## **Application of Fragmented Fish Skin Graft\* on Nonhealing Traumatic** Leg Ulcers for a Diabetic, Obese Patient with Pacemaker, Metabolic Syndrome, Hypertension, Hyperlipidemia, and Venous Insufficiency

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## INTRODUCTION

Fish skin graft (FSG) is a xenograft derived from Atlantic cod that augments wound healing<sup>1</sup>. This case evaluates FSG\* in a patient with nonhealing traumatic ulcers with cellulitis on the left lower leg which had not responded to conservative wound care. Patient is a 70-year-old, obese female with a pacemaker and PMH of bradycardia, metabolic syndrome, hypertension, hyperlipidemia, and venous insufficiency. Need for expedited healing arose as the wound persisted despite over five weeks of standard care and risk of further infection and osteomyelitis developed.

## METHODS

Patient presented with wounds on the lower left leg with cellulitis following a fall two weeks prior. At baseline, the combined surface area of the wounds totaled 59.74 cm<sup>2</sup> with an average depth of 0.5 cm; purulence was noted in the wound, indicating infection. Subsequently, oral trimethoprim-sulfamethoxazole antibiotics were initiated. Standard care was performed over five weeks, including serial debridement and topical antibacterial wound dressing with two-layer compress.

Patient completed the course of antibiotics, and wound surface area decreased to 12.24 cm<sup>2</sup>. however, the infection continued and the risk of osteomyelitis increased due to proximity to the tibia. FSG was deemed necessary and was applied once at the next visit, at which point the remaining wound surface area measured 2.16 cm<sup>2</sup> with a depth of 0.5 cm. Within two weeks following FSG application, the wound had reduced to 0.12 cm<sup>2</sup> surface area with a depth of 0.2 cm. Seven days later, the wound was determined closed with noted hyperpigmentation.

## CASE: 70-YEAR-OLD FEMALE NONHEALING TRAUMATIC LEG ULCERS

Patient History: 70-year-old diabetic, obese female with PMH of metabolic syndrome, hypertension, hyperlipidemia, venous insufficiency, and pacemaker

Wound History: Patient presented with cellulitis of traumatic ulcer on lower left leg that failed five weeks of conservative wound care

Kerecis Applications: One application of fragmented piscine skin substitute (MariGen Micro 4 sq cm) Patient Outcomes: Wound achieved complete closure three weeks after single application of fragmented piscine skin substitute







Two weeks post-application (8/21/2024) Total surface area: 0.12 cm<sup>2</sup>, depth 0.2 cm



Week 4 of standard care (7/25/2024) Total surface area: 12.24 cm<sup>2</sup>



Wound closure (8/28/2024) Cellulitis resolved, noted hyperpigmentation



Single FSG application (8/7/2024) Total surface area: 2.16 cm<sup>2</sup>, depth 0.5 cm



Final healing outcome (9/25/2024)

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## RESULTS

Despite over five weeks of standard care, wound closure was only achieved once the treatment modality was augmented with FSG application. A single FSG treatment enabled complete wound closure three weeks after implementation.

## CONCLUSIONS

This case illustrates clinical efficiency in using FSG to treat large, traumatic, nonhealing leg wounds in a geriatric female with multiple comorbidities of bradycardia, hypertension, hyperlipidemia, and venous insufficiency. Patient also had a large, subcutaneous hematoma which complicated healing. FSG proved safe and effective in wound healing and prevented further infection and osteomyelitis. More extensive studies should investigate FSG efficacy in treating traumatic wounds in patients with venous insufficiency.