

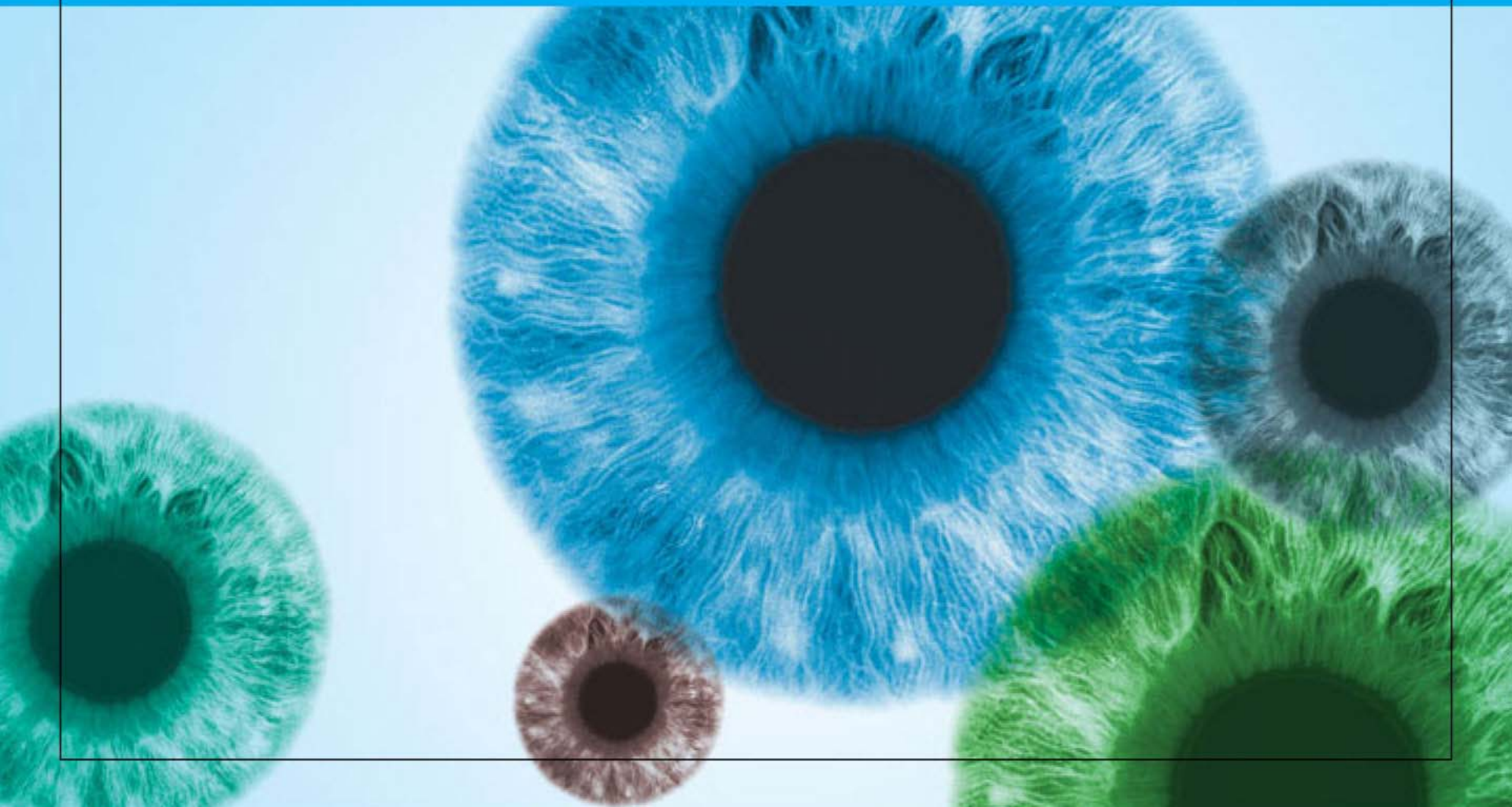
Glaucoma

Information and Treatment

Michigan Medical, P.C.

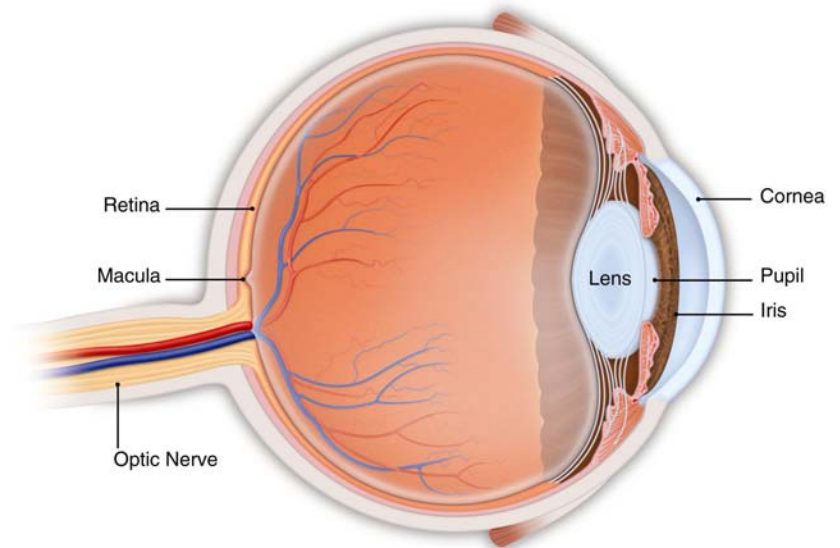
Ophthalmology

Dr. Marko Habekovic



The healthy eye

- Light rays enter the eye through the cornea, pupil and lens.
- These light rays are focused directly onto the retina, the light-sensitive tissue lining the back of the eye.
- The retina converts light rays into impulses; sent through the optic nerve to your brain, where they are recognized as images.



What is glaucoma?

- **Disease of the optic nerve.**
- **When damage to the optic nerve fibers occurs, blind spots develop; blind spots usually go undetected until optic nerve is significantly damaged.**
- **Leading cause of blindness in the United States, especially for older people.**
- **Early detection and treatment are keys to preventing vision loss from glaucoma.**



Normal vision



Vision as it might be affected by glaucoma

Anatomy of glaucoma

- Clear liquid called *aqueous humor* circulates inside the front portion of the eye.
- To maintain a healthy level of pressure within the eye, a small amount of aqueous humor is produced constantly, while an equal amount flows out of the eye through a microscopic drainage system—the *trabecular meshwork*.

Anatomy of glaucoma

- **With glaucoma, aqueous humor does not flow through the trabecular meshwork properly.**
- **Over time, eye pressure increases, damaging the optic nerve fibers.**

Types of glaucoma

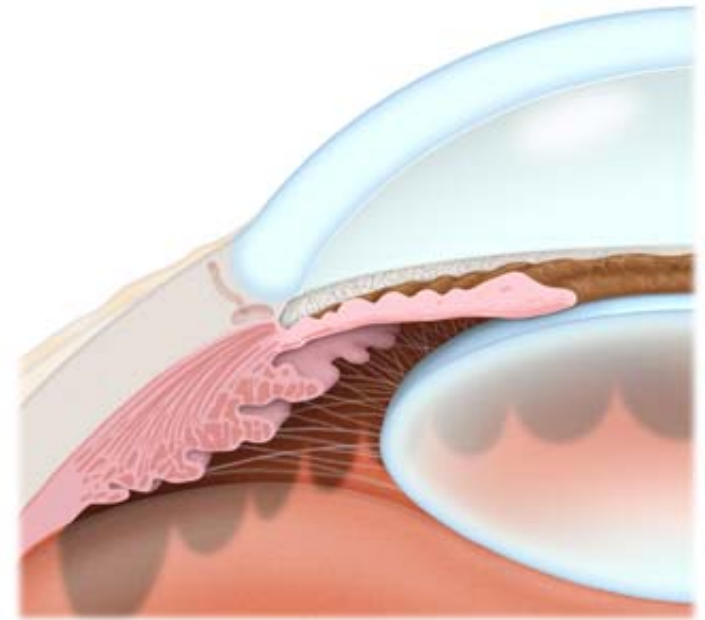
Two main categories of glaucoma:

- **Open-angle glaucoma: the most common form of glaucoma.**
- **Closed-angle glaucoma: a less common and more urgent form of glaucoma.**

Types of glaucoma

Open-angle glaucoma

- **Trabecular meshwork becomes less efficient at draining aqueous humor.**
- **Intraocular pressure (IOP) builds up, which leads to damage of the optic nerve.**
- **Damage to the optic nerve occurs at different eye pressures among different patients.**
- **Typically, glaucoma has no symptoms in its early stages.**

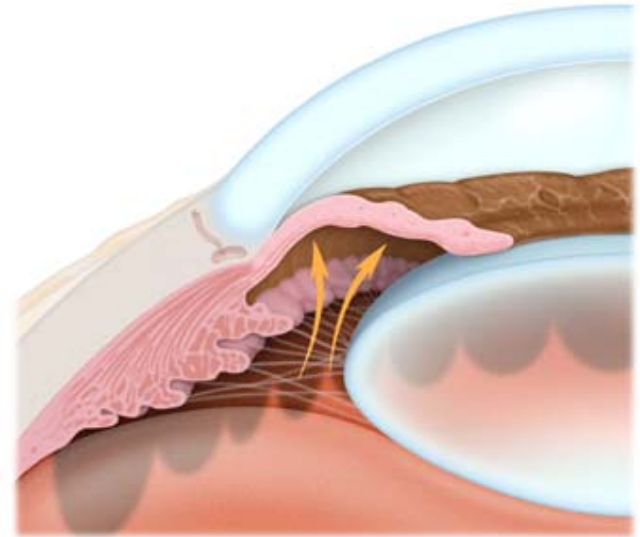


Open-angle glaucoma

Types of glaucoma

Closed-angle (or narrow-angle) glaucoma

- The drainage angle of trabecular meshwork becomes blocked by the iris (the colored part of the eye).
- IOP builds up very fast.
- Symptoms include severe eye or brow pain, redness of the eye, decreased or blurred vision.
- Must be treated as a medical emergency—see your ophthalmologist immediately.



Closed-angle glaucoma

Glaucoma risk factors

Risk factors for glaucoma include:

- **Age**
- **Family history**
- **Elevated eye pressure (IOP)**
- **Nearsightedness or farsightedness**
- **African, Hispanic or Asian ancestry**
- **Diabetes**
- **Previous eye injury**
- **Thin cornea**

Detecting glaucoma

- **Regular eye examinations by your ophthalmologist are the best way to detect glaucoma.**
- **Glaucoma screening that checks only eye pressure is *not* sufficient to detect glaucoma.**



Ophthalmoscope examination

What happens during an exam

- **Tonometry measures eye pressure (IOP).**
- **High tonometry reading is often one of the first signs of glaucoma.**



Tonometry examination

What happens during an exam

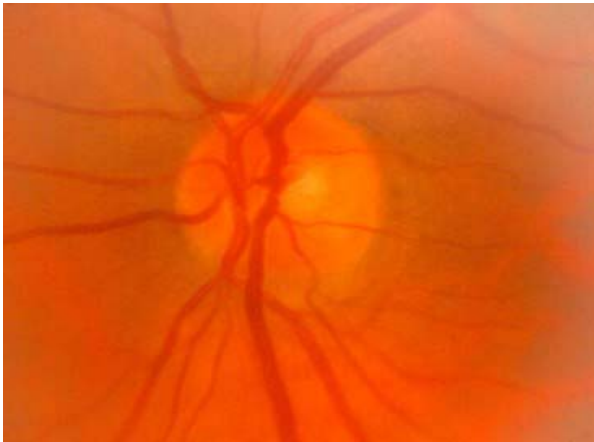
- **Gonioscopy** inspects drainage angle of aqueous humor.
- **Allows ophthalmologist to determine type of glaucoma (open- or closed-angle).**



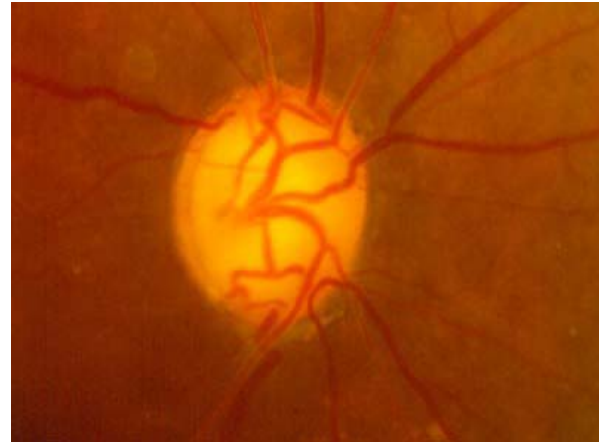
Gonioscopic image of the eye

What happens during an exam

- **Optic nerve exam, in which ophthalmologist dilates your pupils to detect optic nerve damage.**
- **Subtle changes of optic nerve reveal early signs of glaucoma.**



Normal optic nerve



Optic nerve damaged by glaucoma

What happens during an exam

- **Visual field exam, testing for blank spots in peripheral vision.**



Visual field exam

Treating glaucoma

- **Treatment for glaucoma depends on:**
 - Specific type of glaucoma
 - Severity of glaucoma
 - How glaucoma responds to treatment

Treating glaucoma

Open-angle glaucoma

- **Medication.**
- **Eyedrops are most common treatment.**

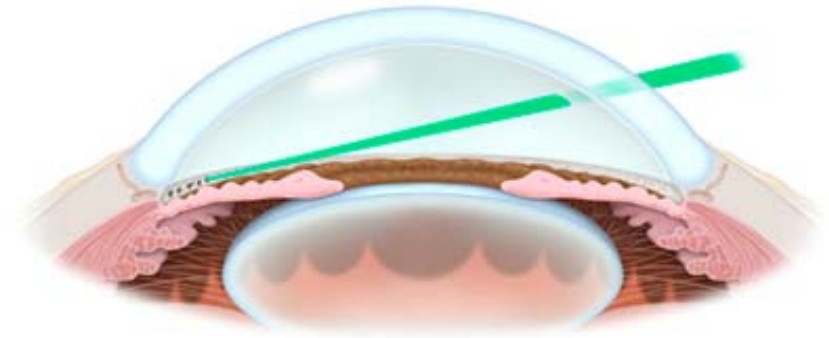


Eyedrop application for open-angle glaucoma

Treating glaucoma

Glaucoma surgery

- **Laser trabeculoplasty:** stimulates the trabecular meshwork (drainage angle) to function more efficiently.

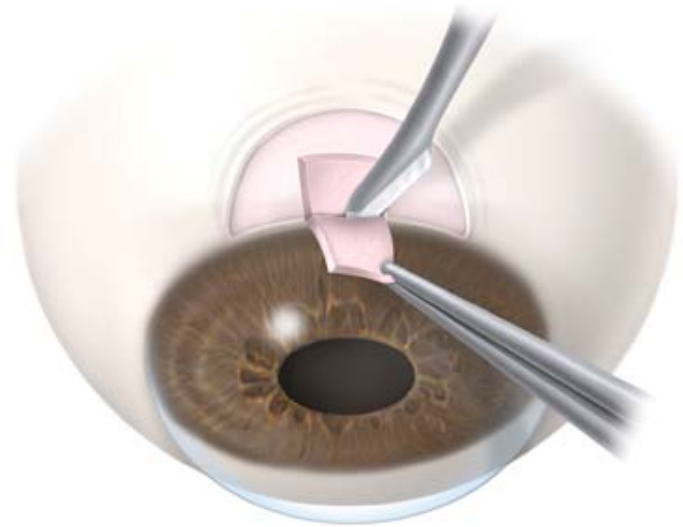


Laser trabeculoplasty

Treating glaucoma

Glaucoma surgery

- **Trabeculectomy: creates new drainage channel for the eye.**
- **Goal is to stabilize disease and prevent further damage/vision loss.**
- **Does not reverse damage to the optic nerve.**
- **Performed on an outpatient basis.**



Trabeculectomy

Treating glaucoma

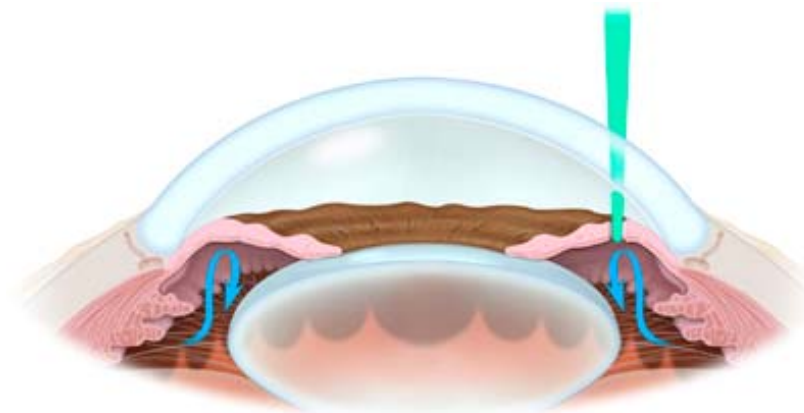
Glaucoma surgery

- **Aqueous shunt or seton: small plastic tube drains fluid from front of eye to lower eye pressure (IOP); performed in eyes at high risk for failure with trabeculectomy.**

Treating glaucoma

Glaucoma surgery

- **Laser iridotomy: creates a small hole in the iris to improve flow of aqueous humor into drainage angle.**



Laser iridotomy

Glaucoma is controllable

- **Vision loss from glaucoma usually can be prevented if detected and treated early.**
- **If you are prescribed eyedrops for glaucoma, you must take them regularly.**
- **If you are at risk for glaucoma, visit your ophthalmologist regularly.**

Preserve good vision with regular eye exams

Everyone should regularly visit their ophthalmologist at the following intervals:

- **Age 20-29 years: At least once during this period.**
 - Those with risk factors for glaucoma (people of African descent or those who have a family history of glaucoma) should be seen every 3-5 years.
- **Age 30-39 years: At least twice during this period.**
 - Those with risk factors for glaucoma (people of African descent or those who have a family history of glaucoma) should be seen every 2-4 years.
- **Age 40-64 years: Every 2-4 years.**
- **Age 65 years or older: Every 1-2 years.**