

1. Introduction

The breadth of pathology within the scope of ocular oncology spans all ocular, orbital, and adnexal structures. As such, the clinical assessment of patients must be accordingly comprehensive and tailored for the detection and surveillance of neoplastic processes. While the essential modalities of standard ophthalmic examination are utilized in the practice of ocular oncology, a nuanced perspective is necessary to optimize management for this subset of patients. In this chapter, we present the systematic approach to clinical examination employed at The New York Eye Cancer Center as a basis for the assessment of patients in ophthalmic oncology practice.

2. Medical History

The initial evaluation of any ocular oncology patient should begin with a detailed medical history of both the lesion in question and the patient's general medical condition, including any chronic medical conditions, recent illnesses, and medications. Any history of ocular disease or treatment should be elucidated. Particular focus should be placed on any history of systemic malignancy. This bears importance as a significant portion of ophthalmic neoplastic lesions consists of metastases from the systemic primary disease. For instance, choroidal metastases account for the majority of intraocular malignancies, and metastatic orbital lesions are most frequently noted in breast and prostate cancers in addition to melanoma (see Chapters 27 and 35).¹⁻⁴ Prior knowledge of such primary tumors may obviate the need for certain ancillary testing. Some patients with ocular malignancies have also been noted to have concurrent, nonocular primary tumors (see Chapter 41) and thus a review of systems should be performed with this in mind.⁵ Otherwise, general medical conditions that may present as masquerading entities such as systemic inflammatory disease and hematologic processes should also be documented during the initial assessment, in addition to any predisposing risk factors for malignancy such as immunosuppression or substance use. A detailed family history and pedigree review may also be necessary when considering diagnoses of heritable cancer syndromes.⁶⁻⁸

When available, an overview of the presenting history of the lesion in question should be obtained. The onset, progression, and chronology of any changes are important and may influence management decisions, and any objective documentation (such as prior consultation reports and photographs of the lesion) should be

reviewed. While many lesions may be asymptomatic and noted incidentally, any prominent symptoms such as pain or visual disturbances should be investigated as they may signal disease processes such as perineural invasion or compromised structures in the visual pathway.⁹

3. Standard Ophthalmic Examination and Testing

History-taking is followed by an ophthalmic examination. This examination is essential in determining the type, stage, and extent of cancer, which helps in planning the best possible treatment. An assessment of neurologic and psychological status is followed by evaluations for visual acuity, ocular motility, visual fields, and pupillary reactions. Intraocular pressure (IOP) is measured and the time is noted. The eyelids, lashes and lacrimal system, conjunctiva, cornea, anterior chamber, iris, and lens of each eye should be examined at the slit lamp. Dilated extended funduscopy is performed with direct and indirect ophthalmoscopy techniques. In addition to clinical examination, focused ophthalmic photography and ancillary testing should be performed at each visit.

At The New York Eye Cancer Center, image-driven assessments provide an abundance of diagnostic information and allow for objective measures of comparison during longitudinal follow-up. When compared to clinical examination and ophthalmic illustration,



Fig. 3-1. Image reviewing software allows objective comparison of serial follow-up photography.

Table 3-1. Diagnostic testing for various tumor categories

Tumor location	Diagnostic testing
Orbit	<ul style="list-style-type: none"> • Orbital imaging (CT, MRI, USG) • External photography • Slit-lamp photography
Conjunctiva/Cornea/Ocular surface	<ul style="list-style-type: none"> • Slit-lamp photography • High-frequency ultrasound biomicroscopy • Anterior segment optical coherence tomography*
Iris/Ciliary body	<ul style="list-style-type: none"> • Slit-lamp photography/Gonio-photography • High-frequency ultrasound biomicroscopy • Anterior segment angiography • Anterior segment optical coherence tomography*
Posterior segment	<ul style="list-style-type: none"> • Fundus photography (traditional/widefield) • Low-frequency A/B-scan ultrasonography • Autofluorescence • Fluorescein/Indocyanine green angiography • Optical coherence tomography

CT: computerized tomography; MRI: magnetic resonance imaging; USG: ultrasonography

*Limited use through opaque media/structures

serial photography and comparative evaluation on large, high-definition monitors facilitate the detection of subtle changes in an accurate and reliable fashion (Fig. 3-1). Ocular ultrasonography is another essential tool in the evaluation of ocular tumors and is primarily employed in the assessment of almost all ocular surface and intraocular masses. It can also be helpful for evaluation of orbital tumors, where radiographic imaging plays a more central role. Ophthalmic ultrasound allows for objective measurement of lesion dimensions, in addition to providing invaluable diagnostic information. Further discussion will follow regarding the ultrasonographic examination of the anterior and posterior segments.

During the initial consultation, a review of any prior photographs and imaging of the lesion in question should be undertaken. Furthermore, photographic documentation is invaluable for both patient education and communication with other providers. In our center, examination rooms are equipped with large, high-definition monitors to allow for a detailed review of imaging by all parties. Specific diagnostic considerations for various tumor types will be addressed in the following sections (Table 3-1).

4. Specialized Testing for Tumors of the Eye, Lids, and Orbit

4.1. Clinical Evaluation of Orbital Tumors

Evaluation of patients with orbital tumors may begin with a general inspection of the eye and adnexa, with attention to any gross asymmetry or alteration of globe position. If present, characteristics of globe displacement may aid in guiding the initial diagnosis. Inferior globe displacement, for example, would be expected with tumors of the lacrimal gland or in the majority of patients with rhabdomyosarcoma, whereas axial proptosis is more likely seen with intraconal masses of vascular or neurogenic origin.¹⁰ Hertel exophthalmometry should be employed to quantitatively document and follow the degree of proptosis in relevant cases. Any variation with changes in position or Valsalva (such as may be seen with orbital varices) should be noted and documented. Palpation of the orbital rim and adnexal structures may be performed, though not all orbital tumors present with a palpable mass. Evaluation of regional lymph nodes—while not exclusive to the assessment of patients with orbital tumors—should be performed, particularly for tumors known to exhibit lymphogenous spread (e.g., conjunctival melanoma and carcinomas). A standard ocular examination is also warranted to detect sequelae of orbital masses, such as anterior segment congestion, exposure-related pathology, and compressive optic neuropathy.