

***ABSTRACT: Presented at The Symposium on Advanced Wound Care (SAWC), Kissimmee, FL April 2014, WOCN, Nashville, TN June 2014, The Symposium on Advanced Wound Care (SAWC), Las Vegas, NV September 2014, and the Clinical Symposium on Advances In Skin & Wound Care (ASWC), Las Vegas, NV October 2014.***

## *Wound Center Autologous Micro Skin Grafting Under Local Anesthesia is Synergistic with Elastic Compression to Improve Venous Leg Ulcer Healing*

Martin J. Winkler Sr., MD, FACS

Creighton University Department of Surgery (Contributed Service), Omaha, NE

University of Nebraska Department of Surgery (Contributed Service), Omaha, NE

### Problem

Split thickness skin grafting (STSG) was the go to solution to cover venous leg ulcers (VLUs) with epithelial cells. Recently bioengineered skin substitutes and growth arrested heterografts, largely replaced STSG because a trip to the operating room is not required.<sup>1</sup> We published that pinch grafts under local anesthesia speed VLU coverage, but the technique is cumbersome and challenging for staff.<sup>2</sup>

Micro-autografting for VLUs has three advantages for VLU coverage: (1) a handheld dermatome harvests a small STSG (~2 x 3 cm<sup>2</sup>) that is minced with sharp rotating disc parallel knives. The micrografts are spread over the wound with a spatula. The small skin surface area required makes the procedure quick to perform, painless under local anesthesia and easily mastered by wound care providers,<sup>2,3</sup> (2) the dermatome harvests a STSG that is 0.014-0.016 inches thick and contains cuboidal epithelial cells from dermal rete pegs. Cuboidal cells have intact organelles with little keratin and are robust when transplanted, and (3) islands of minced skin may tolerate the elastic compression\*\* required to reverse venous stasis pathophysiology

better than sheets of epithelial cells in STSG and bioengineered skin substitutes.<sup>5</sup> This anecdotal case series asks the question: Is micro-autografting in our hands as effective as bioengineered skin substitute for VLU epithelial cell coverage?

## Methods

Three patients with complex VLUs refractory to 4 weeks of therapy underwent micro-autografting\*, in the wound clinic, at a time when wound bed preparation appeared adequate for a bioengineered skin substitute.<sup>4</sup>

## Results

Photographs illustrate details of micro-autografting technique and chronicle the complete healing of all VLUs.

## Conclusion

Wound clinic micro-autografting, in an initial small case series, appears to improve healing time in refractory VLUs, compared with our clinic's historical results from bioengineered skin substitute therapy.

## References

1. Jones JE, Nelson EA, Al-Hity A., Skin grafting for venous leg ulcers., Cochrane Database System Review. 2013 Jan 31
2. Wisnieski L., Norris R., Winkler M., *Split Thickness Skin Grafts performed in the Wound Clinic are Effective: technical lessons from an initial experience.* Science Poster SAWC 2010, [http://www.compressiondynamics.com/compress\\_links/Poster\\_EdemaWear\\_Improves\\_Split\\_Thickness\\_Skin\\_Graft\\_Healing\\_2010.pdf](http://www.compressiondynamics.com/compress_links/Poster_EdemaWear_Improves_Split_Thickness_Skin_Graft_Healing_2010.pdf)
3. Hackl F., Eriksson E., Epidermal regeneration by micrograft transplantation with immediate 100-fold expansion. *Plast Reconstr Surg.* 2012 Mar;129(3):443e-452

4. Svensjo T., Pomahac B., Yao F., Slama J., Wasif N., Eriksson E., Autologous skin transplantation: Comparison of minced skin to other techniques. J Surg Res. 2002;103:19-29.

5. Boggio P., Tiberio R., Gattoni M., Colombo E., Leigh G., Is there an easier way to autograft skin in chronic leg ulcers? "Minced micrografts," a new technique. J Eur Dermatol Venereol. 2008;22(10):1168-1172.

\* Xpansion® Micro-autografting Kit, SteadMed Medical, Fort Worth, TX 76107

\*\* EdemaWear® Stockinet, Compression Dynamics LLC, Omaha, NE 68102