

# The role of a bio-electric, antimicrobial dressing in the healing of acute and chronic wounds

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## Background:

The efficacy of electrical stimulation in the management of partial and full thickness wounds is well documented. It has been used successfully to decrease pain, inflammation and enhance wound healing.<sup>1</sup> With skin injury, endogenous physiologic electrical activity helps cells migrate throughout the wound site to initiate wound healing.<sup>2</sup> Fibroblasts, keratinocytes, neutrophils, and mast cells migrate in the presence of low level micro-currents.<sup>3-4</sup> Silver is a potent antimicrobial that plays a critical role in eliminating pathogens.<sup>5</sup> A growing body of research has shown the benefits of the synergistic activity of the silver electrode combined with a bioelectric environment.<sup>6-9</sup> Both low-level electric stimulation and antimicrobial activity is featured in a novel bioelectric, antimicrobial dressing that generates a sustained electrical microcurrent on the surface of the device.

## Methods:

A bioelectrical, antimicrobial wound dressing was studied in the treatment of acute and chronic wounds in a series of case studies. The bioelectric dressing was applied to six clean wounds and covered with a sterile semi-occlusive dressing for a period of 4 days to 9 weeks with 2-3 dressing changes per week.

## Results:

All wounds in the presented case studies healed completely within a time period of 4 days to 9 weeks. No adverse effects were reported.

## Conclusion:

Based on the results from the presented clinical case study observations, it appears that the application of an antimicrobial, close-proximity electrically active wound dressing may be effective in facilitating healing of acute and chronic hard-to-heal wounds. While clinical experience has demonstrated its efficacy with accelerated wound healing, pain reduction, and use as an antimicrobial barrier, future studies are needed to determine if the bioelectric dressing is applicable to other acute and chronic wounds.

## References:

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The bioelectric dressing is FDA cleared for professional use as an antimicrobial barrier for partial and full-thickness wounds. It consists of a matrix of miniature biocompatible batteries on a flexible surface.

It is activated in the presence of a conductive fluid, which may come from wound exudate or exogenous fluid.

When activated, it generates a sustained electrical microcurrent simulating the physiologic current of injury at the wound.

It has been clinically observed that the bioelectric dressing enhances wound healing, creates an antimicrobial barrier, increases comfort and promotes patient satisfaction.



DRY



WET

## SURGICAL SITE

### Patient Profile

Age/Gender: 72 year-old male

### Wound Profile

Length of treatment: 4 Days



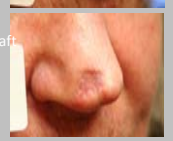
## ACUTE WOUND

### Patient Profile

Age/Gender: 67 year-old female  
Diagnosis: Basal Cell Carcinoma

### Wound Profile

Comments: Treated with Moh's surgery. Wound healing by secondary intention, prevented skin graft.  
Length of treatment: 4 weeks



## ABRASION

### Patient Profile

Age/Gender: 82 year-old male

### Wound Profile

Length of treatment: 1 Week



## VENOUS STASIS

### Patient Profile

Age/Gender: 76 year-old female

### Wound Profile

Length of treatment: 9 weeks



## VENOUS STASIS

### Patient Profile

Age/Gender: 82 year-old female

### Wound Profile

Length of treatment: 4 weeks



## ACUTE WOUND

### Patient Profile

Age/Gender: 78 year-old male  
Diagnosis: Skin lesion  
Co-Morbidity: High cholesterol, HTN, thyroid

### Wound Profile

Comments: Treated with curettage & electrodesiccation  
Length of treatment: 3 weeks

