

Indocyanine Green Scanning: Emerging Metrics of Wound Analysis and Hyperbaric Oxygen Treatment Efficacy

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Intr
Fluorescence vascular microangiography (FVA – LUNA system, NOVADAQ) is an angiographic modality engaging the properties of indocyanine green fluorescence dye illuminated by a near infrared laser. This produces an angiographic display of macro and micro-vascular blood flow without introducing ionizing radiation or risking nephrotoxicity. FVA has long been applied intra-operatively to assess perfusion in a wide variety of tissues and clinical conditions. Investigative efforts are underway at several centers examining application of FVA to the discipline of wound healing. At the Institute for Wound Healing and Hyperbaric Medicine (IWCHM) FVA was performed across the full spectrum of complex wounds, with particular focus on patients receiving hyperbaric those in the Limb Salvage Program.

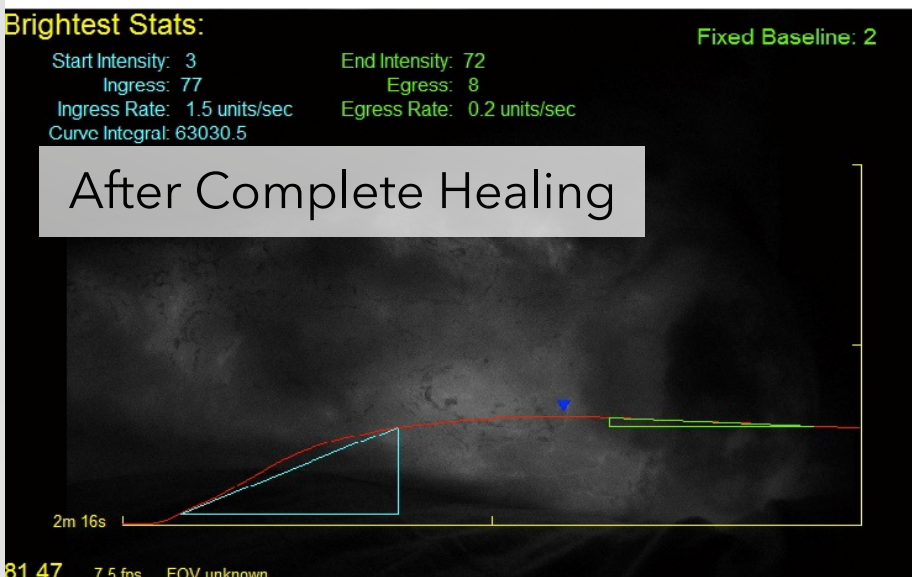
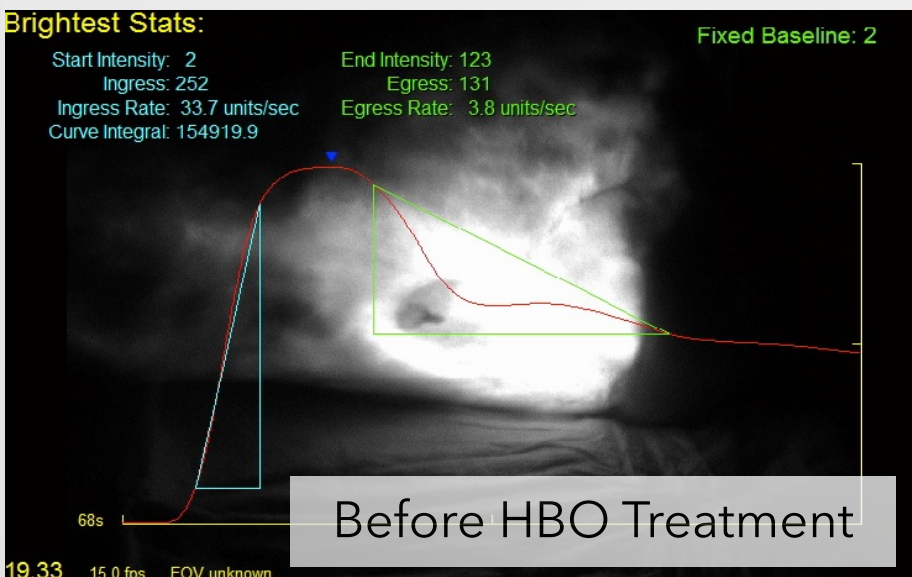
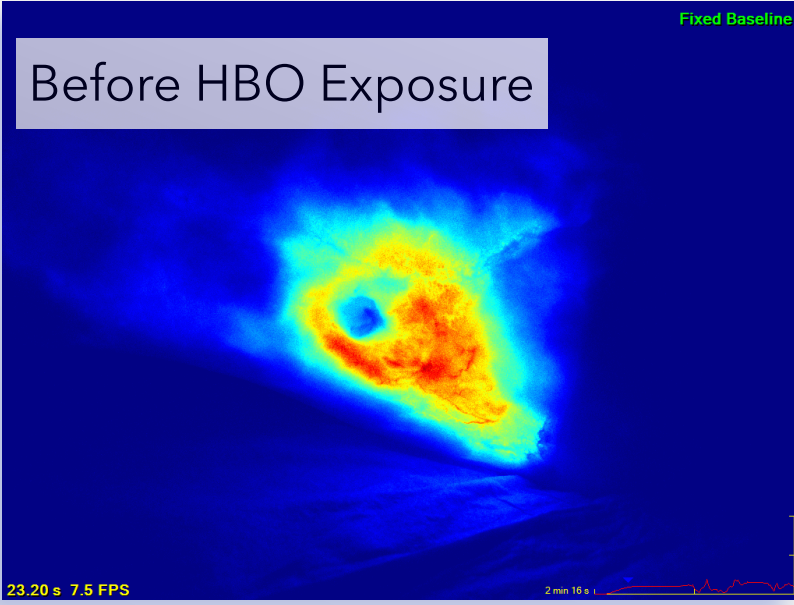
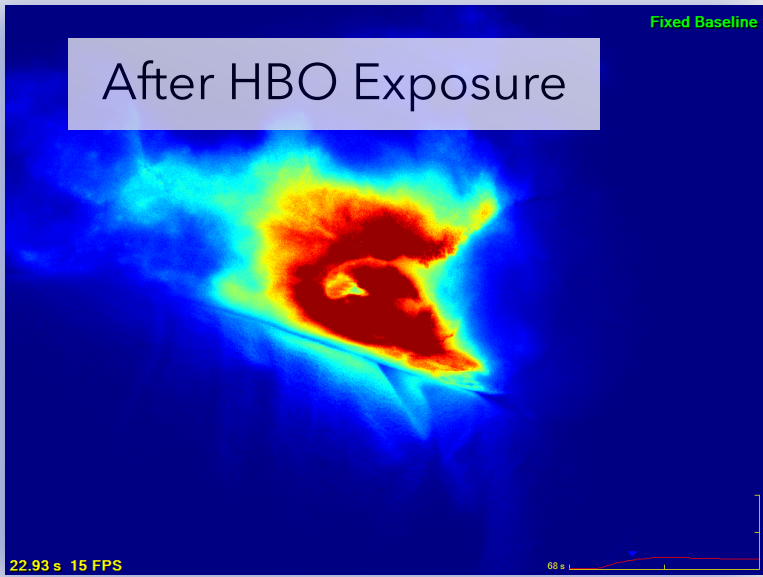
Methods
FVA was performed both during dedicated clinic hours and during unscheduled patient encounters. The I.V. injections and studies involved only 1 WCHM staff member.

FVA studies performed singly and before and after hyperbaric oxygen treatments, before and after ambient pressure oxygen breathing, before and after debridement, and in assessing the effects of specific treatments.

Results
387 studies were performed on 86 patients during 10 months of FVA use. In 67 patients clinical decisions based on FVA studies positively affected patient outcome. Estimable institutional benefits included compensated patient encounters beyond clinic activities (37%) and referrals from beyond the hospital’s historical catchment (21%).

Conclusion
Introducing FVMA into an active clinic schedule occurred without logistical difficulties. FVA data analysis produced metrics that: (1) Define specific wound types; (2) Demonst
HBO
Secondary-Healing” (CUSH); and (4) Illustrate the benefits of HBO

The initial LUNA™ image before hyperbaric chamber exposure and immediately after exiting the chamber demonstrate the typical luminescence of the chronic wound and the expected increase in luminescence after HBO₂Rx.



When the wound is fully healed, there is little luminescence appearing at the wound site and the AutoView summary of the entire sequence has the appearance of a non-wounded area.