

Clinical Utility Evaluation in Lower Extremity Wound Healing Prediction

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Background: Outcomes in Wound Care are impacted by timely and accurate assessment of circulatory status. Current standard noninvasive vascular testing (NIVT) tools suffer shortcomings: inaccuracy of the Ankle-Brachial Index (ABI) in populations with arterial medial calcinosis and lengthy test times and operator variability in Transcutaneous Oxygen Monitoring (TCOM). Combining Skin Perfusion Pressure (SPP) and Pulse Volume Recording (PVR) in a single device is a practical alternative for performing rapid and accurate assessment of micro and macrocirculation.

Methods and Materials: Prospective, nonrandomized, single center investigation following 100 patients with lower extremity wounds for up to 16-weeks or until healing (whichever occurred first), and compares utility and wound healing prediction of paired NIVT technologies. The primary objective was measurement of test time required for accurate prediction of wound healing utilizing SPP/PVR compared to TCOM/ABI. Data available for 84 patients.

Results: Demographics reveal 52.4% female, mean age 68.8 years (range: 20-75) and 50% (42/84) with diabetes mellitus. Time to perform assessment of wound healing potential was 6.8 minutes (range 3-15) \pm SD2.5 for SPP/PVR tests and 35 minutes (range: 25-47) \pm SD5.2 for TCOM/ABI. A salient finding was that SPP/PVR accurately predicted wound healing potential at a rate of 88.9% (32/36) compared to 63.9% (23/36) with TCOM/ABI.

Conclusion: Preliminary datasets demonstrated 80% faster SPP/PVR mean test time compared to TCOM/ABI and greater accuracy of wound healing prediction of SPP indicating that Skin Perfusion Pressure/PVR is a highly useful pair of tests may prove to be a more cost-effective and accurate NIVT tool.