

Snapshot₂^{NIR}

Documenting HBO Therapeutic Benefit

CASE STUDY

Compromised surgical flap following excision of basal cell carcinoma

A 69-year-old male with right facial basal cell carcinoma was referred for care by an ENT surgeon following the excision of a cancerous lesion. Due to the size of the lesion, a large flap was required with concern regarding its tissue viability. Hyperbaric oxygen therapy (HBOT) was used as an advanced treatment modality to facilitate oxygen delivery to the flap and support wound healing. Tissue oxygenation imaging was captured using near-infrared spectroscopy (Snapshot_{NIR}, Kent Imaging) before the initiation of treatment to document the baseline areas of flap compromise, and immediately following HBOT to document therapeutic benefit. Snapshot_{NIR} imaging pre- and post-HBOT was repeated after 5 and 10 successive dives. The images captured at the time of the 10th HBO dive illustrated continued progress and helped to determine the completion of therapy.

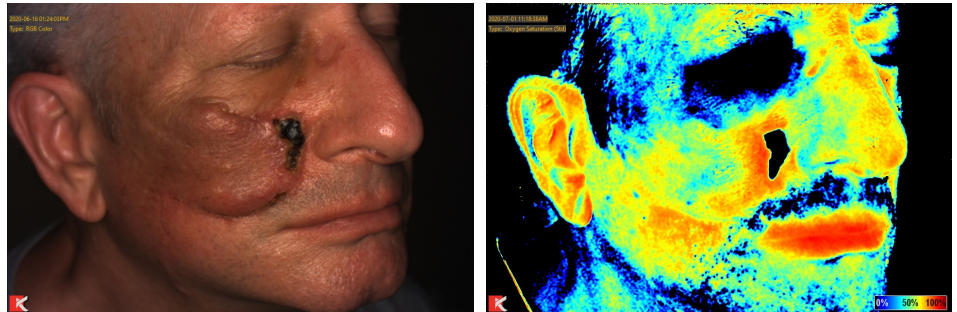


Fig 1: Baseline clinical photograph (left); and the near-infrared image assessment of patient after a flap for facial reconstruction following basal cell carcinoma excision was performed (right).

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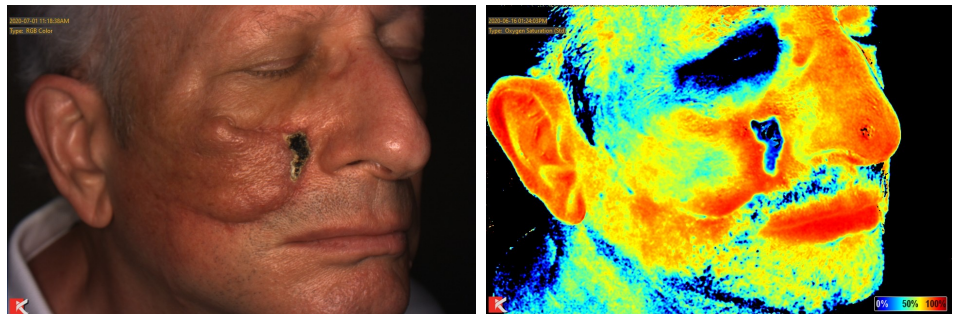


Fig 2: Clinical photograph (left) and near-infrared image assessment following five sessions of hyperbaric oxygen therapy (right). Note evidence of increased deoxygenated hemoglobin within the wound bed consistent with angiogenesis occurring from the venous side within the wound.

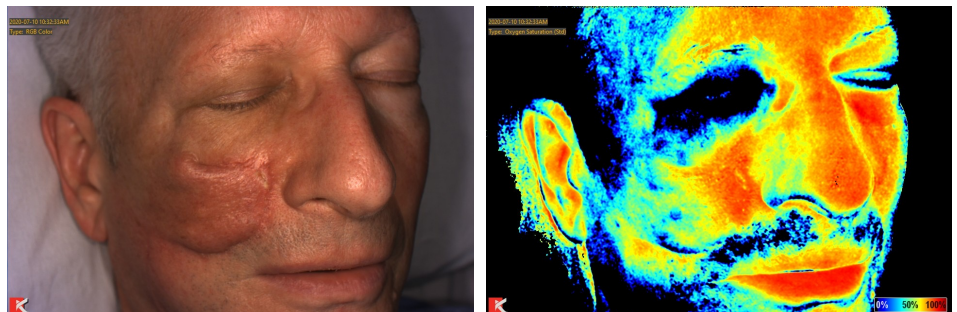


Fig 3: Clinical photograph (left) and near-infrared image assessment following wound resolution achieved after ten sessions of hyperbaric oxygen therapy (right). Note increase in signal of oxygenated hemoglobin within the wound bed.

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“Snapshot_{NIR} is quickly and easily administered. Compared to other tests, the amount of diagnostic information gained in a relatively short time is tremendous!”

Jonathan Arnold, MD

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.

Reference: Jonathan F. Arnold, MD, ABPM-UHM, CWS-P., et al. Interpretation of Near-Infrared Imaging in Acute and Chronic Wound Care – Diagnostics Journal

OBSERVATIONS

Imaging obtained before and immediately following an HBOT session helped tailor the treatment to the minimum sessions required for optimal outcome. This approach aided in improving HBO use and cost containment. Documentation of progress using existing assessment therapies such as transcutaneous oxygen monitoring (TCOM) are very difficult, if not impossible, on this particular area of the body.

RESULTS

The near-infrared images obtained from Snapshot_{NIR} provided objective information on what phase of healing the facial wound was in, the presence of infection, and the response to treatment. This helped reduce time to healing and associated costs to the both the facility and patient, helping to enhance the patient's quality of life.

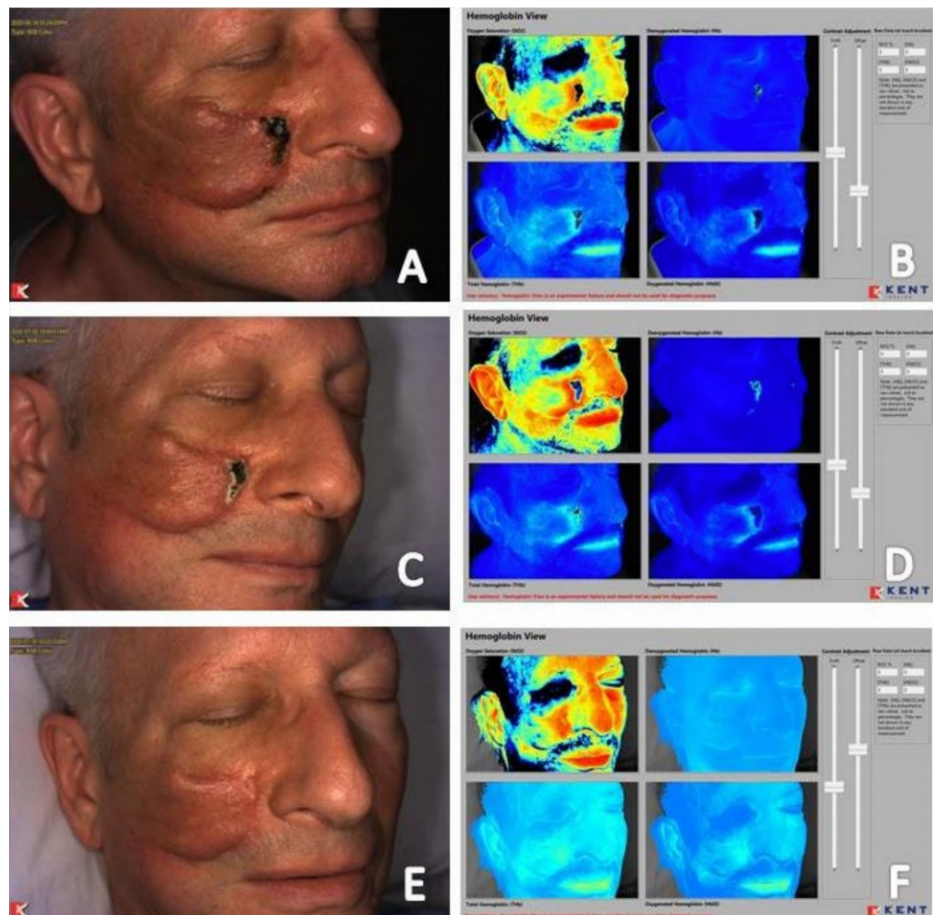


Fig 4, A-F: Clinical photographs on the left with near-infrared image assessment, including total hemoglobin, deoxygenated hemoglobin, and oxygenated hemoglobin views shown 4-up on the right.