CONDITION

Melanoma of the eye

Melanoma of the eye is a cancer that begins in pigment-producing cells within or on the surface of the eye.

WHAT IT IS
Cancer of pigment-producing cells in or on the eye

BODY SYSTEM
Eyes and vision

MAIN SYMPTOMS
Blurred vision, flashes, floaters, dark eye spot

WHAT CAUSES IT
DNA changes, usually without a known trigger

HOW IT IS DIAGNOSED
Specialist eye examination and ultrasound; sometimes biopsy

MAIN TREATMENT
Eye-directed radiotherapy or surgery; systemic therapy if spread

CAN IT BE CURED?
Sometimes - localised tumours can be treated successfully

IS IT AN EMERGENCY?
Sometimes - sudden vision loss or severe eye pain

LONG-TERM OUTLOOK
Often controlled locally, but spread worsens survival

Overview

Melanoma of the eye, also called ocular melanoma, begins in melanocytes. These are cells that make the pigment giving colour to your eyes, skin, and hair.

Most eye melanomas start in the uvea , the middle layer of the eye. The uvea includes the iris, which is the coloured part of the eye, and deeper structures called the ciliary body and choroid. Melanoma in these deeper structures is known as uveal melanoma .

Less often, melanoma develops in the conjunctiva, the thin clear tissue covering the white of the eye and the inside of the eyelids. Conjunctival melanoma behaves differently from uveal melanoma and may need a different treatment plan. Melanoma of the eyelid skin is generally treated as skin melanoma rather than eye melanoma.

Some eye melanomas are found during a routine examination before they cause symptoms. Others affect vision or create a visible dark area. Treatment aims to control the tumour, preserve as much sight as possible, and reduce the risk of cancer spreading elsewhere.

Eye melanoma is not the same as a harmless freckle or mole inside the eye. Most eye freckles do not become cancerous, but some need photographs and regular checks to make sure they are not changing.

Symptoms

Eye melanoma may cause no symptoms at first. A tumour at the back of the eye cannot usually be seen in a mirror.

Possible symptoms include:

Flashes and floaters have many causes, most of which are not melanoma. However, sudden flashes, many new floaters, or a curtain-like shadow can also happen when the retina pulls away from the back of the eye. This needs prompt assessment.

A pigmented mark on the eye is not automatically cancer. An optometrist or ophthalmologist can examine it and decide whether specialist tests or monitoring are needed.

- Blurred, distorted, or reduced vision in one eye
- Flashes of light or new floating shapes in your vision
- A shadow, dark area, or "curtain" across part of your sight
- A growing dark spot on the iris or conjunctiva
- A change in the size or shape of the pupil
- A change in the position or appearance of one eye
- Eye pain, although this is less common

Causes and risk factors

Eye melanoma develops when genetic changes allow melanocytes to grow without normal control. In most people, it is not clear why these changes occurred.

Factors linked with a higher chance of uveal melanoma include:

BAP1 tumour predisposition syndrome can increase the risk of uveal melanoma and several other cancers. It is uncommon. Most people with eye melanoma do not have this inherited condition and have not passed a cancer-causing change to their children.

Ultraviolet light is a clear cause of many skin melanomas. Its role in uveal melanoma is less certain, so eye melanoma should not be assumed to have resulted from sun exposure. Ultraviolet exposure may be more relevant to conjunctival melanoma, but research is continuing.

Eye melanoma is not contagious. It is not caused by using screens, reading in poor light, or wearing contact lenses.

- Having light-coloured eyes
- Having fair skin that burns easily
- Certain unusual moles or areas of increased pigmentation in the eye
- Increasing age
- A rare inherited change in a gene called BAP1

Diagnosis

If melanoma is suspected, you will usually be referred to an ophthalmologist, a doctor specialising in eyes. Assessment may take place at a centre experienced in ocular oncology, which is cancer care involving the eye.

The specialist examines the front and back of your eye, usually after using drops to widen the pupil. Tests may include:

Unlike many other cancers, uveal melanoma can often be diagnosed from its appearance and ultrasound findings without a biopsy. A biopsy removes a small sample of cells. It may be used when the diagnosis is uncertain or to study genetic features that help estimate the risk of future spread. Genetic risk results cannot say with certainty what will happen to an individual.

Once melanoma is diagnosed, imaging and blood tests may be arranged to look for signs of spread. The liver receives particular attention because it is the most common place for uveal melanoma to spread. The tumour's size, location, and whether it has spread are used to determine its stage.

- Fundus photography , which takes detailed pictures of the retina and deeper eye structures
- Eye ultrasound , which uses sound waves to show the tumour's size and shape
- Optical coherence tomography , or OCT, which creates detailed cross-sectional images of the retina
- Fluorescein angiography , which photographs blood flow after dye is injected into a vein

- MRI or other scans when more information about the eye or surrounding tissues is needed

Treatment and management

Treatment is planned by a specialist team. The approach depends on where the tumour started, its size and position, your current vision, the condition of the other eye, and whether cancer has spread.

Small, uncertain areas may sometimes be photographed and watched closely before treatment. This helps distinguish a stable eye mole from a growing tumour. A melanoma that is clearly growing usually needs treatment rather than observation alone.

Radiotherapy is commonly used for uveal melanoma. Plaque brachytherapy involves temporarily attaching a small radioactive disc to the outside wall of the eye, directly over the tumour. It delivers radiation over several days. Proton beam therapy or other carefully targeted external radiation may be used for some tumours.

Surgery may involve removing the tumour or, in some cases, removing the eye. Removal of the eye is called enucleation . It may be recommended for a large tumour, a painful eye with little useful vision, or a tumour not suitable for eye-preserving treatment. An eye implant and a custom-made artificial eye can usually restore a natural appearance, although they do not restore sight.

Conjunctival melanoma is often treated with surgery to remove the abnormal tissue. Freezing treatment, radiotherapy, or medicines applied to the eye may also be used in selected cases.

Treatment can control a tumour in the eye without removing every risk of later spread. Follow-up therefore includes both eye examinations and checks of general health.

If melanoma has spread, treatment focuses on slowing the cancer, controlling symptoms, and maintaining quality of life. Options may include immune-based medicines, liver-directed treatments, or a clinical trial. Tebentafusp is an immune treatment for some people with metastatic uveal melanoma who carry a specific tissue marker called HLA-A*02:01. Testing is needed to know whether it is an option.

Complications

The tumour itself can damage vision by affecting the retina, optic nerve, lens, or drainage of fluid from the eye. It may lead to retinal detachment, cataract, bleeding, or raised pressure called glaucoma.

Treatment may also affect sight. Radiation can damage small retinal blood vessels, the optic nerve, or the lens months or years later. These effects are sometimes treatable, but permanent sight loss can occur. Surgery and radiotherapy can also cause dry eye, irritation, or changes in how the eye looks.

Eye melanoma may return in or around the treated area. Uveal melanoma can also spread through the bloodstream, sometimes years after the original eye tumour was treated. The liver is the most frequent site, although other organs can be involved.

Changes to sight, uncertainty about recurrence, and losing an eye can affect mood, confidence, work, and driving. Vision rehabilitation, counselling, and practical support may help.

Prevention

There is no proven way to prevent most uveal melanomas. They usually occur without an avoidable cause.

Wearing sunglasses that block ultraviolet light and a broad-brimmed hat protects the eyes and surrounding skin from sun damage. These are sensible protective measures, but they have not been shown to guarantee prevention of uveal melanoma.

Inherited BAP1 changes cannot be prevented. If your history suggests this rare syndrome, genetic counselling can explain testing and appropriate monitoring without assuming that other family members are affected.

Routine eye examinations may find a suspicious area before it causes symptoms. They do not prevent melanoma, but they can support earlier assessment. If an eye specialist is monitoring a mole or freckle, attend the planned appointments so that photographs can be compared over time.

Living with it and what to expect

Treatment often controls melanoma within the eye. What happens to vision depends greatly on the tumour's position and size. A small tumour away from the centre of sight and optic nerve may have less effect than one involving these important areas.

Vision can change gradually after radiotherapy. Some people keep useful sight in the treated eye for years, while others develop significant sight loss. Treatments such as injections, laser procedures, cataract surgery, or glaucoma care may help with particular complications.

If an eye is removed, the other eye usually provides enough vision for many daily activities.

Depth perception and awareness on the affected side may change, especially at first. Rehabilitation can help you adapt at home, at work, and when moving around. Driving rules depend on the vision in your remaining eye and local licensing requirements.

Follow-up continues after the eye tumour has been treated. It usually includes specialist eye examinations and surveillance for cancer elsewhere, particularly in the liver. The type and timing of tests are based on the tumour's features and the plan from your specialist team.

The possibility of spread does not disappear immediately after successful eye treatment. Metastases may be found months or years later, which is why long-term follow-up matters. This uncertainty can be difficult. Asking for psychological support is reasonable even when treatment has gone well.

When to get medical help

Arrange a routine eye examination if you notice a persistent change in vision, a new or changing dark mark on the eye, or a change in the shape of the pupil. These symptoms often have causes other than melanoma, but they should be assessed.

If you have already been treated, contact your eye or cancer team about new vision changes, increasing redness or discomfort, treatment side effects, or symptoms that continue between planned appointments. Keep routine follow-up visits even when you feel well.

Seek urgent same-day eye care for:

Call emergency services or attend an emergency department for sudden complete vision loss, a serious eye injury, or severe eye pain with rapidly worsening sight.

- Sudden flashes with many new floaters
- A curtain or shadow moving across your vision
- A rapid drop in vision
- A painful, red eye, especially with nausea or headache

Common questions

Is a freckle in my eye melanoma?

Usually not. Pigmented marks called naevi are common and often remain harmless. An eye specialist may photograph and measure a mark to check for growth, fluid, or other features that suggest melanoma.

Can eye melanoma spread to the brain?

It can spread to different organs, but uveal melanoma most often spreads to the liver. Follow-up plans commonly focus on liver surveillance while also considering the rest of the body.

Will I need to have my eye removed?

Not always. Many eye melanomas can be treated with targeted radiotherapy while keeping the eye. Removal may be advised when a tumour is large, painful, or unsuitable for eye-preserving treatment.

Can eye melanoma be cured?

Localised melanoma can sometimes be treated successfully, especially when the tumour can be fully controlled in the eye. Treatment of the eye does not remove all risk of later spread, so long-term surveillance remains important.

Is eye melanoma hereditary?

Most cases are not inherited. A small number are associated with inherited BAP1 changes. Genetic counselling may be offered when there is a suggestive personal or family history.

Can I still drive after treatment?

Some people can, but it depends on vision in both eyes and local driving standards. Loss of vision in one eye may affect depth perception and side awareness. Your eye team can measure your sight, and a driving authority can confirm the legal requirements.

Sources

- National Cancer Institute. Intraocular (Uveal) Melanoma Treatment (PDQ®)-Patient Version
- National Cancer Institute. Intraocular (Uveal) Melanoma Treatment (PDQ®)-Health Professional Version
- Jager MJ, Shields CL, Cebulla CM, and colleagues. "Uveal melanoma." Nature Reviews Disease Primers . 2020;6:24
- Kaliki S, Shields CL. "Uveal melanoma: relatively rare but deadly cancer." Eye . 2017;31:241-257
- Nathan P, Hassel JC, Rutkowski P, and colleagues. "Overall Survival Benefit with Tebentafusp in Metastatic Uveal Melanoma." New England Journal of Medicine . 2021;385:1196-1206

- Royal College of Ophthalmologists. Uveal Melanoma Guidelines