Case study
Infected, Post-Irradiation Ulcer on Back

Authors:

Dr. (Capt.) G Vishwanath
Mch (Plastic Surgery)
Dr. (Major) Saurabh Singh
MS (General Surgery)
Reconstructive Surgery Centre, INHS Asvini Mumbai

Patient

A 75-year-old male with a history of multiple myeloma developed a compression fracture in vertebra D10 over one year prior to presentation. Internal fixation was performed to stabilize the fracture, and the patient was treated with radiation therapy. Following irradiation, he developed a chronic, non-healing back ulcer that became infected.

Diagnosis

The patient was admitted to the hospital with a post-irradiation wound with fibrotic undermined edges. Pale, fibrotic granulation tissue was present in the base of the wound and pedicle screws were palpable (Figure 1). A culture swab revealed mixed growth of organisms.

Wound Progress

This radiation ulcer had been open for over a year and failed to show signs of significant healing with conservative management (twice daily saline gauze dressing changes). Appropriate antibiotics were administered. Several attempts at wound closure had failed. A decision was made to initiate negative pressure wound therapy (NPWT; V.A.C.® Therapy, KCI USA Inc., San Antonio, TX) over the wound to prepare it for flap closure.

V.A.C.® Therapy System Initiation

Prior to V.A.C.® Therapy administration, surface slough and necrotic tissue were surgically removed, and the wound was irrigated with normal saline. The peri-wound skin was prepared (ie, shaved and cleaned with ether) and ensured to be dry as well as free from grease and hair.

The sterile reticulated open-cell foam dressing (V.A.C.® GranuFoam™ Dressing, KCI USA, Inc., San Antonio, TX) was cut to the size of the wound and gently placed into the wound cavity. A sterile adhesive drape was placed over the foam and 5 to 7 cm of surrounding intact skin to ensure a seal. A 2.5 cm hole was cut into the drape over which the T.R.A.C.™ Pad (KCI USA Inc., San Antonio, TX) and tubing were attached. The tubing was connected to a canister that is attached to a negative pressure unit, and therapy was initiated (Figure 2) at -125 mmHg intermittent pressure (8 minutes on and 2 minutes off). Wound inspection and dressing changes were performed at least twice weekly.

After 10 days of V.A.C.® Therapy, the wound edges were no longer undermined, granulation was improved, and scanty
serous discharge was noted (Figure 3). V.A.C.® Therapy was discontinued and a flap (bipedicled advancement skin flap with split skin graft to donor site) was used to cover the defect.

Figure 3. Following 10 days of V.A.C.® Therapy, wound edges were no longer undermined and healthy granulation tissue formed

Post-V.A.C.® Therapy Follow-up

At 4 weeks, the wound was fully closed with no complications (Figure 4).

Discussion

V.A.C.® Therapy was very useful in treating this chronic ulcer. V.A.C.® Therapy helped achieve wound contraction and early resolution of infection. Compared to twice daily dressing changes, a reduction in pain perception was also reported with V.A.C.® Therapy.

Although V.A.C.® Therapy has been shown to promote perfusion in wounds, there are few publications describing its effects in irradiation-induced ulcers. In a pilot study of five patients, application of V.A.C.® Therapy led to a significant decrease of HIF-1 alpha (hypoxia-inducible factor-1 alpha) concentration, an indirect marker of tissue oxygenation in irradiated wounds. V.A.C.® Therapy facilitated increases in oxygenation may play a role in healing irradiation ulcers, but considerably more research is needed to quantify these effects.


Important: As with any case study, the results and outcomes of this patient should not be interpreted as a promise, representation or warranty of similar results. Individual results may vary depending on the patient’s circumstances and condition.

IMPORTANT NOTE: Specific indications, contraindications, warnings, precautions, and safety information exist for KCI products and therapies. Please consult a physician and product instructions for use prior to application.

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