

A Novel Polymer Based Hydrophilic Gel with an Oxygen Free Radical Scavenging Agent Improves Healing in Lower Extremity Ulcerations

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Introduction:

Healing chronic wounds is of paramount concern for hospitals, clinics, long term care facilities and patients across the United States. Patients with lower extremity ulcers frequently present for wound management as they are commonly at risk for nonhealing and chronicity. The natural stages of wound healing are complex and can often become inhibited for any number of reasons such as underlying chronic medical conditions. For a wound to heal efficiently the body must coordinate complex chemical responses and protein synthesis to regenerate tissue as well as prevent or eliminate infection.

During the inflammatory stage the polymorphonuclear cells engulf and destroy bacteria via oxidative pathways. However, sometimes an overabundance of free oxygen radicals can cause the wound to stall in this stage. Excess reactive oxygen species can slow healing by interfering with metabolic enzymes and causing oxidative degradation of lipids within the cell membranes. This presentation illustrates the effectiveness of a novel hydrophilic gel (Wound-Be-Gone®) with an active formulation that can neutralize the deleterious effects of excess oxygen free radicals and enhance wound healing in chronic wounds.

Methods:

A series of patients with compromised lower extremity wounds were managed with a hydrophilic gel (Wound-Be-Gone®) which binds oxygen free radicals while providing a moist wound environment with a normal pH. The gel was used as the primary topical treatment modality and was applied on a daily basis within a standard wound care protocol that included aggressive bioburden control and debridement in all patients. Wound healing was monitored and progress documented with digital photography.

Results:

A series of patients are presented and discussed. Every patient in this test group showed acceleration of wound healing trajectories with regular application of the new gel as evidenced by robust granulation tissue development and rapid epithelialization. Furthermore based on pain scores, all patients reported that the healing gel actually reduced the overall pain, while the acting clinicians noticed less scar tissue than what would normally be expected with these type wounds. Patients also reported additional benefits of ease of use and no adverse effects.



Conclusion:

Overall, these clinical studies demonstrate that free oxygen radical binding technology in Wound-Be-Gone can enhance healing and suggest that this benefit is realized by controlling the inflammation phase. These results suggest that this healing gel can enhance tissue regeneration, decrease pain and minimize scarring. Clinical outcome data reported here has been confirmed by other studies.

Case Study 1

Diabetic Foot Ulcer

69 yr. old W/F presents with diabetic foot ulcer (DFU) on top of left foot. Patient has history of CHF, Type 2 DM, COPD, HTN, CAD, IVC filter, DVT, and Parkinson's Disease. Patient is currently on Coumadin, and has a history of smoking and ETOH abuse. An oxygen tank was dropped on patient's foot on 10-2-09, fracturing the fourth metatarsal and creating this unusual diabetic pressure ulcer on the dorsum of the foot. She was treated unsuccessfully by a wound clinic for over a month before presenting here in our office. Patient had full thickness debridement and dermagraft application on 11-13-09. Over a ten day period patient showed no effective healing until daily applications of WBG with non-stick dressing began on 11-22-09. Patient was healed 12-15-2009.

Case Study 2

Chronic Venous Ulcer

71 yo male presented with a chronic venous insufficiency ulcer of the right lower leg of six month duration. The patient was previously being treated at a wound clinic using alginates, duoderm and compression dressings, but made no significant progress toward healing. WBG was started on 12-29-09. Compression therapy was continued and dressings were changed every three days. Treatment was finished and the wound fully healed on 1-20-10.

Case Study 3

Arterial Ulcer

55 yo female with severe PAD complicated with diabetes, presented with distal toe gangrene following embolization after lower extremity PTA and stenting of popliteal artery 3 months prior to wound care consult. TCOM evaluation was nonhypoxic. Wound debridement accomplished and WBG started 3-17-10. Excellent wound healing trajectory noted with complete healing 5-19-10.

Case Study 4

Inflammatory Ulcer

63 yo male with a long standing history of venous insufficiency presented with several months of a nonhealing painful and inflamed ankle ulcer. WBG started on 2-9-10 when compression and topical silver showed little improvement. Patient healed with 3 weeks and reported complete resolution in pain.