

Ovine Forestomach Matrix in the Surgical Management of Complex Volumetric Soft Tissue Defects: A Retrospective Case Series

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INTRODUCTION

Volumetric soft tissue loss is an urgent surgical issue and can frequently lead to suboptimal outcomes for patients due to significant soft tissue loss, compromised vital structures (e.g., viscera, tendons, neurovascular structures), and contamination[1]. Ovine forestomach matrix (OFM) has demonstrated clinical success in the surgical management of acute and chronic soft tissue defects, especially in contaminated fields providing a clinically effective option for the immediate coverage of exposed vital structures prior to definitive closure [2].

This retrospective case series (n=13 defects) evaluated the clinical effectiveness of OFM (graft and/or particulate formats) in the surgical management of contaminated volumetric soft tissue defects resulting from necrotizing soft tissue infection, motor vehicle accidents, pressure injuries, trauma and surgical dehiscence.

METHODS

The IRB-approved retrospective study included patients that had undergone surgical reconstruction during the period January 2021 to November 2022 at a single facility. Patient demographics (e.g., age, gender, significant baseline comorbidities), defect etiology and characteristics (e.g., size, CDC grade), and outcomes (e.g., 100% granulation tissue formation, recurrence, complications) were captured. Secondary dressing was NPWT @ 125 mmHg for each defect. The primary study outcome was defined as time (days) for complete graft integration and volumetric fill of the soft tissue defect. Secondary endpoint included post-operative complications (e.g., infection, pain, and recurrence). Descriptive statistics (e.g., median, mean, standard deviation (SD)) were calculated.

RESULTS

A total of 13 volumetric soft tissue defects across ten patients that underwent surgical reconstruction. Mean defect age was 3.5±5.6 weeks and mean area was 217.3±77.9 cm². Most defects had exposed structures (85%) and all defects were CDC grade 2, or higher. Mean time to 100% granulation tissue formation was 23.4±9.2 days, with median product application of 1.0. Staged reconstruction was used in n=7/13 defects, with the remainder (n=6/13) left to heal via secondary intention using standard wound care. There were no major post-operative infections or adverse events (mean follow-up of 7.4±2.4 weeks).

CASE 1: 61-Year-old female. Left arm trauma due to MVA (Morel-Lavalle Lesion)



CASE 2: 54-Year-old transgender male. NSTI of the posterior thigh



CASE 3: 36-Year-old male. Full thickness right hip defect due to MVA



CASE 4: 58-Year-old male. Stage IV pressure injury of the heel, with exposed bone and osteomyelitis



CASE 5: 49-Year-old male with spina bifida, Fournier's gangrene, right groin.



CONCLUSION

The preliminary findings of this case series suggest the clinical efficacy of OFM in the surgical reconstruction of volumetric soft tissue defects often with only one application. These data suggest that OFM can potentially shorten the time to final closure, limit surgical complications, and provide volumetric contour restoration and functional tissue regeneration.

REFERENCES AND DISCLOSURES: [1] Guest, J. F., G. W. Fuller, and P. Vowden. 2018. 'Costs and outcomes in evaluating management of unhealed surgical wounds in the community in clinical practice in the UK: a cohort study', *BMJ Open*, 8: e022591. [2] Bohn, G.A. and A.E. Chaffin, Extracellular matrix graft for reconstruction over exposed structures: a pilot case series. *J Wound Care*, 2020. 29(12): p. 742-749. MTC and WMV have received honoraria from Aroa Biosurgery Limited. *Myriad Matrix, Aroa Biosurgery Limited, New Zealand, ^Myriad Morcells, Aroa Biosurgery Limited, New Zealand,