Nevus & Melanoma of the Eye

What is a nevus?
A nevus is a patch of pigmented cells in the uveal layer of the eye. It is usually benign and is often described as a freckle of the back of the eye.

What is the uvea?
The uvea is the middle layer of the eye. It is the layer in the back of the eye between the retina and the tough outer layer of the eye called the sclera. In the front of the eye, the uveal layer is the iris which is the brown pigmented or blue part you see in the front of your eye.

What is a suspicious nevus?
A suspicious nevus is usually a nevus that is larger than the more common benign nevus. There are several other characteristics of that may indicate that a nevus has a higher risk of becoming or being a melanoma.

How is a suspicious nevus managed?
Photographic and ultrasound measurements are made initially and at regular intervals thereafter. If the lateral borders or thickness of the suspicious nevus increase significantly, malignant transformation to a uveal melanoma is assumed to have occurred. There are other changes, such as subretinal fluid or orange pigment on the surface of the nevus that support this conclusion.

What is a uveal melanoma?
A uveal melanoma is a tumor of the uveal layer of the eye, either in the iris or in the posteriorly located uvea called the choroid. Tumors in the back of the eye under the retina are usually referred to as choroidal melanomas. The part of the uvea between the retina and the iris is called the ciliary body. Ciliary body melanomas are harder to see because they are often hidden behind the iris.

How is choroidal melanoma diagnosed?
Melanomas that develop from suspicious nevi are diagnosed by following the suspicious nevus for interval growth or the development of other risk factors. More commonly a choroidal or ciliary body melanoma is found on its initial observation. The appearance of the tumor seen by the retinal specialist with the indirect ophthalmoscope is often diagnostic. Positive risk factors for melanoma are elevated lesion, subretinal fluid, orange pigment or other pigmentary irregularity, and absence of drusen. Sometimes the only initial sign of a ciliary body melanoma is the appearance of enlarged blood vessels on the outside of the eye over the tumor inside the eye.

Because accurate diagnosis is so important, additional tests are done to confirm the diagnosis. The A-scan and B-scan ultrasound tests measure the dimensions and the ultrasonic reflective structure of the melanoma. A fluorescein angiogram is usually done to confirm tumor circulation and rule out hemorrhagic choroidal detachment.

A special ultrasound called the Ultrasonic Biomicroscope is used to evaluate the ciliary body and iris melanomas.

Tissue biopsy can be performed with a fine needle in cases where the diagnosis is still uncertain. However, fine needle biopsy is seldom required to reach a continued on other side
high enough level of certainty to pre-
scribe treatment of the uveal melanoma.

**How is it treated?**

Once the uveal melanoma has been di-
agnosed, the next step is to make sure
the melanoma has not spread to the liv-
er or other parts of the body. Tests such
as liver function blood tests, chest x-
ray, ultrasound of the liver, and PET-CT scan
are often ordered for this purpose. If the
uveal melanoma has spread to other
parts of the body, the patient is usually
referred to an oncologist (cancer special-
ist) for further evaluation and treatment.

If there is no specific finding of the uveal
melanoma spreading to the rest of the
body, the objective is to prevent the
tumor from spreading. Due to the life
threatening nature of tumor spread, the
main goal of treatment is preservation
of life. Saving the eye and saving the vi-
sion are second and third priorities.

Most tumors are small to medium size
(under 9.0 mm in height). These tu-
mors can be treated with a radioactive
iodine-125 plaque here in Tampa. The
plaques are inserted in a hospital surgi-
cal setting. Most patients are discharged
home the same day with the plaque in
place. The plaque must be removed,
which is usually done about a week later.

For tumors larger than 10mm, the plaque
is not adequate to treat the melanoma.
The eye can be removed (enucleated) here in Tampa or, in many cases, treated
with proton beam approach available in
Jacksonville, Boston, and California. The
proton beam is also used to treat uveal
melanomas which are large and located
in the ciliary body. The retinal surgeons
at RAF in Tampa will surgically implant
clips on the sclera overlying the mela-

doma prior to referral to the Jacksonville
Proton Therapy Institute. These clips al-

\[ \text{How the plaque is made and placed on the eye} \]

\[ A. \]

\[ B. \]

\[ C. \]

Surgical resection of iris melanomas is
occasionally performed if the tumor is
expected to be low grade and small. Sur-
gical resection of other uveal melanoma-
"ms is not widely practiced and would
only be done after radiation treatment
to minimize the risk of spreading the tu-
more outside of the eye.

A fine needle-aspiration biopsy (FNAB)
at the time-of or before radiation treat-
ment is often offered to the patient to
determine the melanoma cell genetic
type. The FNAB results show the proba-
bility of the melanoma spreading to the
rest of the body in the next few years.
Although there is no proven preventive
treatment for high risk FNAB results at
this time, there is much research activ-
ity in this area. Complications of hem-
orrhage and retinal detachment from
FNAB may result in further visual loss.

**How is it followed?**

The eye will be checked at regular inter-
vals after completion of radiation treat-
ment. Generally ultrasonography and
photography of the melanoma are used
to measure regression. The first post-ra-
diation treatment measurement of the
melanoma isn't usually performed until
6 months because the tumor regression
is often slow, and the tumor may swell
slightly in the first few months after ra-
diation treatment.

An annual checkup for tumor spread to
the rest of the body is usually done with
a combination of blood tests, chest x-
ray, ultrasound of the liver and PET-CT
scan. If tumor spread is discovered, the
patient will be referred to an oncologist.

Radiation retinopathy and optic neu-
ropathy are a frequent complication
beginning the first year or two after tu-
mor treatment near the macula or optic
nerve. If vision is lost or threatened, laser
and/or injections of anti-vascular-endo-
thelial-growth-factor (anti-VEGF) may
help. Proton beam treatment can also
cause loss of eyelashes as well as radia-
tion scarring of the lids and conjunctiva.

**What other tumors are seen in the
back of the eye?**

Primary tumors of the breast, gut, and
prostate (as well as others) may be de-
tected first as a metastasis to the uvea.
This also can occur with recurrent pre-
viously treated tumors outside the eye.
Usually the uveal metastasis will be con-
trolled by systemic therapy for the pri-
mary tumor. External-beam x-ray ther-
apy of the eye can be used if systemic
therapy is ineffective or can't be used.

Hemangiomas of the uvea and retina
are not malignant tumors. Here the ob-
jective is preservation of as much vision
as possible. Several non-radiation thera-
pies such as anti-VEGF injection, laser
photocoagulation, photodynamic cold
laser, cryopexy, and surgical excision can
be used. Radiation therapy can also be
used in difficult cases.