

CHRONIC WOUND TREATMENT AND HYPERBARIC CENTER

AT THE MOUNT VERNON HOSPITAL

Case Review

Pt # 293-02

Late Effects of Radiation – Specialized Reconstructive Surgery

Patient is a 50 year-old male former smoker with a 50 pack / year smoking history who underwent a pneumonectomy in 1997 for adenocarcinoma of the right lung. The patient had follow-up radiation therapy and received a tumor dose of 5040 cGy in 28 fractions over a 40-day period.

In 1999, the patient developed a possible recurrence of tumor and infection at the pneumonectomy site. After surgery, the irradiated tissue would not heal normally and resulted in a pleural fistula and *persistent communicating pneumothorax* that ventilated as the patient breathed. The area became chronically infected and drained purulent material continuously. ❶ ❷

The Mount Vernon Center has developed specialized protocols for status-post pneumonectomy patients and surgical wounding in irradiated tissue fields. Transcutaneous Oximetry testing indicated the irradiated tissues had oxygen tensions < 20-mmHg and could not be expected to heal normally.

Hyperbaric Medicine and Angiogenesis

In preparation for surgery, the patient received a course of Hyperbaric Oxygen (HBO_2), IV antibiotic therapy and detailed imaging. After 38 outpatient HBO_2 treatments, new capillary growth had increased oxygen tensions to over 50 mmHg and the complex surgery could proceed.

In a six-hour operation, three surgeons proceeded to excise the fistula and rotate two muscle flaps. ❸

When the chest tube was removed the fistula closed and pleural space fibrosed and filled with fluid per typical pneumonectomy without complications. ❹

The Patient has gained 25 pounds and is back to his pre-CA weight. He is able to bathe and swim, is no longer clinically depressed, and has no medical restrictions or physical limitations. ❺

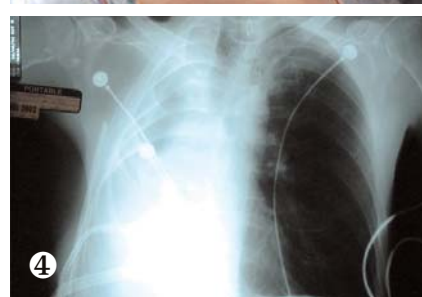
RADIATION TISSUE INJURY

When tissue is radiated in the treatment of a malignancy, some normal tissue cells are also damaged. In about 5% of patients with tissues radiated to dosages > 5,000 cGy, a near linear and progressive radiation fibrosis and destruction of capillary microcirculation occurs. This tissue is often termed “Triple-H” tissue because it is Hypovascular, Hypo-cellular and Hypoxic and will become more so over time.

Triple-H tissues often remain viable for years and then may breakdown spontaneously, or as a complication of surgical wounding or trauma when these tissues are required to meet the increased demands of healing.

Hyperbaric oxygen therapy (HBO_2) induces significant capillary angiogenesis and fibroplasia in this compromised tissue. This effect is unique in therapeutics.

The adjunctive use of HBO_2 for surgical procedures in irradiated tissues is an approved indication for Medicare and Commercial insurance reimbursement.



Physician Support

For related scientific literature, references or to speak with a physician specialist, contact our Physician Support Service at 914-664-8000 ext. 2555

The Chronic Wound Treatment And Hyperbaric Center

At The Mount Vernon Hospital
12 North 7th Avenue
Mount Vernon, NY 10550