

# Venous Stasis Ulcer

A case study by Michael K. Bednarz, DPM, AACFAS, Atlanta, GA

## CASE STUDY: UNITE® BIOMATRIX COLLAGEN DRESSING IN THE TREATMENT OF A CHRONIC VENOUS STASIS ULCER WITH OSTEOMYELITIS OF THE DISTAL TIBIA

The Unite® Biomatrix from Synovis Orthopedic & Woundcare, Inc. is a highly organized, non-reconstituted collagen dressing for the management of wounds. A variety of factors contribute to the nature of a chronic wound bed, including elevated levels of matrix metalloproteinases (MMPs) which inhibit normal healing. Flexibly crosslinked and sterilized\* using proprietary technologies, the Unite® Biomatrix is able to resist premature degradation caused by these elevated levels of MMPs. Clinical results suggest that this collagen dressing helps maintain the wound bed in the healing phase to allow for healthy granulation tissue and wound closure. The Unite® Biomatrix is safe, biocompatible, allows for reliable fixation to the wound perimeter, and has a 3 year room temperature shelf-life.

### ABSTRACT

A 56 year old female presented with a >5 year history of a Grade IV venous stasis ulcer resulting in exposed bone on the lower medial aspect of the right leg. The patient's wound had failed to heal after at least 12 attempts of closure with bioengineered skin substitutes and two split-thickness skin grafts by previous physicians' care. A tri-phase nuclear scan was performed and the patient was determined to have osteomyelitis to the distal tibia as a result of the longstanding ulceration. Surgical debridement of the wound and eight weeks of IV antibiotics were employed. After one application of the Unite® Biomatrix collagen wound dressing, in combination with one application of Integra™ Matrix Wound Dressing (IMWD) and Negative Pressure Wound Therapy (NPWT), the wound healed in six months with no recurrent ulceration.

### PATIENT HISTORY

The patient's medical history included: rheumatoid arthritis and cystic fibrosis. Significant lower extremity surgical history included: venous ligation, two split thickness skin graft applications, and 12 applications of bioengineered skin substitutes.

### PHYSICAL EXAM

Vascular: +2/4 pedal and femoral pulses b/l  
Neurologic: Sensation intact b/l lower extremities per monofilament testing  
Musculoskeletal: b/l Pes Cavus with + hammertoe deformity to digits 2-5 b/l

### PROCEDURE

Patient was taken to the OR where the right leg was scrubbed, prepped, and draped in the normal sterile manner. Debridement of all nonviable tissue was performed. A periosteal window was cut from the medial aspect of the distal tibia and soaked in sterile saline and gentamicin on the back table. Debridement of the necrotic bone was performed and cultures



Figure 1. Debridement and wound preparation.



Figure 2. Application of Unite® Biomatrix

were obtained. Pulse-lavage irrigation with gentamicin was performed over the bone defect and the bone void was packed with absorbable antibiotic beads. The periosteal window was then sutured back in place. At this time, one layer of IMWD was applied over the exposed bone. The non-fenestrated Unite® Biomatrix was meshed at 1.0 cm to 1.5 cm ratio to increase the surface area of the collagen dressing and positioned directly over the IMWD. Surgical staples were used to circumferentially anchor the collagen dressing in place, ensuring intimate contact with the wound bed, and trimmed to allow 2-4 mm beyond the wound margins. To assist with granular tissue over the bone, the patient was placed on NPWT at a continuous rate of 150 mmHg. To prevent direct contact between the NPWT sponge and collagen dressing, one layer of Profore® Wound Contact Layer was applied directly over the Unite® Biomatrix.

## POST APPLICATION MANAGEMENT

The NPWT dressing was changed once per week to inspect the wound and collagen dressing. NPWT was discontinued after four weeks when adequate granulation was achieved. To keep the Unite® Biomatrix hydrated, it was covered with Mepilex® Ag (Mölnlycke). Edema is an important impediment to healing, therefore compressive dressing (Profore® Compression Dressing, Smith & Nephew) was used on this patient in an attempt to control the venous stasis. Additional re-applications of Mepilex® Ag were applied to keep the Unite® Biomatrix hydrated every seven days until complete healing was achieved. At six weeks post-op all surgical staples were removed. The remaining Unite® Biomatrix collagen was allowed to dissociate from the wound on its own. Complete epithelialization of the wound was noted at seven months post-application. The patient was on crutches and non-weightbearing for a total of six weeks. The patient was then allowed full weightbearing throughout the remainder of the post-op period.

## RESULTS

The combination of IMWD to assist in neo-dermis generation over exposed bone, NPWT to enhance granulation, and one application of the Unite® Biomatrix to support an environment for wound healing and re-epithelialization resulted in the healing of the 5 year chronic venous stasis ulcer with osteomyelitis.

## DISCUSSION

Synovis Orthopedic & Woundcare's novel stabilization and sterilization technologies are new to advanced wound management. The Unite® Biomatrix collagen wound dressing easily conforms to the wound bed and resists premature enzymatic breakdown. This case study demonstrates the successful healing of a chronic venous stasis ulcer (recalcitrant to previous advanced therapies) with osteomyelitis using Unite® Biomatrix in combination with other treatment modalities.

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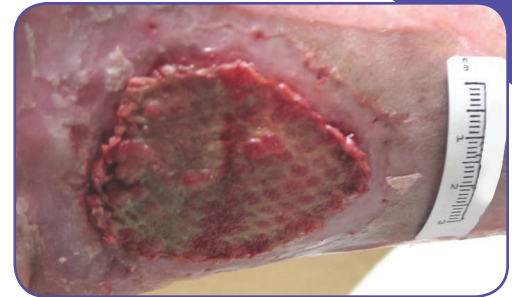


Figure 3. Four weeks post-op.

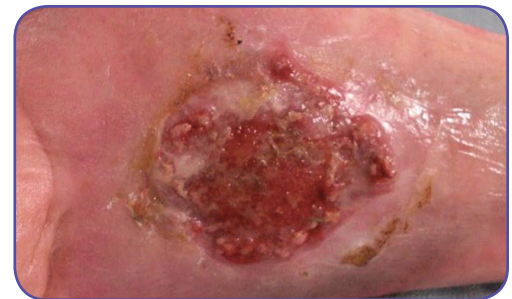


Figure 4. Twelve weeks post-op.

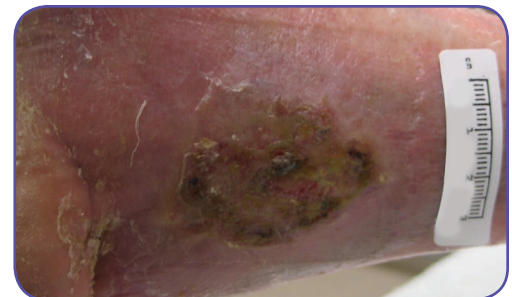


Figure 5. Final follow-up.

For additional information and/or product support, please contact your local Synovis Orthopedic & Woundcare representative or Customer Service at 1-800-650-1816.

\*Passes USP Sterility Testing. Data on file.

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# Synovis®

Orthopedic and Woundcare, Inc.

6 Jenner, Suite 150, Irvine, CA 92618 USA  
Phone: 800.650.1816 Fax: 949.502.3245  
www.synovisorthowound.com



Authorized Representative  
in the European Community:  
AR-MED  
Runnymede Malthouse  
Egham TW20 9BD  
United Kingdom

