Clinical Evaluation of an Extracellular Matrix Surgical Graft for Reconstructive Surgery over Exposed Bone or Tendon

Abigail E. Chatfin (MD, FACSM, CWSP, FAPWCA), Gregory A. Bohn (MD, ABPM/UHM, MAPWCA, FACHM)

1Department of Surgery, Tulane University School of Medicine, 1430 Tulane Avenue, New Orleans, Louisiana 70112, USA; 2Department of Surgery, Central Michigan School of Medicine, St. Joseph Hospital, 200 Hinkley Rd, Tavares, FL, 32778, USA

INTRODUCTION

Full-thickness skin defects with exposed bone and tendon tissue usually require extensive soft tissue reconstruction to replace the damaged extracellular matrix (ECM). Such wounds do not often heal without intervention and failure to close can lead to chronicity, infection and even amputation. ECM biomaterials can be used for soft tissue reconstruction to provide support and to aid the regeneration of missing or damaged tissue. The ECM ‘evine’ foremastich matrix (OFM), modulates inflammation, stimulates blood vessel formation, promotes scaffold infill and undergoes complete remodeling [1]. For plastic and reconstructive surgery (PRS), OFM layers have been laminated without using ‘non-natural’ components (e.g. croslinking agents or synthetic polymers) into OFM PRS grafts, thereby preserving the structure and biology of single-layer OFM. This trial was undertaken to evaluate the performance of the OFM PRS graft when used for full thickness defects with exposed bone and/or tendon.

METHODS

All wounds were debrided during the initial consultation and then as needed during the study. OFM PRS grafts of different thicknesses labelled ‘Thin’ or ‘Thick’ (~1 mm and ~2 mm thick respectively) were used. Materials were cut to size as needed, and rehydrated with saline prior to application. Wounds were imaged and assessed frequently, and a split thickness skin graft (STSG) was applied as required.

RESULTS

The OFM PRS graft was easy to apply, conformed well to exposed tissue and rapidly vascularized leading to well-formed granulation tissue. Where the OFM PRS graft was used to cover exposed bone and tendon tissue, the regenerated neo-dermis began formation within seven days, with a robust blood supply. Participants reported no pain or adverse events and were satisfied with their surgical outcomes. This set of clinical cases provides preliminary insights into the performance of the OFM PRS graft for exposed bone and tendon cases.

REFERENCES AND DISCLOSURES