Late Breaking: Results of a Pilot Evaluation of a Novel Autologous Homologous Skin Construct Treatment of Diabetic Foot Wounds Refractory to Conventional Treatments

David G. Armstrong1,2, Dennis Orgill3, Robert Galiano4, Paul Glav5, Charles M. Zelen6

1 Southwestern Academic Limb Salvage Alliance (SALSA), Los Angeles, CA, 2 Back School of Medicine, University of Southern California, Los Angeles, CA, 3 Division of Plastic Surgery, Brigham and Women’s Hospital, Boston, MA, 4 Division of Plastic & Reconstructive Surgery, Northwestern University Feinberg School of Medicine, Chicago, IL, 5 Drew University School of Medicine, Philadelphia, PA, 6 Professional Education and Research Institute, Roanoke, VA

Corresponding Author: czelten@peridu.com

Introduction

Diabetic foot ulcers (DFUs) are one of the most common complications associated with diabetes. Patients with a history of lower-extremity ulceration and/or infection are at risk for lower-extremity amputation (Limb Salvage Alliance [LSA], Los Angeles, CA). Current treatment approaches include debridement, wound closure, and medical or chemical therapies.

Methods

Eight consecutive patients with Wagner 1 or Wagner 2 wounds with signs of active infection were treated with AHSCs. An initial visit (Day 0) for wound evaluation was performed. Following the Day 0 visit, a sterile technique debridement was performed. Hemostasis was obtained with electrocautery and saline irrigation. Wound debridement was performed using a scalpel and curettes. A sterile clamp was applied to the wound, and the wound was closed with a closure technique (e.g., skin adhesive, staples, sutures). Post-debridement, the wound bed was inspected for necrotic tissue, cellulitis, and residual infection. If the wound was infected, it was treated with systemic antibiotics. Daily wound debridement was performed, and dressing changes were performed every 3-7 days. Some patients had wounds that were debrided every day due to the presence of rapidly necrotic tissue. The wound was closed with a surgical dressing. In cases where the wound was not able to be closed, a negative-pressure wound therapy dressing was used. Each dressing was changed weekly. In cases of wound breakdown, wound closure was attempted, and wound debridement was performed. The wound was dressed with a sterile dressing. The dressing was changed weekly. The wound was treated with antimicrobial agents as needed. Wound cultures were obtained in cases of infection. The wound was followed until healing was observed.

Results

Patient age range was 40-87 years (mean 64.9 years), and the number of visits per patient ranged from 0 to 126 (mean 12.3 visits). The number of wound debridements per patient ranged from 0 to 35 (mean 9.2 debridements). The number of dressing changes per patient ranged from 0 to 126 (mean 12.3 dressing changes).

Conclusions

These results suggest a single application of AHSCs is able to close difficult to treat Wagner 1 and Wagner 2 diabetic foot wounds and could be successfully employed in the clinical setting using normal work practices. Further investigation with a larger number of cases is required to determine the effectiveness of this novel technology with 100% graft take, as an effective treatment for DFUs and wound closure.