inSight

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Glaucoma Awareness

Glaucoma is a chronic eye disease that damages the optic nerve leading to characteristic optic neuropathy and visual field loss. Glaucoma is the second leading cause of blindness in the world, cataract being the first. It was estimated that in 2020 about 60-80 million people have suffered from glaucoma worldwide. This disease is commonly asymptomatic until advanced visual field loss occurs. If glaucoma is undiagnosed and not treated promptly it can lead to irreversible damage to optic nerve and permanent vision loss.

The main risk factors for glaucoma include but not limited to advancing age, African and Latino ethnicity, family history, and increased intraocular pressure. A typical glaucoma examination includes taking a medical history, measurement of intraocular pressure, gonioscopy (visualization of the cornea-trabecular meshwork-iris angle), optic nerve cup-to-disc ratio and nerve rim evaluation, and lastly peripheral visual field testing. The optic nerve examination is done with a dilated eye exam and may include imaging modalities such as optical coherence tomography (OCT) and confocal scanning laser ophthalmoscopy (HRT).

Studies such as the Early Manifest Glaucoma Trial (EMGT) and Collaborative Normal Tension Glaucoma Study (CNTG) have shown the importance of IOP reduction in preventing visual field loss and disease progression. The EMGT shown that a 1 mmHg reduction in IOP baseline was associated with a risk reduction (progression) of 10%. The CNTG study showed that glaucoma progression (visual field loss) was slower in treated group compared to the untreated group.

The treatments include drops, laser procedures, and surgery. Topical eye drops include prostaglandin analog, carbonic anhydrase inhibitors, beta-blockers, alpha agonists, miotics and new Rho-kinase inhibitors. A new bimatoprost implant (DURYSTA) has been FDA approved. This is the first intracameral biodegradable sustained release implant to reduce IOP.

For many years the main surgeries for IOP reduction were limited to Trabeculectomy and Glaucoma drainage implants (Ahmed, Baerveldt, Molteno). Thanks to the contributions of many glaucoma doctors such as Ike Ahmed MD, Davinder Grover MD, MPH, Malik Kahook MD, and Reay Brown MD there are new micro-devices and surgical techniques termed Micro-invasive glaucoma surgery (MIGS). MIGS procedures focuses on the bypassing, unroofing or enhancing the trabecular meshwork. Most of the time these procedures are done at the time of successful cataract surgery and can be done with surgeons comfortable working within the cornea-TM-iris angle.

Studies of MIGS procedures and devices such as iStent implant, Hydrus implant, OMNI device, GATT, iTrack, and Kahook dual blade show promising results of IOP reduction and less potential complications compared to traditional glaucoma surgeries. Even with the new MIGS procedure available to glaucoma and cataract surgeons, trabeculectomy is still an important procedure for severe glaucoma patients that need their IOP in the single digits.

In conclusion, glaucoma is a challenging disease that can negatively impact patients' vision and life. Early diagnosis is key and aggressive IOP reduction is promising to improve visual outcomes. New medications and surgical techniques are continuing to improve IOP reduction and visual outcomes.

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