roblastoma, the term ganglioneuroblastoma is appropriate. In the present case, clinical uncertainty regarding cellular composition coupled with progressive proptosis and its associated corneal complication prompted debulking of the lesion. The history of metastatic neuroblastoma and the presence of multiple ganglioneuromas lend credence to the theory purporting the presence of rests of metastatic neuroblastoma that subsequently undergo maturation. Ganglioneuromas, as fully differentiated neoplasms, do not have the capability to metastasize, so extensive surgical resections or chemotherapy is not normally necessary, provided surgical sampling is sufficient to allow adequate histologic analysis and to assure no neuroblastic cellular elements are present. Excision may be considered when the pathologic diagnosis is uncertain or visual function is compromised by the neoplasm.

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Primary Epithelial-Myoepithelial Carcinoma of the Lacrimal Gland

Most lacrimal gland lesions are inflammatory or lymphoid neoplasms. Nonlymphoid neoplasms are less common, and most are primarily epithelial in origin. Among them, pleomorphic adenoma and adenoid cystic carcinoma are the most common benign and primary malignant tumors, respectively, accounting for 12% and 4% of all lacrimal gland lesions.2 Epithelial-myoepithelial carcinoma is an exceptional malignant epithelial tumor in view of its rarity and the relative lack of understanding of its clinical behavior. These rare tumors usually occur in the salivary gland, and, to our knowledge, only 2 cases in the lacrimal gland have been reported. One of these was a hybrid carcinoma and the other was an epithelial-myoepithelial carcinoma with pleomorphic adenoma background.3,4 We herein report a case of de novo epithelial-myoepithelial carcinoma of the lacrimal gland.

Report of a Case. An 80-year-old Chinese man had a painless, palpable subcutaneous mass in his left upper outer eyelid for 9 months. On examination, a contrast-enhancing mass of 1 cm in diameter was confirmed to arise from the left lacrimal gland, as demonstrated on the computed tomographic scan. The left eye was the patient's only functioning eye, with a visual acuity of 20/50; his right eye had been lost to trauma 15 years earlier. He was treated conservatively, as he refused any intervention for diagnosis. The mass gradually enlarged and displaced the left eye nasally and inferiorly. Adduction was reduced. There was also significant chemosis involving the upper bulbar conjunctiva. No lymph nodes could be palpated over the cervical and supraclavicular regions. Systemic reviews, including abdominal, respiratory, cardiovascular, and neurologic examinations, were unremarkable. The complete blood cell

Figure 1. Computed tomographic scan of the orbit showing a mildly enhanced lacrimal soft-tissue mass arising from the superolateral aspect of the left orbit.

Figure 2. Low-power photomicrograph showing a well-circumscribed encapsulated tumor (hematoxylin-eosin, original magnification ×2).
count, inflammatory markers (including erythrocyte sedimentation rate and C-reactive protein level), and biochemical profiles were all normal. A chest radiograph was clear, and results of an ultrasonographic examination of the abdomen were normal. Repeated computed tomographic scan (Figure 1) of the orbit 10 months after the first examination showed a mildly enhanced soft-tissue mass arising from the left lacrimal gland and pushing the globe posteriorly with bulking of the optic nerve. It measured 24 × 15 × 18 mm. No intraocular invasion or bony erosion could be seen.

The patient eventually agreed to an excisional biopsy, and it was performed via a standard translid lateral orbitotomy. The tumor was a well-encapsulated mass and was removed en bloc uneventfully. There was no postoperative complication, and visual acuity returned to 20/50. Histopathological examination disclosed epithelial-myoepithelial carcinoma of the lacrimal gland. Foci of capsular invasion and tumor nests at the surgical margin were present. Exenteration or external beam radiotherapy was offered to the patient but was declined, as this was his only seeing eye. He was kept under close observation. Two years after surgery, there was no evidence of local recurrence or metastasis.

Gross examination showed a firm, well-circumscribed mass measuring 2.3 × 1.8 × 1.8 cm composed of homogeneously tan fleshy tissue without hemorrhage, necrosis, or calcification. Microscopic sections showed a fibrous encapsulated cellular tumor (Figure 2) with multiple foci of capsular invasion (Figure 3). The tumor was heterogeneous. In some areas, the tumor was in the form of glands that were lined by 2 cell types, the inner epithelial and the outer myoepithelial cells. Similar to a normal functional lacrimal acini unit, with an epithelial lining surrounded by myoepithelial cells, the immunohistochemical staining pattern of this tumor was reminiscent of such a pattern. The inner cuboidal cells did not show immunoreactivity for myoepithelial markers such as S100 protein and smooth-muscle antigen (Figure 4 and Figure 5) but exhibited positivity with cytokeratins.
tin (clone AE1/AE3) and epithelial membrane antigen. In contrast, the outer layer of cuboidal or flattened cells was positive for S100 protein and SMA immunostain (Figures 4 and 5), confirming that they were myoepithelial. In other areas, the tumor was in the form of oval and spindled cells forming nests and sheets. We noted moderate cellular pleomorphism and 5 mitoses in 40 high-power fields (Figure 6). The nuclear pleomorphism, frequent mitoses, and capsular invasion were features of a malignant tumor. Extracellular globules of hyaline material were focally present. Focal clear cell change was seen.

These oval and spindled cells were also positive for the myoepithelial immunomarkers, indicating that they were derived from overgrowth of the myoepithelial component (Figure 7 and Figure 8). Above all, these immunohistopathological features were diagnostic of epithelial-myoepithelial carcinoma. No perineural or perivascular invasion could be seen. There was no other preexisting abnormality associated with this tumor, suggesting it was a de novo, isolated tumor. The characteristic biphasic cell arrangement and immunostaining features helped to distinguish this tumor from common differential diagnoses such as adenoid cystic carcinoma with an infiltrative cribriform growth pattern and pleomorphic adenoma with melting of the epithelial cells in myxoid or chondroid stroma.6,7

Comment. Epithelial-myoepithelial carcinoma is a rare malignant tumor that is more commonly encountered in salivary glands and comprises 1% of all salivary gland tumors.8-10 Its occurrence in the orbit is extremely rare.2 Myoepithelioma can be subclassified histologically into different morphologic types such as chondromyxoid, spindle, hyaline, and epithelial, including the clear-cell variants.2 The epithelial type is believed to behave in a more malignant fashion than the former 2 groups. In the English literature, we found only 1 case of hybrid carcinoma occurring as a mixed tumor, and 1 associated with a preexisting pleomorphic adenoma in a 63-year-old man with an 8-year history of painless proptosis.2 To our knowl-

Figure 6. Nuclear pleomorphism and frequent mitoses, indicating malignancy (hematoxylin-eosin, original magnification ×20).

Figure 7. Staining of spindle-cell areas for S100 protein. The positive staining indicates that the spindle-cell areas were derived from overgrowth of the myoepithelial component (original magnification ×20).

Figure 8. Staining of spindle-cell areas for smooth-muscle antigen. The positive staining confirms their myoepithelial differentiation (original magnification ×20).
edge, this is the first reported case of de novo epithelial-myoepithelial carcinoma of the lacrimal gland without any other tumor background. This malignant tumor, though rare, should be included in the differential diagnosis of lacrimal gland tumor.

Malignant tumor may mimic a benign lesion by deceptively appearing as a painless and slowly growing mass. In our case, sudden disproportionate rapid growth suggested its malignant nature, and repeated radiologic imaging was implemented accordingly. Theoretically, computed tomographic scanning with contrast could help to discriminate epithelial from lymphoid or inflammatory lesions of the lacrimal gland. However, the reliability of this modality in differentiating a malignant from a benign epithelial lesion is known to be poor. Radiologic features such as hyperostosis and tumor calcification, which were generally considered to be features of malignancy, might not be apparent in all cases, as in our patient. Pathological diagnosis by open biopsy is therefore the last resort in confirming underlying disease.

Recurrence and metastasis rates of epithelial-myoepithelial carcinoma from salivary gland have been reported to be from 35% to 50% and from 8.1% to 25%, respectively. In this case, the presence of tumor at the surgical margin suggests that radiotherapy or orbital exenteration may be necessary. However, the ophthalmic complications or morbidity of the treatment should be discussed with the patient, especially in considering the patient's expectations, age, and general condition. Our patient accepted the limited procedure of tumor excision only. During 24 months of follow-up, there was no evidence of either local recurrence or metastasis, and useful vision was successfully preserved. This rare tumor may behave as a low-grade malignant neoplasm, in contrast to other epithelial malignant tumors of the lacrimal gland, such as adenoid cystic carcinoma, which usually has a much poorer prognosis. However, lifelong follow-up is required, as recurrence or metastasis may occur years after surgery.

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Progression of Familial Exudative Vitreoretinopathy After Laser Treatment

Familial exudative vitreoretinopathy (FEVR) is an inherited vitreoretinal dystrophy with a variable clinical course. Early disease with no retinal detachment has been shown to respond well to primary laser treatment. The following case manifested symmetrically but responded asymmetrically to appropriate and aggressive laser treatment.

Report of a Case. A 17-month-old girl was referred to the Vitreoretinal Surgical Service of the Bascom Palmer Eye Institute, Miami, Fla, for a strong family history of FEVR. The patient was delivered at full term, her medical history was unremarkable, and her developmental milestones were intact. She had no previous ocular history, but her mother noticed that the patient was bringing objects close to her face, squinting, and bumping into things. External examination revealed primary alternating esotropia. Dilated retinal examination of both eyes showed symmetric anterior ischemic retinopathy and secondary ridge neovascularization consistent with FEVR. Focal traction in this region was noted. The patient was treated with large spot–size laser ablation by indirect ophthalmoscopy to the anterior ischemic retina. One month following treatment, the patient had good regression of the neovascularization (Figure 1). Despite this regression, extramacular vitreoretinal traction alterations persisted in both eyes. Four months later, there was minimal progression of traction in the left eye with a localized area of extramacular schisis formation. The right eye showed progressive tractional alterations through the macula with development of a falciform retinal fold (Figure 2).

Comment. Familial exudative vitreoretinopathy is an inherited vitreoretinal dystrophy characterized by premature arrest of vascularization of the peripheral retina. There is a broad spectrum of disease involvement from mild avascular reti-