Treatment of severe venous leg ulcer using unique bacteria-binding dressing

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Introduction

Venous leg ulcers are one of the most common leg wounds seen in the United States today, as they are also the most common symptoms of Deep Vein Thrombosis (DVT). Currently there are 600,000 cases of DVT annually in the United States, or 1 in 1,000 persons per year.\(^1\)

DVT causes a chronic vein disease, known as “Post-Thrombotic Syndrome.” This injury to the venous valves creates chronic venous insufficiency that causes painful varicosities, leg edema, as well as venous ulcers and associated skin changes. In a study of patients two years after developing deep venous thrombosis, post-thrombotic syndrome was the major factor impairing quality of life.\(^2\)

Treatment of severe venous leg ulcer using unique bacteria-binding dressing with a fatty acid contact layer, combined with a multi-layer compression dressing

Examples of post-thrombotic syndrome and venous leg ulcers seen in our wound care center

**Example 1**
Severe varicosities (varicose veins)

**Example 2**
Skin changes (hemosiderin stain) with venous leg ulcer

**Example 3**
Severe venous leg ulcer with overlapping lymphedema
Clinical evidence and treatment
In addition to appropriate wound debridement and wound dressings, it is widely accepted that compression therapy for venous leg ulcers is key to promoting swift wound closure.

Based on a systemic review of 39 randomized controlled trials, it was concluded that “Compression increases ulcer healing rates compared with no compression. Multi-component systems are more effective than single-component systems. Multi-component systems containing an elastic bandage appear more effective than those composed mainly of inelastic constituents.”

This systematic review demonstrates that inelastic bandages (e.g. “Unna boots”) are less effective than multi-layer compression dressings (e.g., JOBST® Comprifore system) for treating venous leg ulcers.

2012 CPT code for compression dressings
According to the American Medical Association CPT(r) 2012 book, Category 1 CPT code “29581” has been assigned as “Application of multi-layer compression system; leg (below knee), including ankle and foot.”

If one is applying these multi-layer compression bandages on both legs, this “CPT 29581” code should be modified with a -50 modifier to indicate bilateral leg applications.

Case Presentation
Presented here is a severe venous ulcer case in a morbidly obese patient with history of DVT. This wound was successfully treated on an outpatient basis during weekly local wound care visits, using a combination of Cutimed® Sorbact® WCL (Wound Contact Layer) and Comprifore multi-layer compression wraps.

Cutimed® Sorbact® WCL is a unique bacteria-binding dressing coated with DACC (Dialkyl carbamoyl chloride), a fatty acid derivative that is highly hydrophobic. When the outer membranes and cell walls of pathogenic microbes, which are also hydrophobic, come in contact with DACC, the microbes become physically bound to the dressing, unable to reproduce, and are removed with each dressing change, which helps reduces the risk of wound infection. As DACC is a fatty acid derivative, it is not an anti-septic, antibiotic, or silver-containing product, and has not been linked to any development of resistant bacteria strain or allergic reaction to a particular chemical or metal.

The Comprifore multi-layer compression system is a 4-component dressing kit that provides sustained graduated compression of 40 mmHg up to 7 days, indicated for the treatment of venous leg ulcers.

Patient history
71 year old male with a long-standing history of DVT, post-thrombotic syndrome and varicose veins, presented with a large venous leg ulcer that has been non-healing for 2 years, despite multiple courses of oral antibiotic treatment and Unna Boot application.

Other co-morbidities include hypertension and bilateral leg edema. The patient is currently on Warfarin (Coumadin®) 15 mg daily for the treatment of chronic DVT and recently diagnosed protein S deficiency.

Physical exam and Doppler exam:
Well-developed, morbidly obese male. He was not showing signs of acute distress, but clearly in pain from the large leg ulceration. Vascular exam showed +2-3 pitting edema of bilateral lower extremities, non-palpable pulses on both legs due to severe edema, but biphasic Dopplerable posterior tibial and dorsalis pedis arteries, bilaterally.

ABI (Ankle Brachial Index) was 1.12 Resting and 1.04 Post-Exercise on left leg, and tibial waveforms are within normal limits. Skin Perfusion Pressures were 88 mmHg at right foot and 96 mmHg at left foot, with SPP values over 40 mmHg indicating good wound healing potential.

A venous duplex exam showed DVT in the femoral and popliteal veins on both limbs, with chronic and recanalized thrombus, as well as greater saphenous vein insufficiency in both the thigh and knee on both legs. The patient was previously seen by a vascular surgeon, who recommended medical therapy with warfarin, as opposed to surgical intervention.
Day 3
The patient returned for the review of wound culture results. It was MRSA (Methicillin Resistant Staph. Aureus) sensitive to Doxycycline. The patient was instructed to continue with Doxycycline until the prescription was finished. The wound was debrided, irrigated and dressed with Cutimed® Sorbact® WCL and Comprifore dressing. The patient was instructed to return to the clinic 2-3 times per week, as the wound drainage was fairly copious.

Day 8 and 10
The wound size diminished, and the leg edema was much improved. The wound odor was resolved by Day 8 and the patient also reported a gradual reduction in wound pain and drainage. The wound was sharply debrided with a #15 scalpel, followed by 35 kHz ultrasound saline irrigation treatments. The wound dressing consisted of the same regimen of Cutimed® Sorbact® WCL, an ABD pad, and Comprifore multi-layer compression wrap.
The wound size and leg edema improved steadily at each visit. The wound was again debrided sharply and treated with 35 kHz ultrasound saline irrigation. The same dressing regimen was continued using Cutimed® Sorbact® WCL and Comprifore.

Due to the patient’s travel schedule out-of-state, there was a 3-week hiatus of the wound care center visits. The wound treatment was resumed on Day 63, using sharp debridement, followed by 35 kHz ultrasound saline irrigation, as well as wound dressing using Cutimed® Sorbact® WCL and Comprifore.

Gradual reduction of wound size and depth was noted with the same wound treatment regimen. The patient reported much reduced wound drainage.
Discussion
This case study illustrates that the combination of Cutimed® Sorbact® WCL and Comprifore multi-layer compression wraps can be very effective in successfully treating some severe venous leg wounds, even when Unna Boot therapy had previously failed.

References

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