

# CLINICAL EXPERIENCE WITH A NOVEL PORCINE COLLAGEN MATRIX\* TO FACILITATE FINAL CLOSURE OF GRANULATING WOUNDS ORIGINALLY TREATED WITH NEGATIVE PRESSURE WOUND THERAPY

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## BACKGROUND

Negative pressure wound therapy (NPWT) facilitates dramatic granulation and contraction in responsive wounds, but once granulated, wounds need to support epithelialization in order to completely heal. A novel porcine collagen matrix\* combined with carboxymethylcellulose, sodium alginate, Ethylene diamine tetracetic acid (EDTA), and silver was used to encourage epithelialization of a well granulated wound bed. The denatured collagen present in the matrix enhances binding of fibronectin which acts as stepping stones for migrating keratinocytes. The addition of carboxymethylcellulose and sodium alginate introduces unique characteristics to the matrix that optimizes moisture of the wound bed. An optimally moist environment is critical for wound closure since both excess moisture and desiccation impair epithelialization. EDTA modulates MMP activity by chelating cations necessary for enzyme function. This effect still allows cellular migration while preventing wounds from becoming arrested in the chronic wound cycle due to excessive MMP activity. Silver in the product exerts broad-spectrum antimicrobial activity forming an effective barrier preventing microbial penetration and growth.

## METHODOLOGY

Wounds were treated with NPWT until granulation tissue reached the level of epithelium. Wounds were then dressed with a novel collagen matrix and an appropriate secondary dressing. Dressings were changed every 3-7 days.

## RESULTS

The novel porcine collagen dressing facilitated epithelialization and complete closure of wounds treated with NPWT.

## CONCLUSION

A novel protein matrix of blended and chemically cross-linked porcine collagen designed to facilitate fibronectin activation, encourage cellular migration, limit MMP activity, optimize wound bed moisture, and limit microbial overgrowth can promote epithelialization and final closure of wounds treated with NPWT.

## CASE HISTORIES

### Case 1

35-year-old female with history of ulcerative colitis and status post colectomy done 2-23-07 which was complicated by dehiscence was being treated with wet to dry dressing with little to no improvement. Following referral to outpatient wound care center, she underwent surgical debridement and NPWT was initiated on 5-21-07. Wound responded well to therapy by granulating and contracting. NPWT was discontinued on 6-27-07 and novel porcine collagen matrix dressing with silver\* was applied. Wound was noted to be closed by epithelialization on 7-2-07.

### Case 2

60-year-old female with history of diabetes, peripheral neuropathy, hypertension, and degenerative joint disease NOS treated January 2007 for subcutaneous abscesses involving RLE with intravenous (IV) antibiotics, multiple surgical debridement, and delayed primary closure. She was subsequently referred to hyperbaric center and was treated for compromised flap with hyperbaric oxygen therapy but both wounds ultimately required repeat surgical debridement on 4-19-07 and NPWT was instituted the following day. NPWT was discontinued on 5-11-07 when granulation tissue was even with level of epithelium but wound failed to progress to closure with conventional wound therapy until novel porcine collagen matrix with silver\* was introduced on 6-13-07. Wound was noted to be closed on 7-2-07.



Image 1: NPWT started 5-21-07



Image 2: NPWT continued 6-13-07



Image 3: 7-2-07. Dressed with collagen matrix with silver\* for 5 days.



Image 1: NPWT started on 4-27-07



Image 2: Wound dressed with collagen matrix with silver\* for 5 days.



Image 3: Wound dressed with collagen matrix dressing with silver\* for 12 days.

\* ColActive® Plus Ag - Collagen Matrix Dressing with Silver