Extracorporeal Shockwave Therapy (ESWT) For the Treatment of Non-Healing Venous Leg Ulcers: A Case Series

Introduction

Extracorporeal shock wave therapy (ESWT*) is a non-invasive therapy that involves generating shock waves (transient pressure disturbances that propagate rapidly in 3-dimensional space) outside the body and transmitting the acoustic energy inside the body to induce therapeutic effects. This case series examines the effectiveness of ESWT in treating non-healing venous leg ulcers.

Methods

These patients had venous ulcerations verified by venous reflux study and adequate arterial flow verified by arterial dopplers with toe pressures. They had evidenced based procedures applied to their wounds including sharp debridement, moist wound balance, multi-layer compression bandaging, biofilm management and skin substitutes. Shockwave was applied weekly: 2,000 shocks at 3.5MHz. Total of 4200mJ.

Results

This retrospective case series, ESWT was applied to chronic venous leg ulcers. Patients were treated at a single center between 2/2022 and 5/2022. The criteria for application of ESWT was a lack of progress toward wound healing despite evidence based medicine protocols. Wounds considered healed after 6 shockwave treatments.

Discussion

93% of Venous leg ulcers (VLUs) are open longer than one year because of comorbidities, lifestyle, and work demands. These wounds are challenging to treat because of chronic inflammation, robust biofilms, hypoxia and inflammatory exudate that contribute to continued tissue breakdown and chronicity. The longer the wound is chronic the greater the risk of infection, hospitalization and lost work days.

This case series of patients with chronic venous leg ulcers demonstrated that ESWT was associated with timely wound closure. ESWT, applied every 7 days for 6 sessions in conjunction with good standard wound care treatments, was a convenient, out-patient (10-to-15-minute sessions) treatment without adverse effects. Complete healing suggests that incorporating ESWT into the wound care regimen for chronic non-healing wounds may be beneficial.

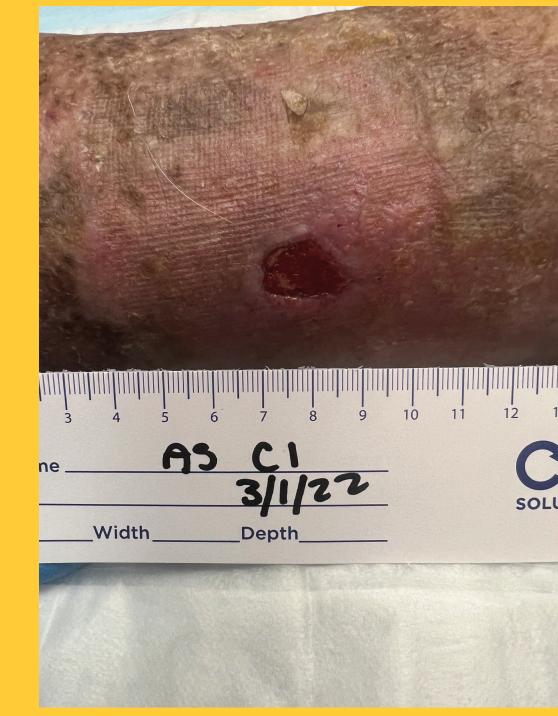


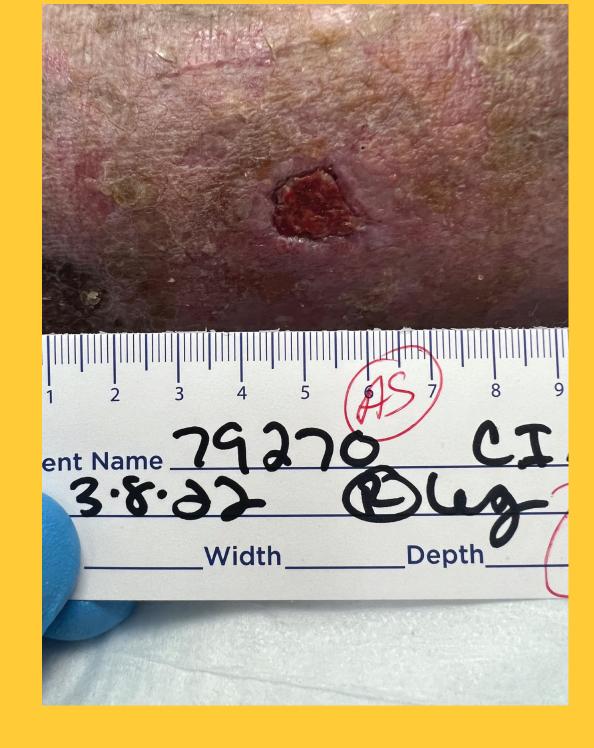
Patient A

53 yo Male referred for chronic wound over one year duration. Patient had pelvic compression syndrome treated with stents in the common femoral vein. Patient had robust arterial flow per doppler. 10 applications of neonatal foreskin applied prior. Wound biopsied from various areas was negative for skin cancer. I initiated biofilm management with anti-biofilm wound gel, collagen and an absorptive hydrofiber dressing with multi-compression bandaging. Weekly shockwave therapy commenced.

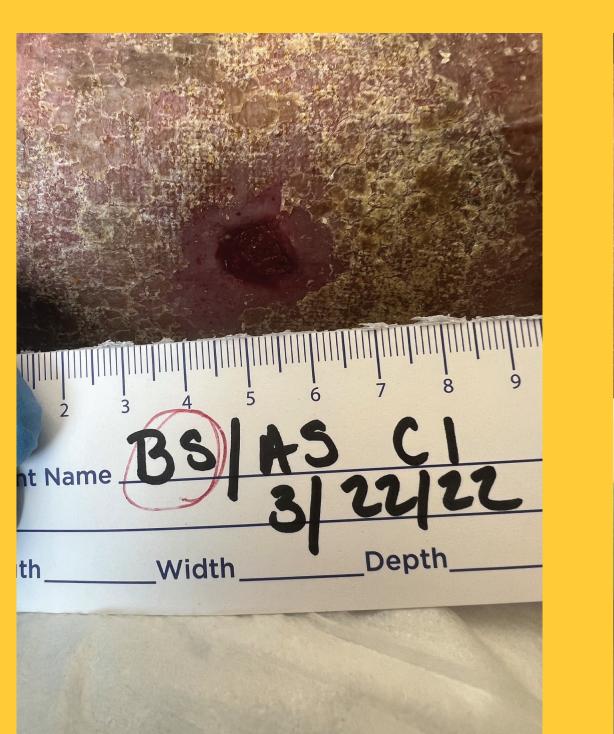






















Patient B

63 yo Male, long-time smoker, referred for chronic ulceration for over one year. Arterial doppler showed adequate arterial flow, venous reflux study showed significant GSV reflux which required endovenous ablation. Sharp debridement was then performed with biofilm management with anti-biofilm wound gel, collagen and absorptive hydrofiber dressing with multi-compression bandaging. Weekly shockwave therapy commenced.















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*ESWT device used is the DermaGold100 by SoftWave Tissue Regeneration Technologies