Effects of pulsatile lavage with suction and MIST ultrasound transport therapy on healing in acute porcine wounds

Teresa Conner-Kerr, PhD, PT, CWS(D), Tracy Sparks, MPT, Jonathan Koo, MPT student, Amy Reardon, MPT student, Bryan Rogers, MPT student, Cammie Roy, MPT, Melynda Shirley, MPT student, Matthew Yoder, MPT student, P. Karen Sullivan, PhD, SM(ASCP), MT(ASCP) and Kenneth Salleng, DVM, East Carolina University, Greenville, NC

Abstract: Delayed wound healing is a significant problem that exacts a high cost both emotionally and financially. Because of these costs, new wound healing modalities are currently under development. The purpose of this study was to determine if pulsitile lavage with suction (PLS) or a noncontact ultrasound device enhance wound healing processes. A standard template was utilized to surgically prepare 3 cm^2 full thickness wounds on the dorsal aspect of 5 separate mixed breed pigs (2 on right and 2 on left). The right proximal wound in all pigs served as a control and was cleansed daily with sterile saline soaked gauze. The PLS (8 PSI impact pressure, 80 mmHg suction) and ultrasound (40 KHz, 0.1 W/cm^2) were randomly assigned to the other wounds. The mean area of the control wounds 10 days after surgical induction was 2.1 cm^2 compared to 1.6 cm^2 for the PLS (24%) and 1.4 cm^2 for the ultrasound-treated wounds (34%). Histological analysis revealed an increased depth of epidermal tissue and total blood vessel area in the granulation bed of ultrasound-treated wounds. Data from this study suggest that both PLS and ultrasound enhance tissue healing.

Presented at SAWC 2003