Snapshot $O_2$t NIR

*Seeing is Believing* in Wound Care

CASE STUDY

# Saving a partially gangrenous foot

**Using Snapshot$_{NIR}$ and a wound biologic to preserve a limb.**


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## CASE HISTORY

43-year-old male, frequently homeless, with poorly controlled Type I diabetes presented at the clinic with a large diabetic foot ulcer on the plantar aspect of the foot. Following clinical evaluation, a conventional course of treatment was initiated. The wound continued to deteriorate with standard treatment until it measured 8x7 cm. At this point, insurance approval was obtained to proceed with a cryo-preserved split-thickness skin allograft.

The large eschar over the ulcer, as seen in Figure 1, was removed using sharp and enzymatic debridement until a pink granular bed was present.

The patient received three applications of the skin substitute Theraskin® (Misonix). He responded to this therapy with the wound fully closing after 10 weeks of initial application.

**Figure 1:** Diabetic foot with large plantar ulcer.

## OBSERVATIONS AND ACTIONS

With the black eschar over the wound, there was no visual indication of the depth of the necrosis. Using Snapshot$_{NIR}$, we were able to image through the edges of the eschar as it was slowly chipped away. The information captured with the device was used to gauge the depth of the ischemic tissue.

The images indicated good tissue oxygenation at the edge of the eschar with each progressive debridement where a few millimeters were removed during each session. With the successive debridement, a fibrous-looking wound bed was uncovered.

Snapshot$_{NIR}$ was next used to confirm that the circulation and tissue oxygenation in and around the wound bed was at a level that would likely support the successful application of the skin substitute.

KENT IMAGING

Snapshot$_{NIR}$

## OBSERVATIONS AND ACTIONS, Continued

The periwound areas showed good oxygenation and the 'wispy' edges of the $S_tO_2$ images illustrated adequate blood flow in the area.[1]

The skin substitute was applied 3 times to the prepared wound bed (once per week for 3 weeks). Follow-up was conducted on a bi-weekly basis and Snapshot$_{NIR}$ was utilized to validate integration of the cellular tissue product as well as progressive wound healing. Snapshot$_{NIR}$ provides the ability to document and evaluate the wound progression and outcomes.

> *"Imaging the wound with NIRS showed sufficient oxygenation of the periwound tissues indicating blood flow. With this additional insight into the tissue viability, I was confident that the application of the skin substitute would likely close the wound.*

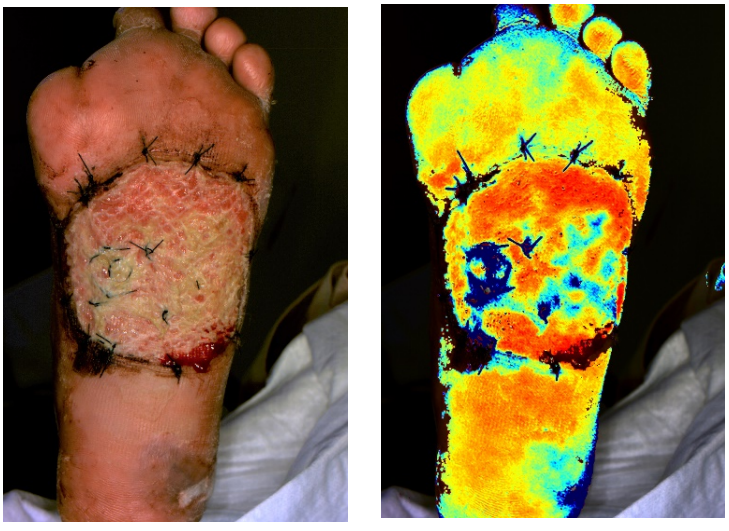

**Figure 2.** Clinical and $S_tO_2$ images showing skin graft **one-week** after first application. Fine wispy edges are noted around the perimeter of the graft which generally indicates that a wound is progressing towards closure.

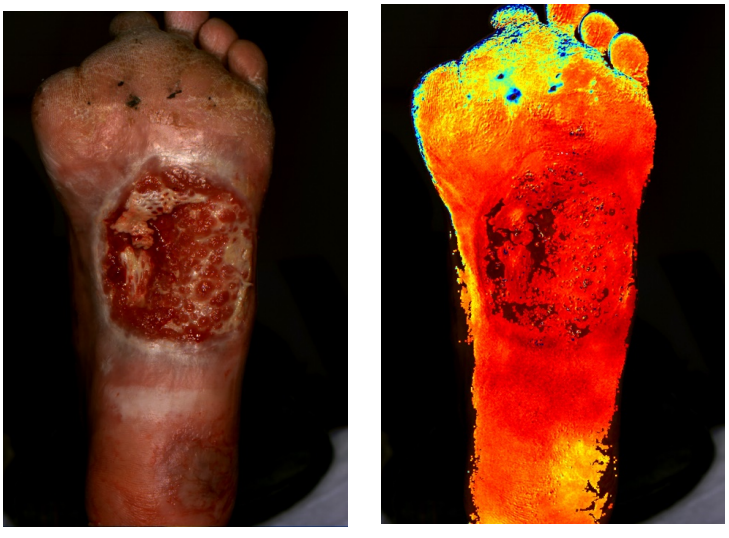

**Figure 3.** Clinical and $S_tO_2$ images showing skin graft **28-days** after first application. As the graft becomes incorporated into the wound bed and angiogenesis progresses, the increased oxygenation of the surrounding tissues is apparent.

Snapshot$_{NIR}$ confirmed good tissue oxygenation and a positive response to therapy. This information was used to support the decision to proceed to limb salvage rather than amputation. This approach saved both time and money and resulted in a much better outcome for the patient.

[1]For more information on NIRS image interpretation in wound healing, please refer to Landsman, A. ***Visualization of wound healing progression with near infrared spectroscopy: a retrospective study***. Wounds. 2020; 32(10): 265-271.