Pressure Injury Reconstruction Utilizing an Ovine Forestomach Matrix Graft

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INTRODUCTION

The burden of pressure injuries (PI) remains a substantial problem with over 1 in 10 adults patients admitted to hospitals affected with PIs [1]. As of 2011 it was estimated that the cost of treating a stage 4 PI and its related complications was \$129,248. Additionally, the average 6 month post operative healing rate for a stage 4 PI is 31-34% and the post operative complication rate after flap reconstruction is reported to be 58.7%. Herein we present the use of an ovine forestomach matrix (OFM) graft in PI reconstruction. OFM is an intact extracellular matrix graft that has demonstrated an ability to modulate tissue proteases [3], promote angiogenesis [4] and is resilient in contaminated wounds [5-7]. The authors hypothesize that the addition of OFM would decrease post-operative complications and healing times seen in PI reconstruction.

METHODS

This is a single center retrospective case series analyzing 6 cases (n=6) in which OFM was utilized as part of PI reconstruction. After surgical reconstruction patients were followed up until wound closure.

RESULTS

Five males and one female patient all presented with Stage 4 PI's. All patients underwent a flap surgical reconstruction with the use of OFM as an implant. All flap reconstruction patients had healed surgical incisions with no significant postoperative complications. There was one mild postoperative dehiscence that healed by 5 weeks.

CONCLUSION

OFM may assist in the accelerated healing of PIs following surgical reconstruction and lower the complication rate when used as part of flap closure. Further studies are needed to expand on this pilot experience.

REFERENCES AND DISCLOSURES

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Sex/Age	Comorbidities	History	Defect Measurement	
M, 51	• Paraplegic	 Recurrence of left ischial and trochanteric PI Prior gluteal flap for sacral ulcer, VY hamstring flap for left ischial ulcer Stage 4 ischial and trochanteric PI with underlying osteomyelitis 	~20 x 30 cm	 Fully No reweek No contraction
M, 66	• ESRD	 Stage IV sacral decubitus PI after prolonged ICU stay for gallstone pancreatitis 	~10 x 10 x 5 cm	FullyNo reNo contract
M, 24	• Paraplegic after GSW	 Stage IV bilateral ischial PI Prior history of E. coli and Strep infections with underlying ischial tuberosity osteomyelitis suspected on MRI 	~8 x 9 x 5 cm (bilateral)	 Fully Drain week side No re week No co
F, 49	• Obesity	 COVID resulting in prolonged ICU stay in 2021 Stage IV PI from ICU stay, underwent debridements and wound care for 1 year with no significant progress MRI demonstrated concerning sign of osteomyelitis in the coccygeal and distal sacrum 	~8 x 7 x 7 cm	 Fully Remand mont No content
M, 25	• Paraplegic after MVA	 Recurrent stage IV sacral decubitus PI and a new stage IV left ischial PI with significant osteomyelitis extending from ischium to posterior column of the acetabulum Patient has had previous V-Y advancement flap 3 years prior to sacral PI 	~15 x 15 x 8 cm	 Fully No reweek No contraction
M, 56	 DM Previous smoker 	 Burned bilateral buttocks and thighs in 2017 in a roofing accident STSG failed leading to stage IV PI Initial attempt at reconstruction at outside center dehisced and now has recurrent stage IV PI with osteomyelitis of ischium 	~ 15 x 10 x 6 cm	 Fully No reweek No contraction

Case Example: 25-year-old male with recurrent Stage IV PI and concurrent osteomyelitis.





Outcomes

y healed at 6 weeks recurrence, last follow-up ek 18 complications

y healed at 5 weeks recurrence at week 18 complications

ly healed at 5 weeks in pulled out accidentally ek 1; small seroma left

recurrence, last follow-up ek 16

complications

ly healed at 5 weeks

mained healed at 16

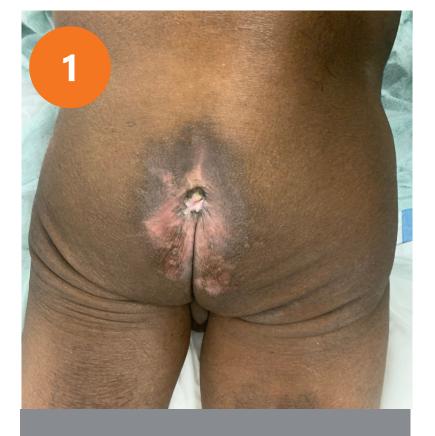
nths

complications

ly healed at 5 weeks recurrence, last follow-up ek 8 complications

y healed at 4 weeks recurrence, last follow-up ek 6 complications

Surgical **Algorithm**

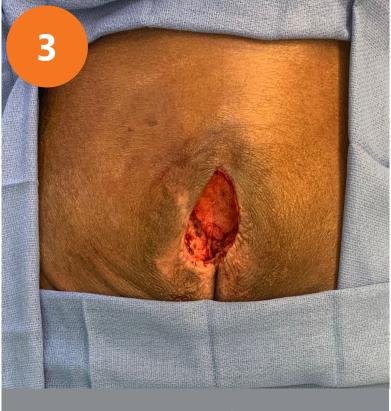


Resect nonviable tissue



Identify and elevate appropriate muscle flap





Bolster OFM graft into dead space



ciNPWT placement