The Management of Wounds with Exposed Tendon and Bone using Innovative and Complementary Technologies: Ovine Extracellular Matrix and Gentian Violet/Methylene Blue Antibacterial Foams

Igor Zilberman (DPM) and Nooshin Zolfaghari (DPM, MPH, CWS); South Florida Lower Extremity Center, Fort Lauderdale, FL

INTRODUCTION
Wounds with exposed tendon and bone are a major challenge due to the degree of damaged or missing tissue, where the void requires reconstruction and re-epithelialization. As such, these wounds present a high risk of wound infection. The objective of this study was to describe the use of a treatment bundle that includes extracellular matrix (ECM) technology and Gentian Violet/Methylene Blue (GV/MB) antibacterial foam dressings. The ECM technology is protected from microbial contamination, prevents biofilm formation, as well as being able to modulate wound proteases and build tissue [1]. GV/MB polyvinyl alcohol (PVA) foam dressing is a complementary technology which is non-cytotoxic and does not inhibit growth factors. Its unique capillary action continuously pulls harmful bacteria-laden exudate, slough and debris away from the wound. It also helps to flatten rolled wound edges facilitating re-epithelialization.

METHODS
Wounds (n=11), including VLU (2) DFU (1), PI (2), surgical (2), traumatic (2) and other (2) were included in the study. The average wound size was 4 cm², range 1 to 17.5 cm². The average wound age was 6 weeks (range 0 to 24 weeks). All wounds received debridement per institutional guidelines. Ovine ECM/Ag was applied and covered with either GV/MB antibacterial polyvinyl alcohol (PVA) foam or GV/MB polyurethane (PU) foam dressing depending on the level of exudate. Following an initial lead in with ECM/Ag, wound management was switched to non-antimicrobial ECM. Wounds were measured and imaged at each visit.

RESULTS
Of the 11 wounds enrolled in the study, 6 were lost to follow-up during the course of management. All wounds responded well to the treatment bundle with 73% (8/11) of wounds classified as "responders", achieving a >50% reduction in wound area by 4 weeks. At 12 weeks, 45% of wounds had closed, and this increased to 100% when wounds lost to follow-up where removed from consideration. The average percentage wound area at 4 weeks was 36% of the starting wound size. While only 45% of wounds closed (n=5/11), the closure rate was masked by wounds either lost to follow-up or still undergoing management.

CONCLUSIONS
The combination of GV/MB foams and ECM technology was effective in the management of wounds with exposed tendon and bone, and helped overcome the inflammatory phase. As the products can be used interchangeably, treatment can be tailored to a specific wound at any phase of healing.

REFERENCES AND DISCLOSURES
Financial support was provided by Appulis Medical. Product was provided by Hydrotex LLC (CT) and Ana Biologics LLC (New Zealand). Uniform Shock and Death Data Template. Hydrotex Natural Omental Template. "Hydrotex Blue CLASSIC" Foam dressing. 