

Limb at Risk: Use of Active *Leptospermum* Honey for the Management of an Infected Foot Wound Complicated by Cellulitis

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PROBLEM:

A 72 year-old diabetic female noted rapid onset of a reddened area on the dorsal surface of the foot. She presented to the hospital and was diagnosed with cellulitis.

Immediate care included sharp debridement and antibiotic therapy. She was transferred to rehabilitation for continued antibiotic therapy and local wound care.

The wound bed was covered with thick slough. The patient was neuropathic, therefore she experienced no pain, but periwound edema, erythema and warmth were present.

RATIONALE:

Type II diabetes mellitus combined with local and systemic risk factors placed this patient at high risk for lower extremity amputation.

Rapid debridement of slough and necrotic tissue was indicated to minimize complications and prepare the wound bed for healing.

METHODS:

A multidisciplinary plan of care was developed to optimize healing outcomes.

Active *Leptospermum* honey impregnated calcium alginate dressings* (HICADs) were initiated to promote gentle, yet rapid, autolytic and osmotic driven debridement in a moist wound healing environment. The dressings were applied with an absorbent cover dressing and changed daily.

Once vascular studies were completed and the majority of necrotic tissue was eradicated, acoustic pressure wound therapy** (APWT) serial wound debridement, and negative pressure wound therapy*** (NPWT) were initiated to enhance granulation tissue formation.

During the final phase of wound healing, active *Leptospermum* HICADs were re-initiated to enhance complete re-epithelialization.

DEBRIDING PROPERTIES OF HONEY

Active *Leptospermum* HICADs promote debridement as follows: A moist environment facilitates autolytic debridement.

The high sugar content of honey promotes movement of fluid from an area of high concentration to an area of low concentration, thus promoting an outflow of fluid. This osmotic effect draws lymph fluid from the deeper tissues and constantly bathes the wound bed.

Proteases within the lymph fluid contribute to the debriding activity of honey. A likely explanation for honey's debriding activity is the conversion of inactive plasminogen to plasmin, an enzyme that breaks down the fibrin that tethers slough and eschar to the wound bed.

RESULTS:

Rapid, immediate liquification of devitalized tissue was noted within several days of initiating active *Leptospermum* HICADs. Edema, erythema and warmth of surrounding tissue was rapidly reduced.

CONCLUSION:

This patient with a "limb at risk" for amputation experienced rapid reduction in edema, erythema, warmth, and necrotic slough with the use of active *Leptospermum* HICADs.

The dressings prepared the wound bed for healing and were versatile and easy to use throughout several phases of the wound healing process.

References:

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- * MEDIHONEY® Absorbent Calcium Alginate Dressing with *Leptospermum* Honey, Derma Sciences, Inc., Princeton, New Jersey.
- ** MIST® Therapy System, Celleration® Inc., Eden Prairie, MN.
- *** V.A.C.™, Kinetics Concepts, Inc., San Antonio, TX, Super Absorbent Dressing, Derma Sciences, Inc., Princeton, NJ

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1/18/2008 (#1)

Upon admission the patient was receiving antibiotic therapy. The wound bed was covered with thick, adherent slough. HICADs were initiated to promote debridement of necrotic tissue, reduce edema, erythema, warmth and provide topical antimicrobial action.



2/20/2008 (#3)

After one month the wound bed is clean and undermining is present. NPWT was initiated to enhance growth of granulation tissue.



3/24/2008 (#5)

Wound is progressing beautifully. Edges are actively advancing, healthy granulation tissue is noted, bioburden and exudate are managed well.



1/24/2008 (#2)

After six days of HICADs, a remarkable decrease in the amount of slough was noted as a result of honey's debriding properties. A combination of APWT, serial debridement, and HICADs were prescribed to further decrease surface debris.



3/12/2008 (#4)

Three weeks later, the wound is filling with granulation tissue and the undermining is healed. Re-epithelialization is now needed, NPWT was discontinued and the HICADs were reinitiated.



4/23/2008 (#6)

The total time to healing with our multidisciplinary, advanced modality approach is 3 months. This high risk diabetic patient with a "limb at risk" for amputation experienced the optimal outcome: a beautifully healed wound!

Case example of HICADs in conjunction with APWT and NPWT