Elimination of Biofilms and Pathogens by the Rebalancing of the Wound Bed’s Bioelectric Charge

Charles Andersen, MD, FACS, FSVS, MAPWCA; Robert G. Frykberg, DPM, MPH

The loss of the bioelectric balance in the wound bed leads to unresolved chronic wounds with inherent biofilms and bacterial colonization. This bioelectric imbalance is characterized as a negatively charged (anionic) environment. The negatively charged molecules include the membranes of bacteria, biofilms and the anchoring mechanisms of the biofilm to the wound bed. In order to remove these obstacles to wound healing, a rebalancing of the environment may be necessary to take place with the introduction of positively charged (cations) nano-particle minerals that bind and inactivate anions through an electroosmosis process.

**McCord System**
- Rebalancing of the anionic wound biofilm with cationic nanotechnology mineral particles.
- Target the bioelectric imbalance.
- Provide a stable environment for cellular migration.
- Increase wound bed oxygenation.
- Re-start the healing cascade.
- To be used in conjunction with wound debridement and infection control.

CASE 1 - EC
- Chronic ulcers with an edema ulcer right leg
- Wound failed to progress with standard wound care
- 11/12/2023 – Started on McCord System

EC – Pre-Application

Wound cleaned and debrided and MCCD foam was retained.

EC – 6 Days

Debridement with Wound cleaned and debrided. Wound cleaned with Biofresh.

EC – 12 Days

Clinically improved with resolution of ulcer and loss of edema.

EC – 19 Days

No more pain at ulcer site.

EC – 41 Days

Chronic lower extremity edema wound that failed to do well with the MCCD System.

CASE 2 - DF
- 60 y/o male – Six-month history of right lower extremity edema ulcer with fragile epidermis and superficial ulceration with variable wound bed in the presence of a chronic wound or cellulitis.
- Calcinosis demonstrated predilected wound area to all infections.
- Patient being seen in the support wound care clinic for debridement and replacement of his compression wrap.

DF – Pre-Treatment

After 24 hours, surface wound was smooth with less erythema and normal looking skin. Wound cleaned and debrided.

DF – 6 Days

Clinically no pain.

DF – 14 Days

Compression wraps removed. Removal of superficial epidermis and draining sinus.

DF – 38 Days

Epithelial tissue forming new epithelial tissue.

CASE 3 - AA
- 16 y/o male with stage 3b chronic foot ulceration.
- Patient had evidence of his ulcers on the leg with evidence of primary closure.
- This type of ulcer has high incidence of ulcers line complications.
- Referred to wound care clinic for treatment of a new line complications

AA – Baseline

Chronic satellite separations with significant colonization of the wound and ulcers line base.

AA – 6 Days

No further split noted on bacterial scan.

AA – 14 Days

Infection healed with negative bacterial scan.

AA – 28 Days

Newly formed epithelial tissue.

CASE 4 - JW
- 56 y/o male with history of hip arthroplasty performed at another hospital on 7/18/2023.
- Developed a post-operative superficial infection at the surgical site.
- Patient referred to wound care at MAMC on 10/7/2023.
- Unable to heal with standard wound care.

JW – Pre-Treatment

Wound cleaned with debridement. Wound cleaned and debrided.

JW – 6 Days

No further split noted on bacterial scan.

JW – 12 Days

Antiseptic to do daily treatment of site. Home treatment with cleanser.

JW – 28 Days

Wound cleaned and debrided. Wound cleaned and debrided.

CASE 5 - AF
- 56 y/o female with alpha thalassemia.
- Left leg ulcer for 22 months – Non-healing wound resulted from a venous ulcer for palpable ankle.
- Transferred with “Regenon” for wound with no significant change in size or area.
- Started on McCord System on 10/15/2023

AF – Pre-Treatment

Wound cleaned and debrided.

AF – 6 Days

Wound cleaned and debrided.

AF – 12 Days

Wound cleaned and debrided.

AF – 19 Days

Wound cleaned and debrided.

AF – 26 Days

Wound cleaned and debrided.