Biodegradable wound matrix dressing of poly (DL –lactide-co-trimethylene carbonate-co-e-caprolactone) in lower extremity venous non healing ulcers

Emily Ray, DO, CWSP, APWH; Christina Sikes, DO; Joan Hughes, BSN, RN

Hamilton Health Care System

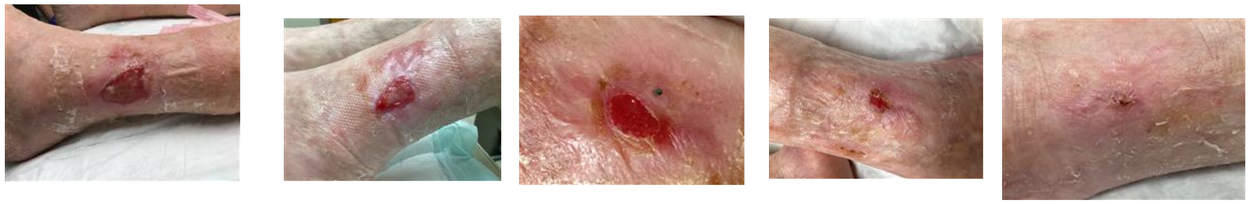
INTRODUCTION:

Venous leg ulcers can be very difficult wounds to heal. By using a biodegradable copolymer of poly (DL –lactide-co-trimethylene carbonate-co-e-caprolactone) which is an absorbable, microporous, biodegradable matrix indicated for the management of superficial dermal wounds, pressure and venous ulcers, along with 2nd degree burns. The product is metabolized by the body into CO2 and H20.

METHODS:

5 patients who had difficult to heal wounds after 12 months to 2 years of standard of care (including revascularization, edema management, and venous ablations) in a wound care clinic setting. In the outpatient clinic, under sterile conditions the polylactic copolymer was applied to an active open venous leg ulcer after sharp debridement by physician. Direct application to wound to ensure contact with wound bed, secured with with a non adherent wound dressing with coating on one side, and bolstered with sterile strips and sterile 2x2 gauze dressing. Contraindications included active infection, necrotic eschar, or heavy drainage. The applications were performed weekly until complete closure up to 20 applications.

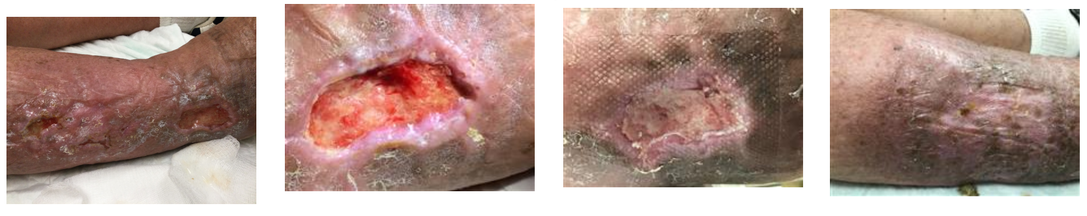
CASE 1: 69-year-old female with a history of type 2 diabetes, insulin-dependent, venous insufficiency presented with left lower extremity diabetic leg ulcer complicated by arterial disease. Treated with calcium alginate and therahoney, 5 months prior to intiation of polylactic biodegradable wound matrix.
Was revascularized, with adjunctive hyperbaric therapy for 40 treatments
Healed in 16 weeks



62-year-old male with a history of lymphedema, venous insufficiency, and type 2 diabetes, presented after 5 months of gentamicin, gentian violet polyurethane foam as well as calcium alginate and medical grade honey, prior to polylactic biodegradable wound matrix initiated. Secured with adhesive mesh, gauze bolster, sterile strips, abd pad, weekly application with 2 layer compression.
Healed in 16 weeks.

Standard application technique of polylactic biodegradable wound matrix, secured with non adherent coated mesh, and bolstered with gauze, sterile strips

70-year-old male with a history of fracture of the right lower extremity 15 years prior with soft tissue trauma, lymphedema, venous insufficiency, presented with right lower extremity ulceration that was treated for 4 months prior, with no change in wound size, with topical gentamicin ointment, and calcium alginate. Prior to polylactic wound matrix application patient was considering palliative wound treatment. Weekly applications, with standard application above, and 2 layer compression. Healed wound in 12 weeks.



RESULTS:

The synthetic wound dressing helped increase granulation, decrease size and depth of wound, and ultimately healed wound with new epithelization and complete wound contraction vs. prior standard of care to heal wound. These patients had standard wound care and were deemed non healing and palliative prior to poly (DL –lactide-co-trimethylene carbonate-co-e-caprolactone) biodegradable wound dressing.

DISSCUSSION:

poly (DL –lactide-co-trimethylene carbonate-co-e-caprolactone), biodegradable wound dressing is a substantial and proven effective alternative to cellular tissue products and amniotic fluid products especially in patients that may have adverse reactions to biologic tissue or an aversion to biological tissue application. Stimulation of granular tissue and ease of wound care/dressing changes, along with pain improvement. The polylactic acid material forms well to the wound bed, and helps lower the pH for appropriate granulation tissue and vascular proliferation. In non healing chronic venous leg ulcers, that had no improvement with standard of care, were able to heal completely with this wound dressing.

CONCLUSION:

Biodegradable wound matrix dressing of poly (DL –lactide-co-trimethylene carbonate-co-e-caprolactone) is effective in stimulation of granulation, epithelization, vasculoneogenisis, and wound healing in venous ulcerations and lymphedematous ulcers on difficult to treat wounds.