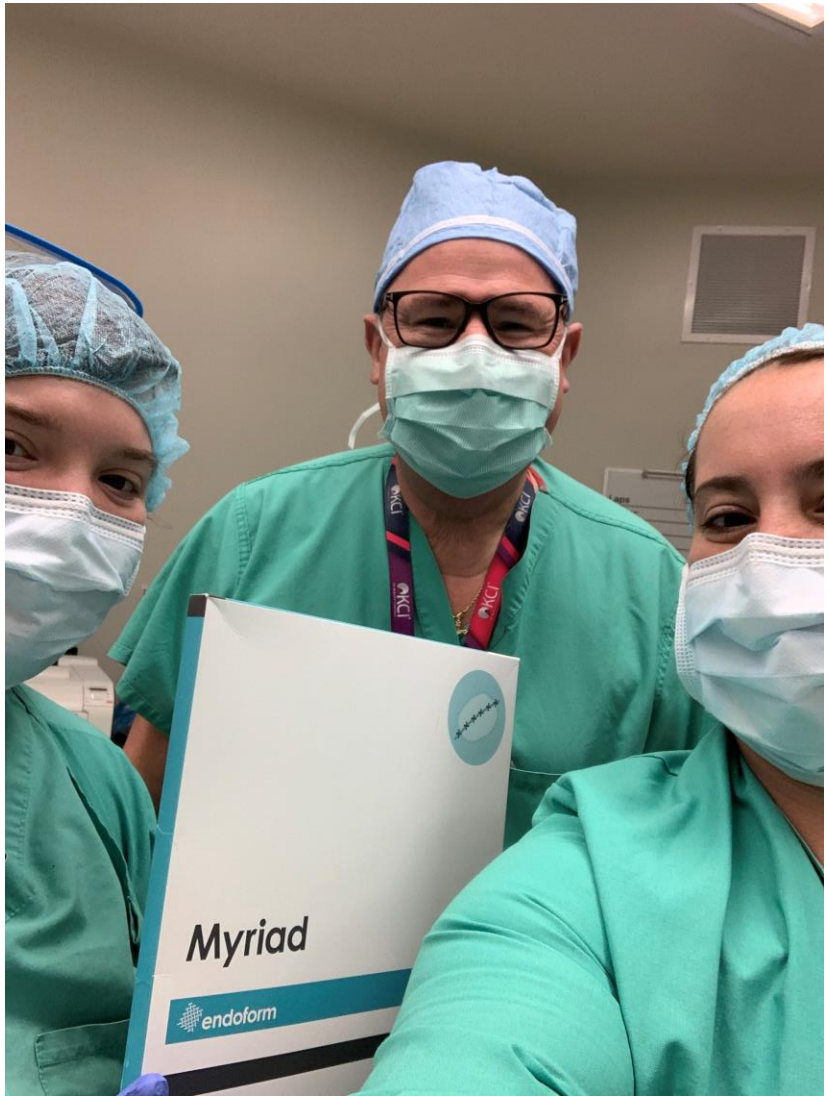
Extracellular matrix-based regeneration over exposed bone and tendon: A prospective case series

James E Geiger Jr (DPM, FACFAOM, FACFAS) and Janice Skwarczyk (PT CWS)

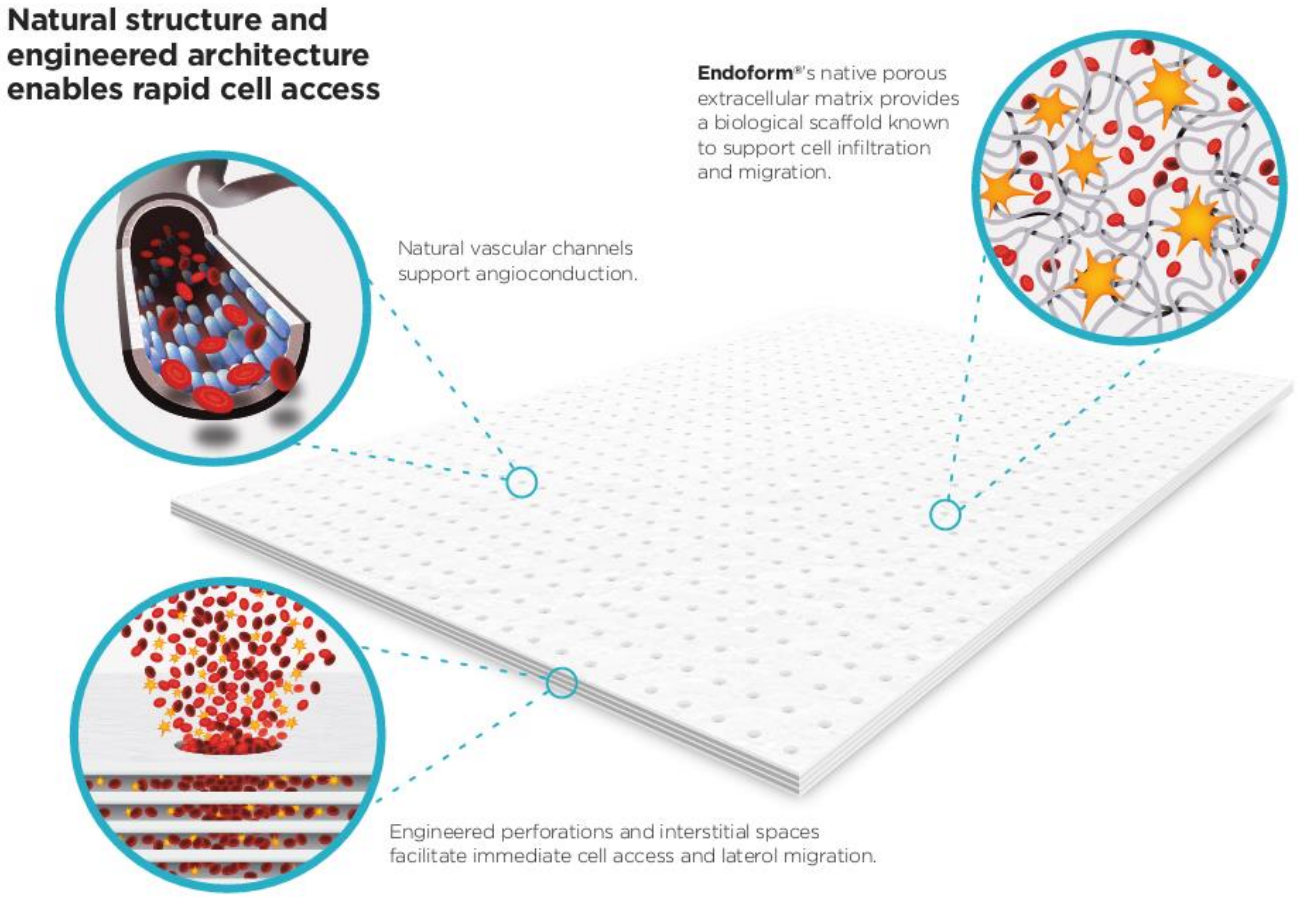
Palos Medical Group, Orland Park, IL, USA



Purpose

- Evaluate the clinical performance of a bio-engineered extracellular matrix (ECM) graft in complex lower extremity reconstruction.
- Four cases evaluated with exposed bone and tendon in complex patients.

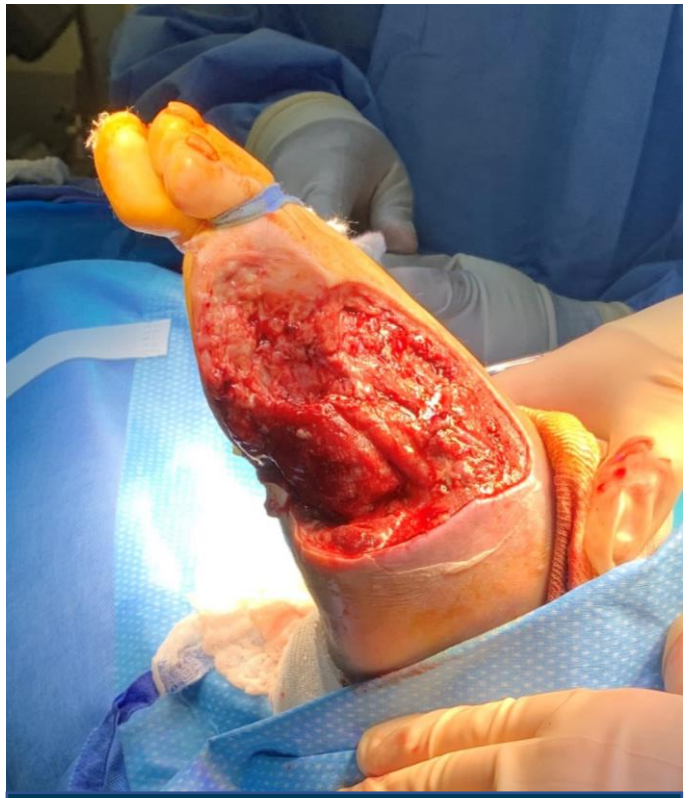
Can ECM graft provide rapid granulation tissue over exposed structures?



Sex, Age	Comorbidities/Past Medical History	Surgical Management	Outcomes
Male, 28	• Juvenile onset diabetes, prior DKA • Unresolved infection to 5th ray	• Amputation of 5th toe and metatarsal head • 10 x 15 cm defect	• Graft granulated at 1 week • STSG at 1 week • Healed at 8 weeks
Female, 61	• CAD, CKD, HTN, hyperlipidemia, poorly controlled DM2, PAD, extensive history of vascular and podiatric procedures	• Non-healing full-thickness calcaneal defect • ~5 x 5 cm defect with exposed calcaneus	• Fully granulated at 1 week • Patient remains under care
Male, 73	• CKD, HTN, DM2, chronic kidney disease, hyperlipidemia, hypothyroidism	• Prior trans metatarsal amputations of 4th and 5th rays • ~4.5 x 13.0 cm defect • Exposed bone along the distal aspect of the wound and joint capsule of the 3rd metatarsal	• Fully granulated in 2 weeks • STSG at 8 weeks • Patient remains under
Female, 35	• DM2, ADHD, bipolar, pancreatitis • Previous partial toe amputation	• Recurrent foot ulcerations managed with debridement's • ~2 x 2 cm defect • ECM graft threaded through dorsum to plantar with primary closure on dorsal aspect	• Granulated at 2 weeks • Patient remains in care

Case #1

Pre-debridement



Post-debridement

ECM graft placement

Case #1

Week 1 – graft fully granulated with coverage of exposed B/T. STSG placed.

Week 3 - ~90% STSG take. Patient 100% healed at week 8

Case #2

Pre-debridement

Week 1 – Graft fully granulated

Week 4 – patient continues to close via secondary intention

Case #3

Post-debridement

Week 2 – Graft fully granulated

Week 8 – STSG placement post planned amputation of 2nd and 3rd

Case #4

Pre-debridement – plantar aspect

Graft placement – dorsum to plantar

Week 2 – ECM graft incorporated. Dorsal closure healed.

Conclusions

- ECM graft easy to use and provides immediate coverage to exposed structures
- Graft integration and granulation achieved within 1-2 weeks
- Suitable for use under NPWT
- Easy to use, handles well and strength to resist ‘pull-out’
- Can be used as an implant
- Compliments staged procedures as well as closure via secondary intention.