# Autolytic Debridement and Wound Closure with Novel Self-Adaptive Dressing Technology in Patients with Multiple Comorbidities

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## CASE 1: Autolytic debridement and closure of lower extremity traumatic wound

**66-year-old male presented with three non-healing trauma wounds located on his right thigh and knee. Patient's prior medical history included diabetes mellitus, cerebro-vascular accident, diabetic peripheral neuropathy, hypertension, alcohol abuse, and folic acid deficiency. Patient is receiving pain management medication.**

**A. Day 0.** At presentation, wounds were covered with slough, yellow eschar and necrotic tissue. Drainage was scant and serous. Periwound tissue was pink, dry and intact, and scaly. Self-adaptive dressings were applied with stretch gauze and tape.

**B. Day 10.** Pain was reduced to zero and drainage was serosanguineous. Thigh ulcers displayed decreased yellow slough with light tissue present. Blackened dry eschar remained on knee ulcer.

**C. Day 28.** Wound base was filled with beefy red granulation tissue with decreased yellow and black eschar on knee ulcer. Affected areas were free from bioburden complications. Surrounding tissue was normal and healthy.

**D. Week 6.** Hypergranulation tissue present on thigh ulcers. Wound edges healthy and re-epithelializing. Silver stat gel applied with self-adaptive dressings.

**E. Week 7.** Thigh wounds reduced in size with bright red granulation tissue and re-epithelializing wound edges. Dry eschar tissue on knee ulcer.

**F. Week 14.** Thigh wounds were completely re-epithelialized with thin dry scab tissue on knee. Self-adaptive dressings were discontinued and patient was instructed to apply daily skin cream or vaseline ointment to avoid dryness and increase tensile strength.

*ENLUXTRA Self-Adaptive Advanced Wound Dressing, OSNovative Systems, Inc., Santa Clara, CA • www.OSNovative.com

## BACKGROUND

- Debridement of slough and necrotic tissue is a cornerstone of good wound practice, and critical in reducing bacterial burden within the wound.[1]
- Although autolytic debridement requires additional time to remove devitalized tissue, it is often a favored method of debridement in patients with multiple comorbidities due to its safety and selectivity in removing only devitalized tissue.[2]
- Dressings may play a key role in wound healing by promoting autolytic debridement in slough- or necrotic tissue-covered wounds.[3]
- We evaluated effectiveness of a novel, super-absorptive self-adaptive dressing* with respect to promotion of autolytic debridement and closure in five wounds.
- Self-adaptive wound care dressings are composed of multi-layered, pliable synthetic polymers with a breathable backing film impermeable to fluids and microorganisms.[4]
- Self-adaptive wound care technology is based on science of dynamic wound dressing materials with variable on-demand functionality; dressings are designed to facilitate moisture balance in wounds through simultaneous absorption of fluid and release of water vapor.[4]

## METHODS

- De-identified data records of patients with wounds that received treatment with self-adaptive wound dressings were retrospectively extracted and analyzed.
- Self-adaptive dressings were applied over wounds with 2 to 3 cm overlap onto intact skin, and adhered with an adhesive or gauze.
- Periwound and wound bed conditions were assessed and documented weekly.

## RESULTS

- Self-adaptive advanced wound dressings were applied to two patients with three trauma wounds and two venous insufficiency ulcers.
- Multiple chronic conditions were present in both patients.
- Four of the five wounds contained at least 50% slough, eschar, or necrotic tissue prior to initiation of the self-adaptive dressings, and none of the wounds were sharp debrided during treatment.
- All wounds in the series progressed to 100% granulation tissue coverage during use of self-adaptive dressings.
- Average time to 100% granulation tissue formation and no devitalized tissue was 59.3 days.
- All wounds closed in average of 116.6 days.
- Wound edges remained healthy and not macerated during treatment.

## CONCLUSIONS

- Self-adaptive dressings appeared to assist in autolytic debridement as evidenced by decreased slough over time in all wounds.
- Wound closure was achieved with use of self-adaptive dressings in all wounds in this series.

## REFERENCES

1.Vowden K, Vowden P. Wound debridement Part 1: non-sharp techniques. J Wound Care 1999;8(5):237-40.
2.Maklebust J and Sieggreen M. Pressure Ulcers: Guidelines for Prevention and Management, 3rd edition. Philadelphia, PA: Lippincott Williams & Wilkins. 2002. Print.
3.Baranoski S. Wound & skin care: Choosing a wound dressing, part 1. Nursing 2008;38 (1): 60-1.
4.Wolcott R, Fischenich V. Ultimate standardization of first-line wound dressings to a single type. Today's Wound Clinic 2014;8(3):22-24.

## CASE 3: Slough reduction and closure of chronic venous insufficiency ulcer

**Right lower leg venous stasis ulcer in 81-year-old female with multiple chronic conditions.**

**A. Day 0.** At presentation, wound was slough covered with black eschar. Periwound area was red and inflamed. Self-adaptive dressing was placed over the ulcer and surrounding intact skin, and secured with gauze.

**B. 1** week**.** Slough, eschar and periwound maceration were considerably reduced and wound edges appeared flatter.

**C. 6** weeks**.** Wound base was mostly red and granulating with minimal eschar.

**D. 16 weeks.** Wound base was bright beefy red and edges were flat and contracting toward the center of the wound.

**E. 6 months.** Ulcer was re-epithelializing and surrounded by healthy periwound tissue. Wound was fully resolved at 8 months.

**F. 2 month follow-up.** Ulcer remained closed and skin appeared healthy.

## CASE 2: Closure of trauma ulcer in elderly patient with venous insufficiency

**81-year-old female presented with a venous insufficiency leg ulcer that developed secondary to trauma from scratching. Patient's prior medical history included hypertension, atrial fibrillation on chronic anticoagulation therapy, CKD stage II, depression, gastroesophageal reflux disease, coronary artery disease, peripheral vascular disease, osteoarthritis/osteopenia and hypothyroidism. Surgical history includes total abdominal hysterectomy and appendectomy.**

**A. Day 0.** At presentation, wound was dark red with brown and black eschar. Wound was increasing in size and cultured positive for M. morganii and E. faecalis. Drainage was moderate with mild odor. Self-adaptive dressing was placed over the ulcer and surrounding intact skin, and secured with gauze.

**B. 12 weeks.** Wound base was pink with yellow and grey eschar. Drainage decreased and odor remained foul.

**C. 12 weeks.** Wound base was pink and red with increased granulation and no eschar. Drainage was moderate with mild odor.

**D. 18 weeks.** Wound base was bright beefy red, and pain and odor were no longer present.

**E. 5 1/2 months.** Ulcer was considerably smaller with healthy periwound tissue and no signs of infection.

**F. 6 months.** Wound was superficial with pink base and scant drainage. Wound was completely re-epithelialized one week later and self-adaptive dressings were discontinued.