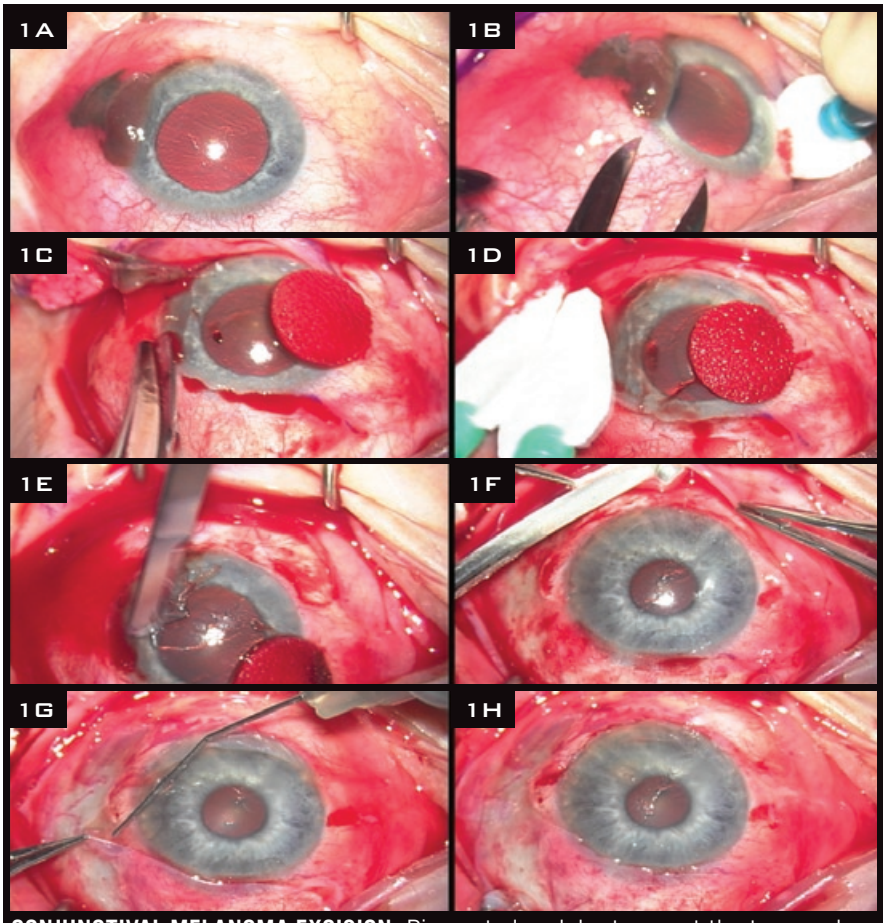
Diagnosis and Management of Conjunctival Melanoma

BY GUSTAVO A. NOVAIS, MD, AND CAROL L. KARP, MD
EDITED BY INGRID U. SCOTT, MD, MPH, AND SHARON FEKRAT, MD

Conjunctival melanoma is a rare but potentially fatal ocular surface tumor affecting about 0.2 persons per million and representing approximately 2 percent of the malignancies of the eye.

Conjunctival melanoma originates de novo in about 5 percent of all cases, from preexisting conjunctival primary acquired melanosis (PAM) in 75 percent, and from nevi in 20 percent.[1] It is an aggressive tumor, and recurrence rates may be as high as 51 percent over 10 years, especially if the tumor is not located at the limbus and has not been completely excised at the time of surgery. Metastatic disease, involving primarily the parotid, preauricular and submandibular lymph nodes, develops in 26 percent of cases with a mortality rate of 13 percent over 10 years; that rate is true even in referral centers.[2] Recent studies have shown an increasing incidence of conjunctival melanoma in the United States. Correct diagnosis is crucial for early excision, which is associated with a lower risk of metastatic disease and tumor-associated mortality.



CONJUNCTIVAL MELANOMA EXCISION. Pigmented nodular tumor at the temporal limbus (1A); wide margin demarcation (1B); "no touch" excision technique (1C); absolute alcohol at the limbus, peripheral cornea and tumor base after excision (1D); epitheliectomy with blade (1E); double freeze-thaw cryotherapy to the conjunctival margins (1F); amniotic membrane placed over the surgical defect with application of fibrin glue (1G); final result after complete tumor excision (1H).

Diagnosis

Classic history. A classic conjunctival melanoma presents as a pigmented nodular lesion usually located at the limbus over or adjacent to an area of PAM in Caucasian patients during the sixth or seventh decade of life. Pigmentation, nodularity, changes in size, the presence of prominent feeder vessels and unusual location (i.e., caruncle and tarsal and forniceal conjunctiva), especially in preexisting areas of PAM, should raise the suspicion of a malignant process. Note that benign nevi can become more pigmented during periods of hormonal changes.

Don't judge a book by its cover. Conjunctival melanoma may uncommonly be amelanotic or reddish-pink

CAROL L. KARP, MD

in color, simulating a malignant epithelial neoplasm, such as conjunctival intraepithelial neoplasia or squamous cell carcinoma, or a more benign inflammatory process, such as nodular episcleritis or pyogenic granuloma. The precursor PAM can also present as PAM sine pigmento. The presence of cysts in an amelanotic lesion favors a diagnosis of amelanotic nevus. Determining the margins of amelanotic lesions can be troublesome, and careful evaluation at the slit lamp should be done before surgical excision.

Avoid incisional biopsy. Excisional biopsy is always preferred. Incisional biopsy may promote tumor seeding and lead to local scarring. The best option is a complete excisional procedure. This will give the patient the highest likelihood for an optimal outcome while minimizing the risks. If the area of suspected tumor or the area of pigmentation is extensive, map biopsies are justified. Referring the patient to an expert is warranted for clinicians not comfortable making the diagnosis or treating ocular tumors.

When in doubt, cut it out. The best way to make the correct diagnosis is by histopathologic evaluation. But conjunctival melanoma is a great mimic. The surgical plan starts at the slit lamp, with careful evaluation of lesion extension and margins, detailed schematic drawings and photodocumentation. Evert the upper eyelids, since extralimbal locations have been associated with a poorer prognosis. Consultation with an experienced, preferably ocular, pathologist is warranted for histopathologic evaluation of the tissue. Correctly assessing surgical margins, cell type and thickness is essential because these are important prognostic indicators.

Management

Be generous with cuts and keep the site clean and dry. A dry "no touch" technique excision, as described by Shields and colleagues,[3] should be performed with wide margins (at least 4 mm) from the apparent lesion (Fig. 1B). Positive margins have been associated with higher recurrence rates and a worse prognosis. The dissection should always begin from the apparently unaffected conjunctiva and proceed toward the involved limbus, with the conjunctival surface kept dry. Tumor cells should not be irrigated. Cautery can stop bleeding as well as help kill any residual tumor cells. Only normal conjunctiva, not the tumor, should be manipulated with instruments; a clean set of instruments should be used after resection of the tumor. No other ocular surgery should be performed at the same time as tumor excision to avoid tumor seeding.

The more the merrier. It is crucial to complement surgical excision with cryotherapy (double freeze-thaw) at the conjunctival margins (Fig. 1F). When the cornea is involved, absolute alcohol is used for epitheliectomy at the limbus and at the base of the tumor after resection (Fig. 1D). If the suspected tumor tissue adheres to the sclera, a sclerectomy should be performed as well.[3] Adjunctive topical chemotherapy, typically with mitomycin C, can be used for recurrent or very extensive lesions. Place punctal plugs when using topical treatment to decrease any risk of systemic absorption, nasal irritation and punctal stenosis.

Far, but not too far. Superficial sclerectomy should be performed when there is pigmentation or suspected adherence of tumor tissue to the sclera. Care should be taken to protect the cornea with a sponge, and to avoid disruption of Bowman's layer. Bowman's layer is excellent protection for the cornea. Rectus muscles should be protected when excising larger tumors.

Not only about beauty. The conjunctival surgical defect should be closed. If the defect is small, a primary closure may suffice. However, since these lesions usually require a wide excision, the conjunctival defect may be large. Amniotic membrane may be of value in such cases since it helps conjunctival re-epithelialization, decreases postoperative local inflammation, provides substrate for limbal stem cell repopulation and decreases scarring.[4]

Recurrence? Zero tolerance for new pigment. New pigmentation should raise suspicion of recurrence. New pigmentation in the setting of a previous melanoma must not be ignored. Surgery, simple cryotherapy or topical mitomycin C can be used. Recurrences can be amelanotic or can even look like a pyogenic granuloma. The eyelids, again, should be everted and the entire eye carefully examined because recurrence can come from microscopic disease at a different site. The palpation of head and neck lymph nodes is recommended, since they are usually the first sites of metastatic disease.

You are not alone. Managing conjunctival melanoma is complex. An ophthalmologist experienced in managing ocular tumors should be involved in each new diagnosis. A multidisciplinary approach and coordination of care are essential. Oncologic, dermatologic and even psychological support should be offered to the patient when appropriate.

1 Folberg, R. et al. *Hum Pathol* 1985;16(2):136–143.
2 Shields, C. L. et al. *Arch Ophthalmol* 2000;118(11):1497–1507.
3 Shields, J. A. et al. *Arch Ophthalmol* 1997;115(6):808–815.
4 Paridaens, D. et al. *Br J Ophthalmol* 2001;85(6):658–661.

Dr. Novais was a research fellow at the Bascom Palmer Eye Institute and is a cornea fellow at Hospital Oftalmológico de Sorocaba, Brazil, and a PhD student in ophthalmology at São Paulo University. Dr. Karp is professor of clinical ophthalmology at Bascom Palmer Eye Institute.