In most cases intraocular tumors of the anterior uvea can be accurately diagnosed by conventional non-invasive techniques such as slit-lamp examination and ultrasound biomicroscopy. Additional non-invasive diagnostic modalities like angiography and high resolution magnetic resonance imaging have been utilized to further add to the diagnostic precision. Most ophthalmic oncology centers approach a diagnostic accuracy of 98% without any surgical intervention. In selected cases, however, which lack typical clinical features, additional histological confirmation of the diagnosis may be desirable. Ophthalmic oncologists are among the few, if not the only cancer treating physicians who do not routinely utilize a histological confirmation before treating a clinically diagnosed malignancy. The reason for this is firstly the high diagnostic accuracy achieved with non-invasive techniques and secondly the difficult access to intraocular tumor samples avoiding iatrogenic vision threatening complications. Although modern diagnostic improvements have resulted in very good diagnostic accuracy without the utilization of any invasive techniques in ophthalmic oncology centers, a small percentage of patients present with atypical neoplasms, which are difficult to be classified purely on clinical grounds.

Following the experience in biopsy of larger systemic malignancies, various intraocular biopsy techniques have been employed for achieving histopathological verification in cases of unclassifiable uveal tumors. In the early days of intraocular biopsy most centers performed a cornel or sclerocorneal incision with diagnostic iridectomy (incisional biopsy of the iris). These biopsy methods although giving a good diagnostic yield, were criticized due to the high incidence of intra- and extracocular tumor spread with local, or even diffuse tumor recurrence, thus bearing the possibility of having an adverse effect even on tumor related mortality. Today the most commonly used method of intraocular biopsy is performed either by fine needle aspiration or by small gauge vitrectomy probes. Fine needle aspiration biopsy has even been successfully employed in iris lesions usually via a clear cornea approach. Although intraocular fine needle aspiration biopsy is generally considered a safe method of tumor sampling regarding tumor dissemination, several authors have expressed criticism. The most important limitations of this technique are however an inconclusive cytopathological diagnosis due to inadequate sampling and intraoperative complications such as vitreous or subretinal hemorrhage.

Although the iris biopsy technique are relatively safe methods, both from the surgical and oncological point of view, it is not recommended to be used as a routine diagnostic method for intraocular malignancies at present, in the absence of evidence that tumor sampling and genetic analysis is beneficial for the patient. In case of nodular iris lesions, that can be excised locally, surgical treatment is recommended. In case of diffuse malignancy conformal radiotherapy techniques such as proton beam irradiation have been employed with great success and limited side-effects. A see-and-wait approach for a limited time-period can be adopted in cases with undetermined nature or malignancy and when ancillary examinations have been so far inconclusive. Alternatively a clear cornea biopsy can be recommended in theses selected cases.

References: