medial palpebral conjunctiva probably stems from the embryologic origin of the normal caruncle from this topographic site.4,5

The major differential diagnostic consideration is a solid caruncular dermoid, which is also present at birth. There is only 1 persuasive caruncular dermoid in the ophthalmic literature,6 and it adhered to the superomedial eyelid margin (where colobomas may also occur with dermoids).6,7 In contrast, abnormal caruncular lesions always involve the lower eyelid. Microscopically, the caruncular dermoid possessed a keratinizing epithelium with pseudoglands of Henle and subepithelial, thincollagen strands.


Extracranial Spread of Choroidal Melanoma via Tantalum Marker Suture Track
Proton beam irradiation allows globe-sparing treatment of uveal melanoma with excellent local control rates.1 Recurrence after radiotherapy is low, ranging from 2% to 5%. Treatment first requires delineation of the tumor by placement of tantalum markers that are sutured to the sclera.2 We report a case of multifocal, extrasceral spread of choroidal melanoma along the suture track of a tantalum marker after proton beam therapy.

Report of a Case | A 65-year-old woman presented 17 months after proton beam irradiation for choroidal melanoma of the right eye with multiple, pigmented, subconjunctival lesions highly suspicious for recurrence with extracranial extension. Review of outside records revealed that the original mass extended from the fovea supratemporally with a collar button configuration, measuring 16 × 14 mm at the base and 9 mm in height on B-scan ultrasonography. The patient underwent tantalum marker placement followed by proton beam therapy 3 weeks later. A total dose of 56 Gy (to convert to rad, multiply by 100) was given in 4 fractions. Thereafter, the patient was lost to follow-up.

Visual acuity on presentation to our institution was no light perception OD. Darkly pigmented subconjunctival nodules were apparent (Figure 1). A secluded pupil and vitreous hemorrhage precluded a fundus examination. B-scan ultrasonography demonstrated remnants of the primary tumor and an additional mass posterior to the globe that was confirmed with...
orbital magnetic resonance imaging. Findings on liver function tests, magnetic resonance imaging of the head and neck, positron emission tomography, and chest radiography were within normal limits. Given highly probable extraocular extension with multifocality, the tumor board recommended exenteration.

Gross pathology showed a large, posterior, pigmented choroidal mass with multiple extrascleral satellite lesions on the anterior aspect of the globe and one near the posterior aspect. Histopathology of the choroidal tumor demonstrated a necrotic central core with a peripheral edge of viable melanoma cells. The extrascleral sites of melanoma were not contiguous to the primary choroidal mass. Direct extension through episcleral channels was not observed. Instead, melanoma cells were seen neighboring and within suture material adjacent to the primary tumor site and at the site of posterior extrascleral extension (Figure 2).

Discussion | Nearly half of recurrences of uveal melanoma are at the margin of the initial mass, probably as a result of treatment planning errors. Furthermore, larger melanomas are more likely to recur because of poorer radiosensitivity. Extraocular tumor spread is typically through anatomical conduits including aqueous channels, ciliary arteries, vortex veins, ciliary nerves, and the optic nerve. To our knowledge, this is the first report of extrascleral extension of melanoma along a
suture track created from tantalum marker placement. There are no reports of scleral perforation during tantalum marker or plaque placement. However, it is known that scleral perforation can occur during strabismus (0.8% to 1.8%) and scleral buckle surgery (2.5%).\(^2\)\(^,\)\(^3\) Presumably, a needle pass penetrated the tumor to provide an avenue for tumor cells to spread beyond the highly localized treatment area of the proton beam. This case demonstrates the vigilance that must be taken in tantalum marker placement, tumor delineation, and timely delivery of an adequate dose of radiotherapy.

Shilpa J. Desai, MD
H. Jane Kim, MD
Robert C. Kersten, MD
Michele M. Bloomer, MD
M. Reza Vagefi, MD

Author Affiliations: Department of Ophthalmology, University of California, San Francisco (Desai, Kim, Kersten, Bloomer, Vagefi).

Corresponding Author: M. Reza Vagefi, MD, Department of Ophthalmology, University of California, San Francisco, 10 Koret Way, San Francisco, CA 94143 (vagefi@vision.ucsf.edu).


Author Contributions: Desai had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

Study concept and design: Desai, Kersten, Vagefi.

Acquisition of data: Desai.

Research funding: M. Reza Vagefi, MD, Department of Ophthalmology, University of California, San Francisco. (Desai, Kim, Kersten, Bloomer, Vagefi).

Increased Fundus Autofluorescence Related to Outer Retinal Disruption

Fundus autofluorescence (FAF) imaging is able to map metabolic changes at the level of the retinal pigment epithelium (RPE) noninvasively in vivo. However, the observed autofluorescence signal is a summation of not only the autofluorescence originating from the RPE but also that from more anterior ocular structures including the overlying neuroretina.\(^1\)

Figure 1. Multimodal Imaging of a 30-Year-Old Man With Multifocal Choroiditis and a 50-Year-Old Woman With Multiple Evanescent White Dot Syndrome

A-D, Multimodal imaging of a 30-year-old man with multifocal choroiditis in the left eye. A fundus autofluorescence (FAF) image at presentation using the Optos system showed multiple hypoautofluorescent spots and a peripapillary zonal hyperautofluorescent area (A), colocalizing with an area of disruption of both the ellipsoid and retinal pigment epithelium–photoreceptor interdigitation zones in the corresponding spectral-domain optical coherence tomographic (SD-OCT) image (B). A FAF image 7 months later (C) showed resolution of the peripapillary zonal hyperautofluorescent area concomitant with near-complete restoration of both the ellipsoid and the interdigitation zones in the corresponding SD-OCT image (D). E-H, Multimodal imaging of a 50-year-old woman with multiple evanescent white dot syndrome. A 30° FAF image using the confocal scanning laser ophthalmoscope system showed multiple hyperautofluorescent spots (white arrow) (E), which corresponded to areas of focal disruption (arrow) of both the ellipsoid and retinal pigment epithelium–photoreceptor interdigitation zones on a horizontal SD-OCT scan (F). After bleaching, the FAF signal of the surrounding retinal areas increased more than the FAF signal of the spots, resulting in a markedly decreased difference in autofluorescence level between the pathological spots and the relatively normal-appearing surrounding retinal tissue (G). However, on the corresponding SD-OCT images before (F) and after (H) bleaching, the retinal structure looked identical. One hour later, the hyperautofluorescent spots reappeared just as in E (image not shown). The green arrows in A, C, E, and G indicate the levels of the SD-OCT scans in B, D, F, and H, respectively.