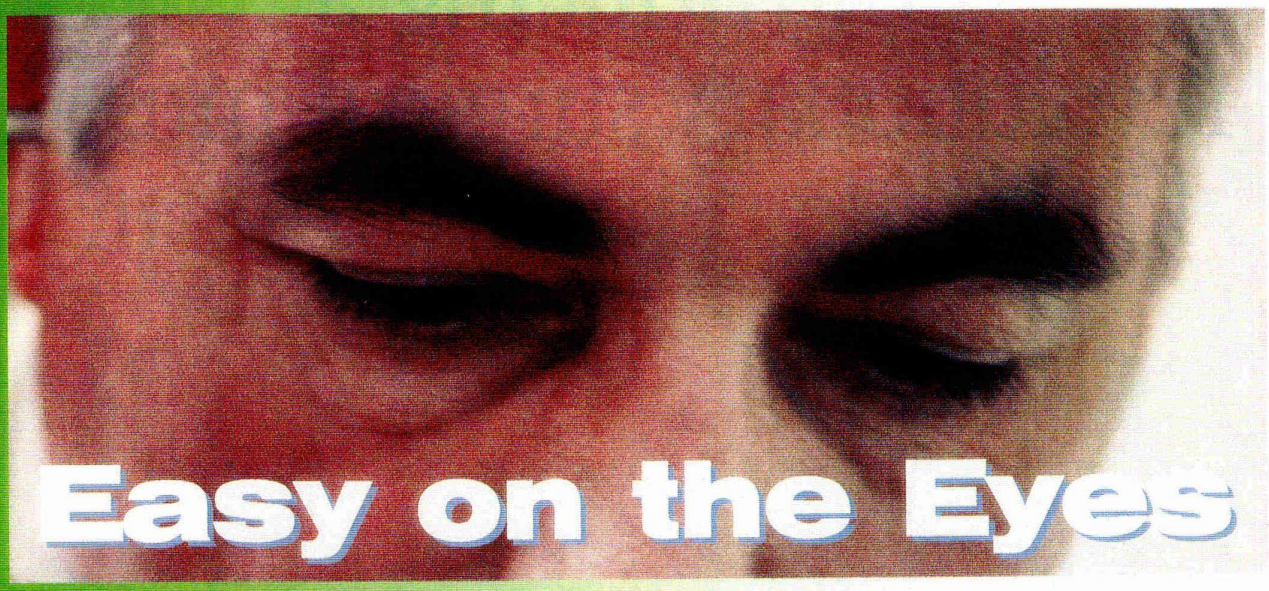


Easy on the Eyes

by Amiya Prasad, MD, FACS

Surgical acuity and creativity are necessary to remove cancer from the eyelids while maintaining a normal-looking eye

Skin cancer of the eyelids poses several diagnostic and management challenge. As a referral specialist, I see these patients well after a significant progression has occurred and the diagnosis is fairly obvious. The excision and reconstruction of these tumors requires a great degree of creativity and flexibility to achieve the optimal result.

The ultraviolet radiation that is primarily responsible for malignant transformation of skin cancer are 290 to 320 nm (UV-B). The most common malignancies affecting the periocular region are basal cell carcinoma, squamous cell carcinoma, sebaceous cell carcinoma, and malignant melanoma. Basal cell carcinoma accounts for 90% of all eyelid malignancies. The tumor primarily involves the lower eyelid (50% to 66%) and the medial canthus (25% to 30%). The upper eyelid is affected in 15% of cases and the lateral canthus in 5%. Although these statistics are helpful, many skin cancers involve adjacent anatomic areas such as the forehead and cheek, and pose even greater challenges in reconstruction.

Early detection and diagnosis are critical. Reconstruction of the posterior and anterior lamella of the eyelid can become complicated when the defect is large. We must educate at-risk patients to bring the appearance of any new lesion to the attention of a physician.

The Task of Revision

Basal cell carcinoma of the eyelid margin is generally diagnosed initially as either a "stye" (hordeolum) or blepharitis. Patients are often treated with multiple eye ointments and/or drops to manage these inflammatory conditions prior to diagnosis. This is understandable because external hordeolum and blepaharitis are more commonly

Key factors in the management of periocular basal cell carcinoma and other eyelid malignancies are:

1) Recognition
2) Awareness of the patient's visual acuity in each eye and current state of ocular health
3) Possibility of lacrimal drainage system involvement
4) Method of excision
5) Method of reconstruction

presented in the practice of ophthalmology. Often, patients do not notice these lesions for months or even years. As in any other area of the face, basal cell carcinomas of the eyelids fall within the categories of nodular, ulcerative, and morpheaform. The ulcerative form at the lid margin often requires larger, full-thickness excisions due to a delay in diagnosis.

I generally perform excision of basal cell carcinoma under frozen section control. Once margins are cleared by pathology, reconstruction can begin. Techniques that involve temporary occlusion of the eye, such as Hugh's flap cannot be performed if the patient's contralateral eye has poor visual acuity. Therefore, it is important to be aware of visual acuity before surgery and plan accordingly. Ocular conditions such as dry eye should also be optimally managed prior to these procedures. Patients who have glaucoma and require the application of pressure lowering drops are at risk of irreversible vision loss if the eye is occluded and drops cannot be administered.

In cases of basal cell carcinoma where margins are difficult to estimate, I collaborate with a Mohs surgeon to perform the excision. The Mohs surgery approach is beneficial because the excision is performed so that the repair of the defect does not bias the process of excision. Cryotherapy and radiation are alternative options in the treatment of basal cell carcinoma; however, I have not found these methods applicable in the periocular region. This is based on the uncertainty of the techniques with regard to the margins and completeness of treatment.

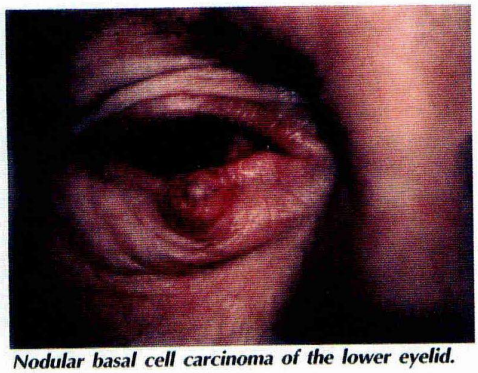
Reconstruction of defects in the periocular area present challenges—primarily to flap design—that are not present in other areas of the body. Rhomboid flaps, for instance, have fewer sites to mobilize skin to fill a defect the closer the defect is to the eyelid margin. Rotation of skin from the inferior aspect of a lower eyelid defect can result in downward traction on the eyelid margin or ectropion. In the medial canthus area, particular care needs to be taken when employing a transposition flap, as flap elevation and web formation are possible. When the lesion involves the margin, both posterior and anterior lamellas of the eyelid need to reconstructed. Reconstruction of the posterior lamella can be performed with a tarsoconjunctival flap such as Hugh's flap or a free graft of tarsus, hard palate mucosa, or dermal graft/implant material made from donated skin. Anterior lamellar reconstruction is usually a skin graft, skin flap, or a combination of both. I have found combining several small flaps or small flaps with a skin graft to be superior to large flaps alone. This is particularly true in the medial canthus area where the curve and depth of the defect make reconstruction more challenging.

Reconstruction of defects in the periocular area present challenges—primarily to flap design—that are not present in other areas of the body.

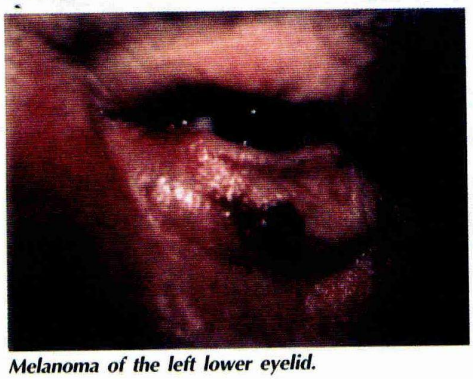
When repairing full-thickness defects of the central eyelid, be aware of potential corneal damage from sutures or other irregularities that can contact the cornea directly. Temporal full thickness defects are more forgiving in terms of need for a mucosal surface against the eye. Myocutaneous flaps such as the Tenzel flap generally do not require mucosal grafting to be tolerated by the eye. The nature of the eyelid margin in its ability to maintain a normal configuration is based on a combination of orbicularis muscle tone, tarsal elasticity, and canthal tendon laxity. These factors are of particular importance in the lower eyelid. If, for example, I place a skin graft in the lower eyelid of a patient with significant lateral canthal tendon laxity, I will also perform a lateral tarsal strip procedure to prevent ectropion. When a defect involves the lateral canthus, I often use a periosteal flap as a key element in maintaining the desired shape of the eyelid similar to the lateral canthal tendon. Upper eyelid skin cancers are a task because the eyelid height can be affected if the levator aponeurosis is partially or completely excised. I prefer to do

PHOTOS COURTESY OF AMIYA PRASAD, MD, FACS

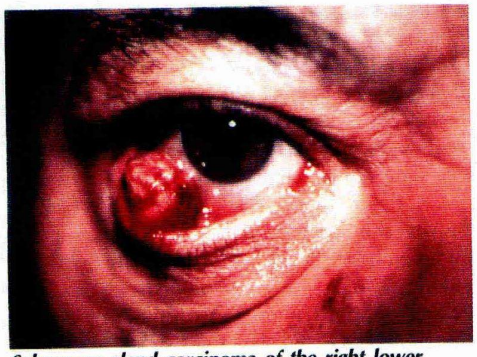
Ulcerative basal cell carcinoma of the medial canthus.



Nodular basal cell carcinoma of the lower eyelid.



Melanoma of the left lower eyelid.



Sebaceous gland carcinoma of the right lower eyelid.

these procedures under local anesthesia with sedation, so there is an opportunity to adjust the final eyelid height and contour with the patient's cooperation.

Danger Signs

The other forms of skin cancer that affect the periocular region include squamous cell carcinoma, sebaceous cell carcinoma, and melanoma. Squamous cell carcinoma constitutes approximately 9% of all periocular cutaneous tumors. This tumor is potentially lethal because it can invade the orbit or metastasize by direct, perineural, or lymphatic spread. These lesions can present as a painless plaque or nodule with varying degrees of scaling, crusting, and ulceration. Excision, as in basal cell carcinoma is usually performed with frozen section control of margins as well.

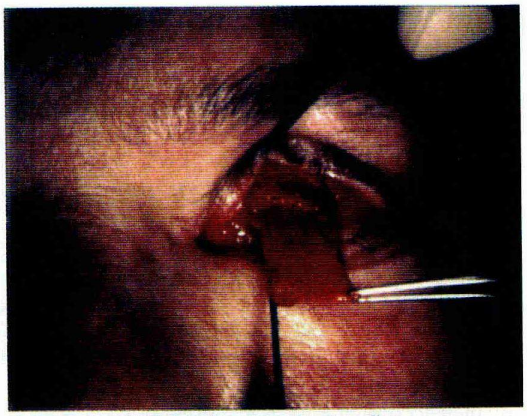
Sebaceous cell carcinoma is the third most common tumor affecting the eyelid and accounts for 1% of all eyelid tumors. Early recognition is particularly important as the morbidity and mortality associated with this tumor approach that of malignant melanoma. Delay in diagnosis can result in a tumor that masquerades as a condition such as blepharitis or conjunctivitis. The tumor typically arises from the meibomian gland of the eyelid and affects people between 50 and 90 years old. Sebaceous gland carcinoma spreads locally via a "pagetoid" epidermal invasion mimicking Paget's disease of the breast. Management of this tumor involves assessment of the conjunctival involvement and determining whether wide excision or orbital exenteration is necessary. Prognosis is worse when the tumor is extensive and has been present for more than 6 months. The prospect of orbital exenteration has prompted many patients to refuse treatment and deny the lethality of this tumor until it is too late.

Delay in diagnosis can result in a tumor that masquerades as a condition such as blepharitis or conjunctivitis.

Malignant melanoma represents about 5% of all cutaneous tumors. It accounts for approximately 1% of all eyelid malignancies. As in other areas of the body, there are four forms of cutaneous melanoma: lentigo maligna melanoma, superficial spreading melanoma, nodular melanoma, and acral-lentiginous melanoma. In the eyelid area as in the head and neck area, lentigo maligna melanoma accounts for the majority of the melanoma subtypes. A patient with a suspected eyelid melanoma should have an ophthalmic evaluation for possible conjunctival involvement. Once histologic diagnosis is made, excision with reconstruction should be performed.

Aesthetics are also important in eyelid reconstructive surgery. Patients not only want a functional eyelid, they also desire a symmetric appearance. For example, if a patient has a unilateral anterior lamellar eyelid defect, they may insist that you not use skin from the contralateral eyelid as this would result in an asymmetric appearance. In cases such as this, postauricular skin and supraclavicular skin work quite well. In addition, patients may request postoperative enhancement of their procedure to maximize symmetry and smoothness. Younger patients are particularly sensitive to the appearance of their eyes after reconstruction and will often opt for subtle enhancements such as laser resurfacing of the flap and graft edges.

Protection of the eye can be severely compromised by the local destructive effect of these tumors. Complete eradication depends on appropriate coordination with dermatologists and oncologists. The goal of reconstruction of eyelid defects should be preservation of ocular health and maximal cosmetic results. ■



Tarsoconjunctival flap for posterior lamella reconstruction.

Rhomboid flap design for closure of temporal defect.

Rhomboid flap mobilized and closed with minimal tension.

About the Author

Amiya Prasad, MD, FACS, is a New York-based cosmetic oculoplastic surgeon with offices in the upper eastside of Manhattan and Garden City, Long Island. He may be reached at 212-265-8877.