



REDUCING AEROSOLIZATION AND CONTAMINATION: THE NEXT GENERATION OF ULTRASOUND ASSISTED WOUND THERAPY

JEFFREY A. NIEZGODA, MD, FACHM, FAPWCA, FACEP
DEBRA J. PETERSON, CCRN, MSN, ACNP-BC

AURORA HEALTH CARE
ST. LUKE'S MEDICAL CENTER
HYPERBARIC AND WOUND CARE ASSOCIATES
MILWAUKEE, WI

BACKGROUND/OBJECTIVE:

Acute wounds usually heal via normal progression through the phases of healing. Chronic, non-healing wounds develop if this process is impeded. Proliferative phase stagnation is characterized by increased proinflammatory cytokines, decreased cellular DNA synthesis, and increased matrix metalloproteinases (MMPs). Once present, these factors allow for increases in bioburden and devitalized/necrotic tissue, further delaying healing as well as increasing the risk for infection.

Debridement is essential to proper wound management as it enhances proliferative phase activity by stimulating cellular activity and removing senescent nonmigratory cells. Furthermore debridement reduces the risk of infection through elimination of necrotic tissue, an excellent medium for bacterial growth.

Sharps debridement is often utilized as it achieves goals rapidly, but the success of this painful technique can be limited due to incomplete removal of necrotic debris. Also, overly aggressive removal of viable tissue is possible and undesirable. Low frequency ultrasound assisted wound treatment (UAW) is emerging as an alternative method of sharps debridement for wound care.

When applied to the wound bed via a wound treatment solution (coupling medium), UAW produces deep tissue penetration of the ultrasonic energy. Associated fibrinolytic action cleaves the necrotic slough and biofilm from the underlying viable tissue without removing healthy tissue.

METHODS:

Early UAW devices have been criticized due to aerosolization and splattering of the solution and the risk of contamination. The newest generation of UAW device has been redesigned to limit aerosolization and the risk of contamination. The Qoustic Wound Therapy System™ (Arobella Medical, LLC Minnetonka, MN) deploys the Qoustic Qurette™, which allows highly focused ultrasound energy with significant reduction in the volume of coupling solution.

CONCLUSION:

The Qoustic Qurette accomplishes wound debridement via the delivery of highly focused ultrasound energy directly to the wound surface with the additional benefit of a significant reduction in the volume of coupling solution when compared to older UAW technology.

This novel UAW device reduces aerosolization and risk of contamination while achieving effective wound debridement.



Benefits of Decreased Aerosolization/Splatter

- Less inhalation risk to patient and provider
- Less exposure to blood borne pathogens
- Less risk of room and equipment contamination
- Less cost due to decreased need for PPE