

Snapshot₂^{NIR}

Documenting a regressing pressure wound

CASE STUDY

Ischial tuberosity pressure injury with inflammation and poorly oxygenated tissue

Frank Aviles, PT, CWS, FACCWS, CLT-LANA, ALM, AWCC, DAPWCA

Wound care specialist at Natchitoches Regional Medical Center, LA

PATIENT HISTORY

Thirty-seven-year-old active male, with history of paraplegia and wheelchair bound presented with right ischial tuberosity Stage IV pressure injury further complicated by inflammation and poorly oxygenated tissue.

CASE DETAILS

The patient was seeking treatment at another facility for 5 months prior to being treated in an outpatient wound care facility for 10 weeks. The pressure wound's surface area and volumetric measurements were starting to regress despite the utilization of advanced modalities.

The patient was subsequently admitted to an inpatient facility for strict offloading, nutrition supplementation, and wound management. While an inpatient, long-wave infrared thermography was used to determine that the patient had a deeper infection developing and the presence of undermining. Neither of these conditions were previously noticed via clinical observation prior to admission. Near-infrared spectroscopy (NIRS) imaging with Snapshot_{NIR} (Kent Imaging) was used to concurrently image the wound and periwound tissue. Using Snapshot_{NIR}'s hemoglobin view to illustrate oxyhemoglobin, deoxyhemoglobin and total hemoglobin renderings, abnormalities were noted that potentially indicated the presence of a poorly oxygenated wound bed tissue, despite showing acceptable superficial oxygen saturation measurements on the device.

Using this information, it was determined that inflammation was present and that the higher tissue oxygenation saturation rates at the wound and periwound sites may indicate the presence of inflammation. The patient was readmitted for a two-stage procedure – debridement, then days later, a return to the OR for closure.

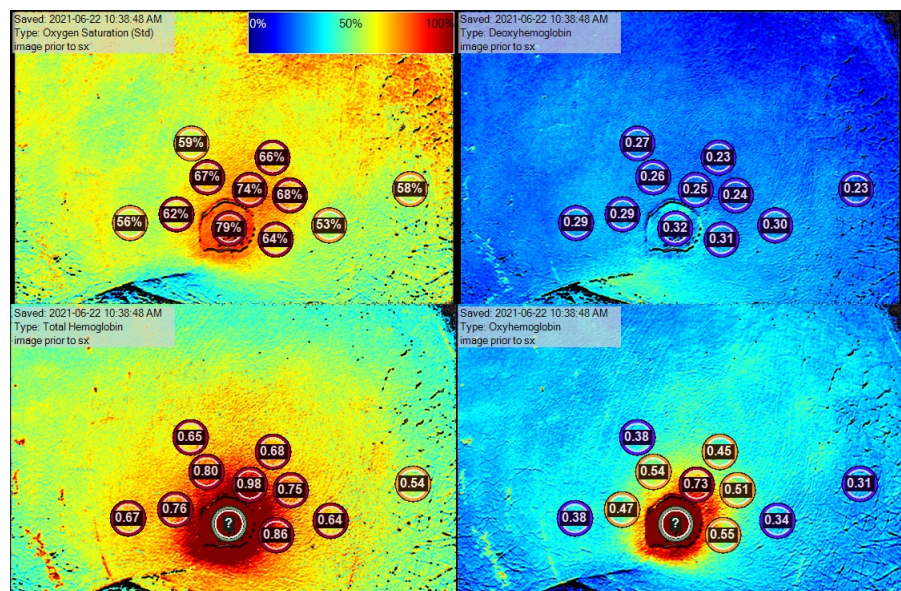


FIG 1: Baseline near-infrared imaging from Snapshot_{NIR} prior to surgery.

OBSERVATIONS

Snapshot_{NIR} indicated a poorly oxygenated wound bed tissue based on the hemoglobin view. This presence of extensive poorly oxygenated tissue was confirmed by the surgeon during the OR surgical intervention. Snapshot_{NIR} was then used to image the post-surgical closed incision line to assess superficial oxygen saturation rates to determine acceptable healing progression on serial days.

Tissue oxygen saturation rates allow the practitioner to determine superficial oxygen perfusion levels at specific scanned locations. When also viewing the hemoglobin, it allows us to explore the physiological responses underneath the wound bed.

“ *The tissue oxygenation information obtained from Snapshot_{NIR} allows us to collect objective information promptly, assist with our assessment, guide care, and determine the success or failure of specific interventions.*

Frank Aviles, PT

What are you doing to measure microvascular oxygenation?

Wounds can be deceptive. Leveraging near-infrared spectroscopy (NIRS) for tissue assessment goes beyond the macrovascular to measure the critical microvascular level.

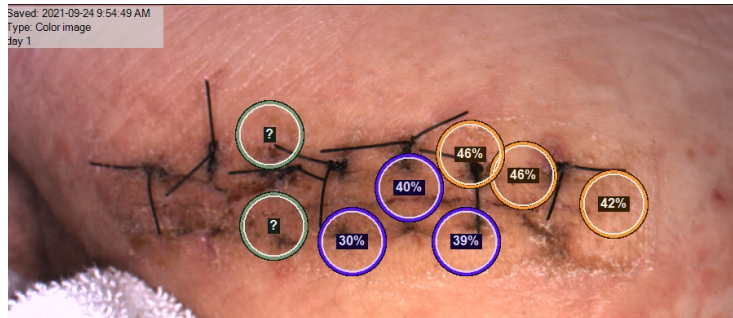


FIG 2: Clinical images with tissue oxygen percentages. Incision line on day 1.

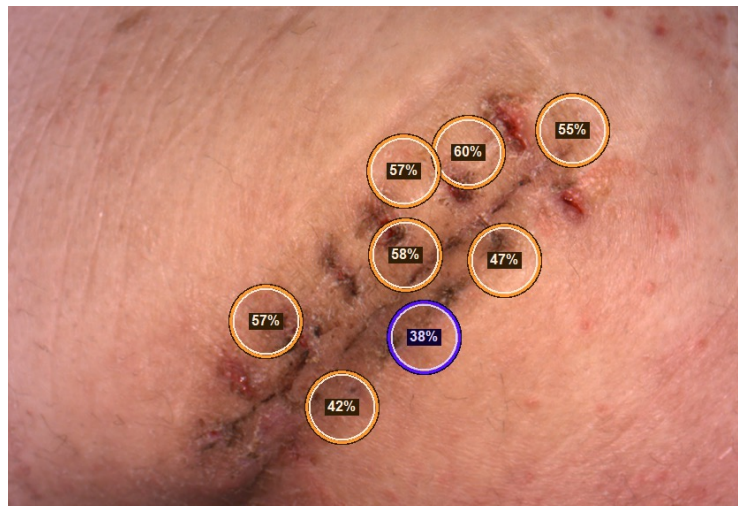


FIG 3: 15 Days later.



FIG 4: 21 days from first image. Note the difference in the oxygen saturation values as the wound heals.