Combining Ionic Silver Wound Hydrogel* and Negative Pressure+ for Limb Salvage

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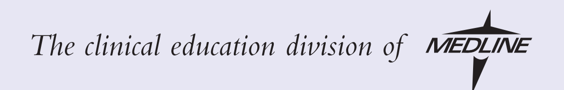
The clinical education division of 

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BACKGROUND

The human body is in a constant fight against bacterial organisms. Conditions such as diabetes and hypoperfusion can impact the efficiency of immune responses. Bacteria can gain the upper hand if they can gain entry into the body, and overtake the ability of the body's immune system to fight. Bacteria is a known enemy of wound healing, placing wounds into a non-healing state and causing cellular senescence.

Bacteria is a known enemy of wound healing, placing wounds into a non-healing state and causing cellular senescence. Organisms such as *Pseudomonas aeruginosa, Staphlococcus aureus, and Streptococcus* can invade the host causing infection, morbidity, limb loss and mortality. In the highly complex wound with multiple variables that impact immunocompetency clinicians seek interventions that have potential for managing bacterial loads that have overwhelmed the host defense mechanisms. Silver dressings and negative pressure wound therapy (NPWT) are two adjuctive methods that can assist in reducing bacterial loads in the wound bed. When used together they may offer a treatment alternative that provides a positive outcome in the complex wound with known bioburden.

NPWT has a pronounced immunocorrecting effect through mechanical vacuum therapy which intensifies the blood flow at the wound surface and activates an increased local cellular immune response. In addition, NPWT removes exudate and cellular debris from the wound bed. Silver is a fast acting antimicrobial agent that kills a wide range of pathogens, including resistant organisms. Ionic silver dressings liberate silver ions when exposed to moisture offering a graduated rate of delivery at the wound bed and a sustained antimicrobial effect. Together these technologies stabilized a digressing chronic wound, eliminated recurring systemic infections and provided a healing outcome in a patient who was seeking alternatives to amputation.

CASE STUDY

Age, gender: 58, male

Wound etiology: Neuropathic ulcer

Location: Right heel

Co-morbidities: IDDM, PVD, CVD, Renal insufficiency

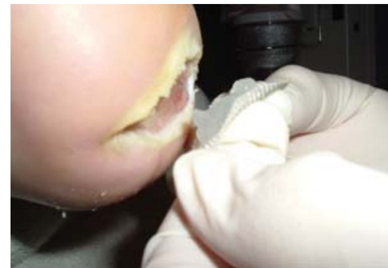
Significant past history: Right transmetatarsal amputation, chronic recurring infection right heel; including MRSA and osteomyelitis, septic event associated with wound source, diminished perfusion RLE r/t popliteal arterial occlusion.

Wound treatment history: RLE knee high custom orthotic, partial calcanectomy and intervenous antibiotics, growth factor therapy, bioengineered tissue graft, not a surgical candidate for arterial bypass grafting.

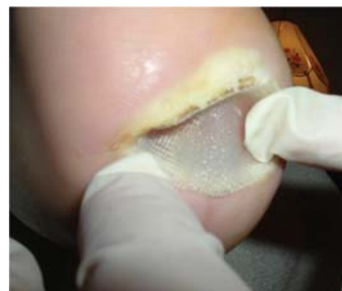
Wound current duration: 7 months

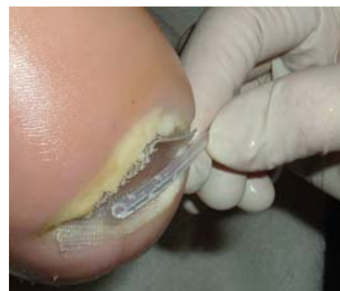
This case study is a depiction of one 58 year old's journey through an exhaustingly long but ultimately successful experience with a chronic wound. The healing outcome is largely attributable to a dedicated caregiver and faithful compliance with detail and follow-up. In the true spirit of team work the implementation of the described treatment plan is a result of physician-paraprofessional collaboration and their insight into potential benefits of new technology. Patient management was further supported by Home Health Care nursing staff to ensure progress, as well as an insurance case manager who went the distance to maintain the equipment in the patient home in the face of policy limitations. It resulted in this individual keeping a limb that earlier was judged to be beyond salvage. Moreover, it preserved mobility, self-esteem and body image, those essentials we all seek in our daily lives.

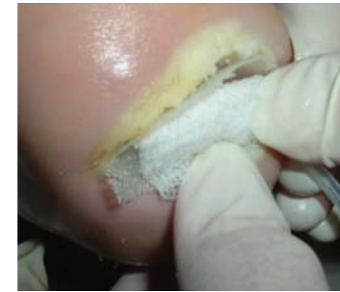
The treatment program promoted wound healing in a limb known to have a popliteal occlusion. It prevented further septic complications in an individual plagued by recurring systemic infections. It provided a successful solution to wound management where numerous others had failed. And it provided a measure of hope over the 12 week period of evaluation and stabilization that preceded a popliteal bypass in this medically complex individual. Overall, ulcer treatment using ionic silver dressing and negative pressure therapy accomplished more than an 80% closure outcome in a compromised limb and contributed to the final healing that occurred 8 weeks following right lower extremity revascularization.

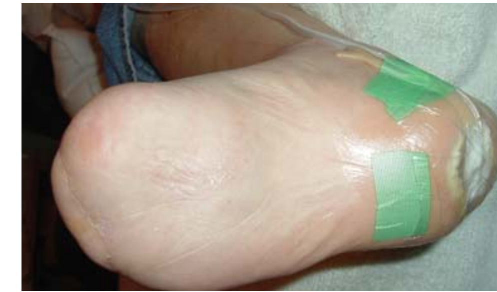


Ionic silver hydrogel is applied to a non-adherent porous dressing sized to the wound bed and then placed with gel side to the wound surface

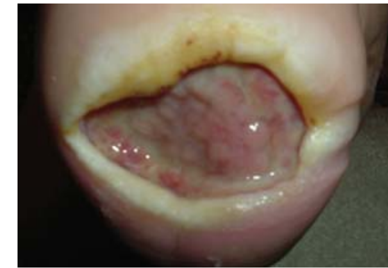








The drain and moist guaze are placed over the non-adherent material, lining the wound. The entire area is sealed with a transparent film and connected to the NPWT at 80 mm Hg.



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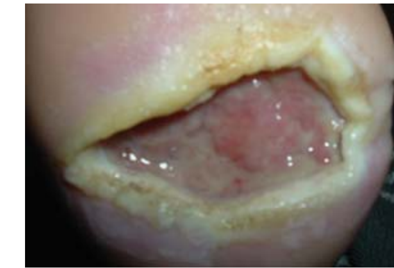

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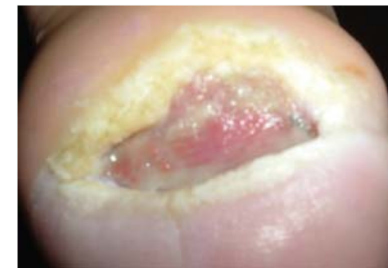

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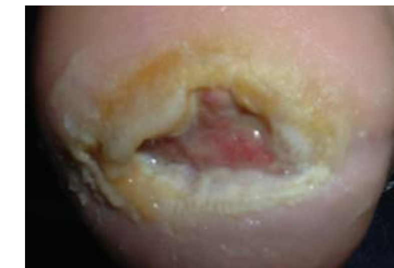

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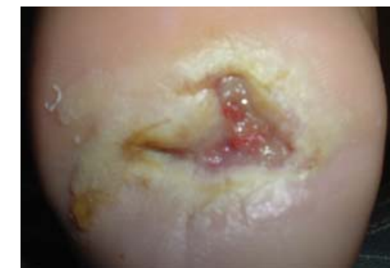

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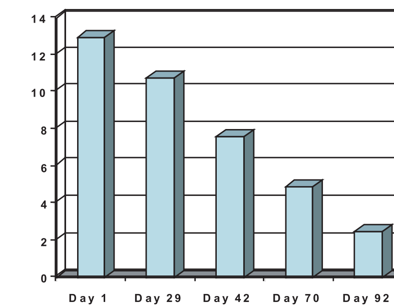

Over this 92 day period, the wound displayed an 80.6% reduction in overall size and 83.3% decrease in depth despite existing hypoperfusion

RESULTS

As evidenced by photo documentation the wound responded well to a combination of ionic silver dressing and NPWT resulting in a re-evaluation for bypass. The wound closed to 80% prior to revascularization and no systemic infections occurred during the treatment period . This combination of a ionic silver dressing and negative pressure wound therapy can provide an efficacious wound treatment modality for chronic and highly complex wounds.

REFERENCES

1. Davydov YA et al. Concepts for Clinical Biological Management of the wound Process in the Treatment of Purulent wounds using Vacuum Therapy. Russian Journal; Vestinik Khirurgii 1991:Feb;132-35.

2. Kane DP. Chronic Wound Healing and Chronic Wound Management. Chronic Wound Care: A Clinical Source Book for Healthcare Professionals. HMP Communications: Third Edition 2001;11-17.

3. Nametka M. Silver Antimicrobial Hydrophilic Dressing Benefits Management of Recurrent Non-healing Wounds. Symposium on Advanced Wound Care, Baltimore, MD: April 2002.

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