



Topical Oxygen Therapy for a Chronic Irradiated Breast Incisional Wound Monitored by Near-Infrared Spectroscopy



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BACKGROUND

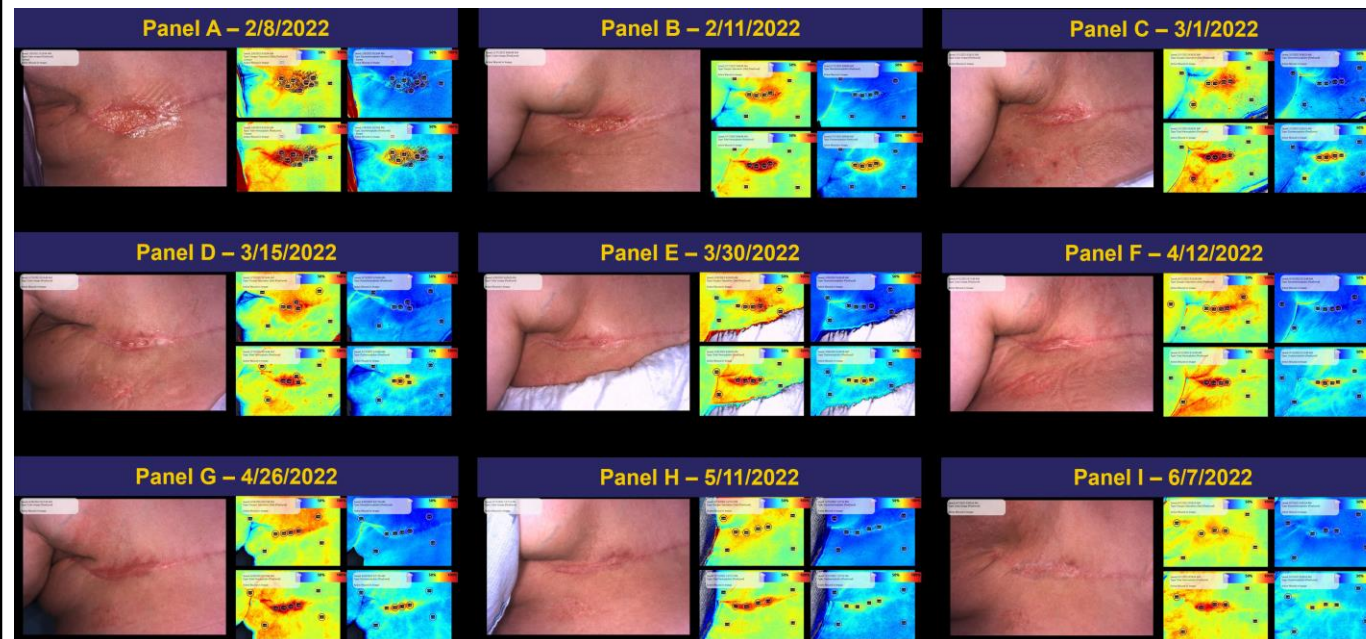
- Delayed healing and surgical site complications are well-documented issues that arise from mastectomies performed for breast cancer in conjunction with postoperative radiation therapy.
- As radiation can induce vasculopathy and attenuate perfusion, these wounds are difficult to heal and can lead to persistent non-healing wounds.
- Topical oxygen therapy has demonstrated efficacy to heal chronic wounds in randomized controlled trials by increasing localized oxygen supply.
- Near-infrared spectroscopy (NIRS) can monitor topical oxygen therapy efficacy by quantifying tissue oxygen saturation (StO₂).
- We present a patient with a chronic wound that failed basic wound care therapy but was successfully treated with topical oxygen.

OBJECTIVE

To monitor the healing progression of a radiated breast non-healing wound through the course of treatment with topical oxygen therapy. NIRS was used to document the therapeutic benefits of the oxygen intervention.

CASE REPORT

A 62-year-old female patient underwent a right modified radical mastectomy and a left simple mastectomy. She received one month of radiation therapy to the right mastectomy site. Following radiation therapy, she developed a chronic non-healing wound. At the initial visit at the wound care clinic, the wound had been present for 38 days and measured 5.4 cm x 1.7 cm x 0.2 cm. Topical oxygen therapy was initiated with tissue oxygenation (StO₂) monitored via NIRS.



RESULTS & DISCUSSION

- Initial NIRS evaluations prior to topical oxygen therapy showed mixed arteriovenous oxygen saturation levels of 67% (Panel A).
- Following 32 days of treatment, there was a very significant decrease in the size of the wound and oxygen saturation levels were measured at 80% (Panel D).
- At 60 days, the wound was re-epithelialized and oxygen levels were 84% (Panel F)
- The patient was followed with subsequent NIRS evaluations until the inflammation under the epithelialized wound had subsided which was taken as an indication of deep healing (Panels G-H).
- After inflammation had subsided, a bra with a prosthetic breast was placed across the previous wound with no recurrence (Panel I).

CONCLUSION

This case demonstrates the ability of topical oxygen therapy to heal chronic irradiated wounds. This case also demonstrates the clinical utility of NIRS in tracking and documenting the interventional response to an advanced wound therapy.