Thoracoabdominal Flap: A Simple Reconstruction Technique for Chest Wall Osteoradionecrosis

Dear Editor,

Reconstruction of the irradiated chest wall after surgery is often a challenge due to the scarce amount of nonirradiated tissue availability and restricted vascularization.[1] The surgical treatment of osteoradionecrosis (ORN) primarily aims to eliminate infection, to excise all damaged tissue, and to provide chest wall stability. There are several options to correct these defects including skin grafts, local flaps such as transverse rectus abdominis muscle flap, latissimus dorsi muscle flap, rigid chest wall reconstruction, and even healing by secondary intention[1,2] We present a reconstruction through a thoracoabdominal transposition flap that allows us to preserve the original anatomy of the region.

A 73-years-old female was diagnosed with left breast carcinoma, cT2N0M0 and underwent breast conservation surgery with axillary lymph node dissection and received adjuvant brachytherapy 20 Grays, 2 fractions approximately 20 years back. After approximately 10 years of disease-free interval, she developed a nonhealing ulcer at the inframammary crease of the ipsilateral breast. The ulcer did not heal with conservative treatment and gradually increased to the size of approximately 3.5 cm × 3.0 cm with necrotic slough on the ulcer base [Figure 1a]. Whole-body positron-emission tomography/computed tomography revealed speculate ulcer of size 1.6 cm × 2.4 cm × 3.5 cm (maximum standard uptake value – 1.89), suspicious of inflammatory (?), or recurrent (?) lesion. Histopathological examination (HPE) revealed irregular acanthotic epidermis, mild dermal inflammatory infiltrate, fibrosis, and fibrinous exudate with no evidence of recurrent malignancy, suggestive of ORN. Wide local excision with underlying ribs sequestrectomy was done with gross margins of 1 cm all round. A postoperative defect of size 6.0 cm × 5.0 cm × 3.0 cm was formed [Figure 1b]. The defect was reconstructed with the thoracoabdominal flap [Figure 1c]. The specimen was sent for HPE [Figure 1d]. The patient recovered uneventfully. HPE was consistent with similar initial pathological findings.

Figure 1: The nonhealing ulcer with necrotic slough on the base (a), postoperative wound defect (b), thoracoabdominal flap reconstruction (c), and surgical specimen (d)

Chest wall ORN is an extremely rare radiation-induced toxicity. Hypoxia, hypovascularity, and hypocellularity due to radiation-induced free radicals are responsible for it.[3] The differentiation of ORN from recurrence is critical for the clinician. Biopsy of wound edge rules out the tumor recurrence. ORN heals spontaneously with secondary intention usually.[4] However, surgical debridement with en bloc resection of affected tissues followed by reconstruction with nonirradiated tissue is warranted in selected patients.[5] A transposition flap is defined as a flap that should be elevated over a normal skin area to reach its eventual primary defect destination. This reconstruction through a thoracoabdominal transposition flap allows preserving breast anatomy and its natural contour. It also provides skin with a similar color and texture to the defect, as an alternative to the free flap. Furthermore, it is a better surgical option than second-intention closure that is a long time-consuming healing process associated with a high chance of infection. The flap is well vascularized and consists of well-vascularized nonirradiated tissue. This surgical technique is a single-stage procedure and it provides a satisfactory cosmetic to the patient. The prognosis of ORN after flap reconstruction is excellent. The clinicians should be aware of such rare adverse events of brachytherapy.

In conclusion, we report a case of ORN of the chest wall after brachytherapy for breast cancer. It highlights this uncommon complication. The time interval to diagnosis is typically greater than a decade after the primary treatment. Surgical resection with nonirradiated local or distant flap reconstruction is the well-proven treatment for the potential cure in patients who do not respond with conservative management. Thoracoabdominal flap reconstruction is a simple, single-stage, and reliable surgical technique with a shallow learning curve.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient (s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal.

The patients understand that their names and initial s will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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