

Three-Dimensional Wound Matrix for Refractory Post-Surgical Wounds: A Two-Patient Case Series

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INTRODUCTION

Chronic, non-healing surgical wounds present substantial challenges and often require multimodal advanced therapies for resolution. Common options include cellular, acellular, and matrix-like products (CAMPs), negative pressure wound therapy (NPWT), and hyperbaric oxygen therapy (HBOT). This case series evaluates a three-dimensional (3D) porcine hepatic wound matrix* designed to fill wound cavities and provide a stable, volumetric scaffold that supports cellular infiltration and granulation tissue formation. Its clinical effectiveness is demonstrated through the management of post-surgical dehiscence wounds, including a challenging case involving acute radiation therapy exposure.

METHODS

A retrospective analysis was conducted on two patients with non-healing surgical wounds refractory to standard-of-care (SOC) treatment. Both patients received applications of the 3D porcine hepatic wound matrix* within a comprehensive protocol. Data collected included the number of applications and timing, adjunctive therapies (e.g., NPWT and HBOT), prior CAMP usage, comorbidities, wound-related complications, and complete healing outcomes.

Case 1: 79-year-old female presented with an infected surgical dehiscence wound following a right total hip arthroplasty. Prior to initiating the 3D porcine hepatic wound matrix*, SOC and NPWT were utilized but failed to show progress in wound healing.

Case 2: 61-year-old female presented with a surgical (lumpectomy) dehiscence wound of the left breast following radiation therapy. Additional therapies including NPWT, 40 HBOT sessions, and 7 applications of a different CAMP were also utilized, but the wound did not progress to complete healing.

RESULTS

These cases illustrate the potential of the 3D porcine hepatic wound matrix* to successfully manage complex wounds with significant volume and depth. In both cases, a measurable reduction in the wound volume and depth was observed within the first 4-5 weeks of treatment, initiating a trajectory toward complete healing within 8 to 13 weeks.

CASE 1: Dehisced Total Hip Arthroplasty Wound

This case demonstrated a significant reduction in wound volume during the treatment period. By week 4, the wound volume decreased by 89%, increasing to a 97% reduction by week 9. Despite a complex health history and failure to progress with SOC and NPWT, the wound achieved complete healing by week 13 after 10 applications of the 3D porcine hepatic wound matrix*.



Baseline: 1.8cm x 7cm x 2cm (25.2cm³)



Week 4: 1cm x 4cm x 0.7cm (2.8cm³)
→89% reduction wound volume



Week 9: 0.6cm x 2.6cm x 0.5cm (0.78cm³)
→97% reduction wound volume



Week 13: Complete healing

CASE 2: Surgical Dehiscence Post-Radiation Therapy

Although the depth of the wound did not decrease during the first four weeks of treatment, by week 5 there was a 50% reduction that increased to a 62.5% reduction by week 6. This steady decrease in depth and overall wound size continued, resulting in complete healing by week 8. The 3D porcine hepatic wound matrix* was applied a total of 6 times.



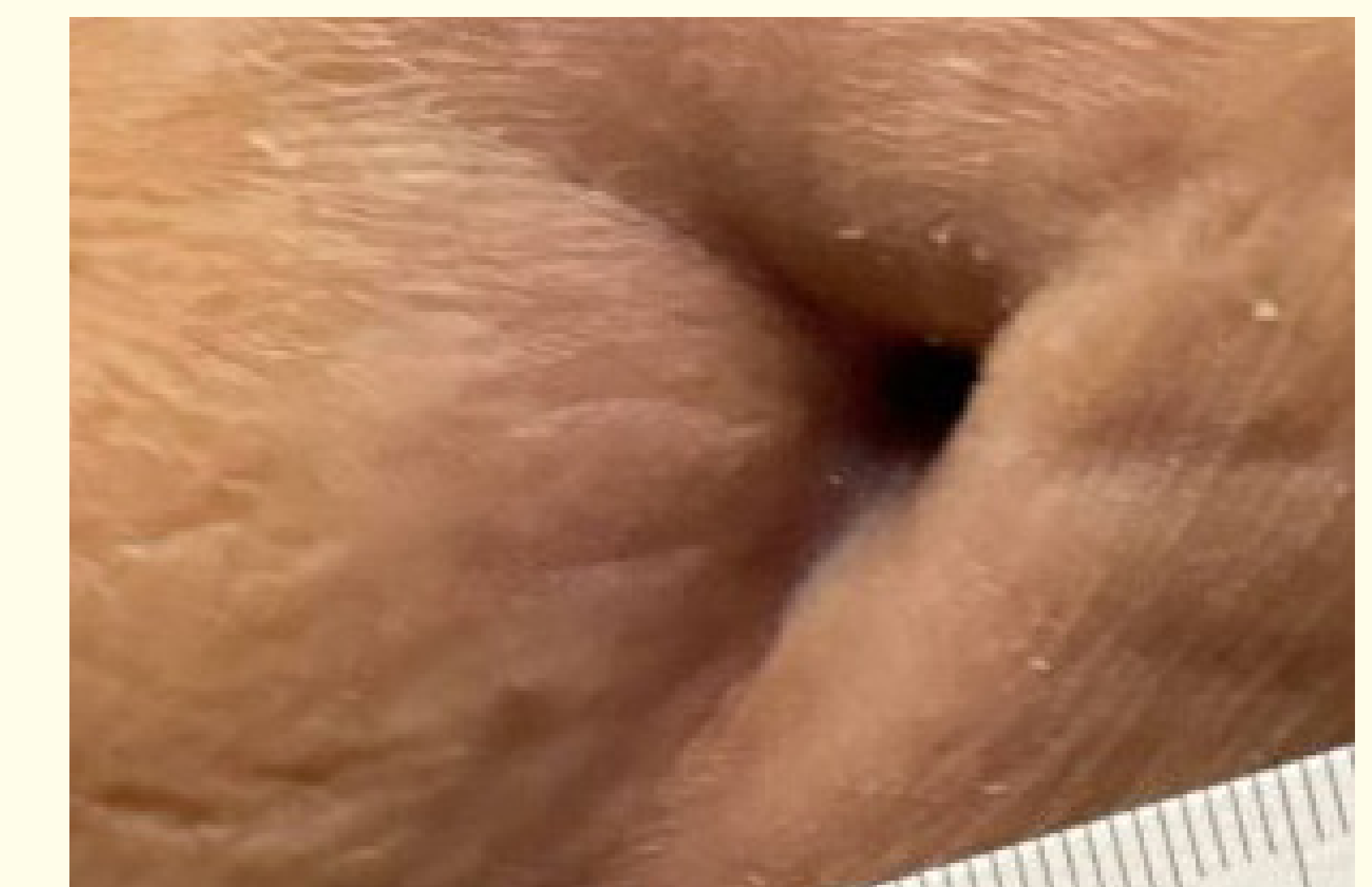
Baseline: 0.2cm x 0.2cm x 0.8cm (0.032cm³)



Week 5: 0.3cm x 0.3cm x 0.4cm (0.036cm³)
→50% reduction in wound depth



Week 6: 0.2cm x 0.2cm x 0.3cm (0.012cm³)



Week 8: Complete healing

DISCUSSION

The first case highlights the clinical efficacy of the 3D porcine hepatic wound matrix* in managing non-healing post-surgical wounds with volume. The impact of the 3D porcine hepatic wound matrix* was most notable during a 3-week pause in applications that resulted in an increase in the wound size. After resuming the 3D porcine hepatic wound matrix*, the wound size quickly decreased to complete healing.

Several factors complicated the second case including the patient's health history and recent acute radiation therapy. Additionally, previous treatments and therapies - including NPWT, HBOT, and the use of a different CAMP - failed to achieve complete healing. However, after 6 applications of the 3D porcine hepatic wound matrix*, complete healing was achieved by week 8.

CONCLUSION

In this two-patient case series, a 3D porcine hepatic wound matrix* supported complete healing of refractory post-surgical wounds after failure of prior advanced therapies. These cases demonstrate that a 3D porcine hepatic wound matrix* can support resolution of refractory surgical wounds with substantial depth, volume, and high comorbidity burden. The observed outcomes support the role of 3D porcine hepatic wound matrix* technology as an effective adjunct to SOC for post-surgical wounds that fail to progress despite comprehensive multimodal management.

*Miro3D Wound Matrix. Study sponsored by: Reprise Biomedical, Inc.

Miro3D wound matrix is indicated for the management of wounds, including: partial and full-thickness wounds; pressure ulcers; venous ulcers; chronic vascular ulcers; diabetic ulcers; tunneled, undermined wounds; trauma wounds (abrasion, lacerations, partial thickness burns, skin tears); drainage wounds; and surgical wounds (donor sites/grfts, post-Moist surgery, post-laser surgery, podiatric, wound dehiscence).

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