

# USE OF BIOACTIVE GLASS SKIN SUBSTITUE MATRIX IN TREATMENT OF STAGE 4 SACRAL PRESSURE INJURY

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## INTRODUCTION

Pressure injuries (PI) impose a significant burden on patients. Patients hospitalized with PIs show increase in lengths of stay and costs. Our aim was to assess the efficacy of Borate-Based Bioactive Glass Wound Matrix (BGWM\*) in a case series of chronic non-healing stage 4 sacral PI.

## METHODS

Cases from our tertiary wound care center in Lake Success, NY with sacral PI stage 4 consented to treatment. After cleansing and debridement the BGWM\* was applied to the PI, with a wound veil, and topical foam as a secondary dressing. Each case's standard of care (SOC) wound data was compared to post-BGWM\* use data. Descriptive statistics were used for SOC and post BGWM\* cross section area (cm<sup>2</sup>) and volume (cm<sup>3</sup>) in each patient. Statistics included student t-test, Spearman correlation and CORREL functions in Excel.<sup>1</sup>

## RESULTS

**CASE 1:** A 66-year-old female with hypertension, congestive heart failure, and morbid obesity presented with a chronic stage 4 sacral pressure ulcer. The subject was treated with advanced wound healing products, including NPWT, combo foam and topical oxygen, after which progress stalled. At baseline SOC Q3 2022, wound depth starts 1.3 cm, and the area was 3.7 cm<sup>2</sup>, 4.81cm<sup>3</sup>. The peri-wound skin appeared dry, muscle base granulated. Starting 8/3/23 to 9/26/23, four doses applied over 56 days. The final depth was 1.2cm, area 0.57 cm<sup>2</sup> and volume 0.69 cm<sup>3</sup>. The subject reported no issues associated with product use. BGWM\* area and volume change was significant compared to SOC by t-test p<0.05, also diminished BGWM\* slope ((-) R squared value) for area over time compared to SOC (-0.6 vs.+0.8)), and Spearman rank correlation and CORREL function 0.2 for volume supports divergent closure rates.

**CASE 2:** A 70-year-old female with a history of hypertension, hyperlipidemia, type 2 Diabetes Mellitus, and stage 3 chronic kidney disease presented with a chronic stage 4 sacral pressure ulcer. Though treated with advanced wound healing products, including NPWT and topical oxygen therapy, the case's progress stalled. SOC in Q1 2023, the wound bed displayed granulated muscle base. BGWM\* was applied 5/18/23 to 7/13/23, three doses over 55 days. The subject reported no issues associated with product use and stated that drainage decreased. The pre BGWM\* depth 1.8cm and area 0.6 cm<sup>2</sup> achieved closure over 8 weeks. BGWM\* treated compared to SOC area show Spearman and CORREL equations with divergent trends, area, and volume Spearman/CORREL correlation -0.2 supporting the closure over time with BGWM\*.

**CASE 3:** A 68-year-old female with a history of hypertension, hyperlipidemia, morbid obesity, and aortic stenosis presented with a chronic stage 4 PI. The subject was treated with advanced wound healing products, including NPWT, porcine skin grafts, and topical oxygen with little improvement. SOC data was from Q4 2022 through Q2 2023 and pre-BGWM\* wound depth measured 1.5 cm, and the area 0.96 cm<sup>2</sup>. The wound edges appeared macerated, with granulated muscle base. Wound exams completed from 6/22/23 to 11/2/23; six doses were applied over 139 days. The depth reduced to 1cm, but area and volume t-test was similar, and Spearman/CORREL correlation were area-0.42 and -0.35 for volume supporting SOC and BGWM\* similar closure rates. The subject reported no issues associated with product use. Both SOC and BGWM\* improved closure.

## DISCUSSION

This case series demonstrates the safety and efficacy of a Borate-Based Bioactive Glass Wound Matrix to effectively improve closure in stage 4 sacral PI.

### REFERENCES

1 Microsoft® Excel® for Microsoft 365 MSO (Version 2302) <https://www.exceldeemy.com/calculate-spearman-correlation-in-excel/>

\*Mirragen® Advanced Wound Matrix, ETS Wound Care, Rolla, Missouri

