

BACKGROUND

Sacral pressure injury (SPI) reconstruction with primary closure and skin grafting continues to be a challenge due to the low success and high recurrence rates. Free flaps are often chosen despite a high risk of complications associated with the surgery. We present a patient with a chronic SPI treated by an alternative method using Kerecis® acellular fish skin graft (FSG) to achieve early full closure. Due to its native dermal structure, porosity, biomechanical properties and natural bacterial barrier rich in Omega 3 fatty acids, the FSG help facilitate the formation of granulation tissues and allow faster wound closure. The aim of this case report is to describe a novel skin graft manufactured from fish skin that could prove beneficial in the treatment of chronic SPI.

OBJECTIVE & METHOD

We present a new treatment approach for chronic stage IV SPI using FSG in conjunction with negative pressure wound therapy (NPWT) in a single case report. Several mechanical debridements along with wet to dry dressing changes and collagenase were performed to ensure a clean and healthy wound bed prior to grafting. NPWT was used to help with tissue granulation to achieve the optimal wound size for grafting. Initial application of the FSG was done in the operating room and NPWT was used to secure the graft. Weekly NPWT dressing changes were performed in the outpatient setting and wound healing progress was assessed by photographs and measurements.

CASE

An 80-year-old male patient with hypertension, cerebrovascular accident, atrial fibrillation and Covid-19 infection presents for management of a chronic stage IV SPI that developed 1.5 years ago. The initial SPI measured 11 x 11 x 2cm. In May 2021, the patient underwent serial mechanical debridements. The wound was dressed with wet to dry dressings along with collagenase and transitioned to NPWT after 2 weeks to achieve tissue granulation optimal for graft application. At the time of graft application, the wound measured 3.5 x 5 x 1cm. A vascular wound bed was achieved after sharp excision and debridement. FSG was placed directly on the wound followed by a knitted cellulose acetate fabric impregnated with petrolatum emulsion and NPWT. The NPWT was placed to -125mmHg suction. NPWT was changed weekly at an outpatient clinic and serial dimensions were taken to monitor wound healing progression.

RESULTS

Table 1: Wound Prior to Graft Application















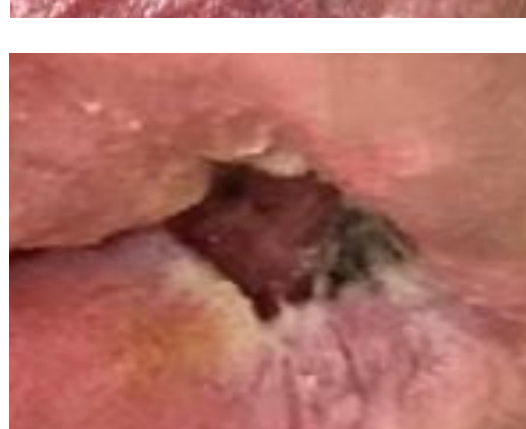



Month 1	Month 2	Month 3	Month 4	Month 5	Month 6
					

Table 2: Progression of Wound After Graft Application in October 2021

Month 1	Month 2	Month 3	Month 4	Month 5	Month 6
					
					

RESULTS

- Significant granulation tissue and a decrease in wound depth by half was noted within the first month of FSG application.
- NPWT kept the wound clean and well vascularized, which allowed for optimal healing.
- Over 6 months, the wound demonstrated complete wound closure after just one application of Kerecis® FSG.

DISCUSSION

Surgical management of SPI faces many complication risks such as wound dehiscence, ulcer recurrence, and infection, leading to higher rate of hospitalization and prolonged hospital stay. The above case represents an example of FSG application in treating chronic SPI. Acellular FSG with NPWT can provide another option to accelerate wound healing in patients with chronic SPI who have failed other conservative treatment options. Along with the NPWT, the acellular FSG provides a scaffold for cellular migration and proliferation, and supports vascularization and the formation of granulation tissue. The FSG was able to bring the wound to complete closure within 6 months without any further surgical intervention. Complete wound closure was achieved with only one application of the acellular FSG, without any complications to date. It appears to be a promising treatment option for chronic SPI and this case can provide future clinical and surgical guidance to practitioners dealing with similar disease processes. While limited, this study yielded excellent results and demonstrates FSG's potential as a clinically advantageous therapy for SPI.