point to avoid new hypersensitivity reactions. If skin is exceptionally dry, use of hypoallergenic dimethicone-based lotions without fragrance may be tried.

GOING THE DISTANCE

Compression wraps, which may remain intact for up to 7 days, pose another problem as this length in time can increase the risk for maceration, odor, or dressing slippage. The best solution for this is to change the wrap more often (every 3-5 days). Some patients may be unable to come into the clinic for more frequent dressing changes or may have maceration or odor even with more frequent wrap changes. These scenarios require the use of various dressing management strategies:

- There is not conclusive evidence that the type of dressing used on venous ulcers affects wound healing.[3] Therefore, practical aspects such as exudate management and avoidance of peri-wound skin irritation should guide dressing choices. Because venous ulcers, especially early in treatment as edema is reducing, may have substantial exudate, use of absorbent dressings is essential. Foams are ideal dressings in this case as they are absorptive and also provide local compression over the ulcer. For high exudate, use foams that do not have film backing so that drainage can wick out into the wrap. Trapping exudate in the dressing can lead to further maceration of surrounding skin. Calcium alginates or starch copolymer-based dressings can be cut to fit the wound under the foam for extra absorption. A new category of quick-wicking products (eg, Drawtex,® SteadMed,™ Fort Worth, TX; or Active Fluid Management,® Milliken, Spartanburg, SC) may help prevent maceration by moving exudate quickly into the dressing away from the skin. Sometimes, a contact layer and gauze 4 x 4 are enough to keep the wound moist and absorb exudate. Avoid putting too much bulk under compression wraps; this will decrease sub-bandage pressure by increasing limb size, thus leading to increased exudate due to poor edema control. It is rare that venous ulcers require moisture-donating products such as hydrogels. Avoid adhesive dressings due to high risk of contact sensitivity in these patients.
- Odor related to long dressing wear (not infection) can be treated with a thorough washing of the skin and wound along with the use of an antimicrobial wound cleanser. If odor remains, apply metronidazole gel with each wrap change.
- Skin cleansing should occur with each compression wrap change. Use a gentle soap, such as Cetaphil,® and, occasionally, for odor and ongoing folliculitis, temporary use of Hibiclens® is useful.

Maintaining the integrity of multilayer compression dressings for patients with a large calf and small ankle circumference (also referred to as an inverted champagne bottle appearance) provides a challenge for many clinicians. For strategies to deal with this, consider the steps noted in the table on page 25. ■

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