

for the Management of Traumatic Lower Limb Injuries: a Retrospective Review

Gustavo Prezzavento MD¹, Lucila Olivera Whyte MD¹, Rodrigo Juárez Calvi MD¹, Juan Rodriguez MD¹, Philippe Taupin PhD²

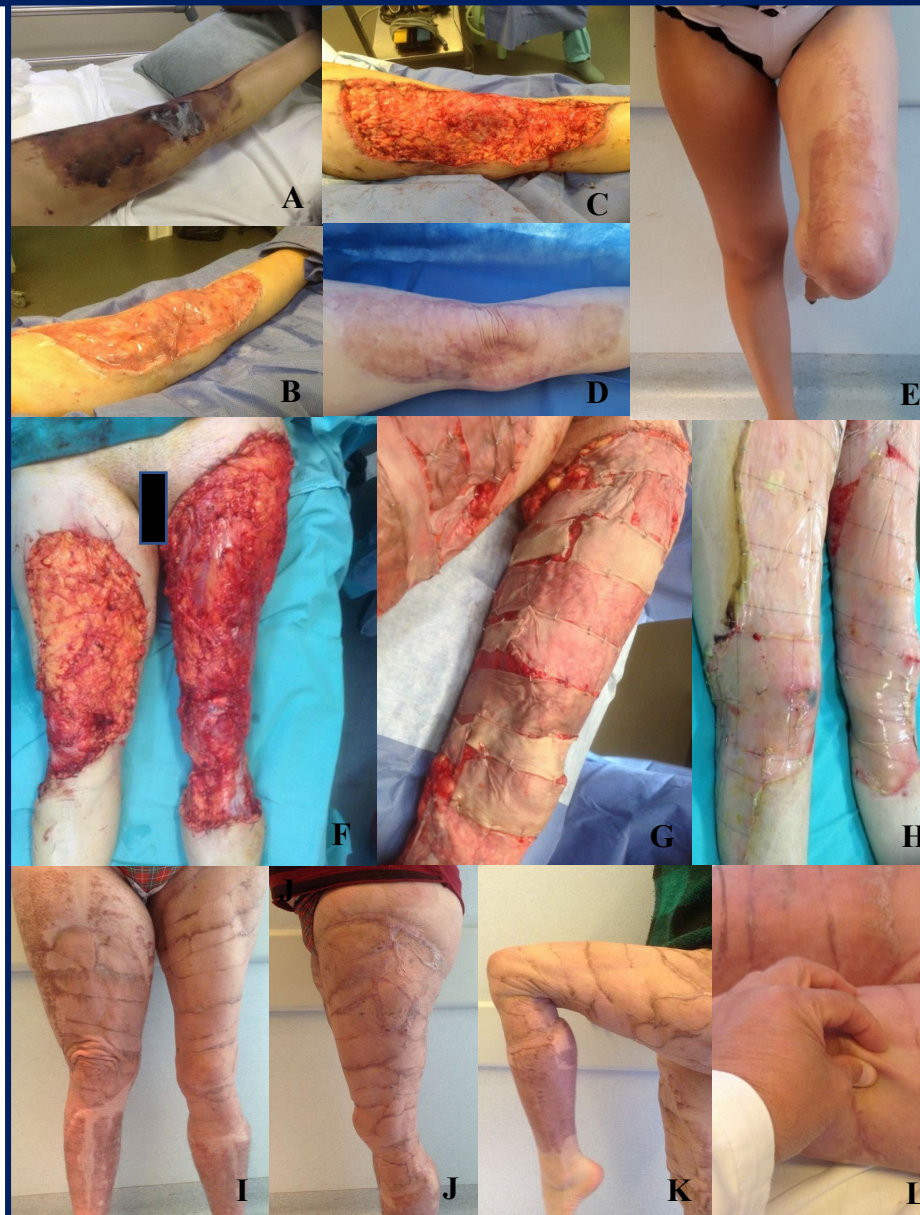
¹German Hospital, Buenos Aires, Argentina. ²Integra LifeSciences, Princeton, NJ, USA

Introduction

In full-thickness wounds, it is necessary to have an appropriate dermal replacement because dermal tissue does not regenerate into normal dermis after injury. The use of a dermal matrix underneath an autologous skin graft during the healing process provides a scaffold that supports tissue growth, resulting in an improvement on the long-term cosmetic and functional outcomes. However, the usefulness of managing large wounds with deep skin impairment using cadaver skin prior to a dermal matrix has not been exhaustively studied.

Methods

We performed a retrospective study of patients with lower limb trauma managed using a combination of cadaveric skin, DRT and autologous skin graft, from January 2014 to December 2021. Debridement was performed within 48h of accident. After 7-10 days, wounds were covered with cadaveric skin. Four weeks after, remaining epidermis of cadaver skin was removed, and DRT was placed followed by STSG (21 days later). NPWT was instituted throughout the procedure. Cosmesis was evaluated with the VSS and POSAS at 6 and 12 months after surgery. Functional recovery was assessed by the attending physician after 1 year.



Patient 1. 18-year-old female; no comorbidities, 8% ABS (A). Wound after debridement: 42 x 16 x 3 cm (B). DRT placed (C). One-year postoperative results: no depression of covered surface (D), full ROM recovered after physical therapy (E).

Patient 2. 22-year-old; no comorbidities, 24% ABS. Wound after debridement: right 28 x 20 x 2 cm, left 61 x 48 x 5 cm (F). Cadaveric skin placed (G). DRT placed (H). One-year postoperative results: no depression of covered surface (I, J), full ROM achieved after physical therapy (K), elasticity of treated regions (L).

Abbreviations. ABS: affected body surface, DRT: dermal regeneration template, NPWT: negative pressure wound therapy, POSAS: Patient and Observer Scar Assessment Scale, ROM: range of motion; VSS: Vancouver Scar Scale.

Results

Five patients were treated (patients 1 and 2 are depicted). All wounds originated from a crush injury after patient being run over by a car and were full-thickness. The ABS was 11.2% on average. The average cadaveric skin take was 98.4%. The average DRT take was 99%. The mean VSS was 3.2 and mean POSAS was 27.8 six months after surgery. After 12 months, the mean VSS was 2.6 and mean POSAS was 22.6. No depression of the covered surfaces was observed. All patients recovered full articular function and movement after physical therapy, one year after surgery.

Conclusion

All patients presented full wound coverage with satisfactory cosmesis and functional results. The combination of cadaveric skin, DRT and autologous skin graft for the management of limb trauma wounds, with deep skin impairment, provides a mean to obtain enough volume and to mitigate the cost for reconstruction. It should be further studied to provide conclusive results.

Products

Integra® Dermal Regeneration Template, Integra® Bilayer Wound Matrix & meshed variants (Integra LifeSciences)