



**WHAT DOES  
INTERVENTIONAL  
GLAUCOMA MEAN  
TO YOU?**



JASON BACHARACH, MD

When *Glaucoma Today* reached out to ask my thoughts on what interventional glaucoma (IG) means to me, what first came to mind was the irony of the concept. In training and throughout my first 2 decades of practice, I did everything possible to avoid intervention. Medications first, next laser, and, only then, filtration surgery was the mantra of my residency and fellowship training.

Today, IG is more than a mindset—it is a practice reality. We have clinical trials to support the approach and new tools in our bag to successfully execute it. Some of our top fellowship training centers now mold masters in IG (think of the beloved, long-haired, hockey-loving Canadian who is the Chief Medical Editor of this publication).

The roots of IG started long ago (sorry, Reay) with legendary glaucoma specialists like Reay Brown, MD, working on trabecular bypass devices and pushing the envelope beyond traditional tubes and trabs. IG was off to the races when Tom Burns' team at Glaukos obtained FDA approval for the first-generation iStent in 2012. Now, we have many excellent options to help execute the task of balancing stratified IOP target goals with risk.

But we are only at the nascency of IG as many more options are in different stages of development. Guided administration of pharmaceuticals, or GAP therapy, is poised to be the next iteration of IG. Dissolvable or replaceable sustained-release treatments are demonstrating intriguing results in late-term clinical trials. Soon, we could see a major disruptor change our day-to-day practice. I feel a healthy balance exists between skeptical colleagues and those of us who are ready to leap in feet-first.

Not surprisingly, the first Interventional Glaucoma Congress was held last year in New York City. Curated by Ike Ahmed, MD, FRCSC; Rick Lewis, MD; and Arsham Sheybani, MD, this think tank-style meeting brought together like-minded colleagues to exchange ideas regarding IG. Scientists, clinicians, and industry partners discussed ways to bridge gaps in the understanding and implementation of IG.

The concept of IG can stir mixed emotions, ranging from excitement to anxiety, as new skill sets need to be mastered. But, in the end, if it is good for our patients, most of us will brave the challenge. It is the best of times to be practicing glaucoma care. I compliment my professional and industry-based colleagues who continually move IG forward in our world.



LAUREN S. BLIEDEN, MD

To me, IG means being able to actively slow or change the course of glaucomatous disease. I tell all of my patients the same thing: "I don't care how we get to stable, as long as we get there." This involves a combination of medication, laser, and surgery over the course of the patient's life. I think we are currently in a renaissance of treatment options across all of these modalities, with a lot more offerings that balance the traditional risk-benefit ratios.



CRAIG CHAYA, MD

At the heart of an IG approach is customization—or care that is tailored to each patient. This is guided by factors such as visual potential, glaucoma staging, IOP targets, comorbid conditions, patient preferences, and existing evidence in the literature. *Interventional* is not always synonymous with *surgery* but is, instead, a philosophy of what is in the patient's best interest long-term.

Having multiple options that preserve functional vision, improve quality of life, and keep future options available when needed are key. The spectrum of IG includes approaches such as using newer medicines with novel mechanisms of action that preserve conventional outflow, finding a drop regimen that is simple and likely to improve the odds of patient adherence, using selective laser trabeculoplasty (SLT) as first-line therapy, performing MIGS earlier in the disease process, and knowing when to employ more aggressive incisional surgery—all of which are crucial to modern glaucoma care.

What IG does not include is doing the same thing for every patient, assuming that all patients want to be on three to four drops indefinitely, being rigid with therapeutic options, and remaining oblivious of the true state and velocity of the disease as to be too passive or too aggressive with treatment. Having the right tools and knowing when and how to use them are the crux of the interventional mindset.



STEVEN R. SARKISIAN JR, MD

To me, IG is procedural glaucoma, or an innocuous way of saying *surgery*. Having seen the worst of the worst glaucoma-related blindness, I have long advocated for early surgical intervention, declaring from the podium at almost every meeting the mantra, “Glaucoma is a surgical disease.” This has led to me being called a *cowboy*, or my favorite, an *arrogant proceduralist*. However, time and technology have proven me right, and we now have even safer and effective options to treat patients with some type of procedure, be it first-line SLT, a sustained-released medication, or a MIGS procedure with or without cataract surgery.

Candidly, I am often shocked by current editorials in journals suggesting surgeons start to think about first-line SLT, a practice I have been doing for the past 13 years. Now we are on the precipice of another disruptive change to occur in our field: the advent of sustained-release medications. Every thoughtful, faithful-to-the-cause, cutting-edge doctor taking care of patients with glaucoma will be taking the time to inject or implant medication to lower IOP, affording perfect compliance for each recipient. There is still no cure for glaucoma, but we will save vast numbers of patients from losing their vision to their disease in the years to come. It is an exciting time to work in glaucoma!



IAN CONNER, MD, PHD

IG is anticipatory rather than reactive. IG acknowledges that glaucoma is a chronic, currently incurable disease, and we seek to manage that disease before it becomes uncontrolled. In order to achieve this goal, we must strive for improvements in (1) early detection of disease and progression, (2) delivery of existing therapeutic agents, and (3) interventions that are safer and acceptable to our patients.

OCT was a revolution. It allows us to diagnose disease and detect progression before patients are even aware of their declining vision. Newer imaging technologies will allow us to detect tissue under stress at the cellular level, and advances in perimetry will permit even earlier detection of vision loss.

These advances will give us more time to act before vision loss is manifest and permanent.

Sustained-release therapeutics already exist for some ophthalmic drugs, such as intravitreal steroids. Intraocular and periocular sustained-release glaucoma medications will allow us to take patient adherence out of the equation and to minimize side effects from pulsed dosing.

Finally, the interventions. Acceptance of SLT as first-line treatment is now mainstream. Trabecular ablation and trabecular bypass, with or without combined cataract surgery, is rising in popularity and establishing its own track record of safety. Improvements in filtering procedures, including newer transscleral shunts, are lowering the threshold to intervene earlier in more refractory glaucomas.

In short, IG is a mindset that encourages the physician to break free from the constraints of programmed, step-wise treatment and instead consider the patient, his or her disease, and his or her preferences. The goal is to minimize morbidity, not just in terms of vision loss but in how the disease and its treatment affect the patient’s entire life. We are fortunate to have an ever-expanding spectrum of tools available to achieve this goal—we must now sort out how best to use them with each individual patient.



LEONARD K. SEIBOLD, MD

To most clinicians, the concept of IG is most easily characterized as some form of surgical treatment for uncontrolled glaucoma. Although this certainly encompasses the crux of what IG means to me, I would more broadly describe it as the appropriate use of any and all medical, laser, or surgical therapies required to slow or halt this blinding disease. With recent advances in the past decade, we must move beyond the traditional limits of eye drops and trabeculectomy and better tailor our treatments to each individual patient. IG does not entail unnecessarily aggressive surgical intervention, but rather proactive yet assertive measures to prevent the irreversible damage that this chronic disease can cause.

Historically, initial interventions have encompassed a host of topical IOP-lowering medications. However, now with SLT, a growing MIGS arsenal, and novel drug delivery platforms coming to market, we have several eye drop alternatives that deserve to be considered at all stages of disease. We can no longer turn a blind eye to the side effects, noncompliance, and cost associated with topical eye drop therapy, but rather must search out and offer alternatives where appropriate to

Iqbal Ike K. Ahmed, MD, FRCSC; and fellows Valentina Lozano, MD; and Jeb Ong, MD, discuss the concept of interventional glaucoma and how it applies to training and practice today.



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maximize patients' quality of life and treatment efficacy. To practice IG, we must be familiar with all of the options available and openly and honestly discuss with our patients which therapy is best suited for their unique situation. My hope with IG is that we can confidently pursue treatment in a more precise and efficient manner while achieving superior outcomes for our patients.



**H. GEORGE TANAKA, MD**

The IG mindset can include straightforward decision-making, such as offering SLT over eye drops as an initial treatment for glaucoma (an option supported by the LiGHT study). However, in a broader sense, IG can be considered a new subspecialty encompassing two areas: novel procedures designed to enhance aqueous outflow and novel drug delivery systems. These minimally invasive procedures allow aqueous humor to bypass the trabecular meshwork or direct aqueous humor into the suprachoroidal or subconjunctival spaces.

In contrast to traditional glaucoma surgeries such as trabeculectomy and tube shunt implantation, MIGS procedures are less invasive, carry less risk, offer quicker postoperative recovery, spare the conjunctiva, minimally affect refractive error, and require less postoperative management. In general, MIGS is less effective than traditional surgery in lowering IOP; however, along with new sustained-release drug delivery systems, MIGS may allow patients with mild to moderate glaucoma to reduce the number of glaucoma drops they take and may mitigate the drawbacks of medical IOP-lowering treatment, such as local and systemic side effects, cost, and the need for compliance with its associated psychological burden, thereby improving the patient's quality of life.

IG has enabled earlier procedural intervention in the treatment of glaucoma patients, and the movement has caught on among glaucoma specialists and comprehensive ophthalmologists. The goal of glaucoma treatment has always been to prevent irreversible blindness, but IG has allowed us to shift

our focus to a more patient-centered approach that seeks to improve patient quality of life by reducing the medication burden. In addition, cataract surgery is now a refractive procedure with the goal of reducing dependence on glasses and contact lenses as well as improving quality of vision. Combining cataract surgery with IG in patients with mild glaucoma allows an additional improvement in quality of life without affecting refractive outcomes. ■

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