

Utilizing Endoform as a Surrogate Marker of Wound Protease Levels in Chronic Wounds

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Wound protease concentrations have long been recognized to correlate with inflammation and wound chronicity.^{1,2} The importance of wound proteases in dictating long-term healing outcomes has spurred the desire for simple, cost-effective, and readily available tools health care professionals can use to gauge wound protease concentrations.³

Endoform (Aroa Biosurgery Limited, Auckland, New Zealand) is an advanced intact extracellular matrix (ECM) with the same composition and function as tissue ECM. Clinical observations from Champion and Bohn⁴ described how Endoform changed in the wound bed over time among different wound types. One of their key obser-

variations was that when used in a highly proteolytic wound, Endoform degraded entirely in a day or 2 with little residual product in the wound bed at the time of reapplication. These authors⁴ also observed the rate of Endoform degradation slowed as inflammation resolved and the wound transitioned from the inflammatory phase (high protease concentrations) to the proliferative/remodeling phases (low protease concentrations).

We and others⁵ have implemented the early and aggressive management of wounds with Endoform to address protease imbalance and build tissue. We use this product as a clinical cue for elevated wound proteases. By starting

wound management with a defined amount of Endoform (2 layers) then observing the amount of residual ECM at days 3 and 7, we can judge the level of proteases and phase of healing at each reapplication and adapt our strategy accordingly to individualize each patient's wound management (see Figure). Therefore, Endoform serves as surrogate marker for the level of wound proteases present in a wound. Reconstituted collagen dressings immediately gel in the wound and therefore do not have this unique feature.⁶

We recently undertook a controlled case series (N = 20) to assess changes in Endoform following application. Our results,⁷ presented at the Symposium on

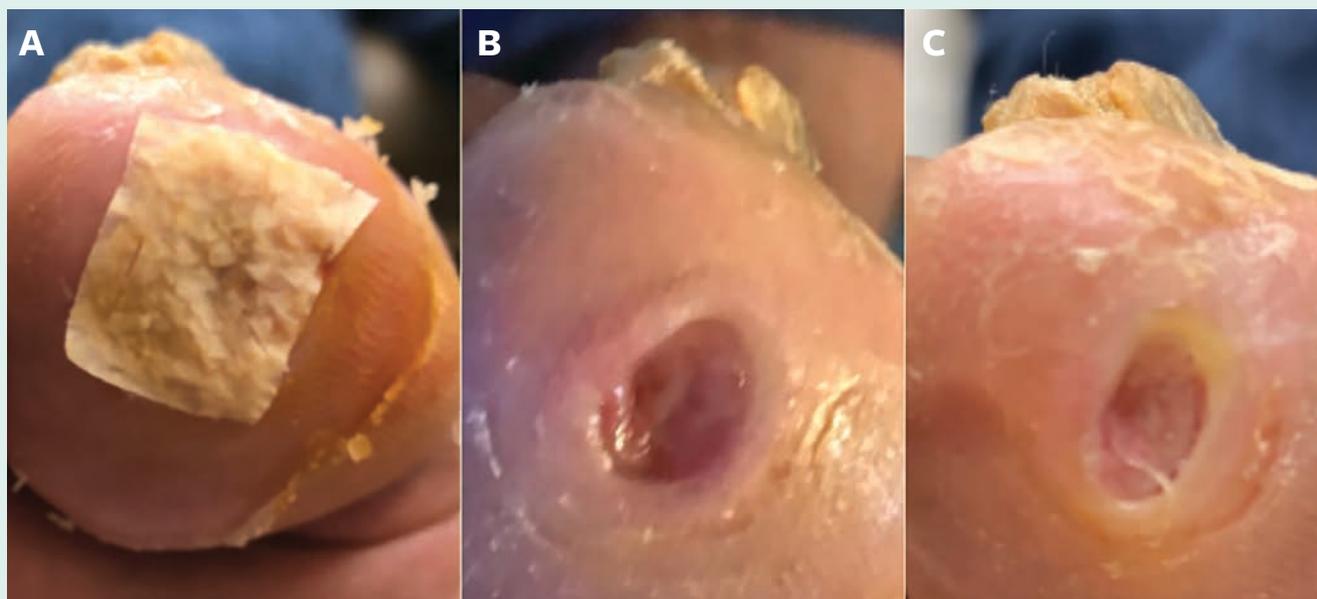


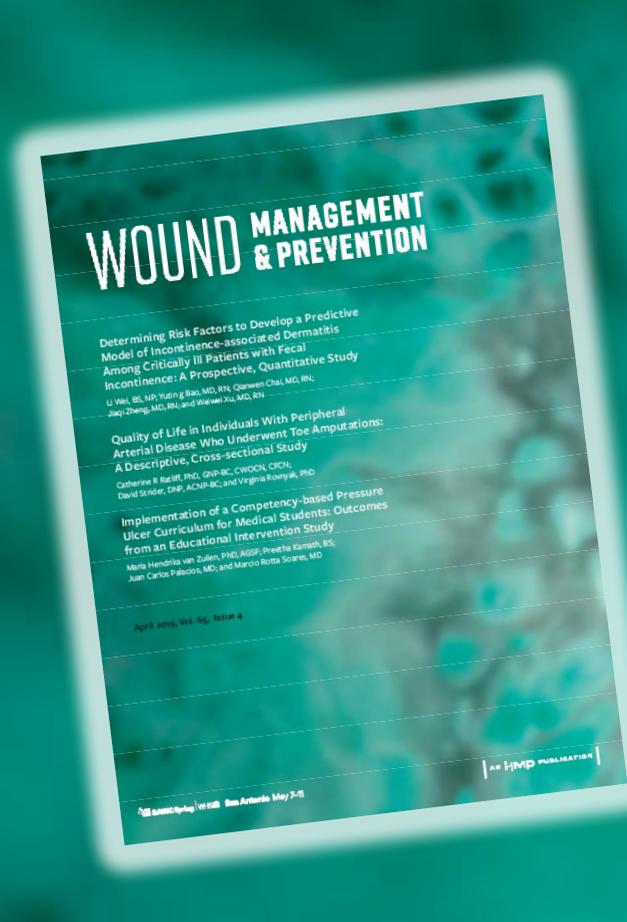
FIGURE. Wound management and assessment using Endoform: A) initial application of Endoform; B) day 3: high protease concentrations with only trace amounts of extracellular matrix (ECM) remaining; C) day 7: high protease concentrations. The ECM is entirely degraded.

Advanced Wound Care (SAWC Spring) 2019 in San Antonio, Texas, illustrate the real-world use of Endoform as a surrogate marker for wound protease levels. In this study, a variety of wounds, including diabetic foot ulcers and venous leg ulcers, were debrided then treated with Endoform on days 3 and 7. The amount of residual Endoform was assessed by the clinical team. High wound protease concentrations and subsequently wound chronicity were inversely proportional to the amount of residual Endoform.

For us and our practice, using Endoform has many benefits and primarily allows us to identify wounds with elevated proteases and monitor changes in wound proteases and, as such, monitor wound progression from the inflammatory phase into the proliferative phase and the building of new tissue. ■

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