The Combined Benefit of Negative Pressure Therapy (N.P.T.), Elemental Silver Contact Layer, and Bilayered Living Skin Equivalent (L.S.E.) in the Treatment of Chronic Hard to Heal Lower Extremity Wounds.

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Problem: Closure of chronic lower extremity wounds is often more challenging due to existing co-morbidities. Complicating factors such as chronic steroid use, vascular disease, and MRSA colonization deter wound healing and encourage resistance to typically reliable wound healing techniques. These hard to heal wounds invite further complications including infection, pain, disability, and amputation. Often these patients are not candidates for split thickness skin grafting for hesitation to create a new wound. However, bilayered living skin equivalents (L.S.E.) may be prone to failure if heavy wound exudate cannot be well controlled.

Purpose: To accelerate the wound healing process in chronic hard to heal wounds and to decrease pain, infection, and wound exudate.

Methodology: We present our first six patients of an on-going trial utilizing the combined benefits of negative pressure therapy (N.P.T.), a silver contact dressing, and bilayered living skin equivalent (L.S.E.). Painful lower extremity wounds of traumatic etiology with co-morbidities including chronic steroid use, poor healing potential and vascular disease were chosen. N.P.T was performed with an elemental silver coated contact dressing with 400 micron porus foam at 75-100 mm Hg for an average of 14 days. Once a sufficient granulation wound base was achieved, the patient underwent L.S.E placement. N.P.T with sof-foam at 125mm Hg continues for an additional 6-7 days over the silver contact dressing and the L.S.E.

Results: 6 of 6 patients were successful in achieving goals of wound closure, decreased pain, and decreased infection.

Conclusion: The combination of N.P.T, elemental silver contact dressing, and L.S.E. in colonized hard to heal chronic wounds produces an accelerated wound healing potential. Patient education and compliance in this sophisticated method are key issues for successful outcome.

* *Negative Pressure Therapy; VAC by KCI*
Elemental Silver Contact Layer; Silverlon by Argentum Medical LLC.
Bilayered Living Skin Equivalent; Apligraf by Novartis

Technique

- Treatment begins with sharp debridement, Silverlon, and compression
- KCI Wound VAC is added shortly thereafter
  - Silverlon is placed directly to the wound bed with 2-3 cm overlap
  - Black Wound VAC sponge is placed over the Silverlon cut to fit the wound. VAC setting is usually 100-125mmHg continuous.
- 1-3 weeks later, Apligraf (graftskin) is added
  - Primary dressing of Mepitel and Silverlon
  - Covered by Wound VAC's white sponge at 125mmHg continuous
- The VAC is discontinued 1-2 weeks after Apligraf application.
- Weekly dressings continue with Silverlon and Compression until wound is healed.

Case 1

54 year old male with 30 year history of steroid dependent COPD and Asthma; he also has peripheral neuropathy, hypertension, CAD with history of MI, and history of slow healing wounds. He has been self-treating a traumatic leg wound for 3-4 weeks.

10/3/01
admit
4.7 x 6.0 x 1.8cm

10/17/01
Silverlon & Debridement
4.1 x 4.9 x 1.1 cm

11/12/01
Silverlon & Wound Vac
4.0 x 4.7 x 0.7 cm

12/10/01
s/p Silverlon, VAC and
Apligraf 0.6 x 1.0 cm

12/31/01
Healed at 3 months

Case 2

73 year old woman with chronic steroid dependent asthma, hypertension, bilateral venous stasis disease, and history of phlebitis. Has 3 month old painful leg wound that originated from an insect bite and has failed conventional therapy.

6/11/01 s/p Debridement
s/p 12 days of Wound VAC

6/11/01 Application of Apligraf
Continue VAC and Silverlon
Reduced pain

7/2/01 s/p apligraf & VAC
Cont. Silverlon and Dynaflex
Reduced pain

8/28/01
Healed at 3 months

Case 3

68 year old woman with chronic steroid dependent rheumatoid arthritis, Sjogren Syndrome, osteoporosis, and iron deficiency anemia presents with a traumatic painful leg ulcer.

11/26/01 Admit
9.9 x 8.5 cm

11/29/01s/p debridement.
Application of Apligraf

11/29/01
Apligraf, Silverlon, VAC

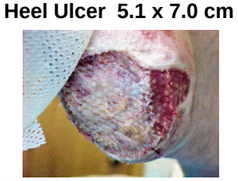
12/03/01 1st dressing change;
reduced pain Excellent apligraf "take"
Went on to rapid healing

Case 4

82 year old woman with diabetes, peripheral vascular disease, and neuropathy. Ulcer developed from thermal injury (electric blanket). Failed to respond to conventional treatment.

1/12/02 Necrotic Diabetic
Heel Ulcer 5.1 x 7.0 cm

1/12/02 s/p Debridement.
Pre-Apligraf, Silverlon, Wound Vac



1/14/02 2 days s/p apligraf,
Silverlon, Wound Vac
Excellent Apligraf "take"

4/10/02
s/p 2nd Apligraf, Silverlon,
Wound Vac 2.1 x 2.0 cm