

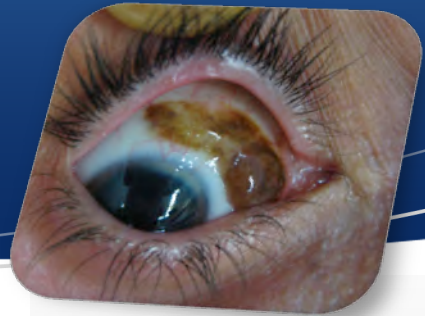
Conjunctival Tumors

Diagnosis and Treatment

Dr. Finger says, "Think of Sunglasses as Sun Block for your Eyes."™

These tumors are primarily related to ultraviolet (UV) exposure. The ozone layer is thinning and the incidence of conjunctival melanoma is increasing.

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Your first conjunctival cancer surgery will determine your outcome!

Conjunctival cancers (melanoma and squamous carcinoma) are commonly treated with combinations of surgical removal "excision" and cryo "freezing" therapy. Sometimes patients also need chemotherapy (typically mitomycin or interferon) eye drops. Though it can be simple to diagnose these tumors, advances in treatment options have made treatment decisions more complex and best performed together with an experienced eye cancer specialist.

For example, Dr. Finger has developed specialized cryotherapy applicators for treatment of conjunctival cancer. These "Finger-tip" applicators provide larger surface areas for more complete, uniform freezing of conjunctival, scleral and corneal tumors.

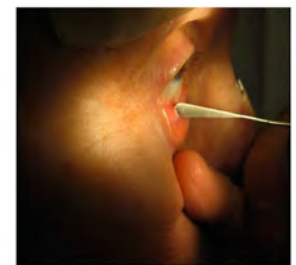
Excision alone has been associated with a high recurrence rate, while only 12% of tumors recur after excision with cryotherapy. Failure of local control is associated with cause loss of the vision, loss of the eye and metastatic tumor spread.

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A simple, relatively painless biopsy can be done in the office to determine the type of conjunctival, corneal or eye lid tumor that affects your eye.

Tumors

| | |
|---------------------------|---|
| Nevus | A benign pigmented conjunctival tumor of the conjunctiva |
| Pterygia | AA wing-shaped overgrowth of the conjunctiva onto the cornea |
| Pinguecula | A yellow-white patch of sun damaged conjunctiva typically seen between the lids |
| Melanoma | A malignant tumor that starts on the conjunctiva and typically extends onto the cornea. |
| Squamous Carcinoma | Can present as dysplasia or carcinoma. They extend locally and rarely metastasize. |



Topical Chemotherapy for Conjunctival Cancers

In 1993, Dr. Finger published the first case where mitomycin chemotherapy eye drops were used to treat malignant melanoma (and PAM with atypia) of the conjunctiva and cornea. Since that publication this technique has been used around the world. More recently (2008) he found that Interferon alpha eye drops could be used for treatment of conjunctival melanoma.

This is because some tumors are multiple (multifocal) and others can be amelanotic (invisible to clinical examination). If large or multifocal standard surgery and cryotherapy may be inadequate to completely destroy the tumor. When they are amelanotic or difficult to see, they may also be missed. This is why (in these cases) a topical “eye-drop” can be used to bath and treat all of the affected conjunctival and corneal surfaces.

Clearly, conjunctival cancer patients need to have an eye examination from an experienced eye cancer specialist. The specialist will determine if the tumor can be treated with surgical excision and cryotherapy, or if additional chemotherapy eye drops are needed.

Finger PT. Guest Editorial: **Topical mitomycin chemotherapy for malignant conjunctival and corneal neoplasia.** British Journal of Ophthalmology 2006;90:807-9

Finger PT et al: **Topical Interferon Alfa in the Treatment of Conjunctival Melanoma and Primary Acquired Melanosis Complex.** American Journal of Ophthalmology 2008 Jan;145(1):124-9.

Finger PT et al: **Topical Chemotherapy for Conjunctival Melanoma.** British Journal of Ophthalmology 1993;77:751-753.



Custom-designed “Finger-tip” Cryotherapy Probes

Dr. Finger developed these unique hand-held instruments specifically for the treatment of conjunctival and eyelid tumors.

These devices are available through MIRA, Inc. (Uxbridge, Mass, USA)
Or at <http://mirainc.net>

Finger PT. “Finger-tip” cryotherapy probes: treatment of squamous and melanocytic conjunctival neoplasia. British Journal of Ophthalmology 2005;89:942-949.



Note the relatively large flat uniform area of freezing therapy (arrow) provided by a medium-sized “Finger-tip” Cryotherapy probe used in treatment of a conjunctival melanoma.

How Cryosurgery Works

Cryosurgery destroys cells in several ways:

- First, the rapid creation of intracellular ice (within cancer cells) is lethal.
- Second, as ice forms outside a cell, the water inside is drawn out. This shrinks the cell and collapses cellular membranes resulting in a release of proteins and chemicals that kill cancer cells.
- Third, as ice (that surrounds shrunken cells) begins to thaw, large amounts of free water (produced by the thawing ice) rush back inside the cancer cells making them burst.

Modern cryosurgery is performed in a manner to produce a predictable tissue response in the target cancer. Factors that influence the efficacy of cryodestruction include the cooling rate, tissue temperature, the freeze-thaw cycle, and the number of repetitions. Special techniques must be used to prevent or limit intraocular freezing that might affect vision.

Ultraviolet Radiation and Eye Cancer

Scientists have found that the atmospheric "ozone layer" has been thinning for decades. This layer has been our natural "sun block" for ultraviolet radiation. Loss of the ozone layer has been accompanied by increasing numbers of patients with skin cancer.

Dr. Finger and his co-workers have found that the incidence of conjunctival melanoma has increased 300% in men during the last 25 years. Risk factors for conjunctival cancer include: outdoor occupations, ultraviolet exposure, fair skin and blue irises. That is why Dr. Finger says, "Think of Sunglasses as Sun block for Your Eyes."TM

Ultraviolet (UV) Light Exposure

Contributes to:

- Eye Cancers
- Benign Growths on the Eye
- Corneal Burns
- Cataract
- Solar Retinopathy
- Macular Degeneration

Drugs That Can Increase UV Toxicity

- Chlorothiazides
- Sulfonamides
- Tetracycline
- Phenothiazines
- Psoralens

If you are taking any of these drugs, care should be taken to reduce your exposure to ultraviolet light (e.g. sunlight).

Occupational Exposure to UV is Related To Sun Exposure

- Truck Drivers
- Mailpersons
- Couriers
- Pilots
- Lifeguards
- Farmers
- Fishermen
- Astronauts
- Ski Instructors
- Park Rangers
- Policemen
- Construction Workers



"A photometer can be used to measure how much ultraviolet radiation is blocked by your sunglasses."

These occupations (among others) as well as recreational exposure can increase your risk.

Sun Block

Ultraviolet radiation is divided into UVA, UVB, and UVC. Sun block is primarily used to block UVB from burning our skin and causing cancer. SPF generally means Sun Protection Factor for UVB rays. That is SPF 8 means that if a person normally develops sunburn in 15 minutes, it will take 2 hours (8 times 15 minutes) before they burn. Some new sun blocks also stop UVA exposure, but only the opaque zinc oxide and titanium dioxide offer total protection by blocking all light.

Sunglasses

Dr. Finger says, "**THINK OF SUNGLASSES AS SUNBLOCK FOR YOUR EYES.**"TM

Sunglasses should block all UVA, UVB, and UVC rays. Be careful and ask for 100% UV protection. Your optical shop should have a machine that measures UV transmission through glasses called a "photometer." The photometer should find that your sunglasses block all UV radiation or light under 400 nm in wavelength.

Sun Blocking Clothes

There are specialty clothes and hats that can be used to block Ultraviolet Radiation. For more information contact <http://SunPrecautions.com>

Frequently Asked Questions:

Q: What color sunglasses should I choose?

ANS: You may choose any color (gray, brown, green, or yellow). Some colors will affect your color vision. If you have a color vision problem gray is best (especially for driving). You can have a clear UV blocking coating on your regular glasses.

Q: What else can I do to decrease glare?

ANS: Polarizers and antireflective coatings can be added to your glasses to decrease glare. However, these alone will not block ultraviolet light.

Q: Do cataract implants block UV light?

ANS: Yes, new implants (IOLs) contain UV blocking agents. Make sure to ask your doctor before your surgery. However, the IOL will not block UV exposure of your conjunctiva and eyelids.

Q: Can conjunctival tumors spread to other parts of the body?

ANS: Yes, just like malignant melanoma of the skin, conjunctival melanomas can spread. Sebaceous and squamous carcinoma of the conjunctiva can also spread, but that is less common.

Q: What will I feel after excision and cryotherapy?

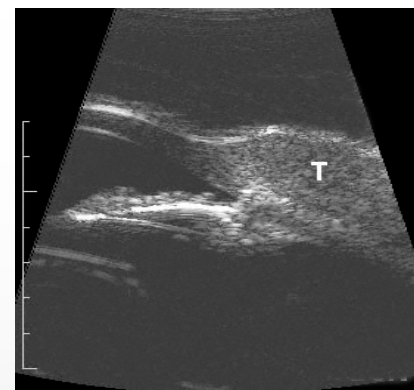
ANS: For the first day there may be some discomfort, but after that typically one may feel the sutures beneath the eyelids.

Q: How long will I be a patient after surgery?

ANS: Dr. Finger has found that very few patients develop local recurrence once two years pass (from surgery). That is why he will recommend that you be examined at least every 4 months until that time.

Q: Will chemotherapy eye drops make me feel sick or cause my hair to fall out?

ANS: Mitomycin eye drops will cause a great deal of irritation of the conjunctiva and eyelids that goes away when the treatment is finished. On the other hand, Interferon eye drops can make your patient feel like he or she has the flu (while you take these drops). This is why Dr. Finger recommends that we place a plug in the punctal drain of the eyelid, to decrease the chances of it getting into your (nose) and systemic circulation.



High-Frequency Ultrasound Imaging

This monograph reveals aspects that emphasize the importance of expert diagnosis and treatment for patients with conjunctival cancer. Another example is the use of **high-frequency ultrasound imaging**.

In 2003, Dr. Finger and colleagues described a case series of patients found to have intraocular penetration of their squamous conjunctival cancers. This can also be found in melanoma, plasmacytoma and other tumors. However, it underscores the need to evaluate each patient to make sure the tumor hasn't penetrated the eye.

When a conjunctival tumor extends into the eye, typical findings include: loss of the normal scleral reflectivity, angle blunting (as it fills with tumor), an enlarged ciliary body and thickening of the anterior uvea.

At The New York Eye Cancer Center, each patient with conjunctival cancer (that is affixed to the eye) is evaluated with high-frequency ultrasound imaging (UBM) prior to treatment. If intraocular extension is found, the treatment plan is changed to make sure the entire tumor is removed or destroyed.

Finger PT et al. **High-Frequency Ultrasonographic Evaluation of Conjunctival Intraepithelial Neoplasia and Squamous Cell Carcinoma**. Archives of Ophthalmology 2003;121:168-72

About Paul T. Finger, MD

In his efforts to save life, conserve eyes and vision; Dr. Finger has pioneered the use of specialized "Finger-tip" cryotherapy applicators, chemotherapy eye drops (mitomycin and interferon) and ultrasound imaging for tumors of the conjunctiva and cornea.

In order to better inform his patients, he has created the world-renowned web sites: <http://eyecancer.com> and <http://paultfingermd.com>

Dr. Finger has developed new methods for the diagnosis and treatment of many ocular tumors, holds several patents and has written hundreds of scientific publications. Dr. Finger lectures frequently at local, national and international meetings.

Dr. Finger is certified by "The American Board of Ophthalmology," a Fellow of the American College of Surgeons, a Senior Fellow of the American Academy of Ophthalmology and cares for patients from all over the world.

Dr. Finger has a particular interest in conjunctival cancers, choroidal, ciliary body and iris melanomas. He has written extensively about new ways to detect and treat retinoblastoma, conjunctival melanoma, squamous carcinoma, metastatic cancer to the eye and orbital tumors.



Dr. Finger is a Clinical Professor of Ophthalmology at New York University School of Medicine and Director of Ocular Tumor Services at The New York Eye Cancer Center, The New York Eye and Ear Infirmary, Manhattan Eye, Ear and Throat Hospital and NYU-Affiliated Hospitals

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