



GLAUCOMA

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JOHN A. BURNS SCHOOL OF
MEDICINE

FINANCIAL DISCLOSURES

- Alcon (Surgical Division)
- Alcon (Pharmaceuticals)
- Sight Sciences
- Aerie Pharmaceuticals
- Ivantis

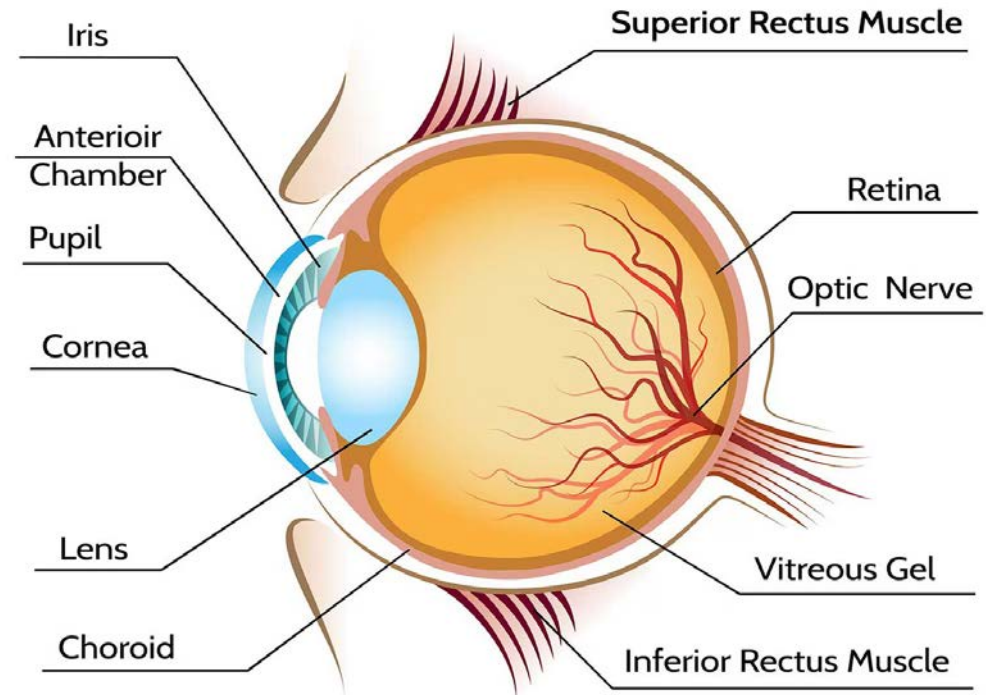
ABOUT MYSELF

- Born & Raised in Hawaii
- Punahou → University of Washington
- JABSOM
 - Graduated w/ Honors – Alpha Omega Honor Society
- Bascom Palmer Eye Institute – Residency & Glaucoma Fellowship
 - Ranked #1 Eye hospital in the US and #1 Ophthalmology Training program in the nation for 20th consecutive year!
- Assistant Clinical Professor of Ophthalmology (JABSOM)
- Board of Directors – JABSOM Alumni Association
- Sugiki Portis Yim Eye Center
 - Queens POB I Suite 714
- Board Examiner for the American Board of Ophthalmology

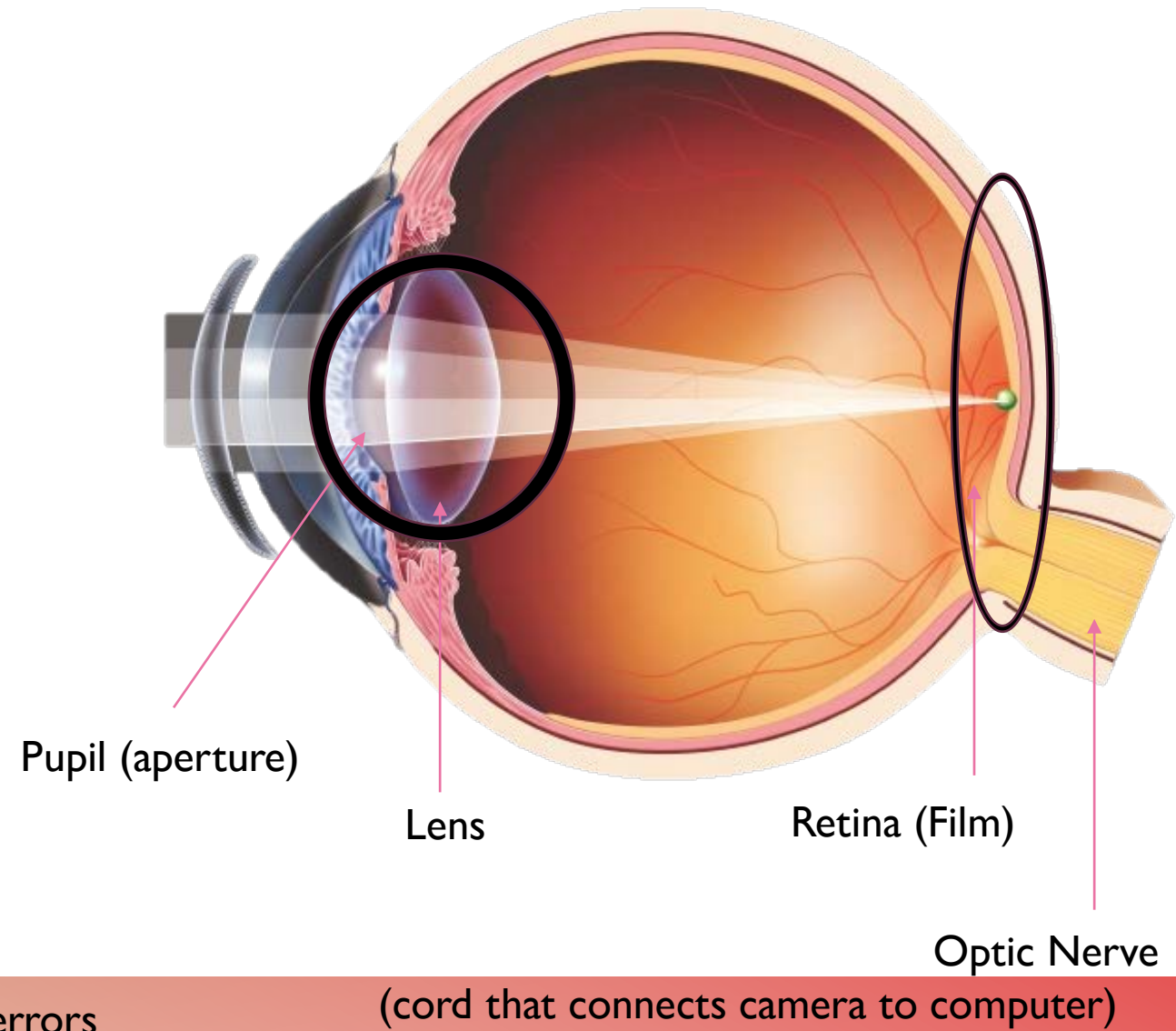
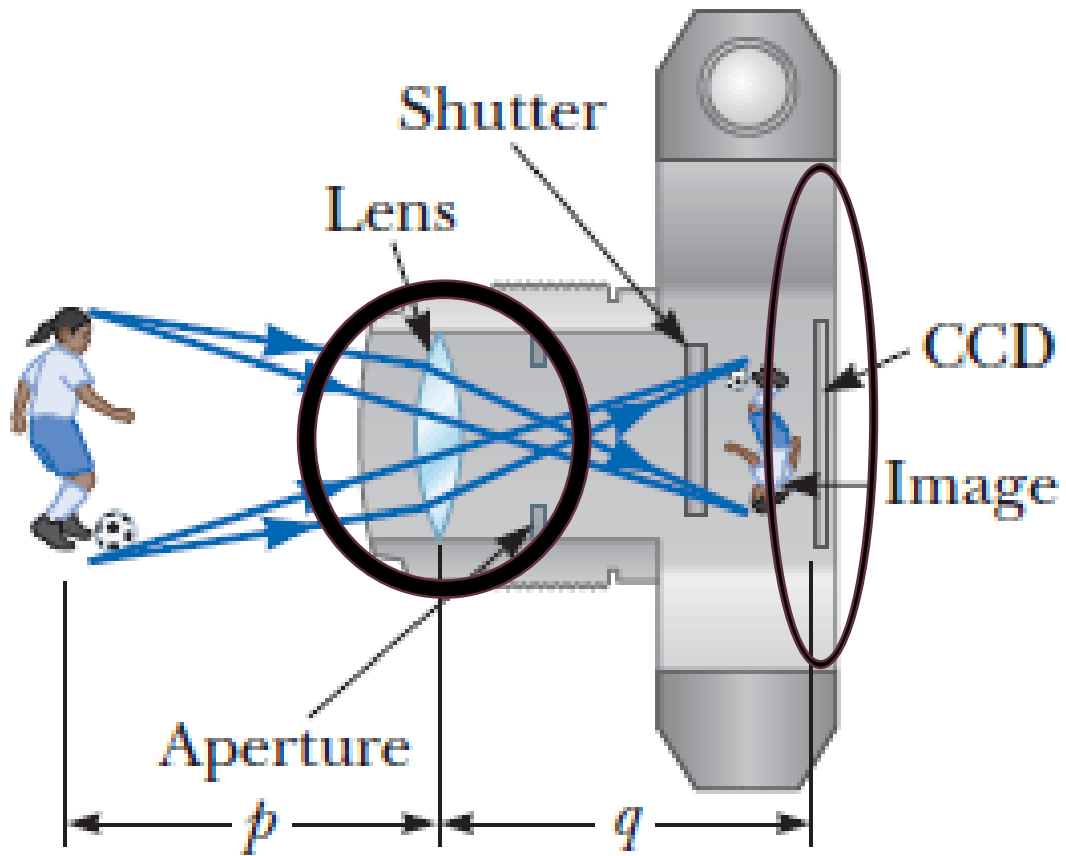


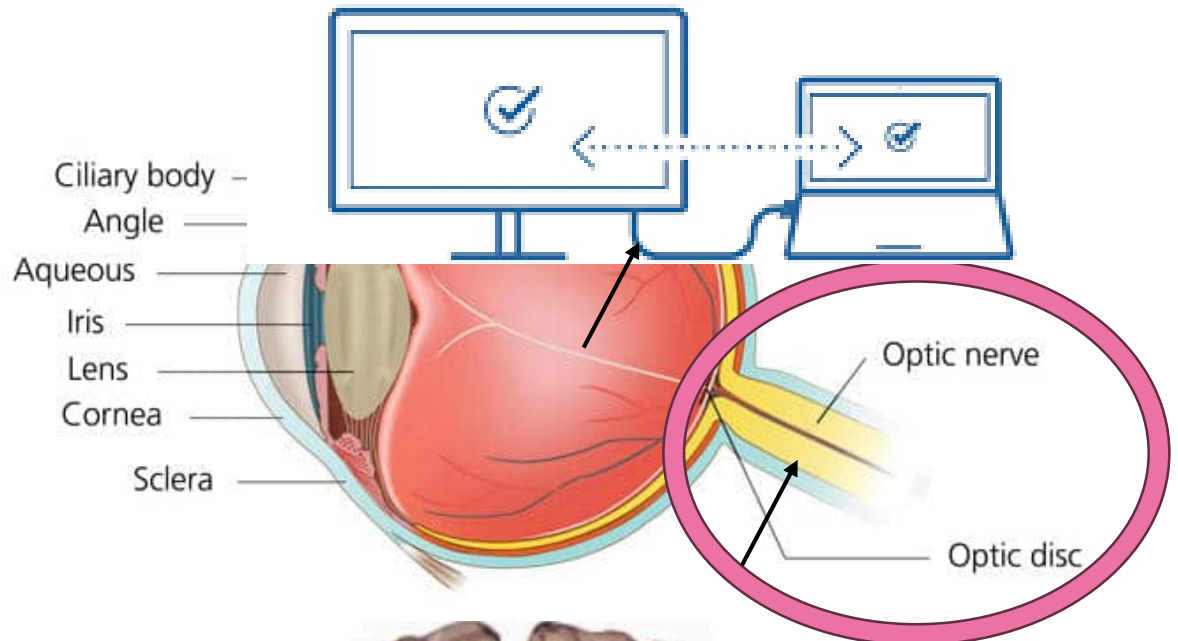
OBJECTIVES

- Describe Basic Eye Anatomy relative to understanding glaucoma
- Glaucoma:
 - What is it?
 - Why should this matter to you?
 - Natural history of disease
 - Treatment options (Old vs. New)
- Dispelling “Old Wives’ Tales”
- Q & A



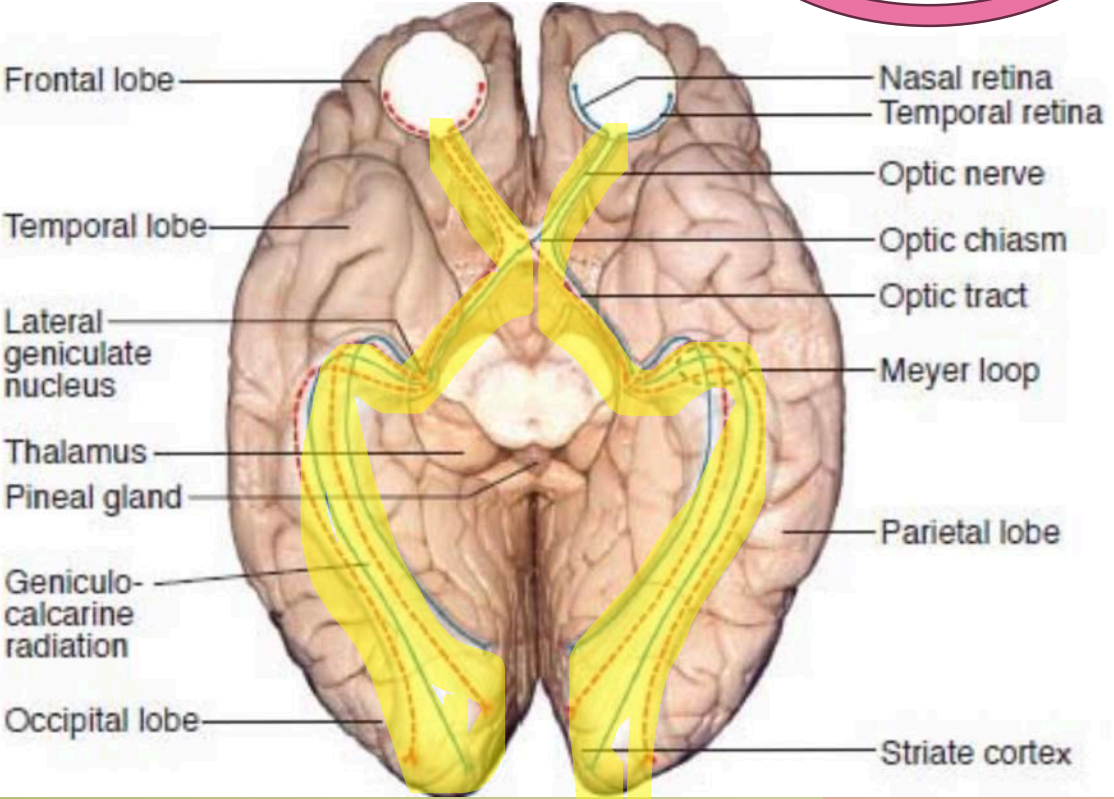
OCULAR ANATOMY





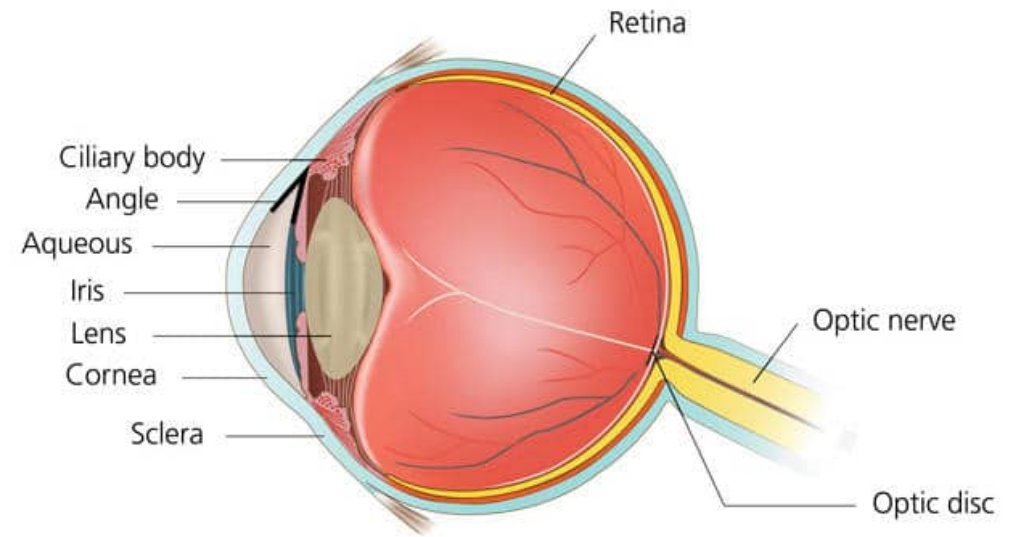
GLAUCOMA

- Chronic, progressive disease that damages your optic nerve (the cable that connects your eye to your brain)
- Glaucoma is NOT HIGH PRESSURE in the eye
- There are MANY TYPES of glaucoma



WHY DO WE CARE ABOUT GLAUCOMA?

- Leading cause of irreversible blindness in the world
 - > 80 million with glaucoma
 - 3 million in US
- "Silent blindness"
 - Most commonly it's painless
 - Vision loss starts peripheral and then progresses centrally in most cases (most don't know they have it until the end stages of the disease)
- Important to diagnose early
- Early treatment = More time with vision
- Treatment for all glaucoma is to lower the pressure in the eye (Regardless if they have "High pressure" or not)



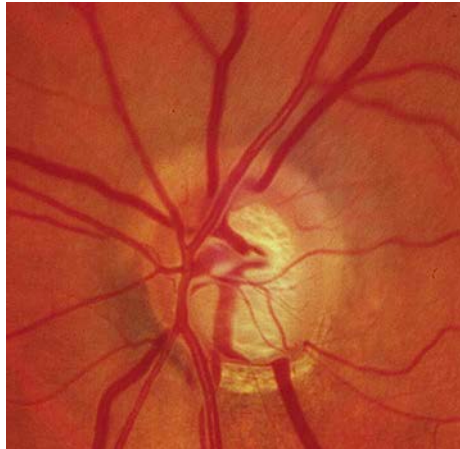
WHO'S AT RISK?

- Age (Anyone over the age of 50)
- Family history of glaucoma
- Increased eye pressure
- Some medical conditions:
 - Rheumatoid Arthritis
 - Lupus
 - Diabetes
 - Migraine headaches
- Steroid use (inhalers, corticosteroids)

MANY DIFFERENT TYPES OF GLAUCOMA:

- **Primary open angle glaucoma**

- Pigmentary glaucoma
- Steroid induced glaucoma
- Pseudo-exfoliative glaucoma
- Neovascular glaucoma
- Uveitic glaucoma
- Traumatic glaucoma
- Phacolytic glaucoma
- Ghost cell glaucoma
- Phacomorphic glaucoma
- Lens-Particle glaucoma
- Phaco-antigenic glaucoma / phacoanaphylaxis glaucoma
- Normal Tension Glaucoma
- Congenital Glaucoma



- Juvenile onset glaucoma
- Primary angle closure glaucoma
- **Acute angle closure glaucoma**
 - Pupillary block
 - Pharmacologically induced
- Chronic angle closure glaucoma
- ICE syndromes
- Etc.... The list continues

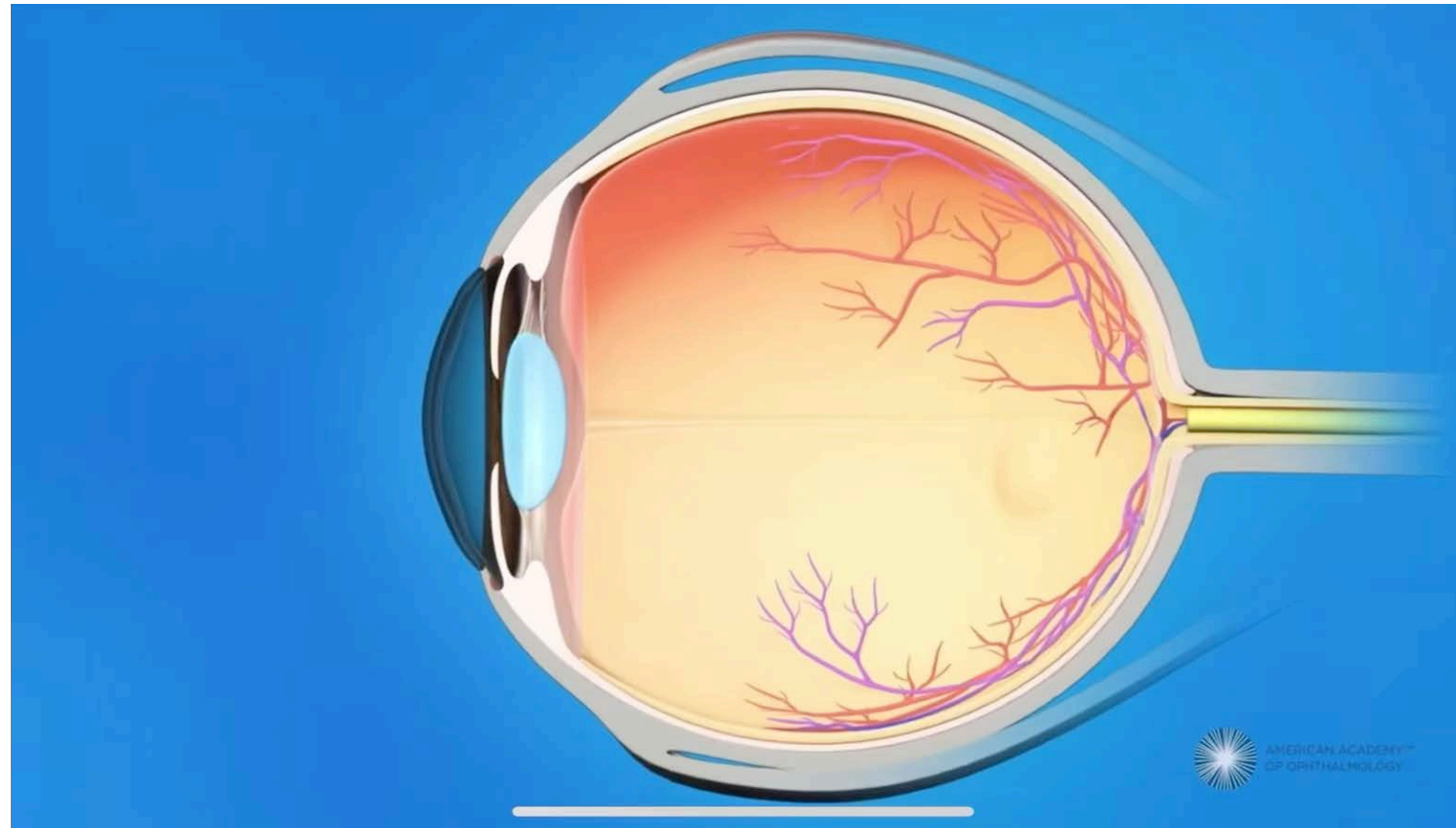
YOU DO NOT NEED TO KNOW THE TYPES OF GLAUCOMA

- That's our job as your glaucoma specialist (Don't feel bad, even most general ophthalmologists don't know all the types)
- Takeaway points from this lecture:
 - Basic understanding of glaucoma
 - How glaucoma can affect your vision
 - Why it's so dangerous
 - Treatment options (As even your physician or optometrist may not know everything that's up to date)

GLAUCOMA: KEY POINTS

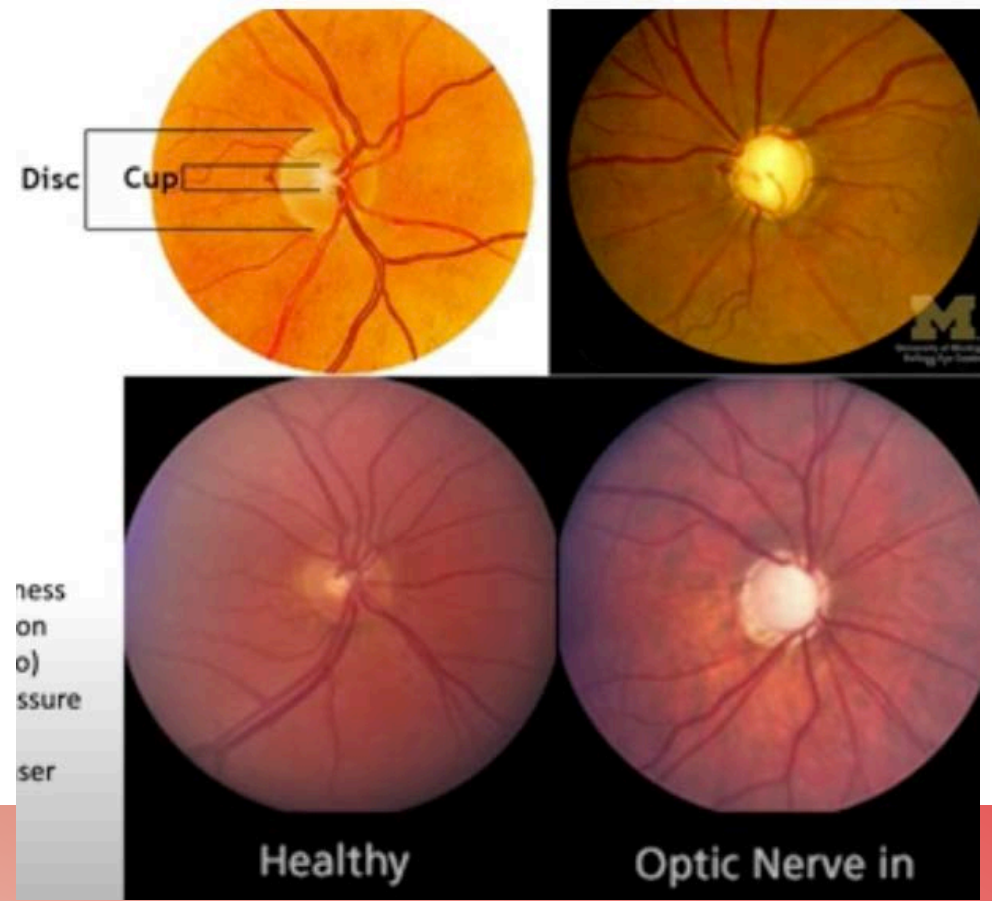
- You cannot cure glaucoma (Chronic progressive disease that will worsen over time)
- The damage from glaucoma is irreversible
- By diagnosing the disease early, treating early, you buy more time with useful vision (hopefully enough time to outlive blindness)
- My job is to keep you seeing for as long as humanly possible with the resources available to me based on the unique anatomy, structure, and function of your eyes
- Every eye is unique and different (glaucoma management is tailored specifically for that individual based on many variables)

EYE ANATOMY IN GLAUCOMA



THE OPTIC NERVE HEAD

The Cup: Normal < 0.5



OPTIC NERVE CUPPING AND VISUAL FIELD LOSS



0.2



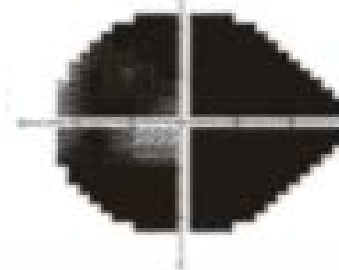
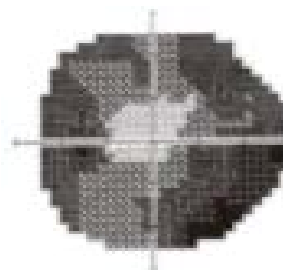
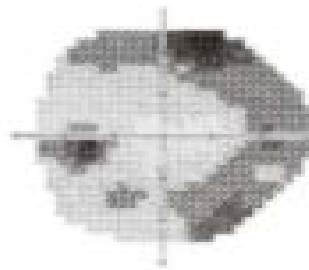
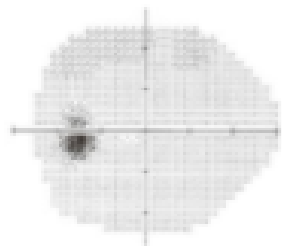
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0.7

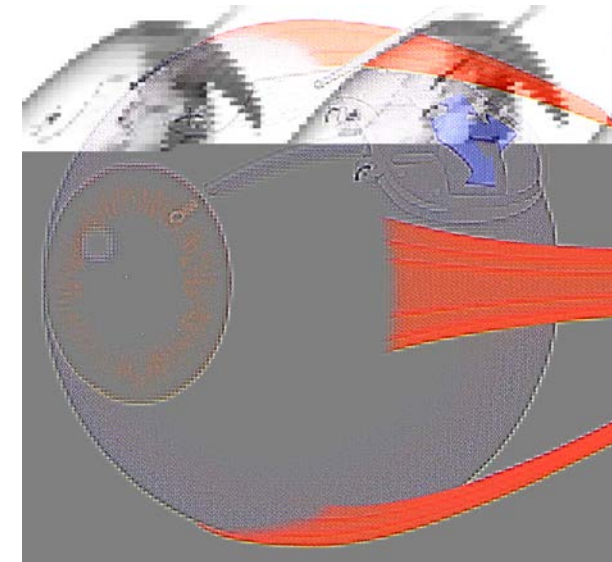
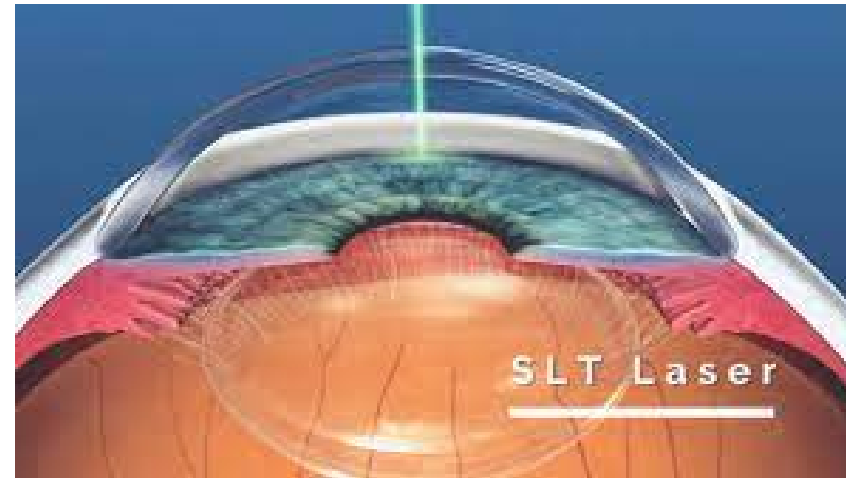


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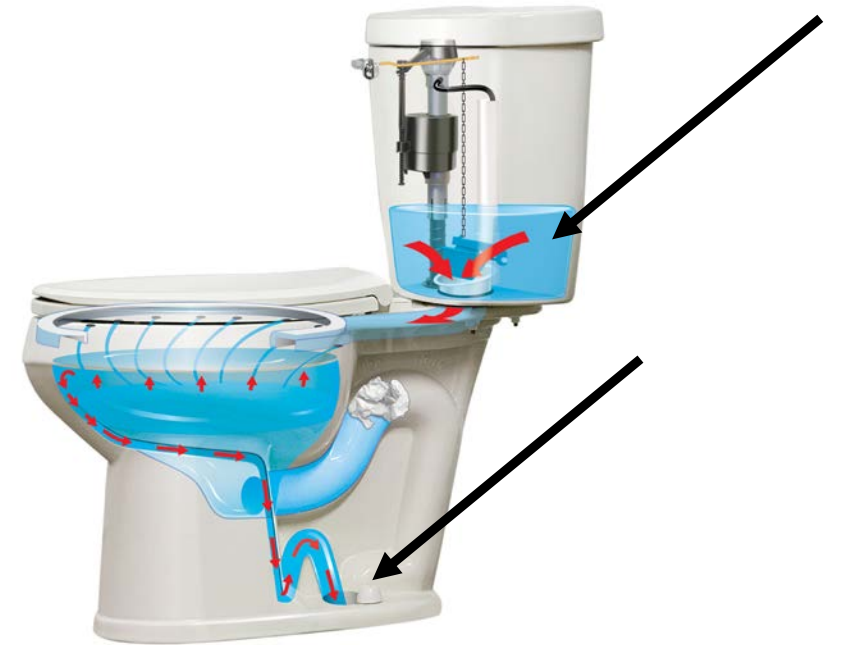
3 DIFFERENT WAYS TO LOWER IOP (INTRAOCULAR PRESSURE)

- Medicine
- Laser
- Surgery



MEDICINE – GLAUCOMA DROPS

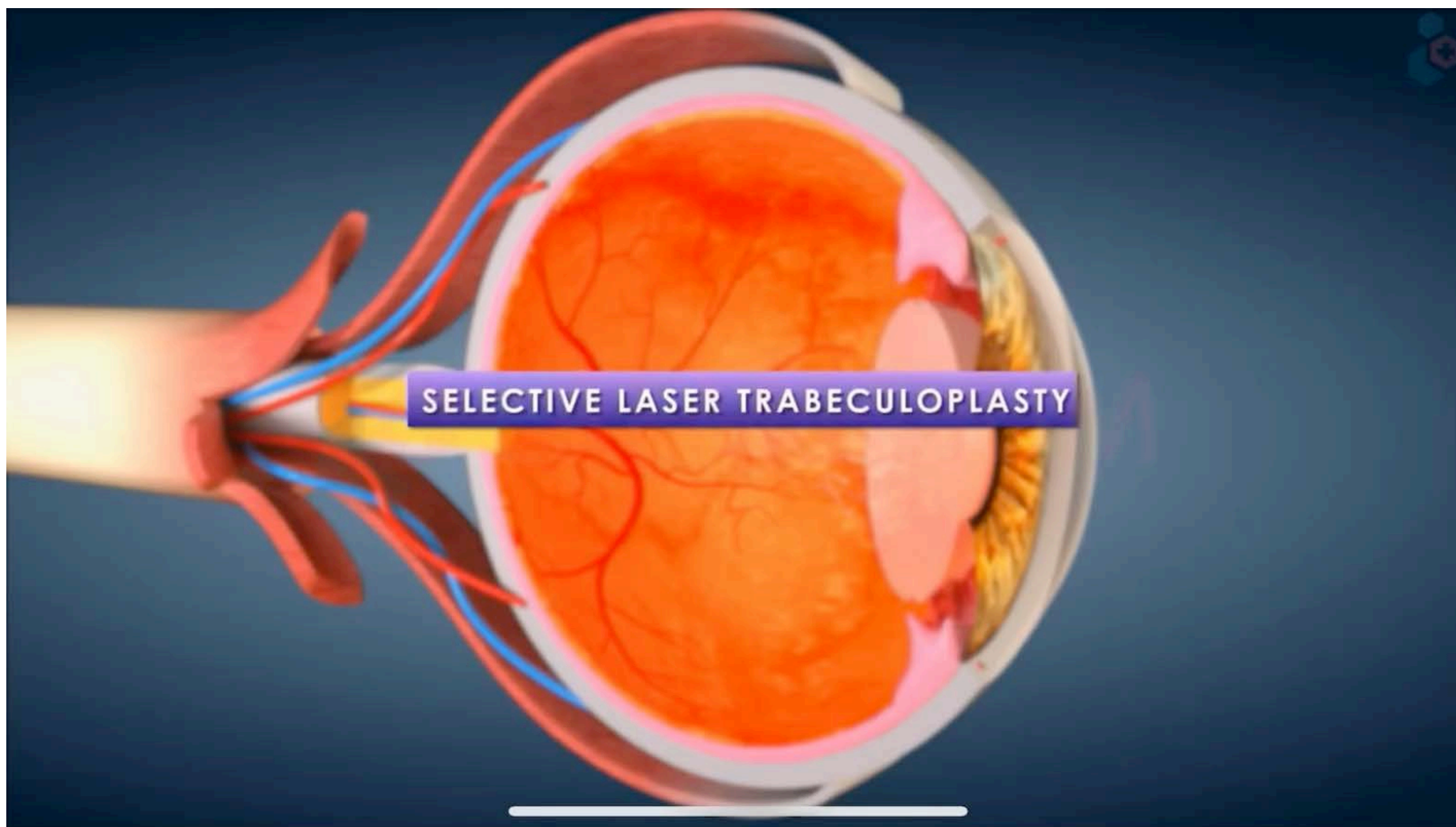
- 2 main mechanisms to lower the pressure
 - Decrease the amount of fluid the eye makes
 - Alpha agonists
 - Beta Blockers
 - Carbonic Anhydrase inhibitors
 - Increase the drainage of fluid
 - Prostaglandin Analogues
 - Miotics
 - Netarsudil



LASERS

- SLT – Selective Laser Trabeculoplasty
(often used first line to treat glaucoma)
- LPI – Laser Peripheral Iridotomy
- CPC – Cyclophotocoagulation
(Micropulse vs. G-probe)

SELECTIVE LASER TRABECULOPLASTY (SLT)



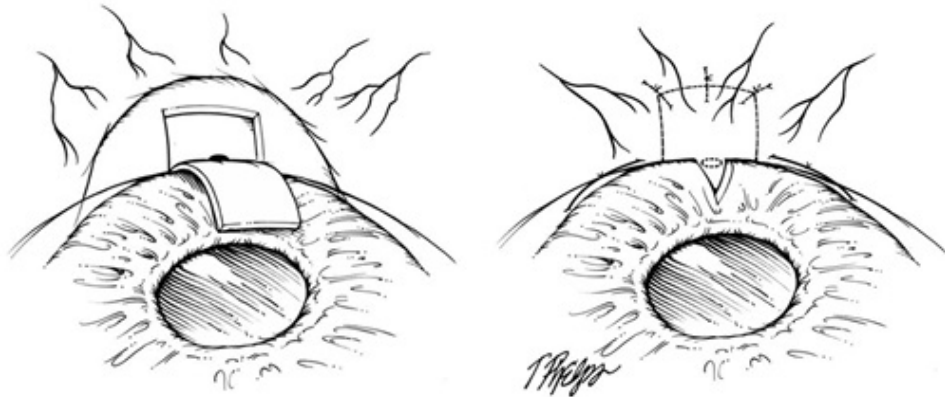
SURGERY

- Last resort
 - If medicines and lasers were not able to achieve low enough pressures to slow or stabilize the progression of glaucoma
 - To lower the pressure, we must either create another drainage system or improve your existing drainage system
- Traditional "Big Gun" glaucoma surgery
 - Trabeculectomy
 - Tube shunts
- Minimally invasive glaucoma surgery (MIGS) – Too many to discuss
 - iStent
 - Hydrus
 - Omni

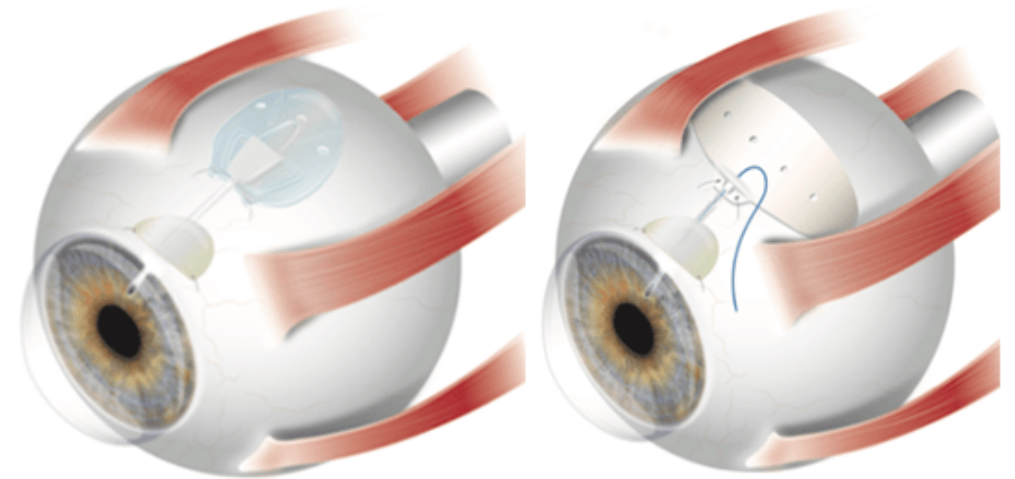


TRADITIONAL GLAUCOMA SURGERY

- Highest EFFICACY (Gets the job done. Achieves the lowest IOP reductions)
- Highest RISK (Including blindness. Many long term complications that have to be monitored for)
- Used as a LAST RESORT now with the advent of minimally invasive glaucoma surgery (MIGS)



Trabeculectomy

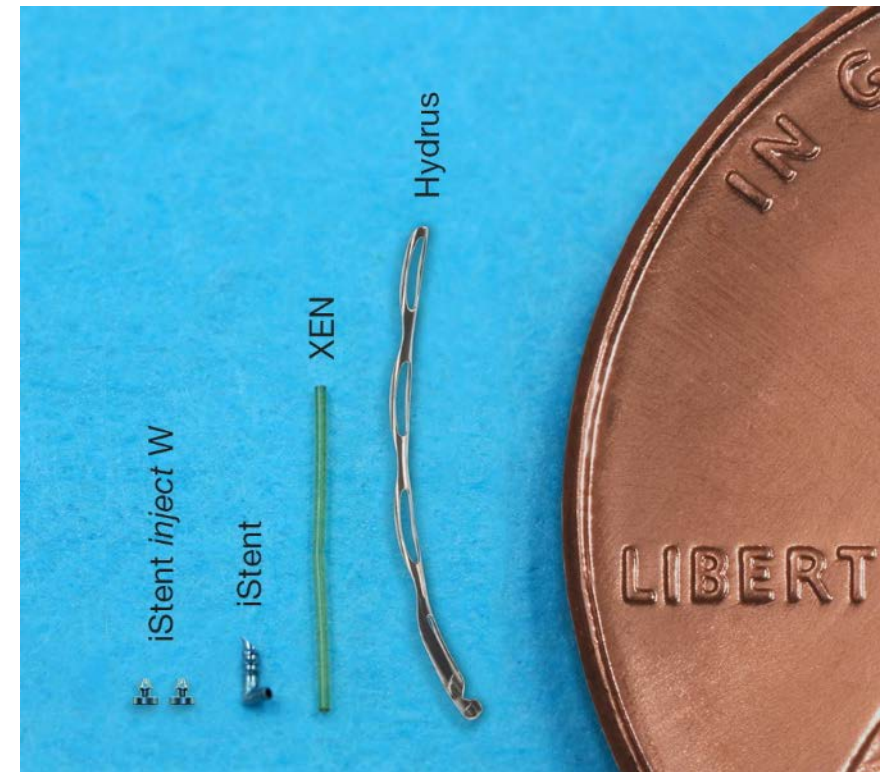
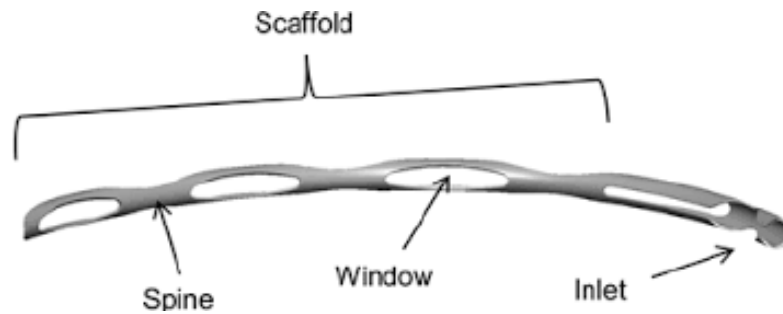
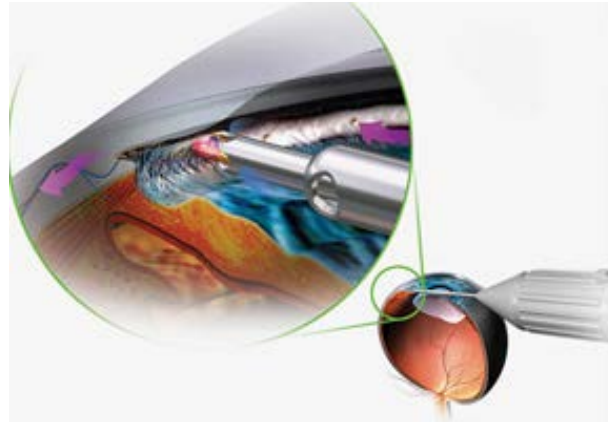
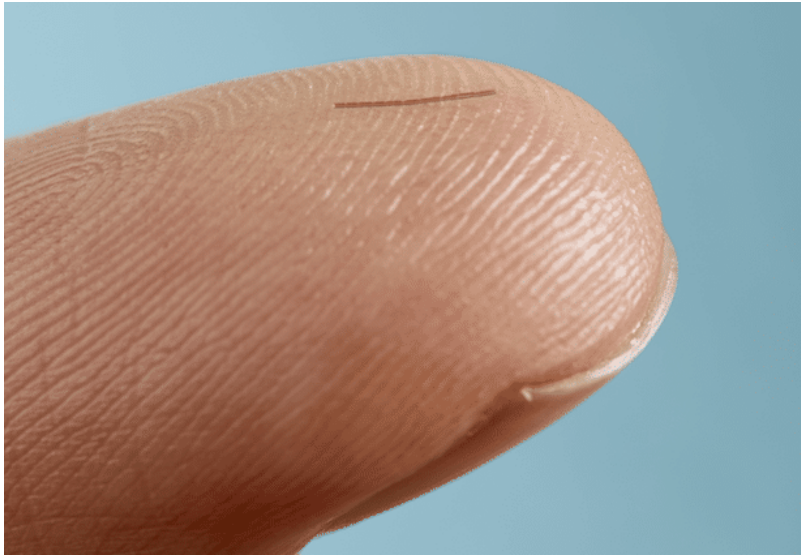


AHMED VALVE

BAERVELDT SHUNT

Tube shunt

MINIMALLY INVASIVE GLAUCOMA SURGERY (MIGS)

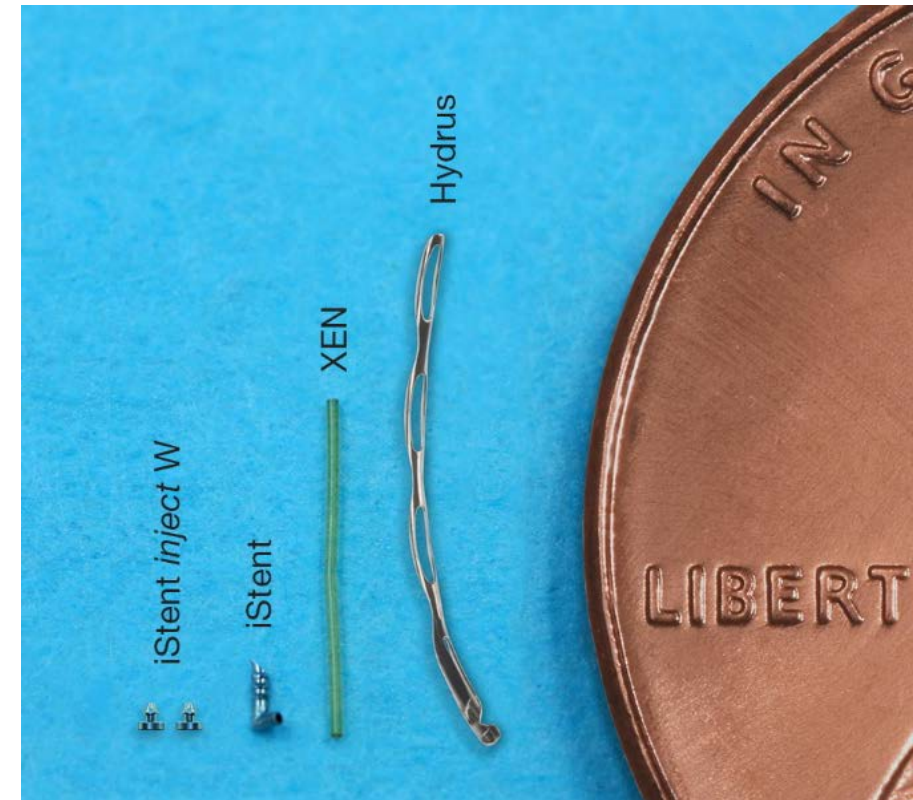


WHY DO MIGS?

- **Safer**
- **Can lower eye pressures and decrease/eliminate need for medications**
- **Lower complication rate**
- Can **buy time** before traditional glaucoma surgery
- Many different types to choose from because **every patient is unique**

ARE THERE DIFFERENT TYPES OF MIGS?

- Absolutely
- Many different types:
 - Istent
 - Istent inject
 - istent infinite
 - Hydrus
 - Xen
 - Preserflo
 - Streamline
 - Omni
 - Trab 360
 - Kahood dual blade
 - Trabectome
 - CyPass
 - iTrack
 - ECP (endocyclophotocoagulation)
 - iAcess
 - iPrime
 - Etc...



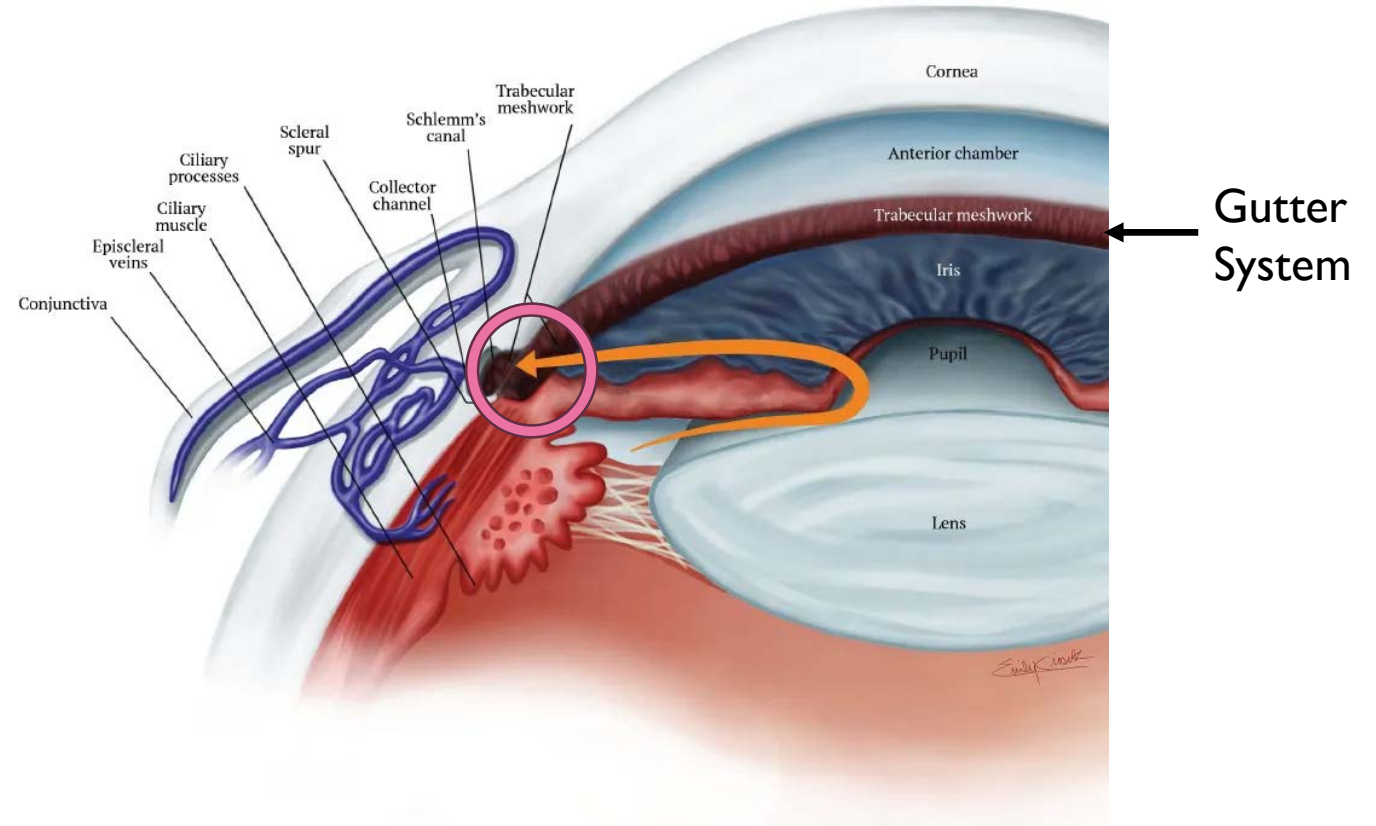
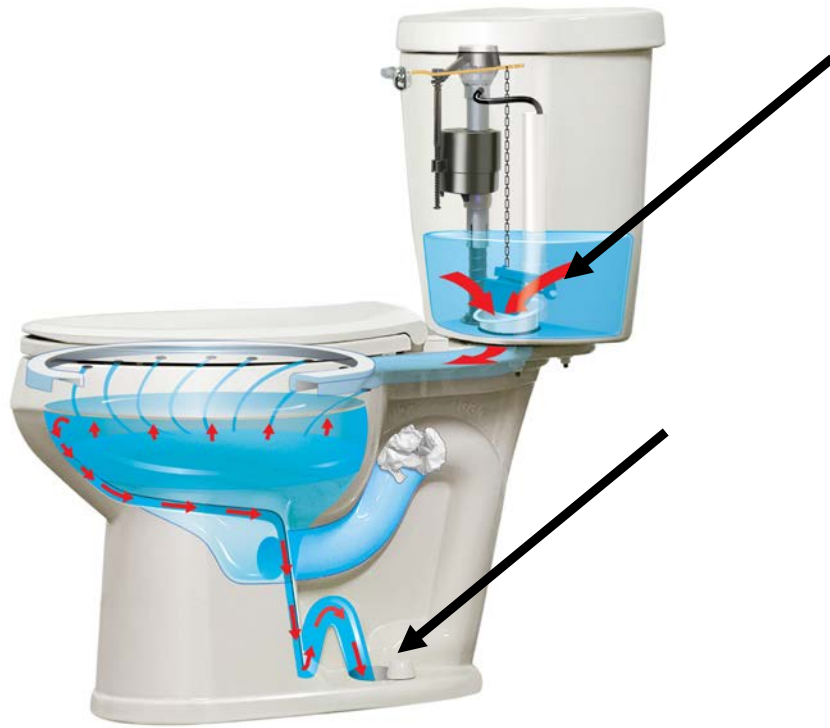
HOW DO YOU KNOW WHICH MIGS IS RIGHT FOR YOU?

- That's our job as glaucoma specialists
 - Glaucoma + Cataracts
 - Intolerant to medications
 - On the maximum tolerated medications, but your glaucoma is still progressing
- If your general ophthalmologist is not aware of MIGS or comfortable performing MIGS, seek the opinion of a glaucoma specialist (even if the specialist isn't the one performing the surgery)
 - He or she can give you recommendations based on data to send back to your ophthalmologist
- **NOT one size fits all**
 - Some MIGS are better for certain eyes and some may end up being worse
 - Choosing the “right” MIG is often more important than “getting just any MIG”.

TOO MANY MIGS TO DISCUSS

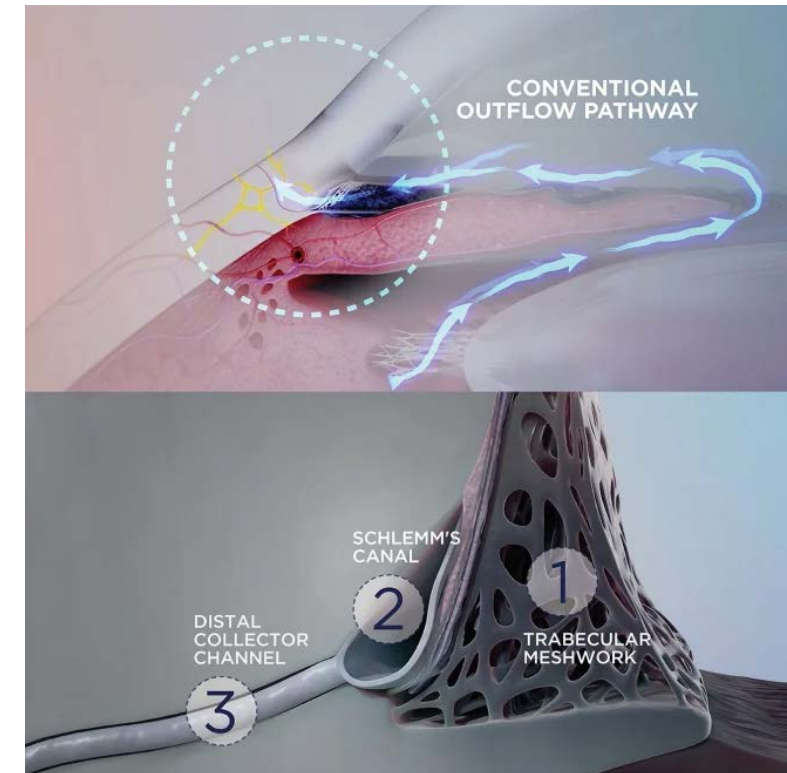
- Omni
- Hydrus
- iStent

THESE MIGS IMPROVE THE OUTFLOW OF FLUID FROM THE EYE



SUMMARY OF MIGS

- Many minimally invasive surgical options are available
- MIGS can be used in mild to severe glaucoma as standalone procedures and not only combined with cataract surgery
- 1 size DOES NOT FIT ALL
 - Knowing what MIG to use in specific types of glaucoma is critical for success and avoiding unnecessary complications and surgery
- Although MIGS much safer than “traditional glaucoma surgery”, not all people are candidates for MIGS, and if not done correctly they can cause significant damage
- MIGS can delay or possibly avoid having traditional glaucoma surgery
- Can decrease medication burden (pts who cannot tolerate eye drops)



KEY POINT SUMMARY OF GLAUCOMA

- You cannot cure glaucoma (Chronic progressive disease that will worsen over time)
 - But most will not go blind from it in their lifetime
- Diagnosing the disease early, treating early, you buy more time with useful vision (hopefully enough time to outlive blindness)
- There are many great options to treat glaucoma (Medicines, Lasers, Surgery)
- Every eye is unique and different (glaucoma management is tailored specifically for that individual based on many variables)

DISPELLING OLD WIVES' TALES

TRUE OR FALSE

- Sitting too close to the TV will ruin your eyes
 - FALSE! Watching TV, including LCDs and flat screens, can't cause your eyes any physical harm (no evidence yet...) The same is true for using the computer too much

TRUE OR FALSE

- Your vision will get worse if you read in the dark
 - FALSE! But having good light will prevent eye fatigue and make reading easier

TRUE OR FALSE

- Wearing glasses makes your eyes dependent on them
 - FALSE! You're just getting used to seeing things more clearly

TRUE OR FALSE

- Wearing glasses with the wrong prescription will ruin your eyes (as an adult)
 - FALSE! Children are the exception to the rule

TRUE OR FALSE

- Eating Carrots will make your eyesight better
 - FALSE! Carrots are healthy for eyesight because they contain vitamin A, a nutrient important to your eyes. Eating a lot of carrots won't help you see better unless you suffer from vitamin A deficiency, which is rare in the US. Also, eating too many carrots can be its own problem since vitamin A is fat soluble; you could develop vitamin A toxicity and cause your skin to turn yellow.

MAHALO

- Dr. Kamal Masaki
- JABSOM
- My Parents
- All of you!
- Michael Yim, MD
 - Sugiki Portis Yim Eye Center
 - Queens POB I Suite 714
 - 808-528-5333

