

Using Advanced and Adaptive Technologies for the Management of Wounds - Extracellular Matrix and Gentian Violet/Methylene Blue Antibacterial Foam Dressing

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INTRODUCTION

Inherent problems develop when acute wounds digress from the normal healing pathway. A de-stabilized, hostile and proteolytic wound environment develops that cannot progress to constructive remodeling. External factors, such as infection or bacterial colonization of a wound add to these challenges and intensify the problems which prevent wound closure. In this case series, challenging or at-risk wounds presented at our center were managed using extracellular matrix (ECM) technology*, in combination with a Gentian Violet/Methylene Blue (GV/MB) polyurethane (PU)* or polyvinyl alcohol (PVA)* antibacterial foam dressing. This treatment solution is adaptive and can be tailored to individual wounds and the stage of wound healing. ECM technology with ionic silver stabilizes the wound bed, prevents biofilm formation, modulates inflammation and importantly, builds tissue during the later stages of healing. GV/MB is a complementary non-cytotoxic antibacterial technology which wicks away bacteria laden slough, debris and exudate while pulling healing agents to the wound bed. This dual approach to management facilitates resolution of inflammation, and optimal maintenance of the wound bed, while protecting from bacterial colonization.

METHODS

After debridement and wound bed preparation, ECM/Ag was applied to the wound bed on a 3 to 7-day frequency and covered with GV/MB antibacterial foam dressing. Foam selection was dependent on the levels of exudate, with PVA foam and PU employed for high and moderate exudative wounds, respectively. ECM/Ag assisted in stabilizing the proteolytic environment of the wound and providing a temporary scaffold, while the GV/MB foams absorbed the bacteria-laden exudate away from the wound bed.

RESULTS

A total of 15 wounds (n=15) were enrolled in the study, and included VLU (3), DFU (2), pressure injuries (1), surgical (3), traumatic (3) and other (3, pyoderma gangrenosum, sinus tract, deep partial burn). Average wound age was 44 weeks (range, 0 to 156 weeks); average wound size, 16 cm² (range 1.9 to 101.6 cm²). 67% of wounds closed at 14 weeks, including those lost to follow-up and still undergoing treatment.

REFERENCES AND DISCLOSURES

Financial support was provided by Appulse Medical (www.appulsemed.com). Product was provided by Hydrofera LLC (CT) and Aroa Biosurgery LTD (New Zealand); *Endoform® Antimicrobial Dermal Template; *Hydrofera™ Blue READY Foam; *Hydrofera™ Blue CLASSIC Foam

Wounds closed:

67%

By week 14;
n=10/15

“Responders” at 4 weeks:

33%

>50% reduction in wound area at 4 weeks; n=5/15

Average % wound size at 4 weeks:

71%

SD±75%

CASE 1

Patient History: 50-year-old male, morbidly obese with type 2 diabetes; bilateral lower extremity venous stasis ulcers; wound age ~54 weeks.

Week 0: debridement; 6.2 cm²; ECM/Ag plus GV/MB PU, two-layer compression wraps



Week 2: 6.8 cm²; ECM/Ag plus GV/MB PU, two-layer compression wraps



Week 6: 4.1 cm²; ECM/Ag plus GV/MB PU, two-layer compression wraps



Week 9: 1.9 cm²; ECM/Ag plus GV/MB PU, two-layer compression wraps



Week 12: 0.1 cm²; ECM/Ag plus GV/MB PU, two-layer compression wraps



Week 14: healed



CASE 2

Patient History: 65 year old male involved in a severe motorcycle accident resulting in deep soft tissue contusion to medial thigh; wound age 8 weeks.

Week 0: surgical debridement to remove necrotic tissue; 28 cm²; 2.0 cm depth; exposed muscle; ECM/Ag plus GV/MB PU



Week 4: 18.2 cm²; 0.1 cm depth; ECM/Ag plus GV/MB PU



Week 5: 19.7 cm²; ECM/Ag plus GV/MB PU



Week 11: 0.6 cm²; ECM/Ag plus GV/MB PU



Week 13: healed



CASE 3

Patient History: 73-year-old female sustained blunt trauma to the calf region

Week 0: debridement; 40.9 cm²; ECM/Ag plus GV/MB PU



Week 4: 28.5 cm²; ECM/Ag plus GV/MB PU



Week 8: 26.7 cm²; ECM/Ag plus GV/MB PU, granulation tissue observed



Week 12: healed



CASE 4

Patient History: 46 year old female sustained a hematoma from traumatic injury

Week 0: 3.9 cm²; ECM/Ag plus GV/MB PVA



Week 3: 0.7 cm²; ECM/Ag plus GV/MB PVA



Week 6: healed

