The Healing Power of Nature

Piscine Tissue Graft* (PTG) Utilized in Resolution of APR Surgical Wound Failed VRAM Flap in ancy K. ChatRadiated Field

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INTRODUCTION

Surgical full thickness wounds dehiscence in perineal region can be difficult to heal for a multitude of reasons. In literature review Abdominal Perineal Resection (APR) morbidity in relation to healing and wound complications irrespective of surgical approach varies from 14-80%. [1,2] Delayed wound healing risk factors include but are not limited to, obesity, smoking, smoking history, APR procedural bleeding, pre-operative chemotherapy, pre-operative radiotherapy, immune suppression, hypoalbuminemia.[3] Pre procedural chemoradiotherapy account for the highest APR morbidity risks association for healing complications. Chemoradiotherapy is associated with tissue atrophy, fibrosis, and lymphatic disruption of the healing cascade.

METHODS

Weekly applications of fragmented piscine tissue graft (PTG) was utilized to treat a recalcitrant failed flap closure in a seventy-year-old female status post APR follow by vertical rectus abdominis myocutaneous flap (VRAM) closure of perineum/posterior vaginal wall. Wound healing was complicated due to pretreatment regimen of Adenocarcinoma of the rectum with chemoradiotherapy. Two weeks post operative visit patient was found to have 75% flap failure, 26 cm sq full thickness wound.

Kerecis™, Kerecis, Isafjordur, Iceland

CASE: SURGICAL WOUND DEHISCENCE IN RADIATED FIELD

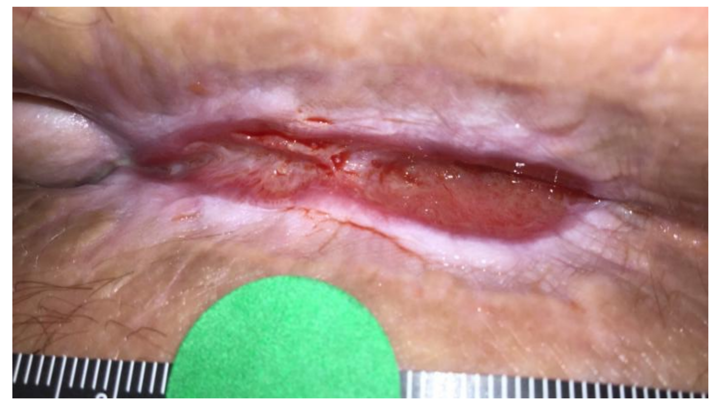
Patient History: 70-year-old Caucasian female with past medical history of Deep Vein Thrombosis (DVT), Degenerative joint left hip and chemoradiotherapy

Wound History: Patient presented for evaluation and management of surgical wound dehiscence with flap failure status post Abdominal Perineal Resection (APR) for colorectal cancer. Wound failed to respond to 12 weeks SOC.

Kerecis Applications: 10 applications of fragmented fish skin graft

Patient Outcomes: Full closure was obtained in the perineum following 10 applications and improved moisture associated skin irritation to perineum was noted.

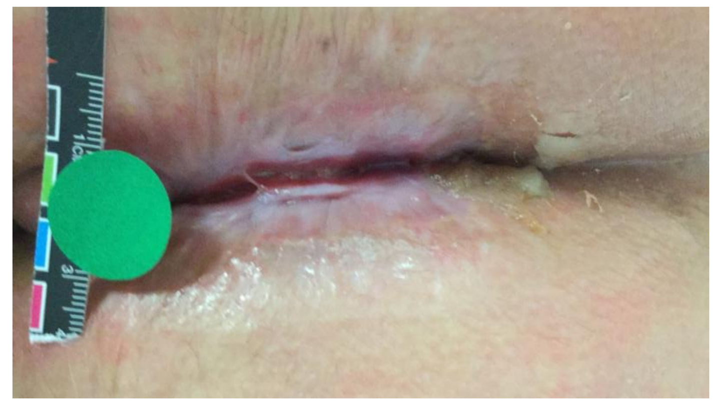
Initial presentation



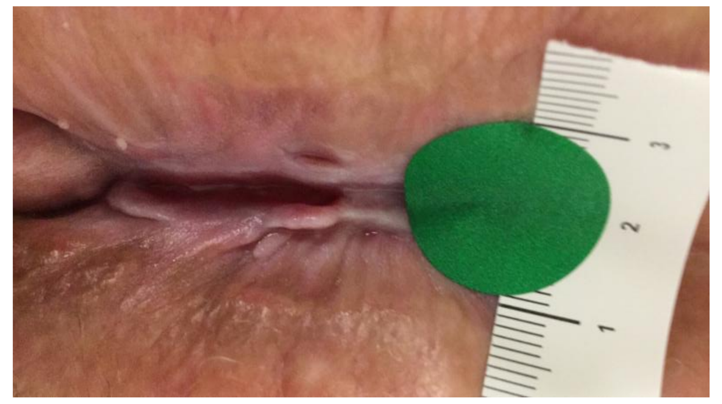
Week 1
First application of fragmented fish skin graft

Week 2
Second application
Wound size: 3.58cm L x 1.06cm W x 0.2cm D
New epidermis observed

Week 3
Third application
Wound size: 3.23cm L x 0.45cm W x 0.2cm D



Week 4
Fourth application
Wound size: 2.16cm L x 0.56cm W x 0.2cm D
Significant reduction in wound size



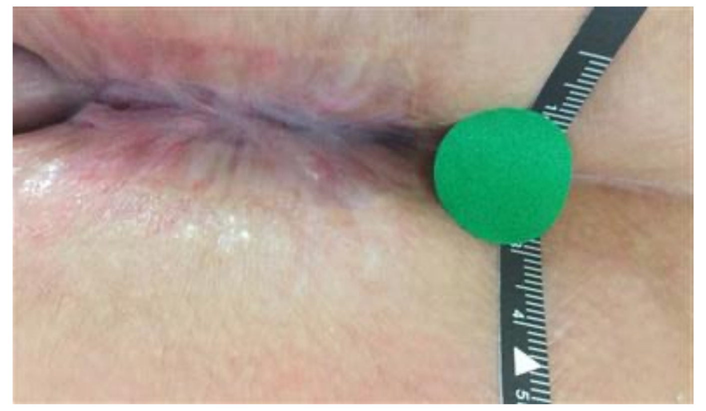
Week 9
Fifth application
Wound size: 1.48cm L x 0.33cm W x 0.1cm D
100% granulation

Week 10
6th application
Wound size: 1.95 cm L x 0.44cm W x 0.1cm D

Week 11
7th application
Wound size: 1.59cm L x 0.54cm W x 0.2cm D

Week 12
8th application
Wound size: 1.09cm L x 0.27cm W x 0.2cm D

Week 13
9th application
Wound size: 1.68cm L x 0.71cm W x 0.1cm D



Week 15
Final healing outcome
100% new epidermis with improved tissue mobilization
Perineal and vaginal atrophy showing signs of improvement

RESULTS

The perineal wound was treated with standard wound bed preparation, serial debridement followed by weekly applications of fragmented PTG Significant wound improvement was noted following PTG therapy and progressed to full closure in 10 applications over a five-month period.

CONCLUSIONS

Wound healing was further complicated by absences from services in 2-4-week intervals on multiple occasions due traveling out of state. When consistent weekly applications of PTG were observed consistent healing was attained verses standard of care. When standard of care was utilized during periods of absence from service marked wound deterioration would occur. PTG is an innovative biological acellular graft that augments wound healing by reduction in inflammation, increased angiogenesis, cell mediation to wound closure.[5] Further studies in the use of PTG in the treatment of complex wounds are needed.

References

1. Azah A. Althumairi, etal. Predictors of Perineal Wound Complications and Prolonged Time to Perineal Wound Healing After Abdominoperineal Resection. Cancer World Journal of Surgery volume 40(7):1755–1762 (2016) https://pubmed.ncbi.nlm.nih.gov/26908238/ Accessed 11/18/2022
2. Bullard KM, Trudel JL, Baxter NN, et al 2005 Primary perineal wound closure after preoperative radiotherapy and abdominoperineal resection has a high incidence of wound failure Dis Colon Rectum 2005; 48: 438–443 https://pubmed.ncbi.nlm.nih.gov/15719190/ Accessed 11/18/2022
3. Buscail E, Canivet C, Shourick J, et al. Perineal Wound Closure Following Abdominoperineal Resection and Pelvic Exenteration for Cancer: A Systematic Review and Meta-Analysis. Cancers 2021, 13(4) 721 https://www.mdpi.com/2072-6694/13/4/721/htm https://doi.org/10.3390/cancers13040721 Accessed 11/18/2022 Christian CK, Kwaan MR, Betensky RA, et al, Risk factors for perineal wound complications following abdominoperineal resection. Dis Colon Rectum 2005; 48: 43–48. https://pubmed.ncbi.nlm.nih.gov/10030413/ Accessed 11/18/2022
4. Eseme EA, Scampa M, Viscardi JA, et al, Surgical Outcomes of VRAM vs. Gracilis Flaps in Vulvo-Perineal Reconstruction Following Oncologic Resection: A Proportional Meta-Analysis Cancers (Basel). 2022 Sep 1;14(17):4300. doi: 10.3390/cancers14174300. https://pubmed.ncbi.nlm.nih.gov/36077834/ Accessed 11/18/2022
5. Fiakos G, Kuang Z, Lo E, Improved Skin Regeneration with Acellular Fish Grafts. Engineere4d Regeneration Vol 1, 2020 pg95-101 https://www.sciencedirect.com/science/article/pii/S2666138120300116 Accessed 11/18/2022
6. Holm T, Ljung A, Häggmark T et al (2007) Extended abdominoperineal resection with gluteus maximus flap reconstruction of the pelvic floor for rectal cancer. Br J Surg 94:232–238 https://pubmed.ncbi.nlm.nih.gov/17143848/ Accessed 11/18/2022
7. Wiatrek RL, Thomas SJ, Papaconstantinou HT, Perineal Wound Complications after Abdominoperineal Resection Clinics in Colon and Rectal Surgery Vols. 17 to 35; 2004 to 2022 https://pubmed.ncbi.nlm.nih.gov/20011400/ Accessed 11/18/2022