

CLINICAL TECHNIQUES AND TECHNOLOGY

An ocular surface prosthesis as an innovative adjunct in patients with head and neck malignancy

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The patient with malignancy of the head and neck faces multiple challenges during and after the course of surgical and adjuvant therapy. When disease threatens the periorbital region, the clinician is faced with a complex triaging system aimed at eradicating neoplasia, globe preservation, protection and lubrication of the ocular surface, and maintenance of eyelid function, extraocular motility, lacrimal drainage, and aesthetics. Conventional modalities of protecting the globe, in the presence of intact lid margins, to counter the cicatricial or paralytic challenges of tumor resection and adjuvant irradiation include lubrication, bandage contact lenses, amniotic membrane grafts, tarsorrhaphy, traction (Frost) sutures, upper lid weights (eg, gold), and palpebral springs. However, in the radiated patient with significant cicatrix of the lower lid, ectropion and malposition may persist to leave the patient at risk for exposure keratopathy.

The Boston Ocular Surface Prosthesis (BOSP), also known as the Boston Scleral Lens, is Food and Drug Administration approved for the management of corneal disorders including irregular corneal astigmatism and ocular surface disease.^{1,2} We present a case in which the BOSP, previously prescribed for severe dry eye and exposure related ocular chronic graft-versus-host disease (CGHD),^{3,4} proved a useful adjunct for ocular protection after surgical and radiotherapy for malignancy of the head and neck involving the periorbital region.

METHODS

This review was approved by the institutional review board. A 44-year-old man presented with a history of lymphoma treated in 2003 with chemotherapy, allogeneic bone marrow transplantation, and radiotherapy (3000 Gy). His course was complicated by CGHD with hematologic, dermatologic, and ocular manifestations, including scleroderma-type cicatricial retraction of the lower lids and severe dry eye, the latter of which was treated with the BOSP in August 2005. In May 2007, the patient noted a growth on the right malar

region. Biopsy revealed an undifferentiated sarcoma. The patient was taken to the operating room in September 2007 and a wide local excision of the right side of the face extending superiorly to the right lower eyelid margin, which included skin, facial mimetic muscles of the cheek and lower face, lower facial nerve branches, buccal mucosa, zygomatic arch, temporalis muscle, and soft tissue of the zygomaticotemporal region was made (Fig 1, left photograph). The reconstruction was staged in order to confirm negative resection margins.

The midface was reconstructed in a delayed fashion 2 weeks later with a right anterolateral thigh free flap, which reconstructed both the soft tissues overlying the exposed malar eminence and buccal region and the lower eyelid. The skin component of the anterolateral thigh flap measured 20 × 14 cm. The recipient vessels used were the facial artery and retromandibular vein. The buccal resection was primarily closed. Lower eyelid reconstruction was achieved with the native conjunctival layer with a portion of the free anterolateral thigh tissue composing the anterior lower eyelid. A portion of the fascial component of the free flap was anchored to the lateral nasal bone with a Mitek anchor (Mitek Inc., Norwood, MA).

The patient was resumed with > BOSP wear in the fourth postoperative week after reconstruction. He was subsequently treated with adjuvant radiotherapy of 5400 cGy. At 7 months after primary excision and reconstruction, the patient has a viable flap and acceptable lower lid position (Fig 2) with retention of the BOSP. He retains an intact ocular surface in both eyes with 20/25 vision on the surgical/irradiated right side and 20/20 vision in the left eye.

DISCUSSION

In patients with malignancy of the head and neck with periorbital involvement, surgical and radiation therapy may render the ocular adnexal structures at risk for postoperative scarring leading to lid retraction, ectropion, and corneal exposure. Seventh nerve function may be reduced, further

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